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Evaluating the Cultural Heritage and landscape of Quseir - Qift Road: with a special focus on the gold mines and greywacke quarries

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Evaluating the Cultural Heritage and landscape of Quseir - Qift Road: with a special focus on the gold mines and greywacke quarries

Abstract

The study is divided into two parts preceded by an introduction and entailed by a conclusion as follows:

Part I: Archaeological Survey of Quseir – Qift road

This part is divided into two chapters surveying the road and the ports flanking the road between the Nile and the Red Sea.

Chapter I: sheds the light on the *hydreumata* along the Quseir (Myos Hormos) - Qift (Coptos) road which are:

Bir Nakhil, Dawwi, Bir Sayyala, Bir al Hamara, Al – Zarqa (Maximianon), Bir Fawakhir (Persou II), Bir Hammamat (Persou I), El Muwayh “Krokodilo” and Qusur El Banat.

Chapter II: deals with the ancient port network between the Nile and the Red Sea due to the importance of the Myos Hormos road in the ancient times as the shortest road linking the Nile port of Coptos (Qift) with the Red Sea port of Myos Hormos (Quseir) in addition to the role played by the ancient port of Saww (Mersa Gawasis) from the Pharaonic Period till the 2nd century AD.

Part II: Cultural Heritage Values of the Quseir - Qift road

This part is divided into three chapters underlining the different heritage values along the Coptos – Myos Hormos road.

Chapter III: underlines the gold mines and the value of gold in Ancient Egypt, the evolution of gold extraction in Bir Umm Fawakhir along the different historical phases from the Pre - dynastic period till the Ptolemaic and Roman – Byzantine era and the impact of this activity on creating the settlement that was once inhabited by the miners.

Chapter IV: studies the greywacke (Bekhen stone) quarries and the development of quarrying techniques through the analysis of the numerous inscriptions left by the members of the various expeditions sent to extract this stone in the greywacke mountain of Wadi Hammamat. These textual evidences helped in rendering the various Quarrying phases starting with the Extraction process upon the arrival to the quarry till the Transportation towards the destination on the Nile valley passing by the Logistics that once regulated the work of large - numbered expeditions in the desert such as the distribution of goods, food and other necessities for the workers and the water supply in addition to the cultic and the religious aspects of the region.

Chapter V: represents the valorization of the heritage value of Coptos – Myos Hormos road through elaborating a number of arguments related to the life of the road that forms a pass towards the realization of a desert road archaeology study.

This part of the study includes some proposed ideas towards the ideal use of the potentials of the surveyed areas from the tourism point of view promoting new itineraries and developing projects that may participate as a possible solution due to the recent status of tourism in Egypt.

List of Contents

Abstract	II
List of Contents	IV
Introduction	X
List of Figures	XVIII
List of Abbreviations	XLII

Part I.

Archaeological Survey of Quseir – Qift Road

Chapter I

Quseir – Qift Road (Central Eastern Desert)

1.1. Introduction	2
1.2. Qift – Quseir Road in the Ancient Resources	2
1.3. The Myos Hormos Road	4
1.4. Hydreumata along the Myos Hormos Road	9
1.4.1. Bir Al Nakhil	9
1.4.2. Dawwi	13
1.4.3. Bir Sayyala	18
1.4.4. Al - Hamra	27
1.4.5. Al-Zarqa (Maximianon)	33
1.4.6. Bir Fawakhir (Persou I)	64
1.4.7. Bir Hammamat (Persou II)	112
1.4.8. Al-Muwayh (Krokodilo)	119
1.4.9. Qusur al-Banat	138

Chapter II

The Port System of the Qift – Quseir Road

2.1. Introduction	148
2.2. Coptos (Qift)	148
2.2.1. Roman Settlement	150
2.2.2. Excavations of Coptos	151

2.2.3. Archaeological Findings	155
2.3. Myos Hormos (Quseir Al Qadim)	171
2.3.1. Geographical Location	171
2.3.2. The Importance of Myos Hormos	172
2.3.3. The ancient town of Myos Hormos	173
2.3.4. The Harbour Area	175
2.3.5. The Settlement	178
2.3.6. Archaeological Findings	183
2.3.7. Chronology of the Port of Myos Hormos	187
2.4. Mersa Gawasis	188
2.4.1. Geographical Location	188
2.4.2. Religious Aspects of Mersa Gawasis	190
2.4.3. Archaeological Findings	194
2.4.4. Chronology	200
2.5. The Ancient Red Sea Ports	202
2.6. Port System in the Red Sea	203
2.7. Destination of the Seafaring Expeditions	204

Part II
Cultural Heritage Values of the Quseir - Qift Road
Chapter III
Gold Mining in Bir Umm Fawakhir

3.1. Introduction	207
3.2. Chronology of Bir Umm Fawakhir	207
3.2.1. During the New Kingdom	207
3.2.2. During the Ptolemaic Period	209

3.2.3. During the Roman Period	210
3.3. Remote Sensing of Bir Umm Fawakhir	211
3.4. Natural Resources of Bir Umm Fawakhir	212
3.4.1. Gold	212
3.4.2. Granite	213
3.4.3. Serpentine rocks	215
3.4.4. Gabbroid sheets	215
3.4.5. Volcanic sediments and intermediate to basic lava association	215
3.4.6. Granodiorite	215
3.5. Evolution of the Gold Mining Techniques in Bir Umm Fawakhir	217
3.5.1. Pre - Dynastic and Early Dynastic Periods	218
3.5.2. Old and Middle Kingdom	220
3.5.3. New Kingdom	222
3.5.4. The Ptolemaic Period	229
3.5.5. The Roman – Byzantine Period	231
3.5.6. The Modern Era	233
3.6. Gold Mining Phases in Bir Fawakhir	234
3.7. Logistics	237

Chapter IV

Greywacke Quarries of Wadi Hammamat

4.1. Introduction	240
4.2. Wadi Hammamat	240
4.3. The Historical Importance of Wadi Hammamat	242
4.4. Greywacke in the Ancient Egyptian Texts	244

4.5. Geology of Wadi Hammamat	252
4.5.1. Hammamat Series	252
4.5.2. The Pan African Basement of the Eastern Desert	252
4.6. The Bekhen Stone (Greywacke)	253
4.7. Greywacke quarries of Wadi Hammamat	259
4.7.1. The Eastern Quarry	260
4.7.2. The Western Quarry	262
4.8. Greywacke Quarrying Through the Different Historical Phases	268
4.8.1. The Pre-Dynastic Period	268
4.8.2. Early Dynastic Period and Old Kingdom	284
4.8.3. Middle Kingdom	286
4.8.4. The Second Intermediate Period	292
4.8.5. New Kingdom	293
4.8.6. The Persian Period	305
4.8.7. The Ptolemaic Period	306
4.8.8. The Roman Period	307
4.9. Quarrying Phases	309
4.9.1. Extraction	309
4.9.2. Transportation	312
4.9.3. Logistics of the Quarry Site	313
4.9.4. The Use of Bekhen Stone	314
4.10. Chronological List of Greywacke Objects	317

Chapter V

The Valorization of Quseir – Qift Road

5.1. Introduction	328
5.2. Protection of Cultural Heritage between the Past and the Present	329
5.3. Preservation of Cultural Heritage in the Egyptian Constitution	330
5.3.1. Art. 49: Monuments	330
5.3.2. Art. 50: Material and Moral Civilizational and Cultural Heritage	330
5.4. The Value of Landscape	331
5.5. Identifying Heritage Values	332
5.6. Modelling the Significance of Ancient Quarry Landscapes	334
5.7. Possible Path for Assessing Values of Ancient Stone Quarries	335
5.8. The Ancient Desert Road Archaeology	336
5.9. Heritage, Cultural and Religious Aspects of the Myos Hormos Road	340
5.9.1. Pharaonic and Greco-Roman Eastern Desert Roads	340
5.9.2. Eastern Desert Routes to the Gold Mines	341
5.9.3. Religious Aspects in the Bekhen Mountain	342
5.9.4. Religious Aspects in the Hydreumata of Myos Hormos	350
5.9.5. The Roman Army in the Eastern Desert	353
5.9.6. Communications between the <i>praesidia</i>	358
5.9.7. Water and Supplies on the Quseir – Qift Road	363
5.9.8. Ceramics of Coptos - Quseir Road	365
5.9.9. Architectural Elements of the Fawakhir Settlement Houses	366
5.9.10. The Inhabitants of Bir Fawakhir Settlement	367

5.9.11. Transportation and Movement along the Myos Hormos Road	367
5.10. Eastern Desert Petroglyphs	368
5.10.1. Rock Art in the Central Eastern Desert	368
5.10.2. Risk and Deterioration	370
5.10.3. Preservation of the Desert Rock Art	373
5.11. The valorization of Myos Hormos Road	374
5.11.1. The Archaeological Park	374
5.11.2. Museology and the Case of “Myos Hormos” Road	378
5.12. Monitoring Values	387
Conclusion	390
Appendix I: Site Sheets	399
Appendix II: Catalogue of Greywacke	404
Appendix III: Site Explanation panels	497
Appendix IV: The Recent Status of Tourism in the Red Sea Region, Egypt	502
Bibliography	510

Introduction

The Eastern Desert in Egypt is the region between the Nile to the west and the Red Sea to the east, the mountains that come close to the coast at the level of modern Za'farana to the north and the Nubian Desert to the south. The Eastern Desert consists of mountains and gravel, and there are very few places where soft sand makes it difficult to pass. This means that actual road-building was usually unnecessary, the roads in this case mean the desert tracks that might somehow be marked out and furnished with wells and stations at regular intervals. Distances are much shorter in the Eastern Desert, The Eastern Desert has no oases except "Laqeita", so there are no permanent settlements and no agriculture, but wells can be sunk in most places, the fossil water-reserves under the Eastern Desert are not renewed, so the water-table has been sinking ever since desertification.¹

As for the Roman eastern trade, the most frequently mentioned cargo is wine, including both imported and local Egyptian varieties repackaged in used amphorae.²

The number of amphorae being loaded aboard merchant ships varied in size from large consignments of nearly 50 containers to small deliveries of several amphorae. Dozens of these deliveries would be packed on board vessels as they waited at dock. The ships were also loaded with provisions including supplies and medical drugs termed *pharmakoi* that appeared several times in lists of goods delivered to the Red Sea ports and registered in ostraca – formed passes.³

Once the trade caravans had been landed at one of the Red Sea ports, they had to be conveyed overland by a system of fortified roads to the Nile valley. There are several routes which cross from the Red Sea coast to the Nile valley, and several of these were provided with significant fortifications during the Ptolemaic and early Roman period. These roads are:

- I. The northernmost of these desert routes is the one which runs from Kainopolis (Qena) on the Nile to the site of Abu Sha'ar on the Red Sea that was intended for the carriage of the stone from the imperial quarries at "Mons Porphyritis" and other mining settlements along the route, not for the traffic of Red Sea commerce.
- II. The next route to the central - south, which is the main interest of this study, runs between Coptos on the Nile and Quseir al-Qadim on the Red Sea and it seems to have been involved in the Red Sea trade. This route is clearly one of great significance, as the *hydreumata* on the road are much closer together than on other roads, at an average distance of 16 km⁴
- III. The road from Coptos to Berenike appears to be similar in its construction and facilities. Besides, this is the only road described in the ancient literary sources. The pottery from this route indicates that it was

¹ Bülow – Jacobsen, A. 2013: 557 – 559.

² ADAMS, C. 2007: 226; Brun, J. P. 2003.

³ Bagnall, R. S., Helms, C. and Verhoogt, A. M. 2000: 22.

⁴ Zitterkopf, R. and Sidebotham, S. 1989: 155 ff.; for the inscriptions, cf, Bernard, A. 1972.

chiefly in use between the first and seventh centuries approximately the same period that the port of Berenike was active.

- IV. Another route from Berenike to the Nile, which departed the Coptos route at Wadi ad-Dweig and reached the Nile at Edfu, seems to have been the preferred route during the Ptolemaic period according to the pottery and inscriptions, however, this route was not used to any great extent in Roman times, apart from soon after the Roman annexation.⁵
- V. Another route which traversed the Eastern Desert, connecting Edfu and the Red Sea coast at Marsa Nakari, has only recently been recorded, and appears to have been in use from the Ptolemaic period till the late Roman times that may be the port of "Nechesia".

These roads were certainly not paved nor even prepared in any way except for very occasional places like the mountains around Wadi Hammamat where there are traces of road-works. The way down along the coast to Berenice, appears to have been largely of military, rather than commercial importance. The same may be said about the canal from the Nile to the Red Sea, the so-called Trajan's River.⁶

- VI. The Via Hadriana is a Roman thoroughfare built originally in the second century A.D. it extends from Antinopolis (modern Sheikh Ibada) on the Nile (27° 48.2' N / 30° 52.8' E) in Middle Egypt to Berenice (Baranis, Madinet al - Haras) on the Red Sea Coast (23° 54.62' N / 35° 28.42' E). It was built during the reign of emperor Hadrian (A. D. 117 - 138) in conjunction with his founding of the city of Antinopolis on the east bank of the Nile near the spot where Antinos drowned in 130 A.D.⁷

An inscription in Greek dated to 137 A.D. described the road as safe, level and supplied with stations or lodgings, watch posts and Hydreumata (fortified water points).⁸

The via Hadriana was the latest and the longest of the Roman roads to be constructed across the Eastern Desert which linked emporia on the Nile to their counterparts on the Red Sea coast. The northern segment of the via Hadriana is a trans-desert road between the Nile and the Red Sea which follows a generally west – east course similar to other Roman roads linking the Nile to the Red Sea. Once the via Hadriana comes close to the coast, however, it veers south paralleling the

⁵ Sidebotham, S., and Zitterkopf, R. 1995: 39 – 51.

⁶ The ancient canal linking the Nile to the Red Sea remained in a serious state of disrepair. It was only re-excavated on the orders of the Emperor Trajan who was in power from 98 to 117 AD. The re-opening of the canal allowed barges to sail from Alexandria directly to Clysma. From Clysma, sea voyages could be made south to Myos Hormos and Berenice, where specialized ocean freighters waited to receive their Roman cargoes. This canal route provided Roman businessmen with a cheaper way to send bulky Mediterranean goods to the Red Sea ports. Many passengers would have preferred this water journey to the arduous desert crossing. On outbound journeys this supply route avoided the expense and inconvenience of overland desert transport. However, the upper regions of the Red Sea are subject to persistent northerly winds, making return sailings to Clysma difficult and time consuming. Consequently, many merchants returning from the distant East continued to offload their Eastern cargoes at the traditional ports and use the conventional desert routes to rapidly convey their goods to Alexandria. Cf., McLaughlin, R. 2010: 33; Young, G. K. 2001: 75 – 78.

⁷ Bernard, A. 1984: 23 – 107; Bagnal, R. S. 1993: 46, 47, 69, 71.

⁸ Miller, E. 1870: 313 – 318; Bernard, A. 1977: 216 – 232.

Red Sea. The via Hadriana does not follow the coastline or beach and does not appear to come closer than few kilometres from the Red Sea coast until it passes through Safaga. Farther south, it does not seem to come within nearly a km of the coast again except at Quseir al – Qadim and possibly at Mersa Nakari until it terminates at Berenice.

The role of the via Hadriana may have less to do with commerce, mining and quarrying and may have been constructed placing far more emphasis than the other Roman roads in the Eastern Desert on military and administrative requirements. It might be that the north – south coastal route provided a land communication link directly between the Red Sea ports themselves which were otherwise and previously perhaps only connected by ships playing the coastal route.

As for the security and the fortified water points (*Hydreumata*), it should be stated that the very length and careful construction of the route indicates that the resources were available for the task. The lack of *hydreumata* along this section of the route was deliberate and indicated that the authorities perceived no threats requiring their constructions. This was not the case along the coastal portion of the route where there are a series of *hydreumata* that might have been due to some chronological implications. “Well” stops existed along the northern route and they are discovered with huge piles of sand and other detritus. In addition to the *hydreumata*, the coastal route may also have preserved unfortified settlements and road stations.⁹

The Via Hadriana may have served some governmental administrative function, probably facilitated military monitoring of the region and communication between Middle Egypt and the Red Sea coast and linked north – south, the various Red Sea ports, installations and settlements near the road with one another. The Via Hadriana may also have expedited the movement of Christian pilgrimage between Middle Egypt and the monasteries of St. Anthony and St. Paul and possibly onward by the sea via Raithou, to St. Catherine’s monastery in Sinai, an analogous function has previously been postulated for the Kainopolis – Abu Sha’ar route in late antiquity.¹⁰

Potable water would have been more easily located farther from the Red Sea and this must have been a major reason for placement of the road, where possible, some distance from the coast. Besides, wadis farther from the coast are shallower than those near the shore making road construction farther inland and travel along the coast where wadis emptying into the sea would be deep and difficult to traverse. Moreover, a route adjacent to the sea would be substantially longer due to the numerous bays, peninsulas and other irregularities of the coastline which it would encounter. Sometimes, deviations occurred in the road course such as the sharp turn inland for some distance in the case of the fort of Wadi Safaga due to the level of potable water.¹¹

⁹ Murray, G. W. 1925: pl. XI; For the full detailed description of the Via Hadriana cf, Sidebotham, S. E. and Zitterkopf, R. E. 1997: 221 – 237, fig. 1.

¹⁰ Sidebotham, S. E., 1994 b: 274 – 275; Sidebotham, S. E. 1996: 777.

¹¹ A secondary previous unrecorded route laying south of the east – west trans-desert segment of the via Hadriana and passed by the distinctive limestone outcrop is locally known as Damsa Umm

Finally, the bulk of the desert sites concentrates on the three main routes through the area: one from Qena leading to Abu Sha'r, with a branch via Mons Claudianus, and two from Coptos, to Quseir el-Qadim and to Berenice. Moreover, the commercial dealings of a Coptos based firm heavily involved in trade with both Myos Hormos and Berenice (the Nicanor Archive) make much better sense if both ports with which they dealt lay at the ends of roads radiating out from the one place where they maintained their base.

It is possible that the Romans consolidated the traffic between Berenike and the Nile on the Coptos to Berenike road at approximately the same time as their improvements to the port at Berenike. This is perhaps confirmed by a Latin inscription from Coptos which mentions renovations being carried out at numerous sites along the Coptos—Berenike route during the reign of Tiberius, the same period of the reconstruction of the port at Berenike. This early imperial period inscription indicated that there was considerable construction activity on the Coptos—Berenike road, as well as some fortification work in the ports of Berenike and Myos Hormos. This should have been a reference to the period in which the port of Berenike was upgraded, and the commercial traffic from Berenike was redirected to travel along the road to Coptos rather than the earlier Ptolemaic route to Edfu.¹²

Geographical limits of the study

The survey area is located along the ancient Myos Hormos (Quseir - Qift) road, in the central Eastern Desert of Egypt, linking the Nile port of Coptos and the Red Sea port of Quseir that used to be a stopover along the ancient *via Hadriana*.

The focus of the study is the greywacke quarries of Wadi Hammamat (25° 59' 25" N; 33° 34' 05" E) and the gold mines of Bir Umm Fawakhir (25° 59' 03" N; 33° 36' 27" E.).

Methodology

The methodology followed is the "Descriptive - Comparative" that means describing the sites along the ancient Myos Hormos road and summarizing the raw data to obtain results then comparing the data obtained to determine the results relating to the chronology of the various sites and consequently the road.

Descriptive analysis are useful because they allow us to determine certain aspects of the past, and to understand how they might influence future outcomes.

Data obtained though the previous studies are organized by groups, categories, or classes to be compared targeting an interpretation which is the process of making

Ragaba (27° 48.50' N / 31° 20.85' E). cf., Sidebotham, S. E. and Zitterkopf, R. E. 1998: 353 – 365; For more about the *via Nova Hadriana* cf., Sidebotham, S. E. et al. 2008: 42 – 53.

¹² Bernard, A. 1984: 178 – 184, no. 56 dates it to the reign of Augustus; De Romanis, F. 1996: 219 – 224, dates it to before 4 B.C.; Kennedy, D. L. 1985: 156 – 160; Young, G. K. 2001: 45 – 47.

pertinent inferences and drawing conclusions concerning the meaning and implications of the research investigation.

Reasons of the Study

- I. The deep interest in studying and interpreting the definition: “landscapes are matters of human perception and of cultural experience” that can be applied on the Central Eastern desert landscape and the archaeological relics distributed along the roads linking the Red Sea and the Nile Valley.
- II. The importance of realizing the multidisciplinary concept represented in the geology and the mineral resources of the site as a source of the Greywacke, the gold mining, the water supply in the desert mines and quarry sites and the Roman army system through the analysis of the various *Hydreumata*, watching towers, architectural elements, ceramics and coins found along the Myos Hormos road and mostly left in situ.
- III. The Turin Papyrus that represents a detailed geological map of “Wadi Hammamat”, the papyrus that was a subject of different types of interpretation, therefore, it was important to be studied so as to underline its significance as a guiding map used by the miners going to Wadi Hammamat during the reign of Ramses IV (XX Dynasty).
- IV. The large number of greywacke masterpieces distributed in the museums all over the world which are originally sculpted in the greywacke quarries of Wadi Hammamat, considering the uniqueness of the quarry as the only source of greywacke in Egypt.
- V. The concept of a “quarry landscape” as a dynamic “Cultural Landscape” is an applicable model to articulate the significance and value of ancient quarries that comprise a complex range of material culture across large areas.
- VI. The cultural heritage potentials of the surveyed region that allow future development projects through the sustainable tourism especially with the recent status of tourism sector in Egypt that needs new innovative projects to be promoted.

Objectives of the Study

The study aims to:

- I. Identify the time-depth of quarrying and mining along the Myos Hormos road which is the key methodological issue in terms of investigating the transformation of the landscape and heritage of the quarrying and mining sites over time through:
- II. Examine the rock-art of Egypt's Central Eastern Desert to outline the petroglyphs distribution and influences on their location, the chronology and the reasons why they were created.
- III. Determine the chronology of the Myos Hormos road and follow its development since the pre – dynastic period till the Greco – Roman period through the comparative study between the various excavated sites and findings to obtain precise results and to document these neglected sites located in the eastern desert where most of the archaeological sites are lost due to the rain floods.
- IV. Elaborate the role of quarries and mines as centers of social interaction, in addition to being a place where the techniques of extraction can be experienced, besides, the inscriptions left by the miners and travelers represent a form of visual art and a durable expression related to shared experiences and group identity.
- V. Present a brief overview of the diverse archaeology of the greywacke quarries of Wadi Hammamat and the gold mine of Bir Umm Fawakhir and discuss models through which their significance can be articulated that can be applied as well in other quarrying sites in Egypt and the Roman provinces.
- VI. Follow the chronology of greywacke quarrying and use through cataloguing selected samples of greywacke masterpieces preserved in some museums to determine the various periods of quarrying calculating the number of manufactures and the type categories of products based on the Wadi Hammamat Bekhen stone.
- VII. Prepare a basic development project to register and valorize the cultural heritage potentials of the site in addition to a catalogue study tracing the values of the Coptos – Myos Hormos road considering the risk state of the surveyed sites due to the exposition to rain floods and plunders being left in the open air.

Important Notes

The researcher witnessed some problems and difficulties during the three year PHD project which are:

- Permissions of visit and photograph the surveyed sites, as it necessitated travelling to Egypt to obtain the permission to visit the sites under the Red Sea governorate (From Quseir to Wadi Hammamat). but it was difficult to obtain the second permission to visit the last two sites (Krokodilo and Qusur al-Banat) which are under the governorate of Qena due to the changes of the university regulations and the deadline for the thesis.
- There are no actual excavation works in the sites, hence, the necessity of depending completely on the private surveys accompanied by the employees of the Red Sea governorate to photograph the sites and register the coordinates. But for the sites of (Krokodilo and Qusur al-Banat), the main resource was the published work of the French team excavation in the site.
- The thesis represents an attempt to collect the results of various recent and previous excavations along the Myos Hormos road, and the results achieved through these surveys and excavations for the last 20 years, in a homogenous unique work to keep a trace of these sites, subject of different dangers as they stand in the open air Eastern Desert climatic conditions, with no direct supervision of the authorities.
- The selected samples of ceramics and greywacke objects listed in the thesis are analytical examples chosen by the researcher and they do not represent all the findings in the surveyed sites or the all the greywacke manufactures.
- The name of the surveyed road is mentioned in the thesis as either (Qift – Quseir road) or (Quseir - Qift) road - sometimes with the Greek names (Coptos – Myos Hormos) - according to the geography of the surveyed site, if it is near to Qift or to Quseir. For example, in the first chapter, the study starts from the Red Sea to the Nile, however, the second chapter starts from the Nile port of Qift (Coptos) to the Red Sea ports of Quseir (Myos Hormos) and Mersa Gawasis.

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List of Figures

Part I.		
Archaeological Survey of Quseir – Qift Road		
Chapter I		
Quseir – Qift Road (Central Eastern Desert)		
Fig. 1	The Turin Papyrus. After, Shore, A. F. 1987: 122 – 125, figs. 7.7 - 7.8.	3
Fig. 2	A The main roads of the Eastern Desert in the Roman times. B. The roads from Coptos and Apollinopolis Magna to Myos Hormos and Berenice. - (A) According to Strabo. - (B) Reality in Ptolemaic times. - (C) in Roman times. After, Bülow-Jacobsen, A. 2013: 560 – 561, figs. 3 – 4; For the main roads of the Eastern Desert in the Roman Period, cf., Sidebotham, S. E. et. al. 2002:188, fig. 1.	8
Fig. 3	Plan of the Hydreuma of Bir al Nakhil. After, Brun, J. P. and Redde, M. 2006: Figs. 175 - 176.	10
Fig. 4	The <i>praesidium</i> of “Dawwi” After, Brun, J. P. 2006a: 181, figs. 166 – 167.	13
Fig. 5	Plan of the <i>praesidium</i> . After, Brun, J. P. 2006a: 182, Fig. 168.	14
Fig. 6	A. The door and the western stairs. B. The door and the sandstone door windows. After, Brun, J. P. 2006a: 183, figs. 169 – 170.	15
Fig. 7	A. A detailed plan of the north – western barracks. B. The horse manger in front of barrack.	16

	After, Brun, J. P. 2006a: 183 - 184, figs. 171 – 172.	
Fig. 8	A. A sandstone altar topped with a place for burning incense. B. A sandstone game table. After, Brun, J. P. 2006a: 184, figs. 173 – 174.	17
Fig. 9	The site of Bir Sayyala. After, Brun, J. P. 2006b: 179, fig. 159.	18
Fig. 10	The plan of Bir Sayyala drawn by Ms. G. Wilkinson in 1826. After, Brun, J. P. 2006 b: 33, fig. 1.	19
Fig. 11	The modern well. After, photography of the researcher.	19
Fig. 12	Plan of the <i>praesidium</i> . After, Brun, J. P. 2006b: 180, fig. 162.	21
Fig. 13	The north-western angle of the original enclosure wall, the tower and the second wall. After, Brun, J. P. 2006b: 180, fig. 163.	22
Fig. 14	The four construction phases of the north – western angle of the enclosure. After, Brun, J. P. 2006b: 181, fig. 164.	23
Fig. 15	The Cisterns of Bir Sayyala After, Brun, J. P. 2006b: 181, fig. 165.	24
Fig. 16	The <i>praesidium</i> of Al – Hamra. After, Redde, M. 2006a: 176 – 177, figs. 149-150.	27
Fig. 17	Plan of the <i>praesidium</i> of “Al – Hamra”. After, Redde, M. 2006a: 177, Fig. 151; Zitterkopf, R.E. and Sidebotham, S.E. 1989: 172, fig. 3 (c).	28
Fig. 18	A. The walkway on the eastern rampart. B. The walkway on the northern rampart. After, Redde, M. 2006a: 178, Fig. 152-153.	29
Fig. 19	The door and entrance passage of the <i>praesidium</i> .	30

	After, Redde, M. 2006a: 178, figs. 154 – 155 – 156.	
Fig. 20 (a, b, c)	The central building of the <i>praesidium</i> . After, Redde, M. 2006a: 178 - 179, Figs. 157-158; photography of the researcher.	31
Fig. 21	The Hydreuma of Maximianon. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: 100, figs. 73 – 74.	33
Fig. 22	Plan of Maxinianon After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 75; Maxfield, V. A. 1993: 13, fig. 2.	34
Fig. 23	The schist - greywacke masonry After Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 79; Photography of the researcher.	35
Fig. 24	A. Towers flanking the door entrance, After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 80.	36
Fig. 25	A The parapet of the curtain. B The defense structure of the entrance. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 81 - 83.	36
Fig. 26	A. Graffito on the eastern jamb. After, photography of the researcher. B. The reverse of the entrance door. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 84.	37
Fig. 27	The wall bordering the walkway. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 85, 76.	38
Fig. 28	A. The walkway and its parapet. B. Barricades (western rampart). After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 86 – 87.	39
Fig. 29	A. The potamion of the southern curtain.	40

	B. The pipe that passed through the eastern curtain. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 88, 90.	
Fig. 30	A plan of the piping system through the eastern curtain. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 89.	41
Fig. 31	A. The staircase that gave access to the north – western angle tower. B. Plan of the north – western staircase. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 91 – 92.	42
Fig. 32	The niche of the southern rampart. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 93 – 95.	43
Fig. 33	The central building of the entrance. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 96 – 98.	44
Fig. 34	The Praetorium. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 99 – 100.	45
Fig. 35	A. Stratigraphy of the Praetorium site. B. Aspects of a complimentary layer. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs.101 - 102	46
Fig. 36	A. Plan of the bath of Maximianon. B. The basin. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 103 – 104.	47
Fig. 37	A. The Frigidarium. B. Stratigraphy of the bath. C. The schist pavement. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 105 – 107.	48
Fig. 38	The caldarium in the bath of Maximianon. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 108 – 109.	49

Fig. 39	Plan of the kitchen. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 110 – 111.	50
Fig. 40	The fireplace and the thermal room After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 112.	50
Fig. 41	The oven before and after the French excavation clearance. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 113 – 114.	51
Fig. 42	The dump before and during the excavations. After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 115 – 116.	53
Fig. 43	The sediment features of the dump (straw and shells). After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 121.	54
Fig. 44	A. ash layers in the dump. B. stratigraphy layers in the dump of Maximianon. C. Layers in the dump of Maximianon. after, Adam, J. P., Brun, J. P. and Redde, M. 2006, figs. 145, 122, 123.	55
Fig. 45	A small Ptolemaic bronze (1 st century BC.) found in the dump. after, Adam, J. P., Brun, J. P. and Redde, M. 2006: 173, fig. 134.	56
Fig. 46	Ruins of Phase (A) After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 125 – 127.	58
Fig. 47	The dump of the Paraesidium (Phase B). After, photography of the researcher. See also, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 138 – 147.	60
Fig. 48	The cemetery of Maximianon.	61

	After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 148.	
Fig. 49	alluvial paste amphorae models. after, Brun, J.P. 2007: 520, fig. 16 (1 - 4).	62
Fig. 50	“Le Formiche” type. After, Brun, J.P. 2007: fig. 8.4.	63
Fig. 51	amphorae of Egyptian origin, after, Brun, J. P. 2007: 521, (fig. 17.1). Imported Amphorae from Maximianon. after, Brun, J. P. 2007: 521, fig. 17 (2 - 6).	63
Fig. 52	Bir Umm Fawakhir. After, Meyer, C. 1997: 64 – 68. http://www.tms.org/pubs/journals/jom/9703/meyer-9703.html	64
Fig. 53	The main settlement of Bir Umm Fawakhir, with general view of the central area and remains of a hand mill and a mortar made of the local granite. After, Coli, M. and Baldi, M. 2013: 17, fig. 8.	67
Fig. 54	Christian symbols from Bir Umm Fawakhir Settlement. After, Meyer, C. 1995: 217, fig. 13.	68
Fig. 55	Reconstruction of the Roman / Byzantine gold mining settlement at Bir Umm Fawakhir. After, Sidebotham, S. E. 2008: pl. 10.1.	69
Fig. 56	Map of the Bir Umm Fawakhir vicinity showing the outlying areas and quarries. After, Meyer, C. 1997: 64-68, fig. 3.	69
Fig. 57	View of Bir Umm Fawakhir main settlement. After, Meyer, C. 1997: fig. 2.	70
Fig. 58	A map of Bir Umm Fawakhir main settlement showing areas mapped in 1992, 1993 and 1996. After, Meyer, C. 1997: 64-68.	70
Fig. 59	Bir Umm Fawakhir Region (Google Earth Image).	71

	After, Klemm, D. Klemm, R. 2013: 137, fig. 5.82.	
Fig. 60	A residence compound near the Roman granite quarries. After, Klemm D. and Klemm, R. 2013: 139, fig. 5.84.	72
Fig. 61	The largest and the best-preserved settlement in the Bir Umm Fawakhir district. After, Klemm D. and Klemm, R. 2013: 138, fig. 5.83.	73
Fig. 62	Circular hearth with clay mortar in the settlement. After, Klemm, D. and Klemm, R. 2013:140, Fig. 5.85.	73
Fig. 63	Western part of the settlement (Early Arab Period). After, Klemm, D. and Klemm, R. 2013: 141, fig. 5.86.	74
Fig. 64	Dipinti with a large scrawl on the shoulder. After, Meyer, C. et al. 2014: 78 - 79, Figs. 37 (c, d) - 38 (g).	107
Fig. 65	Late Roman Amphora 1 sherds After, Meyer, C. et al. 2014: 79, Figs. 38 (c) – 39 (c, f, e).	108
Fig. 66	Plan of Bir Hammamat. After, Brun, J.P. 2006 c: 149, fig. 56 – 57; Zitterkopf, R.E. and Sidebotham, S.E. 1989: 172, fig. 3 (d).	112
Fig. 67	A. Plan of the <i>praesidium</i> of Bir Hammamat, After, Brun, J.P. 2006 c: 150, fig. 59. B. The remains of the mosque and the well. After, photography of the researcher.	113
Fig. 68	A. The door of Bir Hammamat. B. The door threshold. C. The rectangular towers. After, Brun, J.P. 2006 c: 151 – 152, figs. 60, 62, 63.	114
Fig. 69	The foundation text of the <i>praesidium</i> . After, Brun, J.P. 2006 c: 152, fig. 65.	115

Fig. 70	A detailed plan of the door and the excavated barracks. After, Brun, J.P. 2006 c: 151, fig. 61.	116
Fig. 71	A. Bekhen stone sarcophagus in Bir Hammamat. After, Brun, J.P. 2006 c: 152, fig. 66. B. Broken sarcophagi beside the well of Hammamat. After, photography of the researcher.	116
Fig. 72	Details of the pavement and the sealing of the door. After, Brun, J.P. 2006 c: 152, fig. 67.	117
Fig. 73	The pavement of the barracks to the west of the door. After, Brun, J.P. ‘Bir Al-Hammamat’, p. 153, fig. 68, 70.	117
Fig. 74	The detailed pavement of the barracks (with the buried amphora). After, Brun, J.P. 2006 c: 153, fig. 69.	118
Fig. 75	The mosque of Bir Hammamat. After, Brun, J.P. 2006 c: 154, fig. 71.	118
Fig. 76	The geographical location of Krokodilo. After, Bagnall, R. S. et al. 2001: 330, fig. 5.	119
Fig. 77	A. The site of Krokodilo on the Myos Hormos road. After, Brun, J. P. 2006 d: 142, fig. 33. B. The crocodile rock that gave the name to the site. After, Bülow-Jacobsen, A. 2006: 59, fig. 18.	120
Fig. 78	Plan of the <i>praesidium</i> (Krokodilo). After, Brun, J. P. 2006 d: 143, fig. 35.	121
Fig. 79	The door and the ruins of the original curtain. After, Brun, J. P. 2006 d: 144, Fig. 36.	123

Fig. 80	A. The tower flanking the door to the west. B. A detailed plan of the door with the towers. After, Brun, J. P. 2006 d: 144 - 145, figs. 37, 39.	124
Fig. 81	A. The stairs flanking the door and the row of barracks attached to the southern rampart. B. The late wall that blocked the entrance. After, Brun, J. P. 2006 d: figs. 40 – 41.	125
Fig. 82	North - Western stairs After, Brun, J. P. 2006 d: 145, fig. 42.	127
Fig. 83	The central building. After, Brun, J. P. 2006 d: 145, fig. 43.	128
Fig. 84	The cistern. After, Brun, J. P. 2006 d: 145, fig. 44.	129
Fig. 85	The pigs' lodge. After, Brun, J. P. 2006 d: 148, Figs. 50 – 51.	131
Fig. 86	The dump (phase B). After, Brun, J. P. 2006 d: Figs. 52 – 53.	132
Fig. 87	Phase B3 (Filling of the lodges). After, Brun, J. P. 2006 d: 149, fig. 55.	133
Fig. 88	Amphorae of Muwayh (Krokodilo). After, Brun, J. P. 2007: 517 - 518, figs. 13 - 14 (1 - 3).	134
Fig. 89	Imported amphorae in Muwayh. After, Brun, J. P. 2007: 518, fig. 14.4.	135
Fig. 90	“Le Formiche” amphorae of Muwayh. After, Brun, J. P. 2007: 511 – 512, figs. 8 -9.	135
Fig. 91	Amphorae from Laodicea (Lattakia). After, Brun, J. P. 2007: 518, fig. 14.5.	136
Fig. 92	Gaulish Amphorae.	136

	After, Brun, J. P. 2007: 518, fig. 14.6.	
Fig. 93	Qusur al-Banat. After, Redde, M. 2006 b:138, fig. 20.	138
Fig. 94	Plan of the <i>praesidium</i> . After, Redde, M. 2006 b: 139, fig. 22; Zitterkopf, R.E. and Sidebotham, S.E. 1989: 173, fig. 4 (C).	139
Fig. 95	Qusur al-banat and the western curtain that doesn't exist anymore. After, Redde, M. 2006 b: 138, fig. 21 (a - b).	139
Fig. 96	Construction details of the curtain After, Redde, M. 2006 b: 139, fig. 23.	140
Fig. 97	The door plan and view from outside and inside. After, Redde, M. 2006 b: 140, figs. 24 – 26.	141
Fig. 98	The foundation text of the <i>praesidium</i> . After, Redde, M. 2006 b: 141, Fig. 27.	142
Fig. 99	Sketch and ruins of room no. 12. After, Redde, M. 2006 b: 141 – 142, figs. 28 – 30.	144
Fig. 100	A. Room (no. 12), the ruins of the shrine. B. Room (no. 8). After, Redde, M. 2006 b: 142, fig. 30 -31.	145
Fig. 101	Sketch of Room no. 10. After, Redde, M. 2006 b: 142, fig. 32.	146
Chapter II		
The Port System of the Qift – Quseir Road		
Fig. 102	The temple of Coptos. After, Petrie, W. M. F. 1896: pl. 1.	151
Fig. 103	Areas excavated by the Michigan – Asyut expedition. After, Herbert S. C. and Berlin, A. 2003: p. 224, fig. 112.	152

Fig. 104	Topographical map of the archaeological zone of Coptos. After, http://www.ifao.egnet.net/arxhaeologie/coptos	154
Fig. 105	The Late Period stela discovered in Coptos. After, Friedland, E. A. in Herbert, S. C. and Berlin, A. 2003: 222, fig. 111.	156
Fig. 106	Egyptian Type I Amphora of Coptos After, Lawall, M. in Herbert, S. C. and Berlin, A. 2003: 166, fig. 101 - 102.	159
Fig. 107	Egyptian Type II Amphora of Coptos. After, Lawall, M. 2003: 171, fig. 103.	160
Fig. 108	Egyptian Type III Amphora of Coptos. After, Lawall, M. 2003: 174, fig. 104 - 105.	162
Fig. 109	Egyptian Type IV Amphora of Coptos. After, Lawall, M. 2003: 178, fig. 106.	163
Fig. 110	Other Egyptian forms. After, Lawall, M. 2003: 180, fig. 107.	164
Fig. 111	Aegean imported Amphora. After, Lawall, M. 2003:182, Fig. 108.	165
Fig. 112	Western Amphora. After, Lawall, M. 2003: 184, fig. 109.	166
Fig. 113	Different examples of imported Hellenistic stamped Amphora Handles discovered in Coptos. After, Ariel, D. T. in Herbert, S. C. and Berlin, A. 2003: p. p. 194 – 199.	169
Fig. 114	Coins of Coptos. After, Buttery, T. V. in Herbert, S. C. and Berlin, A. 2003: 202, fig. 110.	170
Fig. 115	A. The Geographical location of Myos Hormos (Quseir El Qadim). After, Tully, G. 2009: fig.1, p. 66.	171

	B. Map of the ancient ports between the Nile and the Red Sea (Isthmus) described in Strabo. After, Whitcomb, D. 1996: 771, fig.5.	
Fig. 116	Roman relics of Quseir El Qadim (Myos Hormos). After, Whitcomb, D. 1996: 767, fig.1.	174
Fig. 117	Plan of the Roman town of Quseir. After, Whitcomb, D. 1996: 768, fig.2.	177
Fig. 118	Architectural model of Mons Claudianus. After, Whitcomb, D. 1996: 769, fig. 3c.	179
Fig. 119	Map of the region surrounding Quseir El – Qadim. After, Whitcomb, D. 1996: 770, fig. 4.	181
Fig. 120	Current situation in the ancient port of Myos Hormos. After, photography of the researcher (June 2016).	182
Fig. 121	Inscribed fragments that identified the ancient Myos Hormos. After, Bülow – Jacobsen, A. et al. 1994: pl. I, II.	183
Fig. 122	Inscribed fragments identifying Myos Hormos. After, Bülow – Jacobsen, A. et al. 1994: Pl. III, IV.	184
Fig. 123	A reconstruction of the artificial extension of the coast in the harbour of Myos Hormos. After, Sidebotham, S. E. 2008: pl. 7.16, p. 171.	186
Fig. 124	Detailed map of the site of Mersa Gawasis. After, Sidebotham, S. E. et al. 2008: fig. 7.3; Bard, K. and Fattovich, R. 2011: 106, fig. 1.	189
Fig. 125	Site map of Mersa Gawasis. After, Sayed, A. M. 1977: 149.	189
Fig. 126	Stela of Mersa Gawasis (WG. 144 of Qift Magazine Inventory). After, Pirelli. R. 2007: pl. XVII. (a-b).	192
Fig. 127	The Laguna of the port of Mersa Gawasis.	194

	After, Photography of the researcher.	
Fig. 128	The monument of Ankhon. After, Tallet, P. 2015: 34, fig. 3; Sayed, A.1977: 157, pl. 13 and fig. 2.	195
Fig. 129	Stela of Antefoker. After, Sayed, A. 1977: pl. 16.	196
Fig. 130	Galleries of Mersa Gawasis. After, Tallet, P. 2015: 35, fig. 5; Bard, K. and Fattovich, R. 2007: fig. 7.	197
Fig. 131	Different kinds of cordages including a rope bag and a papyrus sandal. After, Bard, K. and Fattovich, R. 2007: figs. 71 – 78.	198
Fig. 132	Entrance of the galleries and niches that once bore the stele. After, Tallet, P. 2015: fig. 6.	199
Fig. 133	Ceramic sequence in Mersa Gawasis. After, Bard, K. A. and Fattovich, R. 2011: 109, Fig.3.	200
Part II Cultural Heritage Values of the Quseir - Qift Road		
Chapter III Gold Mining in Bir Umm Fawakhir		
Fig. 134	Fawakhir gold deposits in the central part of Turin Papyrus. After, Klemm, R. and Klemm, D. 2013: 134, fig. 5.79.	207
Fig. 135	The reconstruction of Harrell to the Turin	207

	Papyrus map indicating a cistern or "water reservoir". After, Harrell, J. and Brown, V. M. 1992: 87, Table 1 - fig. 3.	
Fig. 136	Ptolemaic column inscriptions in Bir Umm Fawakhir. After, Meyer, C. et al. 2000: 81, Fig. 52.	208
Fig. 137	Man-made cave Graffiti of Bir Fawakhir. After, Meyer, C. 1995: 200, fig. 4.	209
Fig. 138	Final Litological map of the Fawakhir area After, Abou El-Magd. I et al. 2015: 3528, fig. 4b.	210
Fig. 139	A granite quarry in Bir Umm Fawakhir. After, Coli, M. and Baldi, M. 2013: 15, fig. 7.	213
Fig. 140	Geological map of Bir Umm Fawakhir After, Meyer, C. 1995 b, 83 – 86, fig. 5.	215
Fig. 141	A. The gold – mines of the central eastern desert. After, Sidebotham, S. E. 2008: 214, fig. 9.1. B. Bir Umm Fawakhir and Wadi El Sid area with The various ancient sites (Google Earth Image). After, Klemm, R. and Klemm, D. 2013: 133, fig. 5.78.	216
Fig. 142	Trench of an Early Dynastic gold mining site at Abu Mureiwat, (Eastern Desert, Egypt). After, Klemm, R. and Klemm, D. et al. 2001 a: 648, fig. 6.	217
Fig. 143	Abandoned fine-grained granodioritic two-handed stone hammers from Pre- to Early Dynastic Higalig gold mine, southern Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. et al. 2001 a: 648, fig. 7.	218
Fig. 144	Stone hammers used in Old and Middle Kingdom times,	219

	From Abu Mureiwat gold mining site, Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. et al. 2001 a: 649, fig. 8.	
Fig. 145	A. New Kingdom oval shaped andesitic stone mill and grinding stones from Wadi Allaqi, southern Eastern Desert, Egypt. B. Remaining New Kingdom waste dam heaps at Umm Garaiyat, Wadi Allaqi, southern Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. et al. 2001 a: 652, fig. 11 – 12.	222
Fig. 146	A. Gold works in the Tomb of Kha'y at Saqqara. After, Ogden, J. 2000: 162, fig. 6.4. B. Inclined Arab period washing table. This type of washing table could be archaeologically assigned in use from New Kingdom times. After, Klemm and Klemm et al. 2001 a: 652, fig. 13.	223
Fig. 147	The shadouf. After, http://www.digopaul.com/it/english-word/shaduf.html.	224
Fig. 148	Gold working scene from the Theban Tomb of Puyemra (TT39). After, Ogden, J. 2000: 155, fig. 6.2.	225
Fig. 149	A. Weighing of gold, displayed as both ring ingots and dust bags above and below the weighing scene, Tomb of Paheri at El – Kab, 18th Dynasty. B. Gold weights of stone with different values, preserved in the National Museum, Khartoum. After, Klemm, R. and Klemm, D. 2013: 24, figs. 2.3 - 2.4.	226
Fig. 150	The New Kingdom gold – mining settlement of Tilat Gadalla, Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. et al, 2001 a, p. 654, fig. 15.	227
Fig. 151	Distribution of the gold production sites in the Eastern Desert of Egypt starting from the Pre – dynastic till the New Kingdom. After, Klemm, R. and Klemm, D. et al, 2001 a: 650, Fig. 9.	227
Fig. 152	Main shaft of a gold mine following a mineralized quartz vein.	228

	After, Coli, M. and Baldi, M. 2013: 12, fig. 3.	
Fig. 153	A. Concave grinding stone near the arrow tip. After, Meyer, C. 1995 a: fig. 12. B. Concave shaped Ptolemaic gold mill from Gidami gold mining site, Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. et al. 2001 a: 656, Fig. 17.	229
Fig. 154	(A) Samples of Gold crushing stones and the lower part of the rotary grinding tool (Eastern Desert, Egypt). After, Meyer, C. 1995 a: 222, fig. 16. (B) Cylindrical granitic rotation stone mill (quern) with well - preserved upper rotation stones for central and peripheral handle sticks from a mining camp in the Nubian Desert, North Eastern Sudan. After , Klemm, R. and Klemm, D. et al. 2001a: 657, fig. 19.	230
Fig. 155	The Ptolemaic, Roman–Byzantine and Arab gold production sites in the Eastern Desert of Egypt. After, Klemm, R. and Klemm, D. et al. 2001a: 655, Fig. 16.	231
Fig. 156	Shaft, tools and the car of the Conte (remains of the last exploitation of Bir Um Fawakhir). After, Photography of the researcher.	232
Fig. 157	A. Entrance to a mining shaft, Wadi Bakariya, Eastern Desert. B. Mining tools (Two-handled pounder and an unused granite mortar). After, Tratsaert, B. J. M. 2012: 252, Fig. 15.11 – 15.12.	235
Fig. 158	(A – B) Grinding facilities in the gold mining areas After, Sidebotham, S. E. 2008: pl. 9.1 – 9.2. C) Remains of a circular heavy mineral concentrator from Daghabag gold mine, Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. 2001 a: fig. 18.	236
Chapter IV		
Greywacke Quarries of Wadi Hammamat		

Fig. 159	A. Geography of Wadi Hammamat. After, Siddall, R. 2013: 2, fig. 1. B. Unfinished sarcophagus in Wadi Hammamat. After, Klemm, D. and Klemm, R. 2001 b: 633, fig.2.	239
Fig. 160	Main view of the Bekhen stone quarrying area. After, Bloxam, E. 2015: 794, fig. 3.	240
Fig. 161	Satellite image showing the complexes of material remains across the main survey zone between Bir Hammamat and Wadi Masag el-Baqar After, Bloxam, E. 2015: 790, fig. 1.	242
Fig. 162	Hammamat Series. After, Andrew, G.1939: pl. I.	253
Fig. 163	Geological map of Wadi Hammamat. After, Siddall, R. 2013: 7.	254
Fig. 164	Greywacke occurrences in the Egyptian Eastern desert. After, http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin	254
Fig. 165	Geological sketch map of the area surrounding Wadi Hammamat. After, Coli, M. and Baldi, M. 2013: 10 fig. 1.	255
Fig. 166	Geological features of the greywacke. After, Borghi, A. 2015; Andrew, G. 1939: pl. III.	256
Fig. 167	The greywacke sarcophagi in the Egyptian Museum of Turin. After, Photography of the researcher, See also, Borghi, A. et al. 2007: fig. 1.	257
Fig. 168	The Topographic contours of Wadi Hammamat quarries. After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 208, fig. 2.	258
Fig. 169	The Eastern Quarry of Wadi Hammamat	260

	After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 209, fig. 4.	
Fig. 170	The Western Quarry of Wadi Hammamat After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 209, fig. 5.	261
Fig. 171	The letter “Q” indicates the quarried outcrop of meta-conglomerates at the head of the slipway. Wadi Hammamat Western quarry. After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211, fig. 6.	262
Fig. 172	(A) Enlarged block that may have been intended for a roman column (dimensions of 2.8 x 0.8 x 0.6 m and 3.0 x 0.9 x 0.6 m), Wadi Hammamat western quarry. (B) Typical Roman wedge hole, Wadi Hammamat western quarry. After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211, figs. 7 – 8.	263
Fig. 173	Possible late period wedge hole (Wadi Hammamat western quarry). After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 212, fig. 9.	264
Fig. 174	The 26 th Dynasty inscription, reign of Psammetichus I (664 – 610 B. C.). After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 212, fig. 10.	265
Fig. 175	A. View of Workshop 1 looking to the north of Wadi Hammamat. B. View of Workshop 2 looking to the north – east of Wadi Hammamat. After, Bloxam, E. 2014: 19, figs. 14 – 15.	267
Fig. 176	Workshop 2 (Main Workshop). After, Bloxam, E. et al. 2014: 20, fig. 16.	268
Fig. 177	Map of the quarries and workshops of the pre-dynastic Wadi Hammamat. After, Bloxam, E. et al. in Archeonil, 24, 2014, p.16, fig. 3.	269
Fig. 178	Chert crescent-shaped drills, Workshop 1, Bir Hammamat. After, Bloxam, E. et al. 2014: fig. 17.	270

Fig. 179	A. Broken and partially hollowed out greywacke bracelet showing concentric rings from drilling. B. Greywacke vessel rough-outs. After, Bloxam, E. et al. 2014: 22, figs. 18 – 19.	271
Fig. 180	A. Pointed-ended small tools in silicified sandstone, B. Silicified sandstone crescent-shaped borer/drill showing wear marks, After, Bloxam, E. et al. 2014: 24, fig. 22 – 23.	272
Fig. 181	Unworked bracelet rough out next to slotted silicified Sandstone tool / rubber to smooth outer edges. After, Bloxam, E. et al. 2014: 24, fig. 24.	272
Fig. 182	A. a dwelling shelter at workshop 2. B. sand filled depression, most likely a well. After, Bloxam, E. et al. 2014: 25, Fig.25 – 26.	273
Fig. 183	Tools in quarries. After, Bloxam et al. 2014: 18, figs. 9–11.	275
Fig. 184	Tools in quarries. After, Bloxam, E. 2015: 798, fig. 6.	275
Fig. 185	Ceramics of Bir Hammamat workshops. After, Bloxam, E. et al. 2014: 22, fig. 20.	276
Fig. 186	Rock cut inscription of ‘K ‘i-m-mdw’ ‘overseer of stoneworkers’, Wadi Faux (east side) at Bekhen Mountain. After, Bloxam et al. 2014: 27, fig. 27.	277
Fig. 187	The settlement in the greywacke quarry. After, Bloxam, E. 2015: 802, fig. 10.	278
Fig. 188	- Area of inscriptions (circled left) and - The Chapel of Nectanebo (Shrine to Min, Paneion)- (circled right). - Arrow points to a major ramp ascending above inscription zone in large-block quarries, dating to between Late Period	279

	to Roman Period (mid–late 1 st millennium B.C. to 5 th century A.D.). After, Bloxam, E. 2015: fig. 8.	
Fig. 189	Name of an individual called “Giw” preceded by the title “controller/inspector”, the inscription dates to the Early Dynastic (early 3 rd millennium BC). After, Bloxam, E. 2015: 805, fig. 13; Goyon, G. 1957: 43, no 4. Pl. II.	280
Fig. 190	Pre-dynastic rock art (dogs and ibex), Bir Hammamat. After, Bloxam et al. 2014: 23, fig. 21.	281
Fig. 191	Inscription of the Herald Ameny. After, Farout, D. 1994: Fig. 1.	288
Fig. 192	Stela of Wadi Gawasis. After, Sayed, A. H. 1977: 170, pl. 16.	288
Fig. 193	Inscription of the Herald Ameny at Wadi Hammamat. After, Farout, D. 1994: Fig. 2.	289
Fig. 194	Sobekemsaf's inscription in Wadi Hammamat greywacke quarries. After, Photography of the researcher.	291
Fig. 195	A. Sety I offering in front of Min in Wadi Hammamat. After, Photographed by the researcher. B. Cartouches of Ramesses II in Wadi Hammamat. After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 22, p. 42.	293
Fig. 196	Cartouches of Ramesses II in Wadi Hammamat. After, photography of the researcher.	293
Fig. 197	Stela of Ramses IV at Wadi Hammamat. After, Christophe, L. 1949: pl. 1.	295
Fig. 198	Members of the first campaign of Ramses IV. After, Hikade, T. 2006: 157, fig. 2.	296

Fig.199	Members of the fourth campaign of Ramses IV. After, Hikade, T. 2006: 160, fig. 3.	297
Fig. 200	(A) The Bekhen stone quarry in the Turin papyrus map. After, Harrel, J. A. and Brown, V. M. 1992: 98, fig. 5 (B) The ancient map of Wadi Hammamat. After, Harrel, J. A. and Brown, V. M. 1992: 84, fig. 3; http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin	299
Fig. 201	Site of the Bekhen stone quarry and the houses of quarry workers corresponding with the sites indicated on the Papyrus map After, http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin	299
Fig. 202	(A) The modern map of Wadi Hammamat. After, Harrel, J. A. and Brown, V. M. 1992: 94, Fig. 4. (B) Interpretation of the Turin mine Papyrus georeferenced on Google Earth® image, the colours correspond as reported in the Papyrus and result consistent with the main geological units. After, Coli, M. and Baldi, M. 2013: 11, fig. 2.	300
Fig. 203	Greywacke statue of king Darius I at Susa, discovered 1972 and preserved now in the National museum of Tehran. After, http://www.livius.org/sus/susa/susa_statue_darius.html ; Van De Microop, M. 2015: 322, fig. 15.4.	304
Fig. 204	Ptolemaic greywacke statuary. A. A statue of a Ptolemaic Prince. After, https://www.brooklynmuseum.org/opencollection/objects/3603 . B. A Ptolemaic Feet. After, http://www.metmuseum.org/art/collection/search/552002 . C. A Greywacke head of a Ptolemaic queen. after, Arslan, E.A. (ed.) 1997: 96, no. III.2 (Isis); Ashton, S. A. 2001: Appendix 3.4 (Cleopatra I or II).	305

Fig. 205	Roman greywacke statuary. A. Roman bust. After, https://www.brooklynmuseum.org/opencollection/objects/89629 . B. greywacke scarab. After, http://www.metmuseum.org/art/collection/search/552319 .	306
Fig. 206	Well of the Hammamat Roman Hydreuma. A, C. photography of the researcher B. After, Zitterkopf, R. and Sidebotham, S. E. 1989: fig. 4a.	307
Fig. 207	Different phases of stone splitting and extraction. A. After, Bloxam, E. 2015: fig. 7. B. photographed by the researcher during the 2015 survey in Wadi Hammamat.	309
Fig. 208	A. Sledge from Lisht South, Complex of Senwosret I, north of pyramid 2, Deposit 4, MMA excavations, 1923–24. After, http://www.metmuseum.org/art/collection/search/545485 . B. The term (<i>lth.w</i>). After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 87: 64 ff., pl. XX.	311
Fig. 209	A. Scene of Nectanebo II offering an obelisk in Wadi Hammamat. After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 29, pl. VIII. B. Obelisk of Nectanebo II in the British Museum. After, http://www.britishmuseum.org/research/collection_online	315
Chapter V		
The Valorization of Quseir – Qift Road		
Fig. 210	Evaluating the Ancient stone quarries. After, Tom. H. and Gurli, M. 2015.	334
Fig. 211	Plan of the small chapel of Min – Amun in Wadi Hammamat After, Aufrere, S. et al. 1994: 201.	341

Fig. 212	Inscriptions of the shrine of Min in Wadi Hammamat greywacke quarries. After, Traunecker, C. 2002: 379, fig. 1.	342
Fig. 213	Gods of the pantheon of Wadi Hammamat. After, Traunecker, C. 2002: 380, fig. 2.	343
Fig. 214	Details of the inscriptions of the shrine of Min in Wadi Hammamat. After, Traunecker, C. 2000: 381, fig. 3.	343
Fig. 215	Reconstructions of the ancient temples of Coptos: A. Early Dynastic Period B. Early Dynastic period C. Second Intermediate Period (with reliefs in the main Sanctuary) D. Second Intermediate Period (with reliefs in the separate chapels) After, http://www.digitalegypt.ucl.ac.uk/3d/coptos/coptos2.html	345
Fig. 216	(A) The Tent of Min associated with the east. After, Diab, A. M. F. 2005: 411, fig. 183. (B) The Early Temple of God Min called (shnt) After, Sayed, A. M. 1993: 39, fig. 10.	347
Fig. 217	A. The god Bekhenew of the Bekhen quarries After, Lucas, A. and Rowe, A. 1938: 151, fig. 14; photography of the researcher. B. The occurrence of Bekhenu in the book of the dead of Iuefankh, Museum of Turin. After, photography of the researcher.	348
Fig. 218	Map of the hydreumata and military bases in the Eastern Desert After, Maxfield, V. A. 1993: 10, Fig.1.	344
Fig. 219	Ostraca from Krokodilo. After, Bülow-Jacobsen, A. 2013: 562, fig. 6.	358
Fig. 220	Watch towers along the Quseir – Qift Road.	361

	A. photography of the researcher. B. Afte, Sidebotham, S. E. 2008: 92, fig. 4.17, Pl. 4.18 – 4.19.	
Fig. 221	Cluster of inscriptions covering a time range from the Early Dynastic to the Late Period. After, Bloxam, E. 2015: fig. 14.	368
Fig. 222	The treasure hunter's digging. After, Lankester, F. fig. 11, online reference: https://www.ucl.ac.uk/archaeology/research/directory/material_culture_wengrow/Francis_Lankester.pdf	370
Fig. 223	Inscriptions of Wadi Hammamat Left. Recent graffiti over boat. Right. Quarry graffiti vandalism. Right down: changing in colour due to taking of impressions. After, Lankester, F. figs. 5 – 8. Online resource: https://www.ucl.ac.uk/archaeology/research/directory/material_culture_wengrow/Francis_Lankester.pdf	371
Fig. 224	The desert site of Avdat. After, http://www.biblewalks.com/sites/Avdat.html	379
Fig. 225	The site of Al – Zarqa, Eastern Desert, Egypt. After, Photography of the researcher.	380
Fig. 226	The current situation of services along the Coptos – Myos Hormos road. After, photography by the researcher.	384

List of Abbreviations

ASAE	Annales du Service des Antiquités de l' Egypte, Le Caire.
AJA	American Journal of Archaeology. Archaeol. Inst. Of Amer. (New York)
AJSL	American Journal of Semitic Languages and Literatures. Chicago
BASOR	Bulletin of the American schools of oriental research, Supplementary Studies, New Haven
BDE	Bulletin de l'Institut d'Egypte.
BIFAO	Bulletin de l' Institut Francais d' Archeologie Orientale, Le Caire.
BMMA	Bulletin of The Metropolitan Museum of Art. New York
BSAE	British school of Archaeology in Egypt, London
CG	Catalogue Generale
CdE	Chronique d' Egypte, Brüssel.
CT	De Buck, A. The Egyptian Coffin Texts, 7 Vols, Chicago, 1935 – 1961
DG	Gauthier, H. Dictionnaire des Noms Geographiques continus dans les texts Hieroglyphiques, 7 Vols., Le Caire, 1925 – 1931
JAOS	Journal of the American Oriental Society
JARCE	Journal of the American Research Center in Egypt, Cambridge, Boston, Princeton, New York.
JE	Journal d' Entrée
JEA	The Journal of Egyptian Archaeology, London.
JNES	Journal of Near Eastern studies, Chicago.
JRA	Journal of Roman Archaeology.
JSSEA	Journal of Society of the Studies of Egyptian Antiquities, Toronto
Kush	Journal of the Sudan Antiquities Service.

KRI	Kitchen, K. A. 1975 – 1990. Ramesside inscriptions: Historical and Biographical, 7 Vols, Oxford.
LÄ	Lexikon der Ägyptologie, Wiesbaden. 1975.
MDAIK	Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo, Berlin, Wiesbaden, Mainz.
MIFAO	Memoires publies par les membres de l' Institut Francais d' Archeologie Orientale du Caire, Le Caire.
Med. Habu.	Breasted, J. H. and Nelson, H. 1930. Der Große Tempel Ramses III in Medinet Habu, Chicago.
PM	Porter (B.), Moss (R.) <i>Topographical Bibliography of Ancient Egyptian Hieroglyphic texts, Reliefs, and paintings</i> , Oxford.
PMMA	Publications of The Metropolitan Museum of Art, Dept. of Egyptian Art, New York.
PSBA	Proceedings of the society of biblical archaeology, London
PT	Sethe, K. 1908 – 1910. Die altägyptischen pyramidentexte : nach den papierabdrücken und photographien des Berliner Museums neu hersg., Bd I- II, Leipzig.
RE	Revue d'Egypte.
RDE	Revue d' Egyptologie, Le Caire / Paris
Rec trav	Recherches et Travaux. Angres
SAK	Studien Zur Altägyptischen Kultur.
SSEA	Journal of the Society of the Studies of Egyptian Antiquities. Toronto
Studia Aegyptiaca	Studia Aegyptica, Chaire d'histoire ancienne de l'Université Lorand Eötvös de Budapest
Urk	Sethe, K. 1933 – 1961. <i>Urkunden der 18. Dynastie</i> , Band 1 – 4, Leipzig.
Wb	Erman, A. und H. 1926 – 1963. <i>Grapow. Wörterbuch der ägyptischen Sprache</i> , 7 vols, Berlin.
ZÄS	Zeitschrift für ägyptische Sprache und Altertumskunde, (Berlin/Leipzig)

Part I.
Archaeological Survey of Quseir – Qift Road
Chapter I
Quseir – Qift Road (Central Eastern Desert)

1.1. Introduction

1.2. Coptos – Quseir Road in the Ancient Resources

1.3. The Myos Hormos Road

1.4. Hydreumata along the Myos Hormos Road

1.4.1. Bir Al Nakhil

1.4.2. Dawwi

1.4.3. Bir Sayyala

1.4.4. Al - Hamra

1.4.5. Al-Zarqa (Maximianon)

1.4.6. Bir Fawakhir (Persou I)

1.4.7. Bir Hammamat (Persou II)

1.4.8. Al-Muwayh (Krokodilo)

1.4.9. Qusur al-Banat

1.1. Introduction

The importance of tracing the central Eastern Desert Myos Hormos road is due to:

- I. It was mentioned in the ancient resources such as the Turin Papyrus and the descriptions of Strabo and Pliny.
- II. The existence of about 65 towers and 9 *praesidia* - *Hydreumata* (Fortified water points).
- III. The structures of population centres.

Topographical features determine the alignment of the central desert route which follows a series of wadis from the Red Sea to the Nile. These wadis (Valleys) represent the typical structure of the Eastern Desert valleys as they are flat, well packed with sand and gravel. Transitions between one valley and another are smooth with slight watershed divisions.

These routes were discovered and utilized by peoples a long time before the Roman period due to the richness of the region in stone and minerals in addition to its importance for the commercial traffic between the Nile Valley and the Red Sea. In Roman times, this traffic passed from Coptos to either Myos Hormos or Berenice of which the shortest and easiest road was the one from Coptos to Myos Hormos.¹

1.2. Qift – Quseir Road in the Ancient Resources

The Turin papyrus was drawn during the (20th Dynasty) reign of Ramesses IV (1151 – 1145 B.C.) to be an illustrated guide and record of the king's third year quarrying expedition to Wadi Hammamat. The author was the scribe of the tomb, Amennakhte, son of Ipu. Amennakhte was also the chief administrator officer of Deir El – Medina in the Theban necropolis where the builders of Ramesses IV's tomb lived, perhaps the "Bekhen" stone monuments were planned for the tomb therefore, Amennakht and his workmen were involved in the expedition to Wadi Hammamat so he was drafted to create the map.²

It was discovered by Bernardino Drovetti, who acquired the antiquities in his collections through intermediary agents who purchased antiquities from local natives who as a matter of commercial enterprise plundered the tombs and temples near their villages, then Drovetti sold it to king Felix, who established the Egyptian museum in the city of Turin, upon purchasing the Drovetti collection in 1824. The fragments were not recognized to belong to a single map due to the fragmented state of conservation. The papyrus scroll, now displayed in the museum, is 41 cm wide and 2.82 m long including gaps of various widths. It is divided into 4 sections; these sections have all been placed within a single wood frame. It represents the oldest geographical map in

¹ The literature on prehistoric and early dynastic rock graffiti in the Eastern Desert attested the long history of these roads, many of which occurred along routes later used by the Romans, cf., Green, F. W. 1909: 247 – 254; Green, F.W. 1909: 319 – 323; Petrie, F. 1933: 10 – 13; Winkler, H. A. 1938; Redford, S. and Redford, D. B. 1989: 3 – 49; for the inscriptions along the Quseir – Qift road which is the main argument of the thesis cf., Rohl, D. 2000: 72 ff., 125 ff.; Morrow, M. et al. 2010: 215 ff.; Cuvigny, H. (ed.) 2006: 13; De Romanis, F. 1996: 181.

² Romer, J. 1984: 129 – 130; For the author of the Turin Papyrus, cf., Janssen, J. J. 1994: 91 – 97.

the world, especially important because it is the only map of topographical interest from ancient Egypt.¹

The Turin Papyrus is the earliest illustrated topographical and geologic map of which texts indicate that the area depicted must be along the natural route from Coptos (Qift) on the Nile through the Eastern Desert via Wadi Hammamat to the port of Quseir on the Red Sea. This route was used in the ancient times during expeditions to the Red Sea for trading voyages south to the land of Punt. The central area between Bir Hammamat and Bir Umm Fawakhir was visited as a source of ornamental stone and gold.²



Fig. 1

The Turin Papyrus

After, Shore, A. F. 1987: 122 – 125, figs. 7.7 - 7.8.

¹ Shore, A. F. 1987: 117.

² Harrel, J. A. and Brown, V. M. 1992: 81; Shore, A. F. 1987: 123.

Strabo mentioned the structure of the eastern desert referring to:

- An “Isthmus”, which is a way founded by Philadelphus (Ptolemy II) between Coptos and Berenice.
- Berenice was not far from Myos Hormos and Coptos was not far from Apollonopolis (Edfu), so that there are two cities at either end defining the “Isthmus”.
- The pre-eminence and improvements on the Coptos—Myos Hormos route during the early Roman period.

The routes were difficult narrow hostile zone of desert passages between the easy sailing of the Red Sea and the Nile. The importance of the isthmus was due to the exchange of merchandise. For this purpose, there were two ports, one leads straight to Asia and the other to Italy of which one was a naval station.

Therefore, the isthmus of Strabo was defined by the two roadways and two principal port cities, Myos Hormos and Coptos. This geographical configuration may have served as a model for the structure connecting both the Nilotic and the Eritrean ports, joining the worlds of the Mediterranean and Indian oceans.¹

Pliny described the journey from Coptos to Berenice by camel passing by watering points placed at intervals along the route and an old *hydreuma*, called “Troglodyticum”, where there is a fort which accommodates 2,000 people. He added that the greater part of the journey used to be made at night because of the heat and the days are spent at these stations.²

1.3. The Myos Hormos Road

The Myos Hormos road is supplied by nine square forts (*praesidia*) which can hold both a garrison and visiting caravans (animals and people). These constructions were supposed to contain a well (*hydreuma*). They were erected at a day’s walk distance about 15 - 20 km away from one another. Each *praesidium* hosted a garrison of about 50-70 Egyptian auxiliaries and furnished rest and water to travellers, who had to pay a toll to pass through, the garrison also supplied sentinels for the signal towers and escort to travellers.³

The term *praesidia* represents roughly squared forts with sides of about 40 m to 50 m and perimeter walls about 1,5 m thick. Depending upon location, the walls were built of boulders and cobbles collected near the site and stone slabs sized by workers, dry-stacked with soils as binder. The Romans used granite from Bir Umm Fawakhir quarries for specific structural elements such as the door-posts of the forts.⁴ While, the term “*Hydreuma*” gives a more general and a large sized compound that can host a little fort “*praesidium*”. There is no good evidence for the size of garrisons but the excavations proved that they were small and were perhaps supplemented by roving patrols and certainly before the extensive building of *praesidia* in the Flavian and

¹ Whitcomb, D. 1979: 761; a translation based on the original text in Strabo 17.1.45.

² Sidebotham, S. E. 1986: 60 – 61.

³ For the equipment of the *praesidia* cf., Cuvigny, H. 2005: 2ff.

⁴ Zitterkopf, R.E. and Sidebotham, S.E. 1989: 160.

Trajanic - Hadrianic period, such forts were small, unfortified and probably did have small garrisons. ¹

The Myos Hormos road contains various archaeological sites as follow:

Coptos (Κόπτος, now: Qift)	The city at the end of the road, on which all the stations depended, mentioned in most of the ancient sources. This was clearly where the commanding officer of the soldiers stationed along the road resided and where most provisions came from.
Wadi Matula	The <i>hydreuma</i> is not mentioned in the texts, nor by the historians. As for the age of the station in wadi Matula, the ceramics from this site are similar to those excavated from Qift and from Khashm el-Menih, and dated to the period between the Second and the fourth centuries AD. ²
Phoinikon, (Φοινικόν, now: Al-Laqita)	The name was mentioned in the <i>Itinerarium Antoninianum</i> , and it was repeated frequently in the ostraca. Contrary to the other stations, al-Laqita is an oasis, although a small one, and there are still some live palm-trees, it was clearly considered the next station towards the valley from Krokodilo.
Qusur El Banat	The <i>hydreuma</i> cannot be dated back to the same period of the other <i>hydreumata</i> as the name was not mentioned in the ancient correspondences, besides, For the same reason the ancient name of the station is unknown. Qusar al-Banat was presumably built after 118 AD, which is the date of the latest dated ostrakon from Krokodilo. ³
Krokodilo (Κροκοδιλώ, now: al-Muwayh).	Krokodilo is presumably named after the rock north-west of the <i>hydreuma</i> which looks like a crocodile, if seen from the north-east side. The name of the station is known from ostraca that have been found on the site: five <i>dipinti</i> with address, many official letters addressed to the curator of Krokodilo, and some private letters.
Bir Hammamat	The site of Bir Hammamat was never mentioned in the ancient texts. Bir Hammamat is composed of two sites bearing the same name of "Persou".
Persou I	Persou I. (now: wadi al-Hammamat) The settlement cannot be described as a road-station (<i>praesidium</i>) in as there is no enclosure wall. It is clearly a quarrying settlement which was presumably active during the period concerned. The name of the place is thought by some to mean "quarry" in Egyptian, <i>prs</i> , to which there appears to be no good etymology. In the letters stone-objects are occasionally referred to and stone-masons' tools are also demanded, as are <i>pondera</i> , presumably of

¹ Adams, C. 2007: 38 – 39; Due to the current condition of the sites along the Myos Hormos road that did not allow a certain result about the function of each site the researcher used both the two terms referring to the sites as both *hydreumata* and *praesidia*.

² <http://rome.classics.lsa.umich.edu/projects/coptos/desert.html>.

³ BRUN, J. P. 2006 f: 187 – 204.

	stone. Moreover, whetstones, and stone-masons (ζκληπουργοί) are mentioned. This gives the impression of occasional works on local demand, it is also possible that the small-scale quarrying referred to in the ostraca took place in wadi al-Fawakhir. ¹
Persou II (Πέρσου now: Bir Umm Fawakhir)	Situated at about 5 km east of the quarrying-settlement, is a central point in the private correspondences, because this was where the vegetables grew. ² There must have been a Roman station of which walls were assumed to be demolished and served as building material for the Byzantine gold-mining village that occupies the site. There must have been a station in Bir Umm Fawakhir as the settlement in wadi Hammamat is not a station and there is no room around it for the quite extensive vegetable-culture which is apparent from the texts. However, these conditions are present at Bir Umm Fawakhir where there is both water and space.
Maximianon (Μαξιμιανόν, now: al-Zarqa)	The ancient name was derived from the name “Maximianus” which is strange as much as this name is otherwise unknown in Egypt until the emperor in the later third century, except for Iulius Maximianus, <i>epistrategus</i> of the <i>Heptanomia</i> around 118 AD, perhaps later δικαιοδότης. The name of the station is known from the dipinti on vases and letters carrying an address that have been found in the site, altogether 32 times. Maximianon was clearly an arid <i>hydreuma</i> , but served as a relay for fish, pickled or fresh, fish-sauce, salt, and other products from the Red Sea. ³
Simiou	The name was found in ten ostraca from Bir Sayyala, moreover, Diodorus Siculus told that a certain “Simmias” was sent by Ptolemy III to explore the elephant hunting grounds in Africa. It seems entirely possible that he founded and named this station on his way to Myos Hormos and installed Philotera as tutelary deity. Physically, the next station east of Maximianon today it is al-Hamra, but most probably, this station, like Qusur al-Banat and Bir Hammamat, was not constructed until the second century and that the next station in practice was Bir Sayyala. Besides, “Simiou” could be derived from a North-Syrian god Simios as Such a Semitic toponym would not be unheard of in the desert. a newly found inscription has allowed to correct the reading ζειμω (which had already been contested), therefore, the genuine name of that god as transcribed in Greek should be ζειμος. ⁴ a further argument for the identification of Simiou as the next station east of Maximianon is to be found in the proskynemata. As about 175 out of 1547 texts from Maximianon carry a proskynema

¹ MEYER, C. 1997: <http://www.tms.org/pubs/journals/jom/9703/meyer-9703.html>.

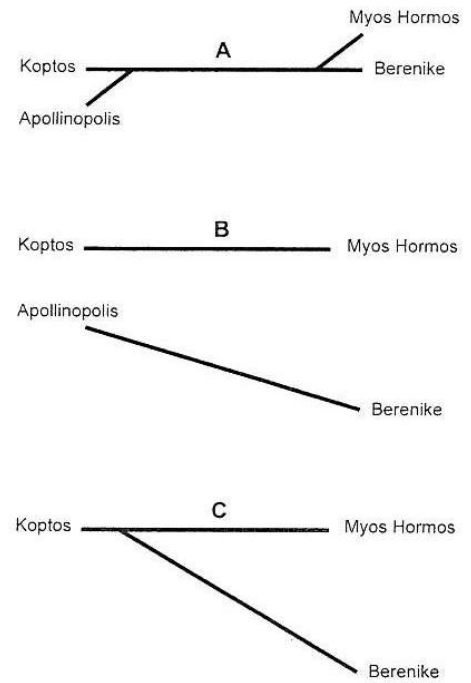
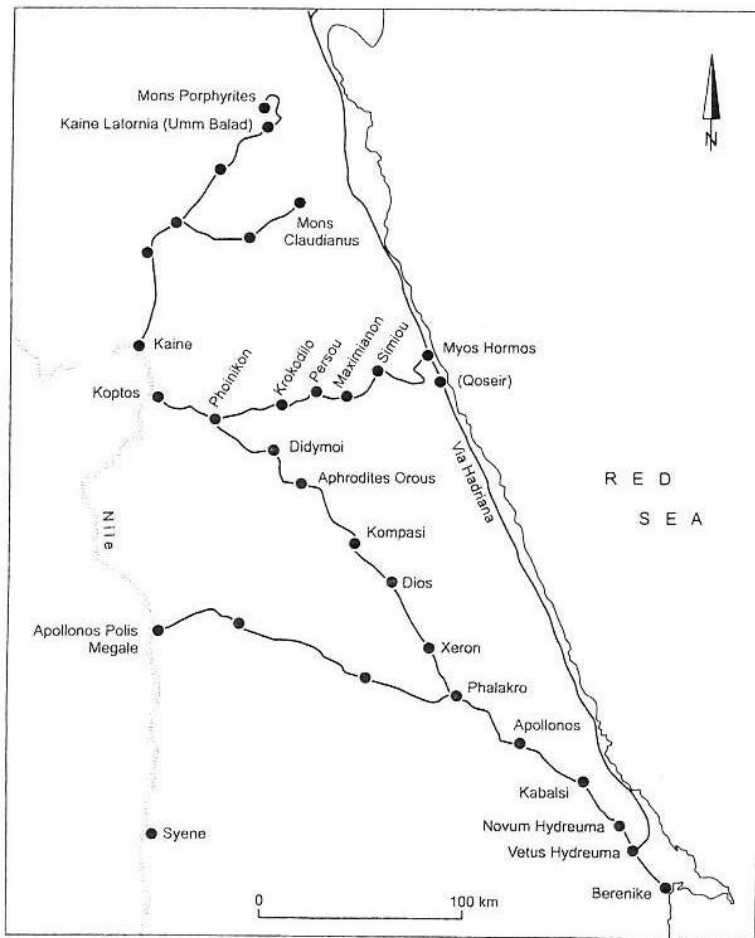
² Carole Meyer stated that no agriculture has ever succeeded in the eastern desert and that the only resources are mineral, namely, gold, granite, and water but after the discovery of the ostraca, the idea should be modified, cf., MEYER, C. 1997: 65.

³ Bülow-Jacobsen et al. 1994: 36, n.11. The ostrakon may have been written in “Persou”, since there is a *prokynema* to Athena. Therefore, it was never sent if it was found in Bir Fawakhir.

⁴ Gatier, P. L., 1997: 761.

	of which (65) are to Athena, (29) to Sarapis, (17) to Philotera, (2) to Pan, and (2) to the Tyche of Simiou. Therefore, Athena and Pan are in Person, Sarapis in Maximianon itself. Since it seems that most of the letters were sent between neighbouring stations, it makes excellent sense that the third largest contingent of letters (17 Philotera, 2 Tyche of Simiou) would come from the next station on the other side.
Siaroi	The name appears only once and seems to have been situated further towards the sea. Both Simiou and Siaroi are mentioned in one of the letters.
Myos Hormos “Μυός όρμος” – Quseir	“Μυός όρμος” was the last stop of the road, this toponym was also mentioned in the Nikanor-archive.¹ Myos Hormos should have been placed at Quseir or Quseir al-Qadim, Like Coptos, it was a market-place for sea-products (fish, fish sauce) and other commodities. It even happens that commodities produced in the <i>praesidia</i> were sold at Myos Hormos.

¹ DE ROMANIS, F. 1996: 148, no. 3.



A

B

Fig. 2

A The main roads of the Eastern Desert in the Roman times.

B. The roads from Coptos and Apollinopolis Magna to Myos Hormos and Berenice

- (A) According to Strabo.
- (B) Reality in Ptolemaic times.
- (C) in Roman times.

After,

Bülow-Jacobsen, A. 2013: 560 – 561, figs. 3 – 4; For the main roads of the Eastern Desert in the Roman Period, cf., Sidebotham, S. E. et. al. 2002:188, fig. 1.

1.4. Hydreumata of the Myos Hormos road

The *Praesidia* of the Myos Hormos road will be the subject of this chapter, depending mainly on the work of the French excavation team on the Coptos - Myos Hornos road between 1994 and 1997.¹

1.4.1. Bir Al Nakhil

Geographical Location

Bir al-Nakhil is located at 13 km from Quseir al-Qadim on the track leading to Samna rather than to Coptos - Quseir, which runs 8 km southwards. However, it measures 5 km taking the path that allow to reach Quseir al-Qadim through the wadi. The presence of easy to reach water, in a sector where it is so rare, attracted travelers and nomads. Therefore, it is legitimate to include the site between those who have played a role along the Myos Hormos road. Bir al-Nakhil is marked by some groves of palm trees and tamarisk growing on the northeastern foothills of the Jabal Dawwi.

Several wells of modern times with a very close water table (average one meter depth), explains the presence of trees. There are also several dry sources nearby, that should have been important in the ancient times such as the Ain Ghazal, known as Bir al-Ambaji, 10 km southeast of Nakhil.²

The water of Bir al-Nakhil is brackish, but the salt content is low enough to allow human consumption. The site was largely destroyed in the 1950s then by 1978, it was thoroughly explored by the team of the University of Chicago led by Martha Prickett.³ Then, the French expedition re-examined the field and drew the plan of the fort remains in 1998.⁴

¹ The same team has later worked on the road to Berenike, excavating first the *praesidium* of Didymoi (1998-2000) and subsequently that of Dios (2005-2009). Berenike itself has been excavated by a Dutch-American team cf., Sidebotham, S. E. and Wendrich, W. Z. (1995; 1996; 1998; 1999; 2000; 2007); Cuvigny, H. (ed.) 2006: 73 – 137.

² Prickett, M. 1979: 270.

³ For the description cf., Baron, T. and Hume, W. F. 1902: 57; Murray, G. W. 1925: 149.

⁴ Brun, J. P. and Redde, M. 2006: 136.

THE FORT

The fort was built on the bank of Wadi al-Nakhil about (130 m of altitude) at the foot of a hill culminating at 322 m and about 100 m to the west of a triangular hill rising above the bed of the wadi. The site is surrounded by an enclosure wall built in the 50s to protect the gardens. The actual state of destruction permits only a brief description.

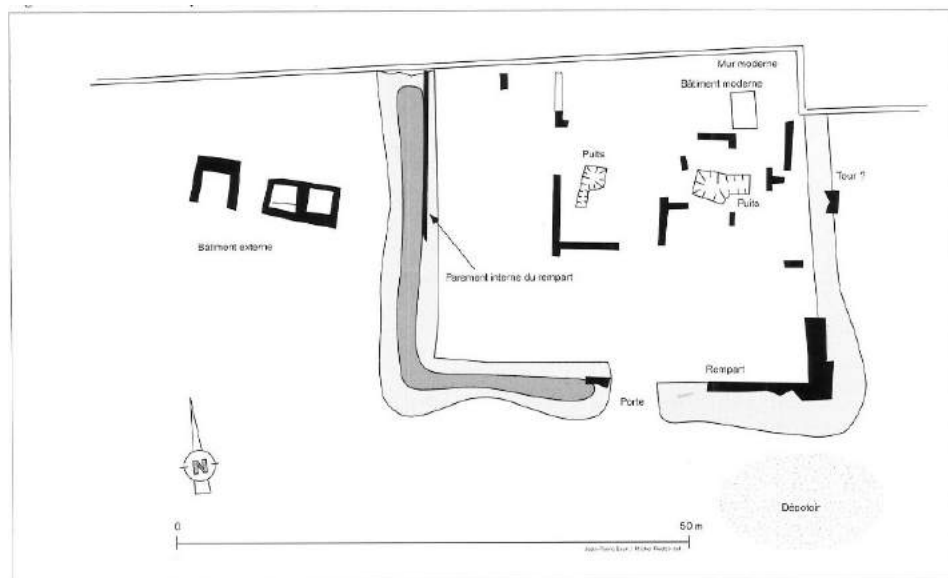
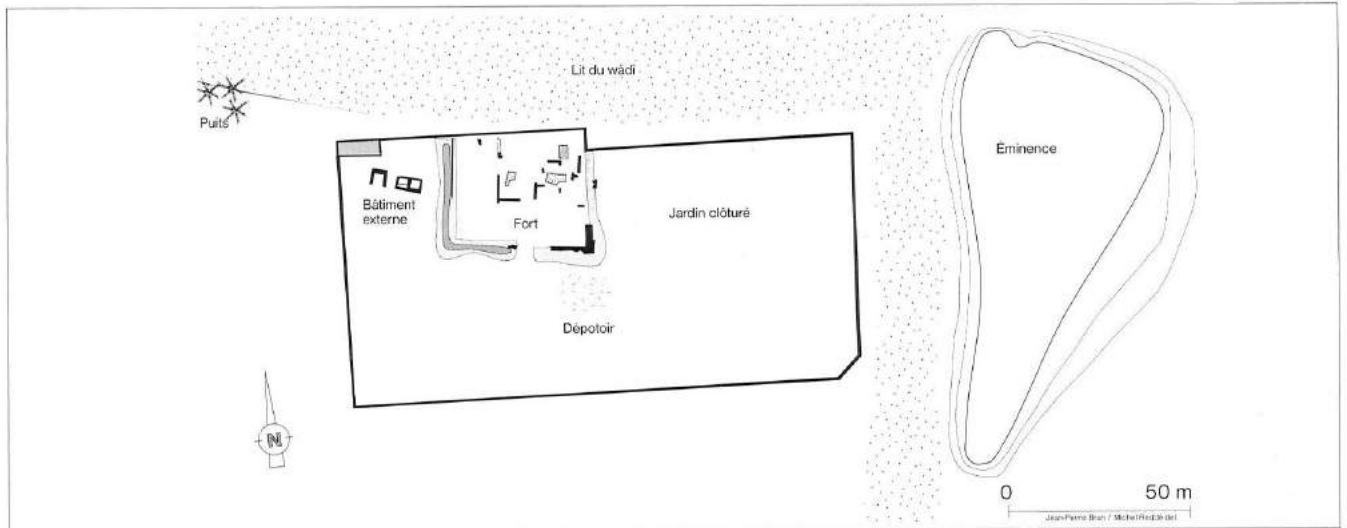


Fig. 3

Plan of the *Hydreuma* of Bir al Nakhil.

After, Brun, J. P. and Redde, M. 2006: Figs. 175 - 176.

The enclosure appears to take a rectangular form, while the blocks located to the west corner draw a mound that could correspond to a tower, the southern corner shows a right angle, reinforced with a thickening. It seems that this fort was not provided with protruding corner towers. The entrance was located to the south and the dump is found on the outer left side, now leveled, but recognizable by the presence of black soil mixed with potsherds and organic material. The ruins are confused within the enclosure while parts of walls which must correspond to barracks can be randomly distinguished. It appears that the density of this complex was more important than that of the other *hydreumata* along the Myos Hormos road while the central space appears to have been built.

The American team had identified at least two construction phases, but the absence of excavations and the state of the ruins does not ensure it.

A modern well is roughly dug in the center of the fort and another one, now partially filled, is located about 20 meters to the west.

These parts of the *praesidia* are somehow different than the other *hydreumata* on the road as the well in the middle does not exist due to the proximity of the water, therefore, it was not necessary to drill large diameter wells, however, one or even more wells could have existed inside the *hydreuma* and disappeared following the course of landslides and destructions.

On the western side of the *hydreuma*, about ten meters from the curtain, the leveling course of two slightly misaligned buildings relative to the *hydreuma* can be seen obviously but with no clue for their function:

- One of them is rectangular, it is composed of two parts and it measures 7.5 x 4 m
- The other is formed in one piece measuring 5 x 4.50 m

The Miners' village

A town composed of 187 buildings grouped into nine sets is located at 1 KM north of the fort of which some parts are similar to those of Bir Fawakhir.¹

Their dimensions vary from 2.25 m² to 50 m², the walls are built of dry stone, with generally rounded corners and floors. Almost all rooms have an interior bench that served as a bed measuring 2 meters long by approximately 0.75 m wide, sometimes the equipment is completed by a second outdoor bench.

Some well-built buildings, located in the upper part of the site, could have had an administrative function while others seem to correspond to miners' dwellings. The gold mine of Wadi al-Nakhil is distant about more than 9 km but the easy washable gold of Bir al-Nakhil should have pushed the miners to travel this distance, even if, The American team did not find any direct evidence of gold mining in the site.²

¹ Prickett, M. 1979: 297-299.

² Brun, J. P. and Redde, M. 2006: 137.

Chronology

The furniture found during the American surveys is dated to the Early Empire, without further specification. ¹

The forms of amphorae could match the Dressel 2/4 and the Egyptian amphorae (AE3). ² In addition to the blue glazed bowls and pots which are common during the late 1st century and early 2nd century AD.

The period of occupancy is not clear, but the ruins and their surroundings do not present sherds from the Byzantine period. It should be noted that the density of constructions seems to indicate an intense occupation that should have lasted probably for a considerable long period. Although sherds attributable to the Augustan period have not been found, it is likely that the occupation of Bir al-Nakhil goes back at least to that period, even if the fort was built later.

Surveys of the American team also detected in the bed of the valley (Wadi) 133 piles of stones, interpreted as ancient tombs, as well as hydraulic layouts. Further south, few remaining huts are dated back to the Byzantine period. ³

¹ Prickett, M. 1979: pl. 88.

² Prickett, M. 1979: pl. 88, b and c (Dressel 2/4 amphorae); P and Q (Egyptian amphorae "AE3").

³ Brun, J. P. and Redde, M. 2006: 137.

1.4.2. Dawwi

Geographical Location

The *praesidium* of "Dawwi" is located at 154 km away from Coptos and 27 km from Myos Hormos, and about 175 m in altitude. The site is in the mid-way at 14 km from Bir Sayyala and 21 km from Bir al-Nakhil. The *praesidium* is a bend of the wadi, where it enters a mountain range, it is built on a gentle slope leading from the foot of the southern hills to the cliffs carved by the wadi, some 200 m northwards.¹

The hill located to the southwest carries a square well – preserved tower at its peak (234 m height). Another hill, to the south of the fort, carries a horseshoe ruin which appears to correspond to an ancient shelter built with reused stones from the *praesidium*. The latter, may represents a very readable plan. The northern row of barracks is still preserved on 1.50 m high, but the rampart collapsed all around.

Piles of rubble lie on either sides of the southern entrance and continue along the east and west sides. These piles represent the digging rubble of a well that once occupied an almost central place within the enclosure.

The Well is collapsed, taking all the surroundings and now, the excavation measures 15 to 20 m in diameter. A diverticulum sloping emerging northwest certainly indicates the remains of a staircase, as Maximianon, that should have provided access to the water table.²

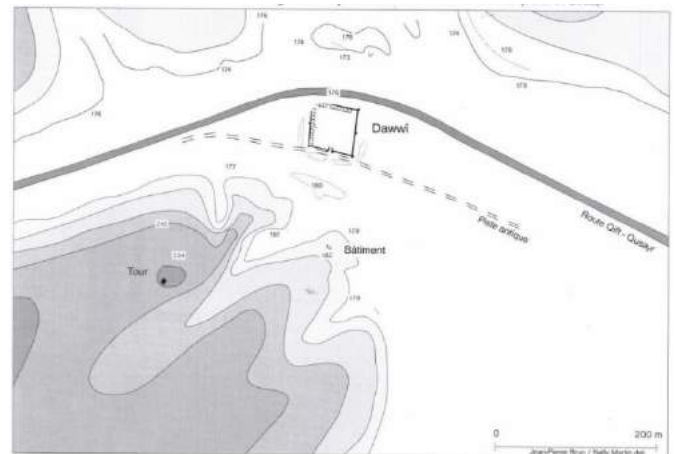


Fig. 4

The *Praesidium* of "Dawwi"

After, Brun, J. P. 2006a: 181, figs. 166 – 167.

¹ Brun, J. P. 2006 a : 133.

² The *praesidium* of Dawwi was the subject of prospecting by Martha Prickett's team in 1978, which provided a brief description of the site as "QRS 46c - Wekalet Iteima". However, it does not appear that the archaeological material is then recovered. Cf., Prickett, M. 1979: 304-305; The name of the *praesidium* was also mentioned as "Iteima" in Zitterkopf, R.E. and Sidebotham, S.E. 1989: 174 – 175.

The Fort

I. The enclosure wall

The enclosure forms a rectangle whose corners are not orthogonal, measuring 55 m from east to west and 56.25 m from north to south (190 feet for each side). It is provided with circular corner towers with a diameter of 3 m. The curtains are reinforced in the middle of semi-circular towers of the same size while the rampart is 1.50 to 1.60 m (5 feet) wide.¹

Each tower was served by a large independent staircase of about 1.20 m, the plan clearly shows that the stairs were built before the barracks that included them. The multiplicity of stairs was necessitated by the absence of barracks at the origin and the narrowness of the wall that made the movements difficult over a long distance. The width of the rampart is the same as that of Bir Sayyala but less than Krokodilo (2 m) and Bir al-Hammamat (2.20 m).

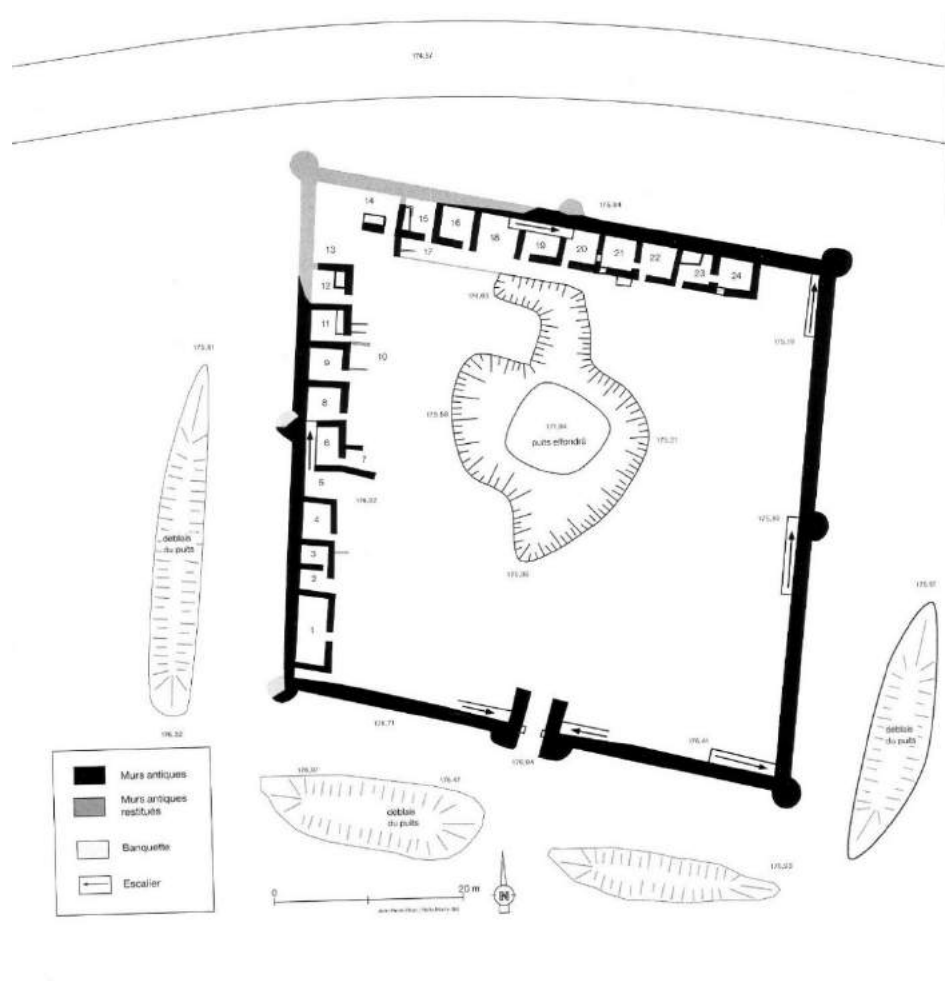


Fig. 5

Plan of the *praesidium*

After, Brun, J. P. 2006 a: 182, Fig. 168.

¹ Brun, J. P. 2006 a: 134.

II. The door

The entrance was defended by two large towers measuring 3.20 m width that project about 1.80 m. They also were served by side stairs. The passage of 2.45 m wide was narrowed to 1.75 m between the sidewalls of the gate. The jambs and lintels were carved out of sandstone. Between the pillars, the threshold was raised to 0.27 m above the ground and marked by a large sandstone block of 0.79 m behind which two thimbles received the hinges of the door. These thimbles, with a diameter of 8 cm and a depth of 4 cm, were carved into the sandstone blocks arranged against the doorposts.¹



Fig. 6

A. The door and the western stairs.

B. The door and the sandstone door windows.

After, Brun, J. P. 2006 a: 183, figs. 169 – 170.

¹ Brun, J. P. 2006 a: 134.

III. Barracks

The fort had only two rows of barracks on the south and west sides. The best preserved show a standardized layout in which the room measures 3.60 m x 3.40 m. Access is provided through a wide door of about 0.80 m to 1 m after passing the door and towards the right, a seat was built, delineated by slabs, which was used as a bed.

In front of the barrack (no. 7, fig. 5) the walls of an awning, recently leveled, are built with different stones of those of the primitive barracks and rampart. It might be a later addition that dates to “phase 3”, The rest of the fort is empty and there was still ample space to accommodate horses and caravans.

In front of the facade, a kind of trough formed of upright slabs appeared to have functioned as a manger for horses (the excavated example is located before the barrack (no. 21, fig. 5) without finding anything that provides their supposed function).

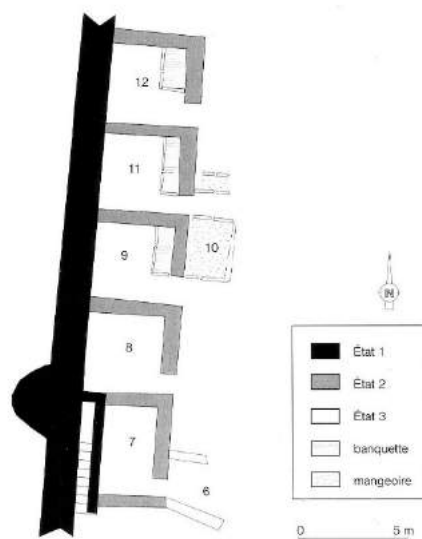


Fig. 7

A. A detailed plan of the north – western barracks.

B. The horse manger in front of barrack.

After,

Brun, J. P. 2006a: 183 - 184, figs. 171 – 172.

Chronology

The discovered findings are very poor, including jugs and gourds of Aswan of which similar examples have been found in large quantities in the final phases of the dump of Maximianon except for an uninscribed sandstone altar topped with a place for burning incense and a sandstone game table.

The scarcity of materials and lack of dump before the door argue for a less intense occupation, may be short-lived, that can be dated to the 2nd century A.D. and could not confirm the foundation period. This fort is different from those of Krokodilo and Maximianon, which are best dated, this difference can be obviously seen in the shape of the towers flanking the entrance and the addition of semi-circular towers on the curtains. This difference can be applied on its original concept as well because if there was an initial phase without barracks, it could be the beginning of an inn and not a police station. It is possible that the digging of wells and the construction of *hydreumata - praesidia* show a tendency to rationalize the route as before the construction of Dawwi, caravans should have gone directly from Bir Sayyala to Myos Hormos, which is 41 km, or to step in the *praesidium* of Bir al-Nakhil located at 35 km, which required a detour of about 10 km but it seems that the attempt to create a new station had not gained the expected success (most probably for the lack of water).¹



A



B

Fig. 8

A. A sandstone altar topped with a place for burning incense.

B. A sandstone game table.

After, Brun, J. P. 2006 a: 184, figs. 173 – 174.

¹ Brun, J. P. 2006 a: 135.

1.4.3. Bir Sayyala

Geographical Location

The *praesidium* of Bir Sayyala is located at 141 km from Coptos and 40 km from Myos Hormos, with an average altitude of 270 m in the mid-way at about 11 km from al-Hamra and 14 km from Dawwi. It is constructed in the middle of a narrow wadi about 300 m wide, hemmed mountains, that can explain the current state of destruction as about half of the site was ruined by floods.¹



Fig. 9

The site of Bir Sayyala.

After, Brun, J. P. 2006 b: 179, fig. 159.

¹ Brun, J. P. 2006 b: 129.

Before the beginning of the French excavations, the *praesidium* was composed of an accumulated mass of ancient ruins around a modern well. Until the 19th century, the modern well was not yet constructed, however, its location was occupied by a circular depression indicating the existence of an ancient well. The existing well, built in 1832 by the English, is still used and seems to have been built of ancient structures that had been discovered during the cleaning of the collapsed Roman well. ¹

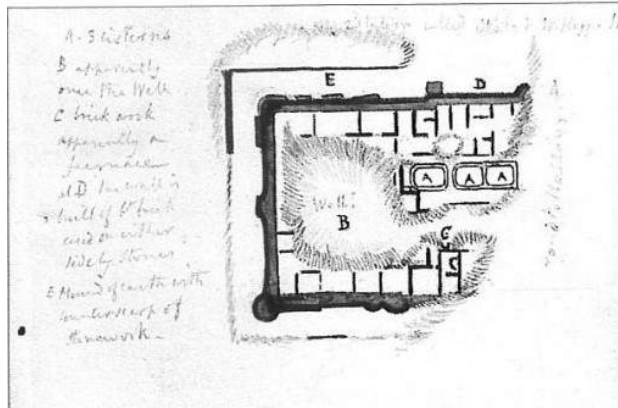


Fig. 10

The plan of Bir Sayyala drawn by Ms. G. Wilkinson in 1826.

After, Brun, J. P. 2006 b: 33, fig. 1.



Fig. 11

The modern well.

After, photography of the researcher.

¹ Zitterkopf, R.E. and Sidebotham, S.E. 1989: 176.

Now, the water level is at a shallow depth of about 10 meters. On the northern side of the fort, as in Maximianon, Krokodilo, Bir Hammamat and Dawwi, there is about one meter of rubbles from the digging of the well. From the south side, a thickness to the east may indicate the northeast corner of the wall.

Further east, the square tower represents the best-preserved part of an outer wall surrounding the original ramparts.

On the western side, there was a square tower, located near the northwest corner as well as a rectangular central reinforcement.

Towards the middle of the southern side, in an area that disappeared now, a thickness may have indicated the presence of a tower flanking the door. The French excavations revealed that the corners were rounded, but the partial collapse of wall blocks formed clusters that, by analogy with other forts, could be interpreted as towers.

Clearance was essentially to understand the structure and type of fortification, perhaps to have a precise chronological information. These clearances have indicated that despite its ruined state, the fort of Bir Sayyala was likely to provide interesting insights, and preserves an important archaeological value.¹

¹ Brun, J. P. 2006 b: 129.

The Fort

Despite the state of destruction, it can be noticed that this fort is not a one of the series Krokodilô -Maximianon – Dawwi and Bir Hammamât because the plan of Bir Sayyala draws a rectangular fort measuring more than 42 m long and 37.60 m wide with no projecting towers.

The door was not placed on the west side because the clearance revealed a continuous curtain. Given the position of the well, usually placed in the axis of the door and the layout in which the relief track a northeast - southwest route,

The French excavation campaign tempted to relocate the door on the east side. Besides, not far from its supposed location, an uninscribed block of granite remains measuring 2.46 m long, 0.34 m wide and 0.24 m thick that could be either the lintel or the door jamb. However, the previous plans indicate a thickness on the southern flank that could be interpreted as an entrance guarding tower, the recent condition of the site shows that the door and the exterior dump were swept away by floods.¹

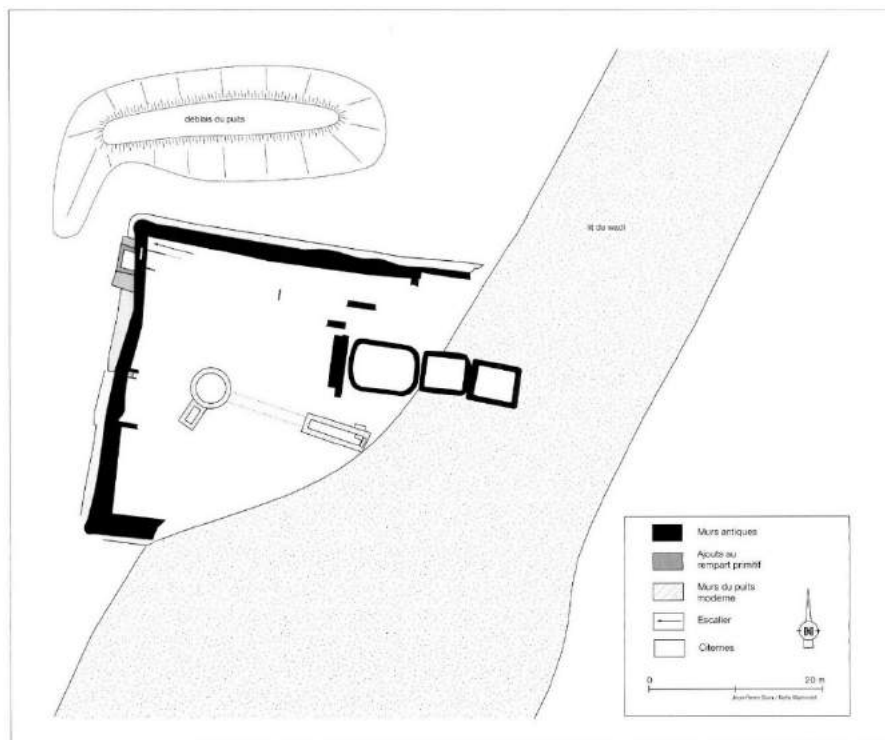


Fig. 12

Plan of the *praesidium*.

After, Brun, J. P. 2006 b: 180, fig. 162.

¹ Brun, J. P. 2006 b: 130.

I. The Rampart

The recent rampart exhibits at least four clearly visible construction phases.

The first phase indicates a rectangular fort without towers but with rounded, slightly projected corners measuring from north to south about 35.70 m or 120 feet. Its north side should have measured more than 40 m. The rampart is well preserved in the northwest corner, an area of which the 0.70 m wide walkway is preserved. It was covered by a 0.60 m wide railing that used to be reached by a 1.60 m wide staircase resulting in the northwest corner.

The second phase attests the addition of a rectangular tower located at 3.50 m from the northeast corner. It measures 3 m wide, therefore, it must have jutted about 2.20 m if compared to the curtain. Its base was surrounded by a 0.45 m wide parapet.

The third phase shows that the tower was strengthened by two buttresses to the north and the south of which respective widths are: 1 m and 1.80 m. It is possible also that the western curtain was strengthened in its southern part.¹



Fig. 13

The north-western angle of the original enclosure wall, the tower and the second wall.

After, Brun, J. P. 2006 b: 180, fig. 163.

¹ Brun, J. P. 2006 b: 130.

The fourth phase indicates a complete refurbishment of the entire rampart, which was included in a new round - cornered casing, without corner towers.

The new curtain measures about 1 m thick, bringing the total width of the wall to 2.30 m and up to 3 m on the western flank.

The decision to strengthen the enclosure wall could be explained by one of three possible reasons:

1. The floods that destabilized or carried away some parts of the curtains, of which some traces can still be visible in the northern and western sections. Therefore, the outer casing would have served to stabilize the wall and to regularize after a flood event.
2. A reconstruction following an earthquake.
3. It was simply a renewal project.

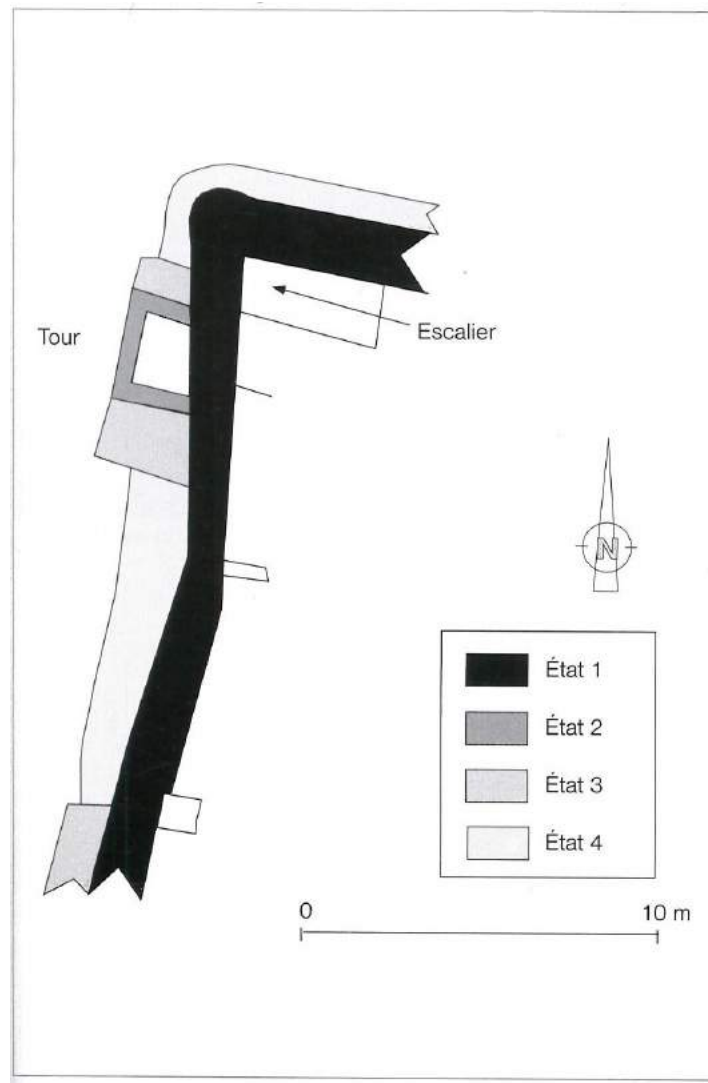


Fig. 14

The four construction phases of the north – western angle of the enclosure.

After, Brun, J. P. 2006 b: 181, fig. 164.

II. The Barracks

Inside the fort, the barracks are attached to the rampart. Surveys in both of them revealed a very thick layer collapse. These two-barracks contained some kind of closets with lime - coated walls, which had been filled with sediments from a dump.

The internal side of the north curtain has a large niche. It can be assumed that this niche represents a development of the niche formed in the southern curtain of Maximianon and that it may have had a ritual function. This niche did not occupy the center of the curtain wall facing the entrance as in Maximianon, therefore, it should have occupied the southern side. Thus, Bir Sayyla represents a relatively late development.

III. The Cisterns

Three cisterns were dug in front of the northern barracks. They are constructed of lime and coated with an average of 4 cm thick lime mortar deposited in three layers. The western cistern is isolated and it measures 6 m x 3.90 m whereas the other two cisterns are connected and they measure respectively 4.80 m x 3.85 m and 4.50 m x 3.55 m.¹



Fig. 15

The Cisterns of Bir Sayyala

After, Brun, J. P. 2006 b: 181, fig. 165.

¹ Brun, J. P. 2006 b: 131.

Chronology

The archaeological material found by the French archaeological campaign is homogeneous, it is almost identical to that of Maximianon such as the ceramics of Aswan, the white paste, culinary, blue faience, thin walled cups, amphorae of Alexandria and those produced in Upper Egypt. In addition to a glass tumbler and a scroll lamp with two spouts that can be dated to the 2nd century A.D. One of the few ostraca found in the site of Bir Sayyala belongs to the curious series "Hermonthitou", attested to Maximianon during the middle of the 2nd century A.D.

Therefore, the occupation is likely to cover at least the entire 2nd century A.D., as Maximianon. However, surveys in the site have not reached the geological levels, or even the original floor and it is quite possible that furniture prior to the 2nd century A.D. can still be discovered.

1. There is an earlier archaeological level to the construction of the southern curtain, this layer which is visible in the cut etched by the waves of Wadi includes gravel and uncharacteristic sherds of which presence indicates either that there have been previous constructions to those existing today or that the curtain was rebuilt.

2. The absence of findings dating to the period prior to the 2nd century A.D. among the relics discovered during the surveys or on surface is not determining. However, almost all the archaeological material in Maximianon, Krokodilo and Didymoi, was found in the external dump as large periodic cleaning had completely emptied the strengths of their waste, Inside the forts, there were the embankments made of datable relics to the last phase of occupation or the very late dropout levels.

It would have been difficult to date the period of construction of the forts in the absence of these dumps as the dump of Bir Sayyala had disappeared, therefore, lack of data on the origins of the fort should be considered, thus, only the period of abandonment can be hemmed towards the late 2nd century A.D. or the beginning of the 3rd century A.D. as Maximianon.

3. This lack of archaeological material can be overcome by comparing the (very partial) plan of the fort with best dated other *hydreumata*. If the fort of Bir Sayyala was built in the second half of the 1st century A.D. as Krokodilo and Maximianon, it would have been likely to be endowed with round - cornered towers. Besides, if the rectangular plan approach Qusur al-Banat, then, angles should have followed a completely different treatment. However, Bir Sayyala seems to have witnessed the birth of shy corner towers with simple rounded thickness. In fact, the plan could be without corner towers, and composed of a simple courtyard surrounded by a row of rooms.¹

4. Along the Myos Hormos road, the fort Bir Sayyala is the only one that includes several construction phases of the rampart. This may be due to its special location, in the bottom of the wadi which is a very vulnerable region to the floods, and it can also

¹ The surveys of Sidebotham are tempting to date the construction to the Ptolemaic period, cf., Sidebotham, S. E. and Wendrich, W. 1995: 99 -101; Sidebotham, S. E. and Wendrich, W. 1996: 372 – 374.

mean that this fort was occupied for a much longer period than the others and had to be restored and strengthened many times.

5. The water level is shallow and the existing wells appear to have an ancient origin that measures only 3.50 m of diameter for which the efforts paid to build the deployment should not have been compared to those required for large deep wells, such as those of Maximianon (diameter: 16 m) and Dawwi (estimated diameter more than 15 m).

6. Some scholars suggested that the name “Simiou” was a reconciliation with the name of “Simmias”, a friend of Ptolemy III, who was sent to Africa in search of war elephants. Simiou would then have been the “wells of Simmias”. ¹

If “Simiou” is identified as “Bir Sayyala”, it would be possible to assign the first establishment in the site (therefore it could have been the first constructed fort in the Ptolemaic period). Therefore, Simiou / Sayyala could be one of the six or seven forts described by Strabo and existed along the Myos Hormos road during the Augustinian period. ²

¹ Bülow-Jacobsen, A. 2006 a: 56.

² Brun, J. P. 2006 b: 131 – 133.

1.4.4. Al - Hamra

Geographical Location

The *praesidium* is located at 52 km to the west of Quseir, in wadi Abil Ziran, immediately beside the modern road. The wadi, which receives at this place several tributaries to the north and south, forms a wide valley, whose average altitude is about 350 m. This valley is dominated, immediately to the north by the slopes of Jabal Umm Arada, that culminates about 918 m. ¹

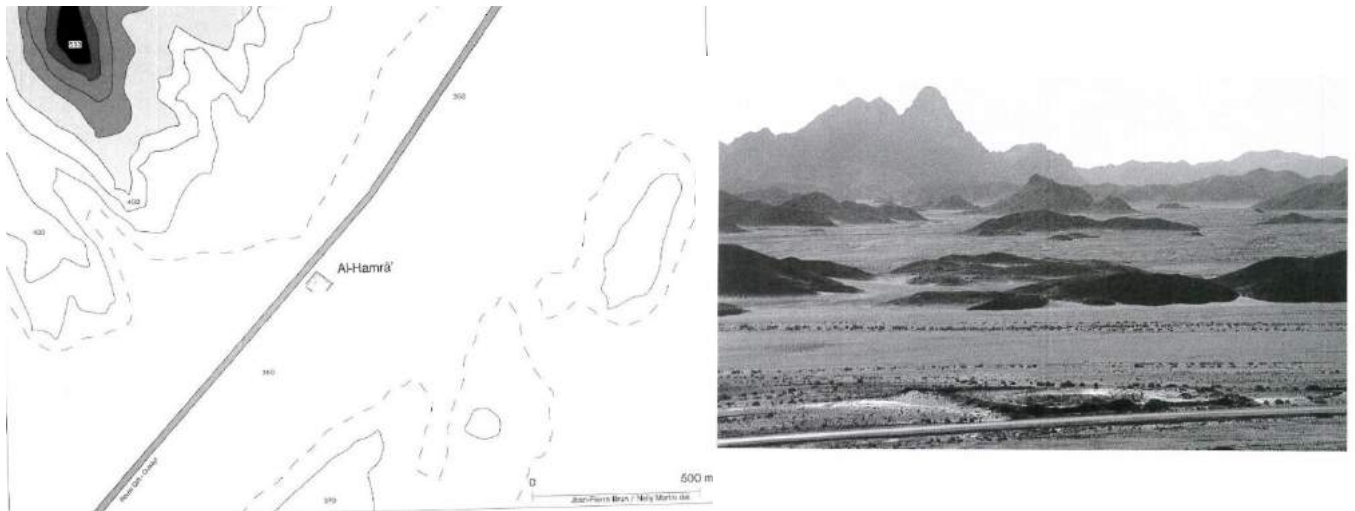


Fig. 16

The *Praesidium* of Al – Hamra.

After, Redde, M. 2006 a: 176 – 177, figs. 149-150.

¹ Redde, M. 2006 a: 127.

Description

The *praesidium* is unequally preserved: to the northwest and northeast sides, the curtain wall preserved to the height of the walkway, measures about 2 m above the present level of the wadi, however, the southern corner is destroyed and silt into the southeastern curtain. The fort is constructed of red sandstone blocks, irregularly cut and delineated in the mud. It forms a square of almost 59 x 57 m, with a single entrance, in the middle of the north-western curtain.¹

The wall, with an average width of about 1.70 m, leaves a space at the top, for a probably 0.80 to 0.90 cm thick crenellated parapet, as well as a 0.79 m wide walkway, which is still visible by the eastern angle of the fort.

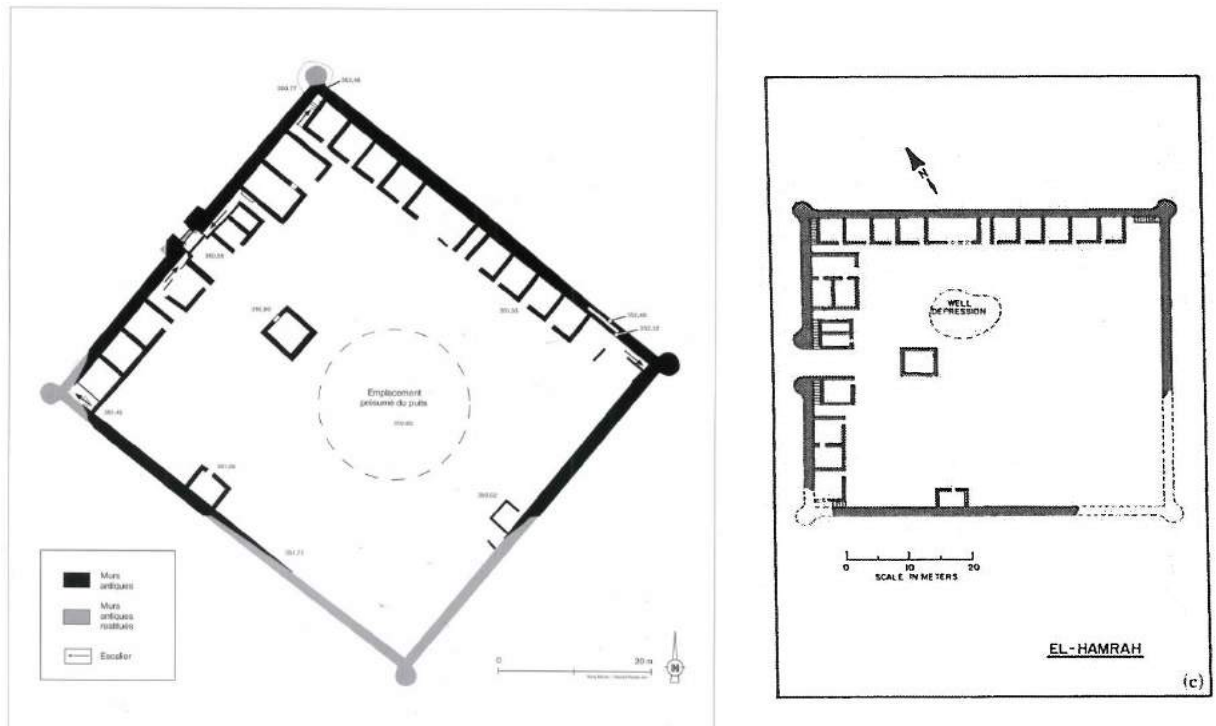


Fig. 17

Plan of the *Praesidium* of “Al – Hamra”.

After, Redde, M. 2006 a: 177, Fig. 151; Zitterkopf, R.E. and Sidebotham, S.E. 1989: 172, fig. 3 (c).

¹ Redde, M. 2006 a: 127.

Two small round towers of approximately 3 m in diameter, without internal chamber are still preserved in the northern and eastern corners. However, no intermediate towers are visible on the curtains, except on either sides of the door. The walkway can be reached through two stairs parallel to the ramparts, situated on either side of the door, and a staircase in each corner of the fort. Twenty installed rooms along both the northeastern and northwestern curtains are preserved. These are regular rooms of generally 3.80 to 4.50 m wide, approximately 4 m deep, open onto a central courtyard. Besides, there is only an adjoining room that appears today against each of the southwestern and the southeastern curtains. The conservation status of the ruins does not allow being specific without an exhaustive clearance. A small square building, about 5.20 m opens at about 14 meters behind the door. Slightly off-center, it includes only one room that opens towards the door of the fort. The presence of a large central well behind this building can be assumed, but any visible traces have disappeared under the effect of the siltation caused by the floods of the wadi except for a grand cross section that permits to identify the substrate and the recent sedimentation would attest this hypothesis, in addition to the comparison with the other known models in the region.¹

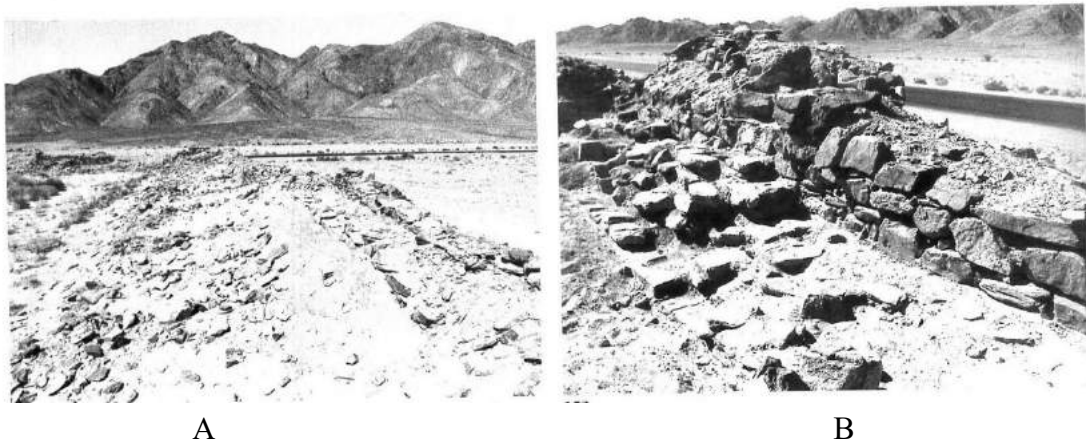


Fig. 18

A. The walkway on the eastern rampart.

B. The walkway on the northern rampart.

After, Redde, M. 2006 a: 178, Fig. 152-153.

¹ The association with the well was also attested by Zitterkopf, R.E. and Sidebotham, S.E. 1989: 176.

Excavated Parts

The French excavation campaign has cleared and identified:

I. The Door

The door is flanked by two square towers about 3 x 3 m as in the case of Qusur al-Banat and Bir al-Hammamat. The threshold consists of several blocks of sandstone, it functioned as an entrance during the second phase, it is raised to a dozen of centimeters. The passage behind the door is carefully slabbed to a depth of about 1.50 m. The foundation inscription has not been found, the nearby Wadi is very close to the modern route which is undoubtedly normal.¹

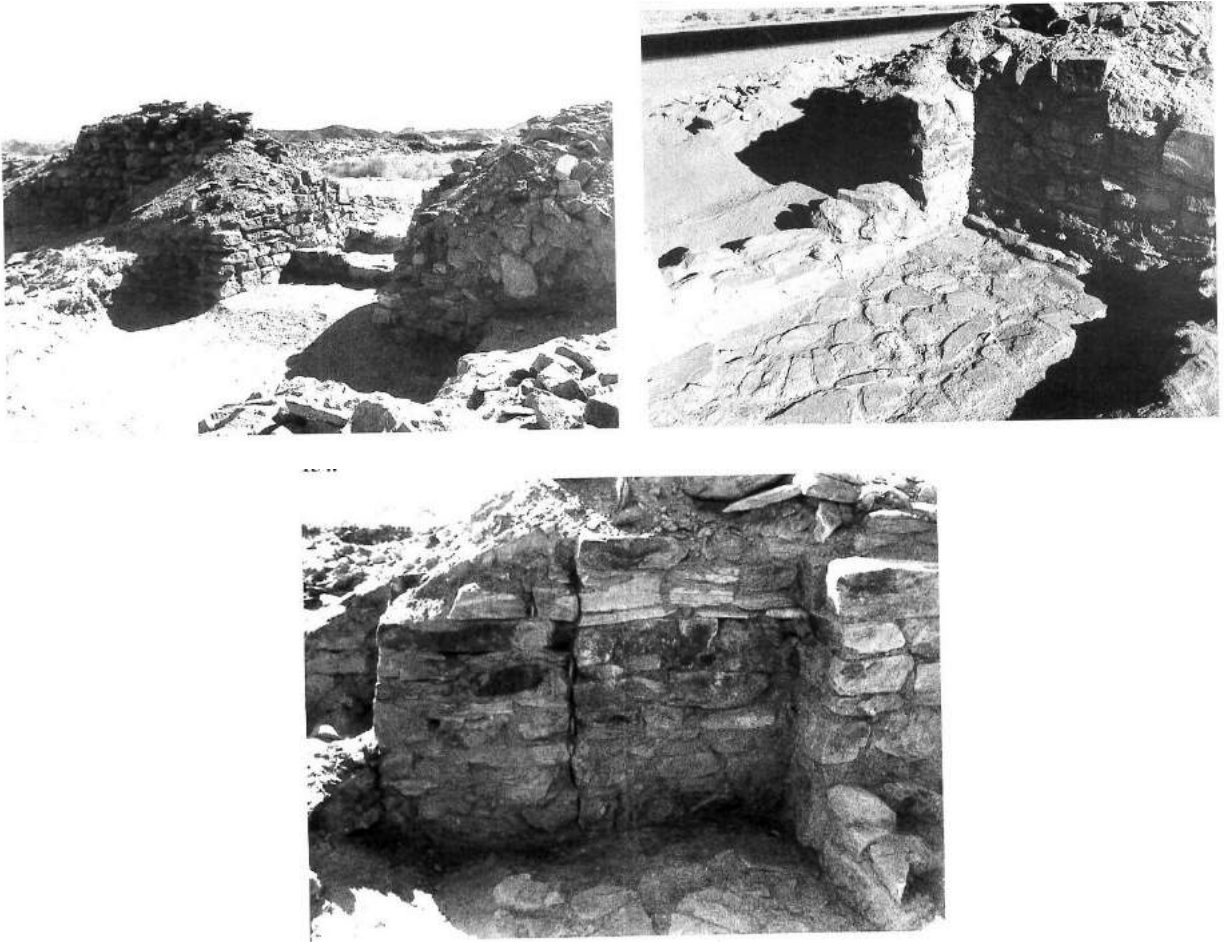


Fig. 19

The door and entrance passage of the *praesidium*.

After, Redde, M. 2006 a: 178, figs. 154 – 155 – 156.

¹ Redde, M. 2006 a: 128.

II. A Small Central Building

The building is implanted facing the door in a position identical to that of Maximianon (Al Zarqa), this building was partially cleared and it has subsequently served as a dump. The edifice has only one door located to the north in the axis of the door of the *praesidium*. Initially, a small masonry was settled in the center of the south wall of the room (no. 5 – Fig. 20c).

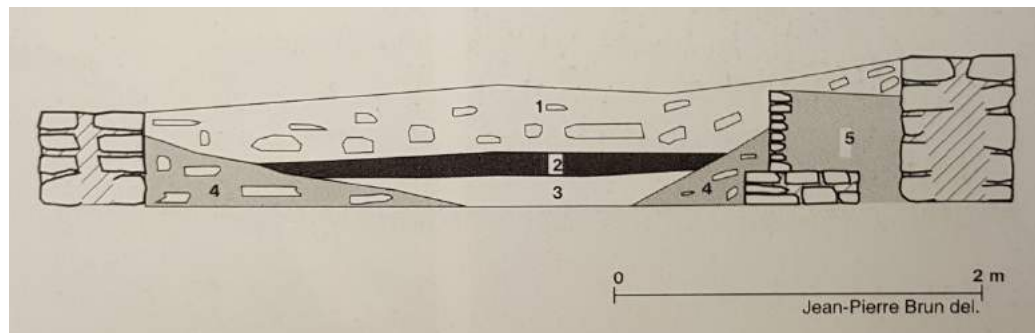
The sketch prepared by the members of the French excavation team shows a first layer of sand encroachment and destruction, followed by a partial reoccupation layer, composed essentially of animal nature (litter). This layer is succeeded by a layer of ash, and a final sand filling containing masonry debris. The lack of full and enough clearance and the ruined condition of these relics do not offer a complete identification.



A



B



C

Fig. 20 (a, b, c)

The central building of the *praesidium*.

After, Redde, M. 2006 a: 178 - 179, Figs. 157-158; photography of the researcher.

Archaeological Findings

Excavations in the *praesidium* of al-Hamra have revealed very few furniture. As the fort used to be periodically cleaned and rejected waste used to be thrown in a dump located in front of the door where the asphalt road passes.

Tableware pottery discovered is divided into three categories:

- Culinary ceramics (pots).
- Aswan ceramics (one gourd).
- Ceramics from Coptos are represented in bottles, a jug and a bowl.
- The amphorae are mostly of AE3 (17 pieces). ¹

¹ Redde, M. 2006 a: 128.

1.4.5. Al-Zarqa (Maximianon)

Geographical Location

Maximianon, the best preserved *hydreuma* along the Myos Hormos road, is located in wadi Abu Ziran, about 65 km from Quseir. At this point the valley becomes very narrow (average 150 to 170 m), it receives two small tributaries, one to the north, and one to the south.¹

The *hydreuma* represents an excellent state of conservation, it is preserved to a height of 3 to 5 m above the average level of the bottom of the valley.²

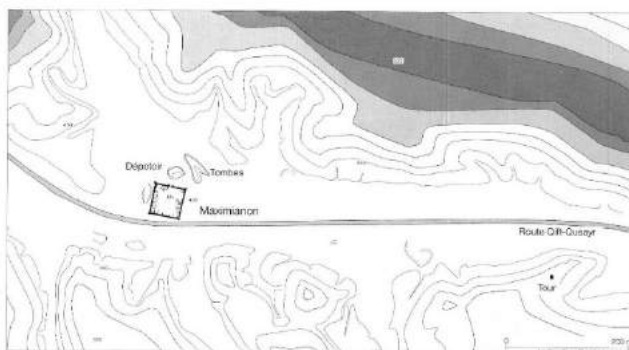


Fig. 21

The *hydreuma* of Maximianon.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: 100, figs. 73 – 74.

¹ BÜLOW – JACOBSEN, A. et. al. 1994: 27; ZITTERKOPF, R.E. AND SIDEBOTHAM, S.E. 1989: 176 – 177.

² ADAM, J. P., BRUN, J. P. AND REDDE, M. 2006: 100.

The archaeological site includes:

- The actual structure and about twenty meters north of it, facing the door.
- A dump that covered the oldest buildings.
- The area of the landfill that measures approximately 600 m square, with a height varying between 0.10 and 1.45 m.

The French excavations revealed:

- A very complex stratigraphy of accumulations of detritus on the ruins of older settlements.
- A small necropolis (pillaged and robbed), about fifty meters to the northeast corner of the fort.
- Two quadrangular towers located on the hill, one about 800 m to the west and the other to a similar distance to the east, rounding off the site.

General Description

A regular squared, precisely cardinal oriented construction, confined with a semi-circular tower at each corner, the fort possesses a unique door opened to the north side and flanked by two semicircular towers.

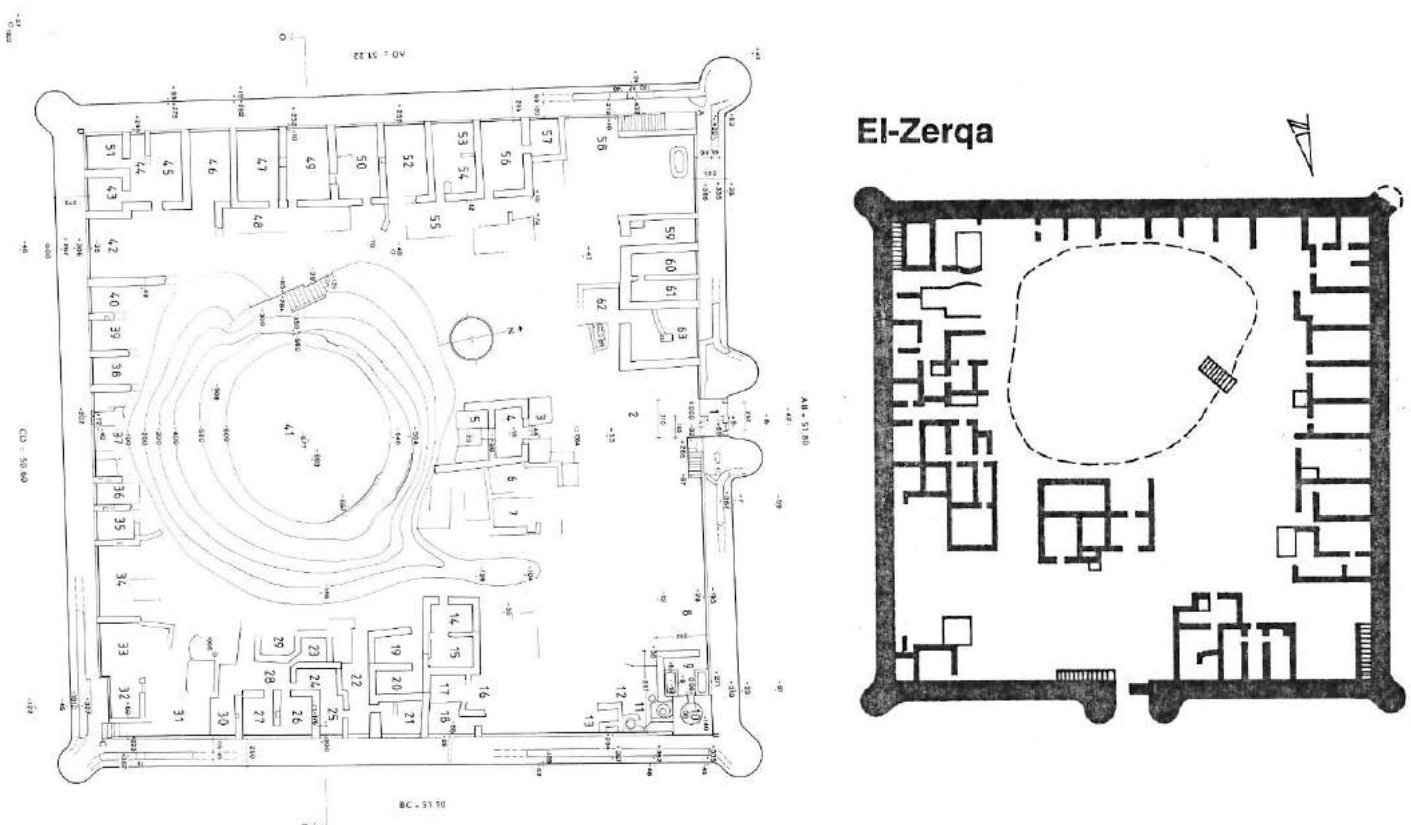


Fig. 22

Plan of Maxinianon

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 75; Maxfield, V. A. 1993: 13, fig. 2.

The *hydreuma* measures 56.37 m long from the north to the south without the protruding towers and 55,85 m from the east to the west. Internally, it measures 51.22 m from the north to the south and 51.80 m from the east to the west. If the projection of the external towers is added to the dimensions, the construction will result a roughly regular square whose sides are between 59 and 60 m (about two hundred feet). The fort masonry is composed of (schist – greywacke) slabs which are or not polished, summarily related with earth mortar and carefully assembled to achieve regular surfaces. The stones were extracted from a trough forming an occasional wadi, located approximately 300 m northeast of the *hydreuma*. The blocks are fairly regular slabs and could often be used without scrap. The External and inland curtain walls and towers are in a better condition of stability. The thickness at the base of the curtain, across sectors, varies between 2.45 and 2.70 m, while the width at the top is about 1.80 m.

The same estimation cannot be made for the lower and upper surfaces of the towers, because of the scree that affect them; In contrast, inland rooms have walls with an average thickness of 0.50 to 0.70 m with vertical walls. Coverage of these parts, whose width varies between 1.80 and 3.40 m, was constituted of large slabs of schist which is still on the ground.

The Well, dug in the center of the fort, is mostly filled; its lowest point is currently 6.93 m. It was reached by a staircase of which the beginning is retained on the west side, it stopped at an intermediate platform from which fetching was conducted. However, because of the large diameter opening of the cavity, approximately 16 m at the lowest level of one stair, it is possible that the latter continued spirally over the entire length of the inverted truncated cone, shaped by the wells. ¹



A



B

Fig. 23

The schist - greywacke masonry

After

Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 79; Photography of the researcher.

¹ Adam, J. P., Brun, J. P. and Redde, M. 2006: 100 - 101.

Excavated zones in the *hydreuma*

I. The Door and Towers

The door is framed by two projecting U-shaped towers, originally bonded with the wall. The foundations are merely composed of a hedgehog of dry stones laid on the bed of the wadi. The masonry, as for the entire fort, consists of (schist – greywacke) blocks attached by mud.



A



B

Fig. 24

A. Towers flanking the door entrance,

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 80.

B. The sandstone jambs of the door. After, photography of the researcher.

The door towers include an indoor lower chamber, their base is indeed filled with sand and stone piers to the level of the walkway, which gave access to the towers. The one to the west still bears some flat stones that were used to pave the defense platform. Finally, it seems obvious that the mass of accumulated rubble at the feet of the towers is insufficient to justify the existence of a floor; it is the simple slide siding before the collapse of a portion of mass filling at the foot of the structure. The eastern tower is accessible by a completely preserved staircase. Thus, the massive composes an increased defense once the entrance is reached. The passage is marked by two pink sandstone jambs (0.34 to 0.35 m X 0.42 0.43 m), one is 2.54 m distance from the other.

¹



Fig. 25

A The parapet of the curtain.

B The defense structure of the entrance.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 81 - 83.

¹ A. Adam, J. P., Brun, J. P. and Redde, M. 2006: 102.

A cluster of three other blocks lying outside the door and a fourth that appears at some distance among the cuttings brought by the wadi helped in restoring 3 m height door jambs corresponding to the height of the walkway. The door jambs are based on irregularly cut blocks of sandstone which continue in the passage of the threshold. This passage is paved by irregular schist - greywacke blocks. The threshold is raised to about 0.27 m above the level of ordinary traffic, constituted by the wadi and barely paved outside the door. It therefore seems impossible that vehicles could enter the fort.

In a successive phase, the door was shrunk to half of the size by a blockage of schist - greywacke blocks, about 1.32 m deep. In this phase, the threshold was raised with three large (schist – greywacke) blocks that form a courtesy of 0.49 m high. The blockage was doubled towards the interior by a dry-stone blocking of the same width, before being endowed to the west with a new jamb of schist blocks which ultimately reduces the passage to 0.63 m.

The eastern door leaf bears a graffito on behalf of Serenu [s]¹ while, the reverse threshold is simply composed of irregular slabs of sandstone, placed on a simple hedgehog of dry stones which continues under the primitive jamb of the door. Besides, a very large corner block, of 0.26 m rests above the threshold level on the west side.



A



B

Fig. 26

A. Graffito on the eastern jamb.

After, photography of the researcher.

B. The reverse of the entrance door.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 84.

¹ Fournet, J. L. 1995: 205 – 206.

The spoil from the excavation at this place, revealed no slate tile or sandstone that can cover the width of the passage. Moreover, it is observed that the access of the two towers towards the curtain was opened during a reuse phase; in both cases, it should be mentioned that:

- A low wall bordered the walkway.
- The back of the western tower has been walled.

This refection passes over the original curtain and the double closure of the door, so that curtain and blockage are here connected from the top. Therefore, the western tower of the curtain is not accessible if there was a passage over the door, probably of wood.¹ In this late phase of use, the two towers formed an autonomous defending fortress that may indicate the relatively precarious situation in the *praesidium*.

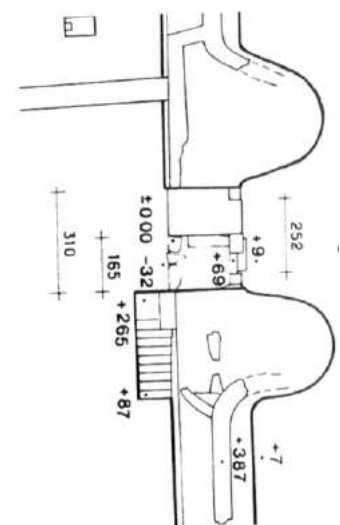


Fig. 27

The wall bordering the walkway.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 85, 76.

¹ some carbonized debris were discovered during the excavations.

II. The curtain and the other towers

The curtain wall is still well preserved in different parts, including the northwest, northeast and southeast corners. The walkway is elevated to about 3 - 3.15 m height, above the ancient soil, that was recognized through the surveys along the western curtains.

Its width varies between 1.13 and 1.22 m and the bordering crenellated parapet which is partially preserved in several points, possesses a thickness ranging between 0.60 to 0.65 m. Besides, some barricades were partially preserved.

To the west, their current height is 1.07 m, whereas, to the east, it is still 1.37 m; the width seems to be very close to 0.80 m. The two measurable barricades are respectively 0.79 m on the eastern curtain, and 0.82 m on the Western Curtain.

The width of the niches can be estimated due to the two measurable examples around the northwest corner of the Western Curtain as both have an aperture of about 1.40 m; these measurements seem very low and it should probably assume that several stone beds have disappeared, especially since this height is about 1.14 to 1.15 m only in the niche relying on the eastern curtain.

The corner towers are accessible through the walkway and the corner stairs, that remained, to the northwest and to the southeast. These towers functioned as a defense platform like the towers of the door and for the same reasons. These towers are partially preserved at the same level as the walkway, except for the north – western angle tower which is severely collapsed.



Fig. 28

A. The walkway and its parapet.

B. Barricades (western rampart).

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 86 – 87.

The entrance has also been reduced in a later phase of occupation, to both the northeast and the north-west by a low arched wall. In the southeast corner, the internal side of the curtain was doubled by a wall measuring about 0.62 m wide; this wall has a corresponding bigger equivalent of the parapet, equally from the internal side, both of these similar walls, are treated with the same care as the original structures and it does not seem like that they have been estimated to isolate certain towers. However, it could be likely that behind the western gate tower, a doubling was destined to hide the side platform of the fort and to transform the tower into a standalone bastion. This refection used to hide a duct evacuation that crosses the rampart and that the ostraca folder "coxa" had designated as the "*potamion*".

This evacuation is carefully coated and surmounted by a stone lintel, it opens towards outside for about 2 m height. However, the function of such structure is unclear, the hypothesis of a latrine, supposing that the banquette should have been included in the extra thickness of the parapet and at the foot of it, could be plausible. It is however not very defensible, because these vertical sumps have resulted in a substantially horizontal pipe, making the evacuation impossible, in the absence of a water stream.

The eastern curtain is traversed in the middle by another very carefully bricked rectangular pipe, located at 1.14 m height. A (0.27 x 0.27 m) section. It is internally coated with lime mortar and covered with squared stone lintels. There can be no doubt that this conduit was used to channel a liquid towards the exterior, that could have been either the water of the well for the animals staying outside the fort, or the evacuation of the sewerage. Moreover, Excavations were executed under the curtain to discover the remains of either a cistern or a pit.



A



B

Fig. 29

A. The *potamion* of the southern curtain.

B. The pipe that passed through the eastern curtain.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 88, 90.

Under the collapse of the wall layer, contemporary used soil did not reveal nothing except for a layer of sand, no trace of any basin or pit has been discovered, besides, the same floor was clean and has not exposed any trash. ¹

Therefore, it is hard to imagine that a small fort as Maximianon (Al Zarqa) has two latrines. if one of the two pipes (or even both) have been used to bring water from the well, it is possible that the eastern curtain belonged to an unfinished device that might have been an external trough. ²

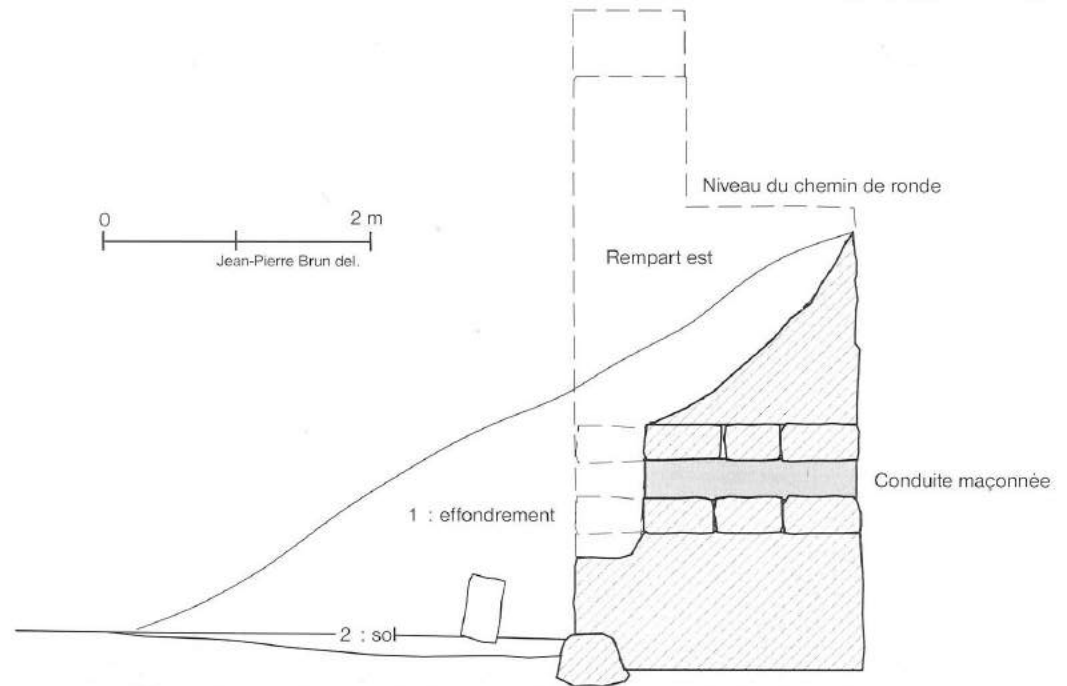


Fig. 30

A plan of the piping system through the eastern curtain.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 89.

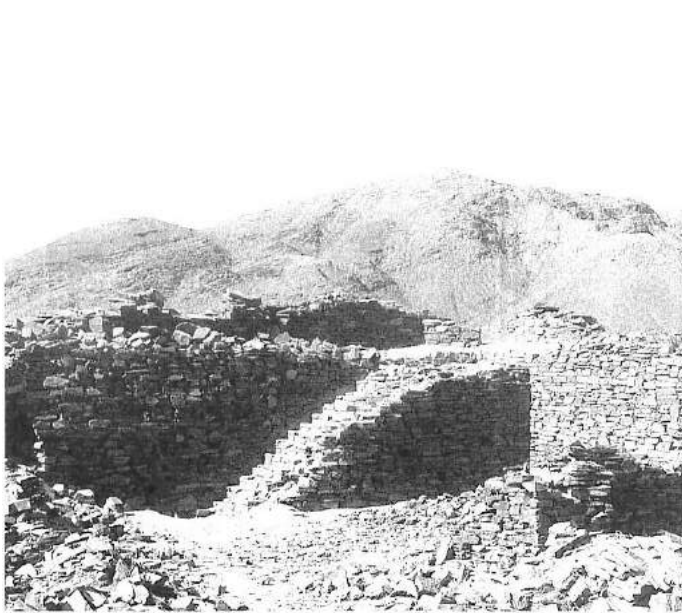
¹ In Mons Claudianus, only one latrine was discovered including an external evacuation of the same type. Cf., Peacock, D. P. S. and Maxfield, V. A. 1997: 56.

² The excavations in Didymoi were executed by J. P. Brun between 1997 – 1998.

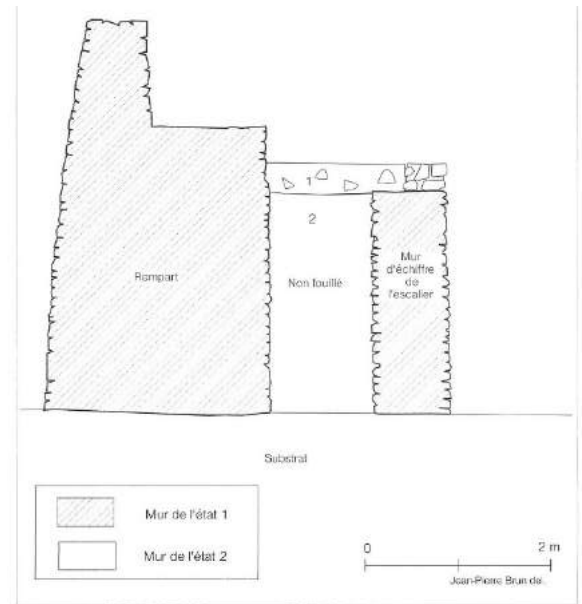
III. Excavations under the stairs of the northwest angle

A staircase leading into the curtain can be found in the northwestern corner of the fort. The backward filling of this staircase seems to be composed of an embankment containing datable furniture. The French survey revealed that the first layer is composed of sand and gravel containing organic materials and some furniture. It was based on an arid gravel layer that fills the stairs to the full height.

The first layer corresponds to a repair, quite awkward to the last step of the staircase, whereas the second corresponds to the original filling. The staircase was placed beside the curtain since the construction of the fort, but no archaeological furniture can be associated with this phase.



A



B

Fig. 31

A. The staircase that gave access to the north – western angle tower.

B. Plan of the north – western staircase.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 91 – 92.

IV. The Entrance

Facing the door, in the center of the row of buildings lying against the southern wall, appears the entrance building, measuring (7 x 4 m), of which the Northern part was destroyed after the collapse of the well.

In the center, a bench, of about 2.28 m large and 1.85 m deep, is recognized in dry stone with blocking stones and sand in the center. However, a small bench seat about 1.50 m wide is laid against the wall to the west, and between the previous two benches, a niche was inserted in the thickness of the wall.

In a first phase, the niche measured 1.13 m wide and 0.56 m depth but after the collapse of the eastern part, the depth was decreased to 0.19 m. There, a trace of lime plaster can still be seen. Moreover, a third bench seat measuring about 1.32 m wide is constituted of schist slabbed edges to the east.



Fig. 32

The niche of the southern rampart.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 93 – 95.

V. The central building

The central building of the fort, facing the entrance door, is still preserved, however, its southern part, was destroyed during the collapse of the well. The access is through a barely raised dry stone threshold measuring about 2.17 m wide, in the axis of the gate of the fort. This passage was reduced subsequently to 1.06 m. The first room, of which layouts are not visible, measures 4 x 2.10 m. It gave access towards the south into a second room, opening on the wells.

The eastern wall of this construction is the only preserved standing without back corner. In a later phase, the passage between the two rooms was opened and two benches were built along the east and west walls. The presence of some decoration fragments in the surface rubbles can be noted indicating the remains of a capital more than an arrowhead trefoil.



Fig. 33

The central building of the entrance.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 96 – 98.

VI. The *Praetorium*

In the southwest corner of the fort, several elements can be accessed through a single door of which a rectangular stall, limited by three schist slabs set on edge could match a horse manger. The “coxa” ostraca file indicated that the pieces located in this corner correspond to the “*Praetoriuim*”, where the curator must have had his office and house.¹

The space was filled with sediments however, the neighboring rooms were almost empty. This 2 m thick embankment protected the walls of the erosion and retained the original appearance of the walls. They were covered with plastered clay mortar that was covered, in a second phase, with a greenish clay that became powder afterwards.



Fig. 34

The *Praetorium*.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 99 – 100.

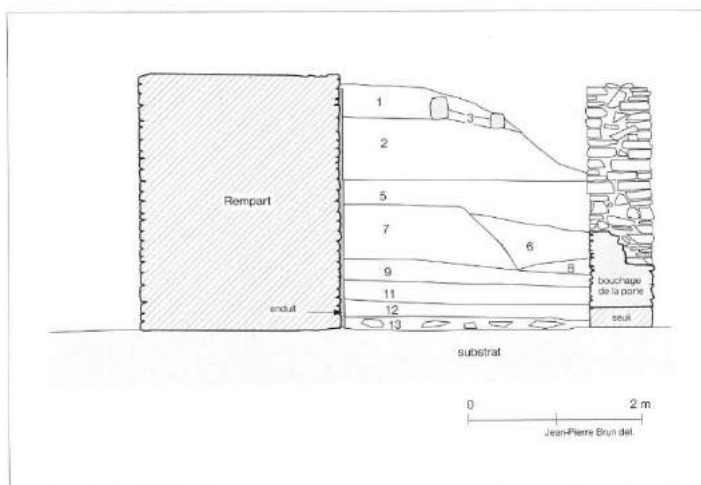
¹ For the definition of the term, cf. Evan, E. 1994: 159 – 161; Smith, W. 1872; Murphy – O’connor, J. 2008: 23.

The floor was located below that of the surrounding parts and it can be reached walking. This part revealed some faience material from the rubble. A second floor was marked by a bed of ashes and some objects, fabricated in Aswan such as (jugs, water bottles, pots and broken amphora spikes). Three soil levels succeeded the previous one and corresponded to a raising of the threshold. These soils have abundant furniture including amphorae AE3, dishes produced in the workshops of Aswan, white - bodied jugs and bottles, pots, earthenware vases and a fine Painted wall and the more significant is the presence of a clay ball bearing the imprint of a horse rider.¹

Moreover, four identical balls were found in the embankment above the soil. They could have sealed official documents received by the curator of the *hydreuma* and sent by the same person, probably the prefect of Berenice, who exchanged regular correspondences with the *curatores*.

A thick embankment was brought in a single phase above these occupation layers, but with different stone materials, gravel, amphorae, dishes and greyish earth. The top of the embankment presents very late deposits such as a quadrilateral stone (2.50 x 1.50 m) whose function remains undetermined.

The furniture of these layers is very close to that of the (B4 phase) of the dump and several ostraca are sharing files between the embankments and the detritus of this phase. In addition to the above mentioned four seals, there are two lamps, one dish, Eastern Sigillata B, one oil amphora, one Italian wine amphora. The glass is represented in two cups, two plates and one aryballos (dated between the mid-1st century and the mid-3rd century).



A



B

Fig. 35

A. Stratigraphy of the *Praetorium* site.

B. Aspects of a complimentary layer.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs.101 - 102.

¹ For Similar discoveries, cf., Sidebotham, S.E. 1996: 389, fig. 1.6.

VII. The Spa

A small bath complex existed in the northeast corner of the fort, positioned in a secondary level to the original soil. additions and anterior door enclosures are observed in the construction phases. They served in the Layouts of the system as a leveling course that passed under the south wall of the cold bath room. From this first condition, very little is known, a corner staircase allowed to climb to the ramparts and at least a barracks was located aside.

After the construction of two thermal rooms, the basin used to be entered by a small 0.68 m wide door, along the north curtain wall and it leded to a 4 x 3.15 m room containing two tubs carefully built of coated and baked bricks of lime, measuring about 1.78 x 0.68 m, of which only the northern one is quite well retained.

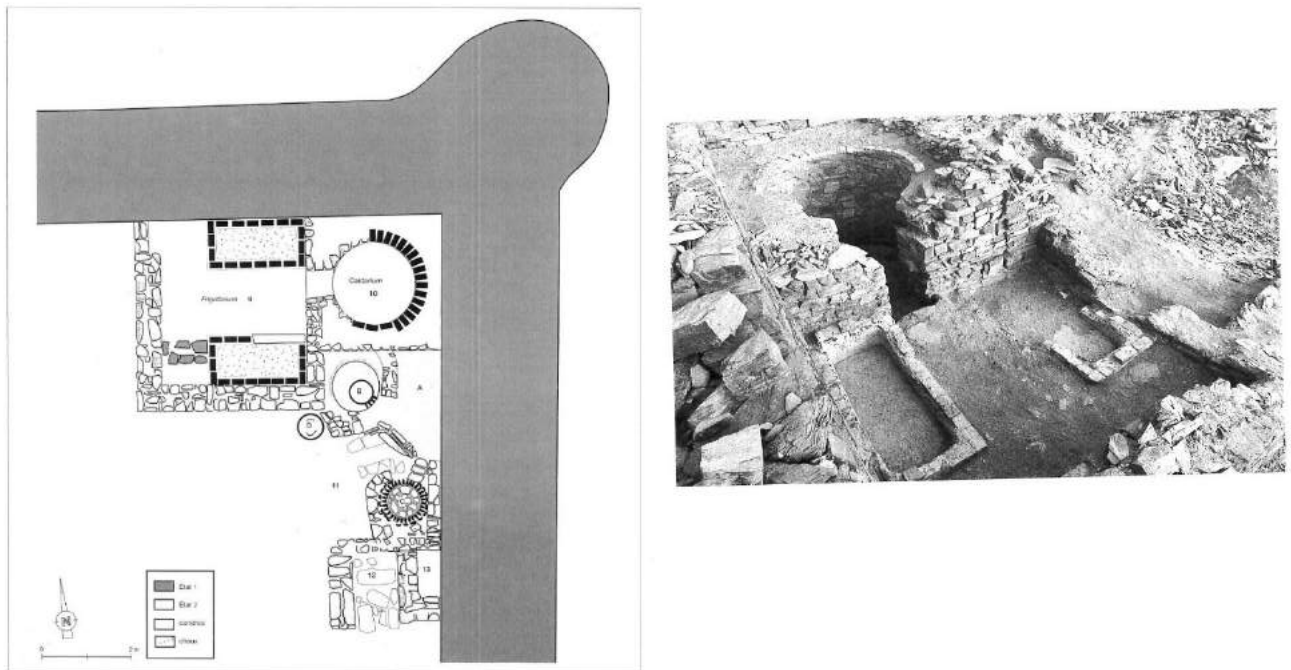


Fig. 36

A. Plan of the bath of Maximianon.

B. The basin.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 103 – 104.

The inside of the door wall reaches the height of 0.60 m while a small ocher lime coating marks the upper limit of the bath. Below, the remains of white plaster are identical to those sealing the installation of the basin. Two successive floors were observed at the base of the baths:

I. A first schist pavement that should have covered the leveling course of a wall dated back to the first phase and its soil. This pavement included few furniture of mainly fragments of an amphora AE3 and a bowl. In addition to, a layer of ash that revealed some furniture (gourd, bottle, bowl, pot and amphora AE3).

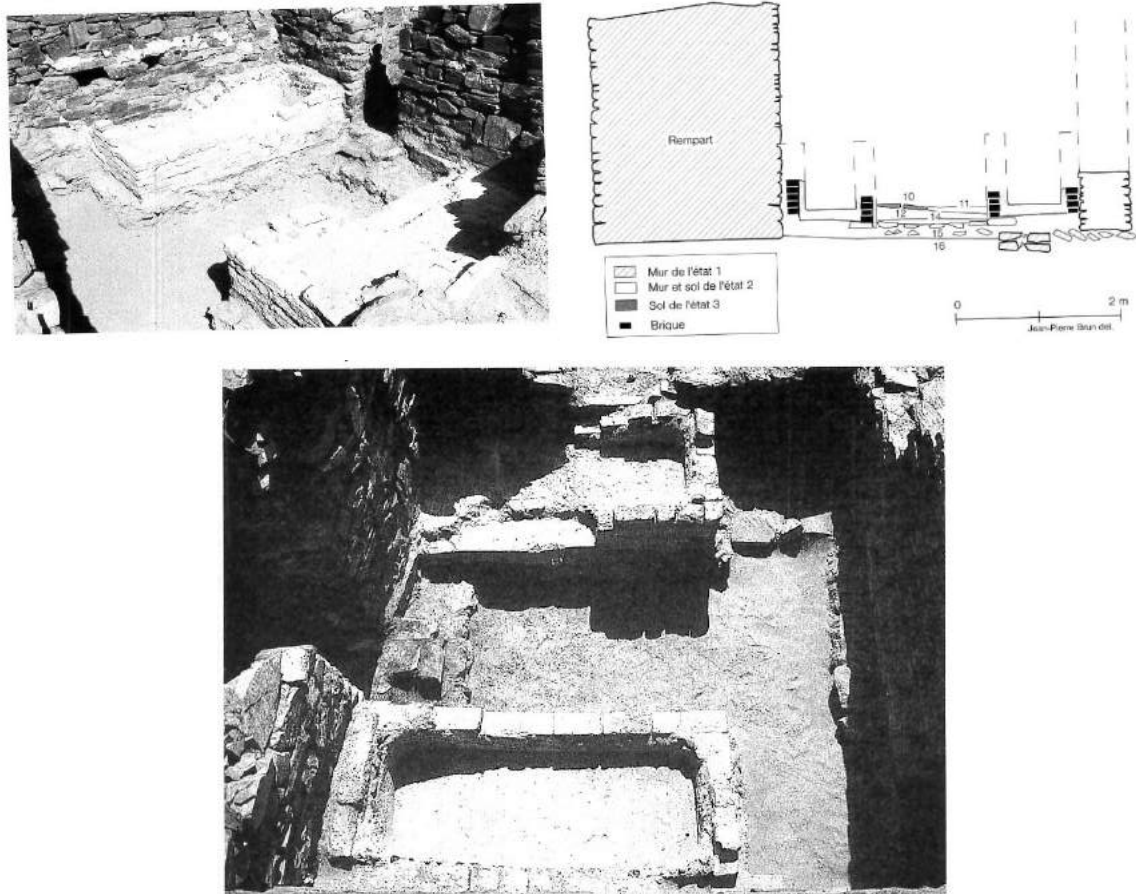


Fig. 37

A. The *Frigidarium*.

B. Stratigraphy of the bath.

C. The schist pavement.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 105 – 107.

II. The second slab was based on two levels of embankments formed of rubble and sand containing abundant furniture (10 gourdes, vases, cooking pot, Pompeian and AE3 amphorae and an apparent glass tumbler. This cold room opened on a hot circular room of about 1.80 m diameter.

This stove, built of schist, was probably surmounted by a dome of baked bricks, of which only the single lower row remains. The floor of the (hot room) is situated in its southern half, in the form of schist slabs that rested on a sterile embankment down to the substrate.

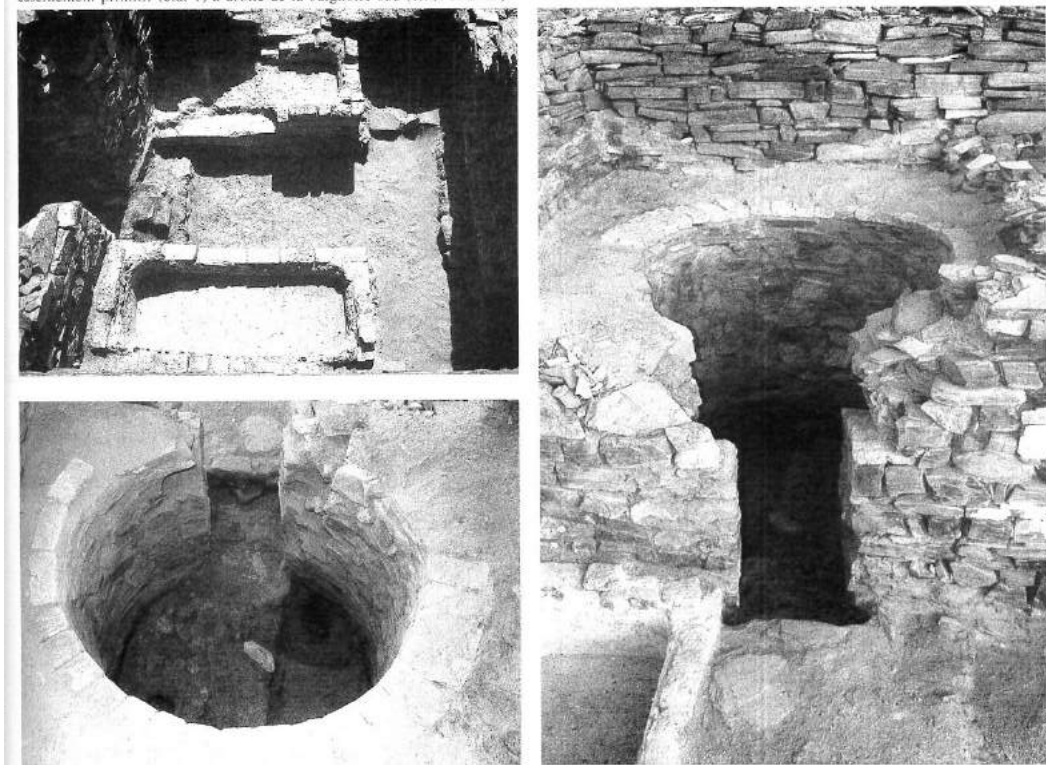


Fig. 38

The caldarium in the bath of Maximianon.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 108 – 109.

VIII. The Kitchen

The kitchen dates to the same time as the baths, although after the construction of the fort. The kitchen has an open firehouse and two adjoining ovens in one enclosure wall, different than the one of the thermal room. Their internal facing is formed as fragments of amphorae bottoms and carefully stacked loops. The thermal room dates to a second transformed short phase, it was established using fragments of jar and amphora bottoms.

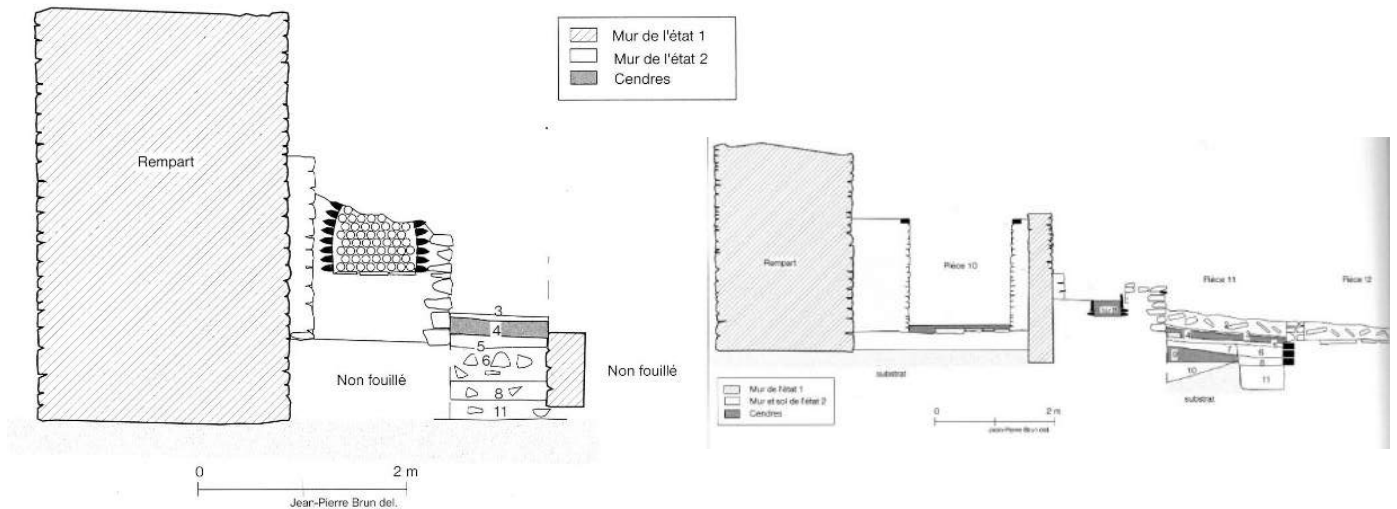


Fig. 39

Plan of the kitchen.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 110 – 111.

Initially, before the allocation of this sector in the kitchen, it seems that an earth floor existed crossed by a perpendicular gutter towards the enclosure wall. The construction of the thermal room, the firehouse and the oven had partially destroyed the gutter and formed a layer of ash. The open firehouse was limited to the west by a bench made of schist slabs, while the thermal room had been destroyed by a late refectory.

Fig. 40

The fireplace and the thermal room

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Figs. 112.



It presents a diameter of about 1 m, with a fifteen centimeters' crown of amphorae bottoms around the masonry. A jar hole, of which base measures 0.36 m in diameter, is filed immediately southwest of the thermal room. The thermal room area was backfilled with stones after a period of use and a new layer of ash produced by the firehouse and the oven that was accumulated on the floor. The oven is particularly well preserved on the ash layer, with a diameter of 0.75 m. It represents a schist paved hearth whose elevation is made of tips of amphorae AE3, carefully recut and assembled in successive crowns.

The furniture of this phase includes AE3 amphorae bottoms, vases and a handle of amphorae probably originated from Paphos (Cyprus).



Fig. 41

The oven before and after the French excavation clearance.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 113 – 114.

The upper part collapsed, but the height of the oven till about 0.80 m can be restored. There had to be a large opening at the dome for firing and flat bread plating. A new soil was then laid out at the base of the ovens and the firehouse. Two depressions were built at the same time as the thermal room, one of these depressions may have been used as tightening or silo, but it was quickly filled by an embankment, while the second depression represents a schist paving.

During the using phase, the space between the furnaces and the firehouse has gradually filled with alternate beds of earth and ash until it reached the level of the firehouse. The furniture of these layers includes fifty amphorae bottoms, a handle of an amphora of Cilicia, a bottle and three gourds resized as cooking pots. In the final phase, the firehouse was filled with ash and detritus (burnt bones, sherds) and the oven was reduced.

The function of this set of houses is not clear, however, the presence of burnt bones, numerous pots, a jar and a stone mortar found in the rubble indicated that the kitchen was in that location.¹

The proximity of the thermal spot brings also to consideration the use of these firehouses to heat water and possibly to prepare the coals used to heat the hot – steam room, which is a weak hypothesis.

¹ Ovens resemble some of those found in Mons Claudianus, and they are most likely bread ovens, despite being different from those in use today, cf., Maxfield, V. and Peacock, D. 2001: 59 – 85.

The Dump and Subjacent Structures

I. Excavation Conditions

During the French excavations, the dump of Fort Maximianon was found in an excellent condition of preservation, covering an area of 625 meters with a thickness that varies from few centimeters to 1.45 m which is a volume of about 325 m³. Some clandestine excavations were carried out by diggers and reached the outskirts and the top of the deposit.

The mound shaped by the waste was protected from the flow of the wadi waters by the crumbling wall stone of the primitive constructions covered by garbage. However, perhaps a significant part of the dump was washed away by the water, to the north, the west and the south of the dump.



A



B

Fig. 42

The dump before and during the excavations.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 115 – 116.

II. Nature of Sediments

- The wadi alluvium form the substrate on which buildings have been erected.
- Colluvium are two levels: the ruins of the primitive constructions and surface.
- The levels related to the buildings include ground floor with small houses, occupation layers and layers of collapsed walls.
- The layers of discharges are formed of a mixture of gravel, schist and straw, containing all kinds of organic waste such as the date stones. It seems that it deals with sweepings gathered in the barracks of the fort or even in stables.
- The violent wind blowing frequently in this sector should have accumulated the straw used for horses that had to be sheltered in the *hydreuma* in the corners.
- Periodically, the *hydreuma* should have been cleaned partially or completely to pick up the straw and the gravel soil (wadi alluvium).

Next to this characteristic mixture of straw and gravel, especially at the beginning of the formation of the dump, pure gravel layers and later strata of pure straw were found.



Fig. 43

The sediment features of the dump (straw and shells).

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: Fig. 121.

- Ash deposits, of which the most characteristic is formed of pure ashes (often packed with water), contain amphora handles and flush tip pruned to enter the furnace construction. These various layers are frequently interrupted by deposits of amphorae, sometimes meles with little fragmented dishes.

- During the major cleanings, massive releases of amphorae should have been discarded after the consumption of wine. These layers are sometimes in the form of thin and slightly extended lenses which correspond to primitive waste.

- There are also levels of a certain thickness which extend over several square meters; in some cases, the layers are more thick than 10 centimeters and cover 100 square meters.

It cannot be a spontaneous thrown garbage, but rather concerted actions, probably at major cleanings ordered by the military hierarchy.



A



B

Fig. 44

A. ash layers in the dump.

B. stratigraphy layers in the dump of Maximianon.

C. Layers in the dump of Maximianon.

after, Adam, J. P., Brun, J. P. and Redde, M. 2006, figs. 145, 122, 123.



C

Analysis of the stratigraphy indicated three phases:

Phase (A) includes the construction, occupation and destruction of primitive buildings.

Phase (B) corresponds to the formation of the dump during the occupation of Maximianon.

Phase (C) marks stabilizing the mound by forming a protective layer of windblown sand and colluvium.

III. Phases of the *hydreuma*

Phase A

Three assumptions should be examined to interpret the Phase (A) constructions:

- The buildings predate the *hydreuma*.
- They correspond to contemporary provisional buildings of the construction of the *hydreuma*.
- Their use was contemporary with the *hydreuma*, considering that they were largely dismantled and the stones of their walls were largely recovered. Therefore, they were used as a quarry.

As they have not been totally destroyed, some of these buildings can be assumed to have existed prior to the construction phase of the *hydreuma*. Thus, they should have been used as temporary housing and were not demolished in the final phase of the construction of the fort.

The virtual absence of stratigraphy on habitat soil and the disappearance of a dump do not allow giving a precise date to the construction of buildings corresponding to the Phase A.

This phase has not delivered: Italian sigillée ceramic (yet present in Quseir al -Qadîm, Laqîta and Bir Umm Fawakhir), one glass bowl, one Hellenistic horn - formed fragmented lamp and one Eastern Sigillata A plate were found in a residual position in the deposits of Phase B. These objects and a small Ptolemaic bronze (1st century BC.), found on the surface of the dump, were probably brought to the site during Phase (A).

Fig. 45

A small Ptolemaic bronze (1st century BC.)

found in the dump.

after, Adam, J. P., Brun, J. P. and Redde, M. 2006: 173,
fig. 134.



The testimony of coins is more uncertain as they may have circulated for a long time before being lost. Therefore, there is no objection to a relatively old dating to the early first century. AD. if not the extreme rarity of the remaining furniture attributable to that period.

The free space to the south could correspond to a central courtyard as it is also possible that this is an unfortified police station similar to the one of Wadi Hammamat. It should be mentioned that these buildings were used for a long period before making alterations (phases A2-A3).

All rubbish dumps are dated to the period after the collapse of the original buildings, which had to occur several years after the abandonment.

In determining the precise date of the phase, the critical arguments are:

- These barracks might have been used as camp then quarry, during the construction of the *hydreuma*,
- The gap between the end of the first use of these buildings and the construction of the fort.
- The waste management and the development of the waste accumulated several years in the fort or close to the door (in comparison with Krokodilo).

The construction of the fort is hardly datable; besides, the dating elements are rare about the abandonment of Phase A.

Two coins of Nero were found on soil; this means that the occupation layers at the earliest phase were contemporary to his reign; they form a part of an abundant issue and they could move some time before being lost.

The ceramics found in habitat or destruction levels are very close to (Phase B) of the dump of which the production period is very long such as:

AE3 amphorae of Thebes,

jugs of Aswan, bottles and jugs of Coptos, ceramic culinary pots and faience from Alexandria,

Only glass vases (goblets) have a well-known chronology as they prove that the last building occupancy levels are datable to the second half of the 1st century AD.

ceramic suggests that the current *hydreuma* succeeded immediately the first establishment, but it is well - known that the Egyptian town ceramic evolved slowly, so that the site could remain vacant for years, without the dishes of the new occupancy became different from that of the ancients.

Therefore, it is not determined if al-Zarqa remained desert between the end of the occupation of these buildings and the construction of the new *hydreuma* as the layers of colluvium and collapse suggest. Sometimes they could have been elapsed before the release of garbage of the Presidium could protect the ruins from the bad weather.

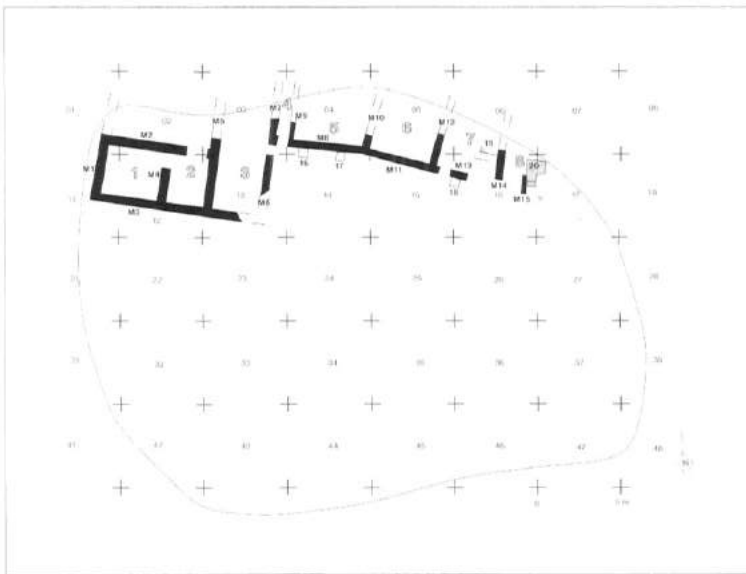
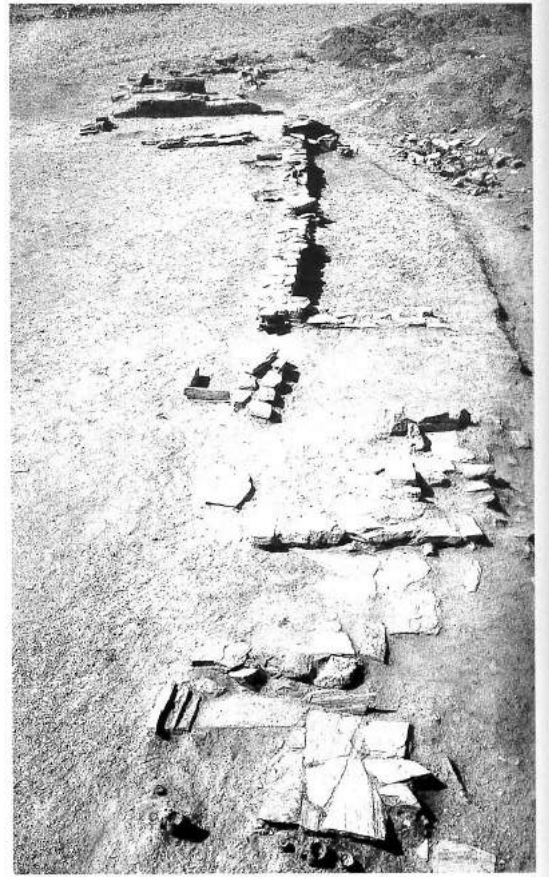


Fig. 46

Ruins of Phase (A)

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 125 – 127.

Phase B (The Dump)

During this phase, the dump, consisted of 108 stratigraphy layers, was formed. The French team grouped these levels into five chronological phases that follow one another without interruption due to the intelligibility of the presentation.

This division is based on the observation of the stratigraphy and the layers of groups authorized by the "records" of contemporary ostraca.

Chronologically, the last layers of a phase are closer to the first layers of the next phase than the oldest layers of the phase to which they were attached.

Within each phase, there are a series of acquisitions of rubbish, ashes and layers of amphorae that allow the subdivision of the main phases, but the time value of these subdivisions is weak because these deposits were accumulated in the reduced period, and would require many dated ostraca to give them any value, which is not the case.¹

Interpretation of the Phase B

Phase B 1

This phase contains levels of gravel, straw and rarely ash, limited in extent and thickness. It may have been deposited in the last quarter of the 1st century.

During the reign of Trajan, towards the end of (Phase B1), garbage was deposited on the mound formed by the ruins of (Phase A). The exact extent of these deposits to the north is unknown as much sediment has been washed.

Phase B2

The layers' alternation was resumed, sometimes interrupted by deposits of amphora, some gravel, straw or ash layers. this phase is probably dated to the reign of Hadrian.

Phase B3

The B3 phase is marked by thick layers of ash that appear in stratigraphy, most probably rejected by the ash produced of the baths, in addition to some earlier ash layers that may come from the kitchen.

The excavations of the baths have shown that their construction was in a successive period to the rest of the *hydreuma*, since some walls of the bathtubs pass on the earlier leveled barracks' walls. It seems likely that this phase is attributed to the reign of Hadrian and the beginning of that of Antonius Pius.

¹ For the stratigraphy of the French excavation team cf., Brun, J. P. and Redde, M. 2006: (Fig. 117-119 and 123).

Phase B4

Complete layers of phase (B4) disappeared and there are often thick homogeneous levels (about 20 cm), spread over a large area.

It seems that the garbage management system changed, frequent cleaning for the barracks and thermal baths should have occurred, sometimes completed by extensive household that would have been succeeded in realizing big regular cleaning, perhaps at the time of the shifts.

Phase B4 is synchronous with the filling of the southeast part of the *praetorium* with many ostraca of which fragments were found. It is probably that the ultimate developments were conducted in the baths during the phase B4 such as the embankment of the last soil of the *frigidarium* including ostraca file belonging to "coxa " that was found within the layers of (B4b Phase). It seems possible to date this phase to the third quarter of the 2nd century AD.

Phase B5

This phase is characterized by large deposits of pure straw, ash and pottery. It seems to cover the late 2nd and probably the beginning of the 3rd century AD.



Fig. 47

The dump of the Paraesidium (Phase B).

After, photography of the researcher.

See also, Adam, J. P., Brun, J. P. and Redde, M. 2006: figs. 138 – 147.

Phase C (Colluviation)

The surface of the dumb was covered with a uniform layer of windblown sand, mixed with ash, some rotten straw and many ceramics, damaged by rain and frost. This stratum is not the result of human action, but the work of the natural elements on the surface of the dump.

The rain and wind blown sand washed away the upper layers and destroyed the organic matter therefore, the combined action of the two formed accumulations on the lower slopes and the hollow which do not appear to have received garbage dumps and have delivered only worn potsherds carried by the water.

The dating elements are identical to those of the rest of the dumb such as: one plate in Eastern Sigillata B, a handle of Gallic amphora, one bottle, two cups, three goblet, two aryballoi, two balsamarium in addition to two coins, one of Nero (10th year of reign) and one of Otho or Vitellius that did not provide additional chronological information.

The Cemetery

An alluvial formed hill stands at about hundred meters to the northeast of the *hydreuma*, scoured then by floods. This part served as a cemetery in which fourteen oriented east-west burial graves, were located. The cemetery had been looted, there remained a tibia and a femur, which had retained some of its stone. The excavations in the cemetery have revealed some animal bones and a small mummified bird wrapped in linen.



Fig. 48

The cemetery of Maximianon.

After, Adam, J. P., Brun, J. P. and Redde, M. 2006: fig. 148.

Ceramics of Al-Zarqa “Maximianon”

Amphorae were found in all layers, sometimes roughly clustered that reflects general cleanings of the *hydreuma* or massive releases after the festivities. The site has delivered a total of 4018 amphorae, of which only those related to B4 and B5 are datable to the second half of the 2nd century or the beginning of the 3rd century AD.¹

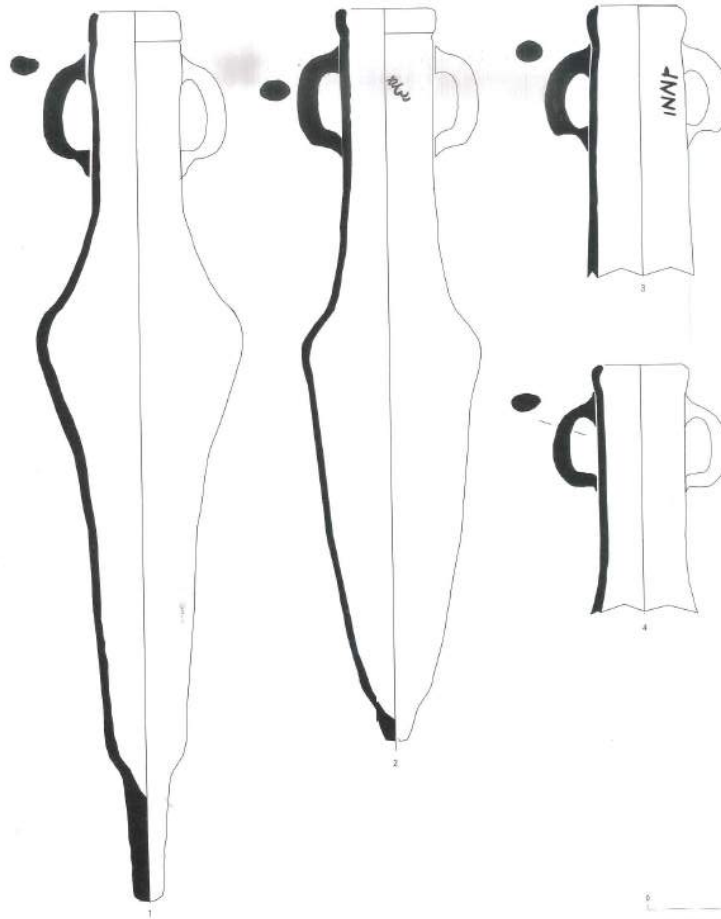


Fig. 49

alluvial paste amphorae models.

after, Brun, J.P. 2007: 520, fig. 16 (1 - 4).

¹ Brun, J. P. 2007: 517 ff.; for more about the ceramics of Al-Zarqa cf., Brun, J-P. 1994: 7 – 26; inscribed ceramics from Al-Zarqa, cf., Bülow – Jacobsen, A. et. al. 1994: 27 – 42.

The Egyptian products formed 99% of the ceramic discoveries in Al – Zarqa which is represented in:

I- Four amphorae of Egyptian origin.

II- Four copies of Aswan amphorae (probably residual).

In addition to, fourteen amphorae from other provinces:

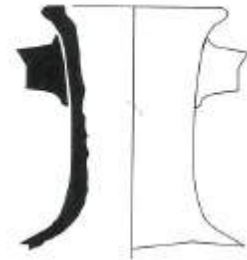
I- One, probably residual, Italian Amphora.

II- Flat bottom little Amphorae, probably Campanian of the “Le Formiche” type.

Fig. 50

“Le Formiche” type.

After, Brun, J.P. 2007: fig. 8.4.



III- Two examples of Amphorae from Laodicea (Latakia).

IV- One example of Cretan amphorae.

V- One example of Gaulish amphorae.

VI- One example of Knidian Amphorae.

VII- One example with a figure on the handle of Ephesus.

Besides, few oil containers can be added to these wine amphorae:

VIII- One example of Tripolitanian amphorae.

IX- African amphora.

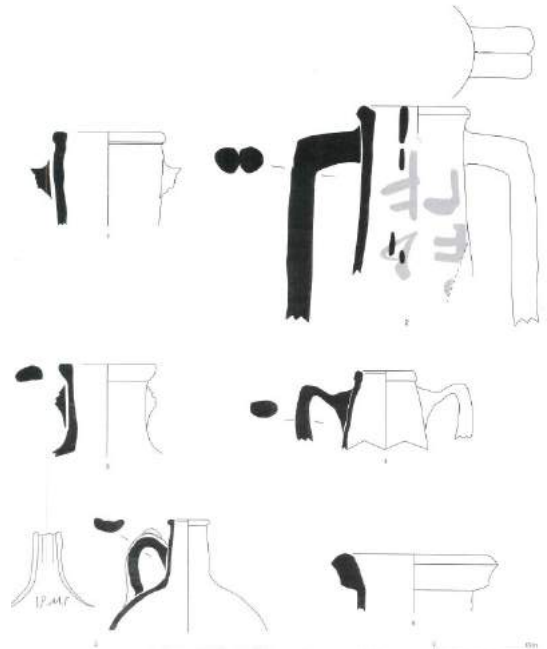


Fig. 51

amphorae of Egyptian origin, after, Brun, J. P. 2007: 521, (fig. 17.1).

Imported Amphorae from Maximianon. after, Brun, J. P. 2007: 521, fig. 17 (2 - 6).

1.4.6. Bir Fawakhir (Persou I)

Geographical Location

The Bir Umm Fawakhir (well of pottery sherds) gold mine area is in the central part of the Eastern Desert of Egypt. It occurs about 88 km west of Quseir and nearly 85 km East of Qift on the asphalt road linking the Red Sea with the Nile Valley with an average altitude of 390 m, the agglomeration of Umm Fawakhir extends at the foot of the northern flank of a hill that culminates at 536 m.¹

The centre coordinate of the Fawakhir gold mine is at the latitude of 25°59' 03" N and longitude of 33° 36' 27" E. El Fawakhir deposit is located beside Bir Um El Fawakhir. The Fawakhir area is characterized by a good exposure, hilly landscape, and above sea level elevations ranging from 400 to 1,062 m. The Wadis in the area are 100 to 500 m wide, sometimes reaching 2 or 3 km, which almost extend in the east–west direction. The climatic condition of the area is arid, dry and hot most of the year with some short torrential rains. The maximum temperature reaches 45 °C during the day time and a minimum of 12 °C at night time.²

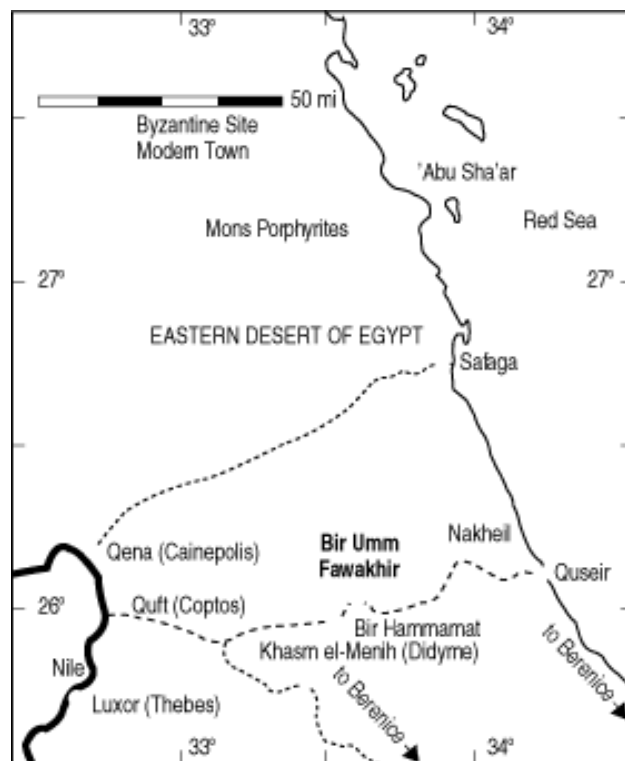


Fig. 52

Bir Umm Fawakhir.

After, Meyer, C. 1997: 64 – 68.

<http://www.tms.org/pubs/journals/jom/9703/meyer-9703.html>

¹ Brun, J.P. 2006 e : 98 – 99.

² Abou El-Magd. I et al. 2015: 3524.

General Description

Ruins of Bir Umm Fawakhir suggest that it was the most populated point along the route in antiquity. Ostraca and pottery sherds attest the intensive activities during the Roman and Byzantine periods. It was an area of extensive gold mining and granite quarrying. There is no evidence of a *hydreuma* here, but protection would have been provided by the sizeable population. The hundreds of ruined huts are generally simple walls of stacked stone c. 0.50-1.0 m high and square in plan. The ruins lay against the northern edge of the wadi. However, a small granite quarry existed at the eastern end of the village.

A primary population centre existed near the settlement in a large village along the putative Roman route. Moreover, A third population centre lay off Wadi el-Sid to the southeast. Although this is near the modern paved road, it would not have been on the Roman route. Buildings here are not as well preserved as elsewhere in Bir Umm Fawakhir area. Many other buildings occur all over the Fawakhir area, of which some are gathered in large clusters and some are single, isolated structures. In addition to, nearby buildings located at 5 km north of Bir Umm Fawakhir, in Wadi Hammamat and in Wadi Atalla, about 15 km from Bir Umm Fawakhir.¹

Bir Umm Fawakhir settlement

The Bir Umm Fawakhir settlement is composed of several structures scattered up and down several adjacent wadis. The main settlement at Bir Umm Fawakhir is not visible from the road, but after turning the spur of a hill, a visitor can walk the length of the Coptic/Byzantine town for about half km. The ruins lie in a long, narrow wadi. The steep sides enclosing the town look like a wall, while the sandy bottom serves as the main street.

Characteristic features of the Byzantine town

The Wadi bottom and some small side branches comprise the main streets of the ancient town, which are quite broad in certain points and narrow in others according to the fault-lines in the granite bedrock.

Rain is so rare; therefore, drainage was probably not a major problem for the ancient inhabitants, however, flash floods have damaged parts of several buildings subsequently.

The buildings all appear to have the same, simple style of dry-stone masonry architecture with some evidences of rebuilding and added rooms and few evidences for collapsed buildings in antiquity or built over older ones. With the potential exception of two possible community bake ovens, all of the mapped buildings appear to be domestic.

The houses are quite irregular and individually distributed; they are composed of two or three rooms with one entrance from the street, and sometimes the houses are agglomerated into larger units of which the largest mapped building has 22 rooms. Some of the houses were furnished with niches and doors and some units were

¹ Zitterkopf, R.E. and Sidebotham, S.E. 1989: 177 – 178.

outbuildings such as storage room, kitchens, workrooms, latrines or animal shelters besides, some units that were positioned on a slope overlooking the main settlement and a path over the ridge, functioned possibly as watch posts.

The first survey of the Oriental Institute mapping project identified:

30 – 35 buildings are houses.

31 – 32 are large agglomerated houses.

37 – 38 are outbuildings.

The plaza is one of the clear aspects of the town which is an open sandy space onto which opened several houses grouped together. Moreover, the compound or the grouping of houses is a phenomenon that can be detected in different points of the town mapping project.¹

Stone masonry was the main building material, with no evidence of mortar or plastering, most of the building stones are granite cobbles (now badly weathered) or felsite chunks.

The walls are built with neat inner and outer faces, between which the space was filled with smaller stones (felsite) and sometimes with potsherds.

The walls are rough enough to prevent the possibility of measuring their widths precisely, but they are generally 0.5 m thick.

In the settlement of Fawakhir, there is no evidence of expansion that can prove a long-term occupation, a fact that suggests a short-lived community. However, courtyards and work. Spaces are common features in the Middle Eastern architecture, few rooms can be identified as possible courtyards at Bir Umm Fawakhir that can be proved through the circulation pattern, areas too large to be roofed easily and perhaps they had wider doorways. One house may still stand to its original height of about 2 m, and two houses with associated silos still exist. The silos, built of cobbles and thick mud plaster, are interesting because such features have not been detected elsewhere on the site and because their association with individual houses does not suggest central control of grain rations.

Particularly striking is the lack of any formal defences, which is surprising for a gold-producing site in a desert where security was often a concern. Only a couple of guard posts have been found on high ridges overlooking the site. The more prominent guard post lacks any formal structures beyond few rough walls for shade or windbreaks. It is marked by ancient graffiti scratched on granite boulders and commands a view of all three roads leading to the wells, many of the mines, and much of the settlement.

¹ Meyer, C. 1995 a: 211.

Several cemetery areas have also been identified on the ridges around the town. The graves are simple cists built of granite slabs or natural clefts in the granite with cairns piled on top. The graves found so far are small and thoroughly looted, but the pottery scattered around them indicates that they are of the same period as the main settlement. The Romans had a high living standard also in the most remote quarry sites of the Eastern Desert, the settlement buildings are reduced to a few basements of huts made up in stacked stone cobblestone and small boulders of the local granite.¹



Fig. 53

The main settlement of Bir Umm Fawakhir, with general view of the central area and remains of a hand mill and a mortar made of the local granite.

After, Coli, M. and Baldi, M. 2013: 17, fig. 8.

¹ Van der Veen, M. 1997: 6 – 7; Meyer C. et al. 2003: 13 – 53.

Apart from the sherds, which are thick on the ground and used as the primary dating evidence, surface finds are sparse. In particular, no written evidence has yet been recovered from the site aside from the dipinti, which are dockets painted in red on the shoulders of wine jars. Written in a cursive Greek hand and highly fragmentary, the dipinti have so far yielded little information beyond showing the presence of an imported luxury wine at a remote site.

Crosses and other Coptic symbols indicate that the population was Christian, but no church has been located. Likewise, no administrative buildings, storehouses, or workshops have been found, although there are some reasons to believe they existed closer to the modern road, where the wadi wash is heaviest.¹



Fig. 54

Christian symbols from Bir Umm Fawakhir Settlement.

After, Meyer, C. 1995: 217, fig. 13.

¹ Meyer, C. 1995 a: 215.

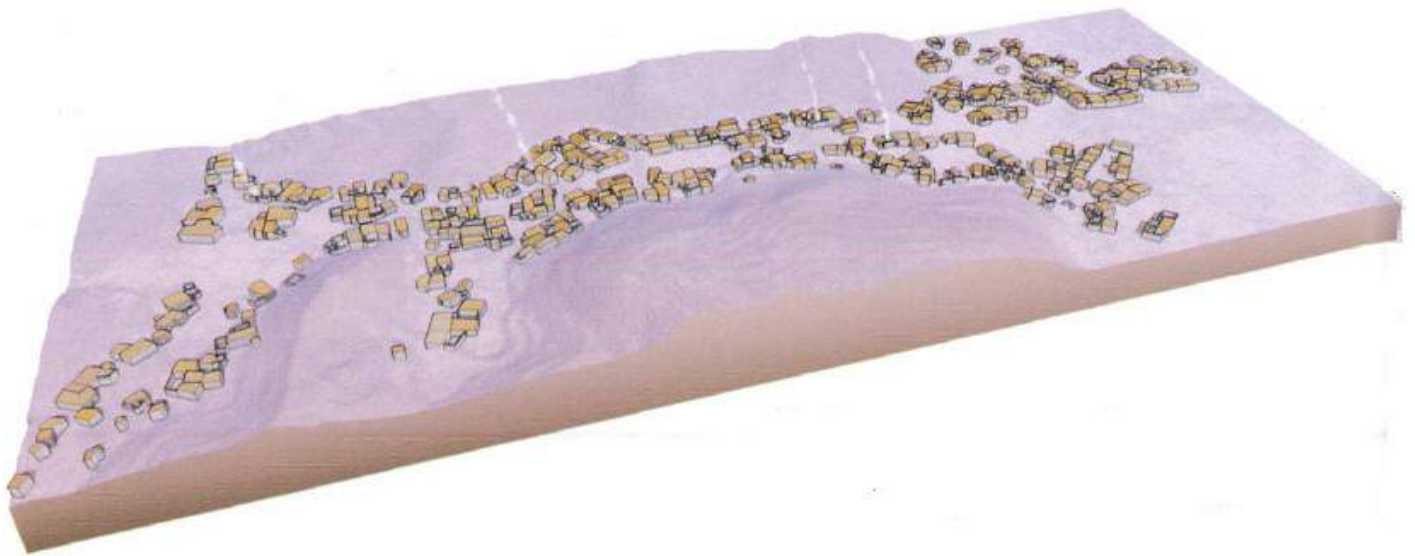


Fig. 55

Reconstruction of the Roman / Byzantine gold mining settlement at Bir Umm Fawakhir.

After, Sidebotham, S. E. 2008: pl. 10.1.

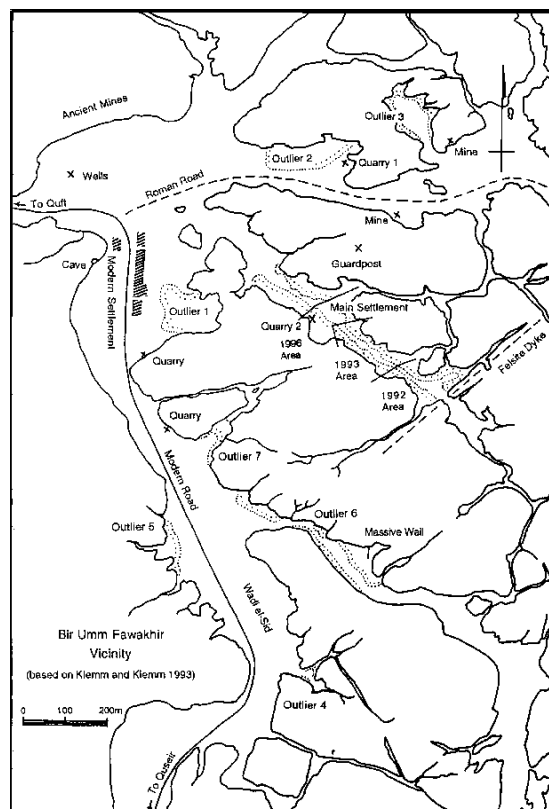


Fig. 56

Map of the Bir Umm Fawakhir vicinity showing the outlying areas and quarries.

After, Meyer, C. 1997: 64-68, fig. 3.



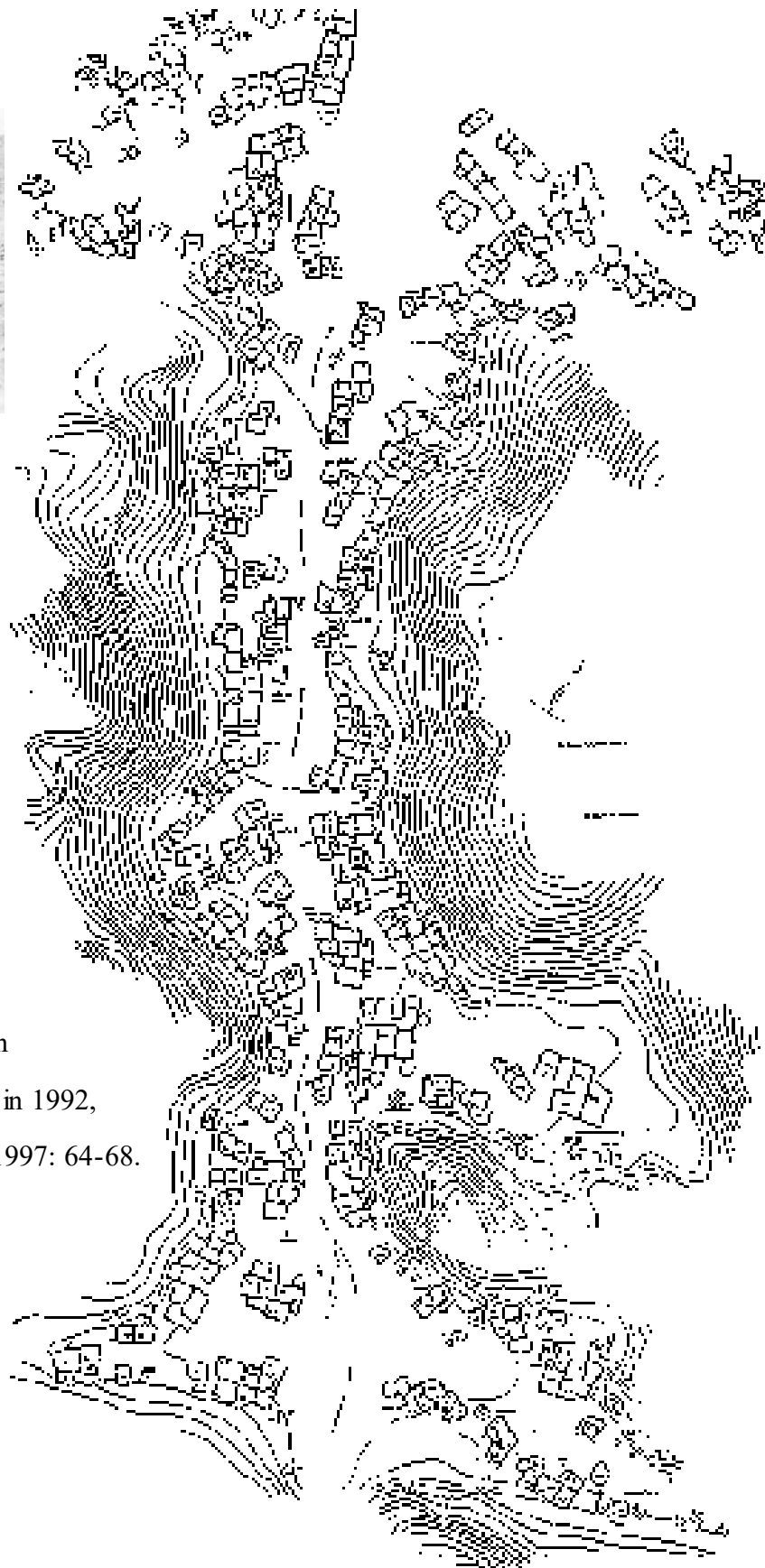
Fig. 57

View of Bir Umm Fawakhir main settlement.

After, Meyer, C. 1997: fig. 2.

Fig. 58

A map of Bir Umm Fawakhir main settlement showing areas mapped in 1992, 1993 and 1996. After, Meyer, C. 1997: 64-68.



Detailed account of Bir Fawakhir settlement

The area of Bir Umm Fawakhir was a subject of archaeological surveys in the last 20 years to underline the nature and type of gold mines and workers' settlement. In addition to the detailed mapping of the main settlement, outlying clusters of simultaneous ruins have been identified.

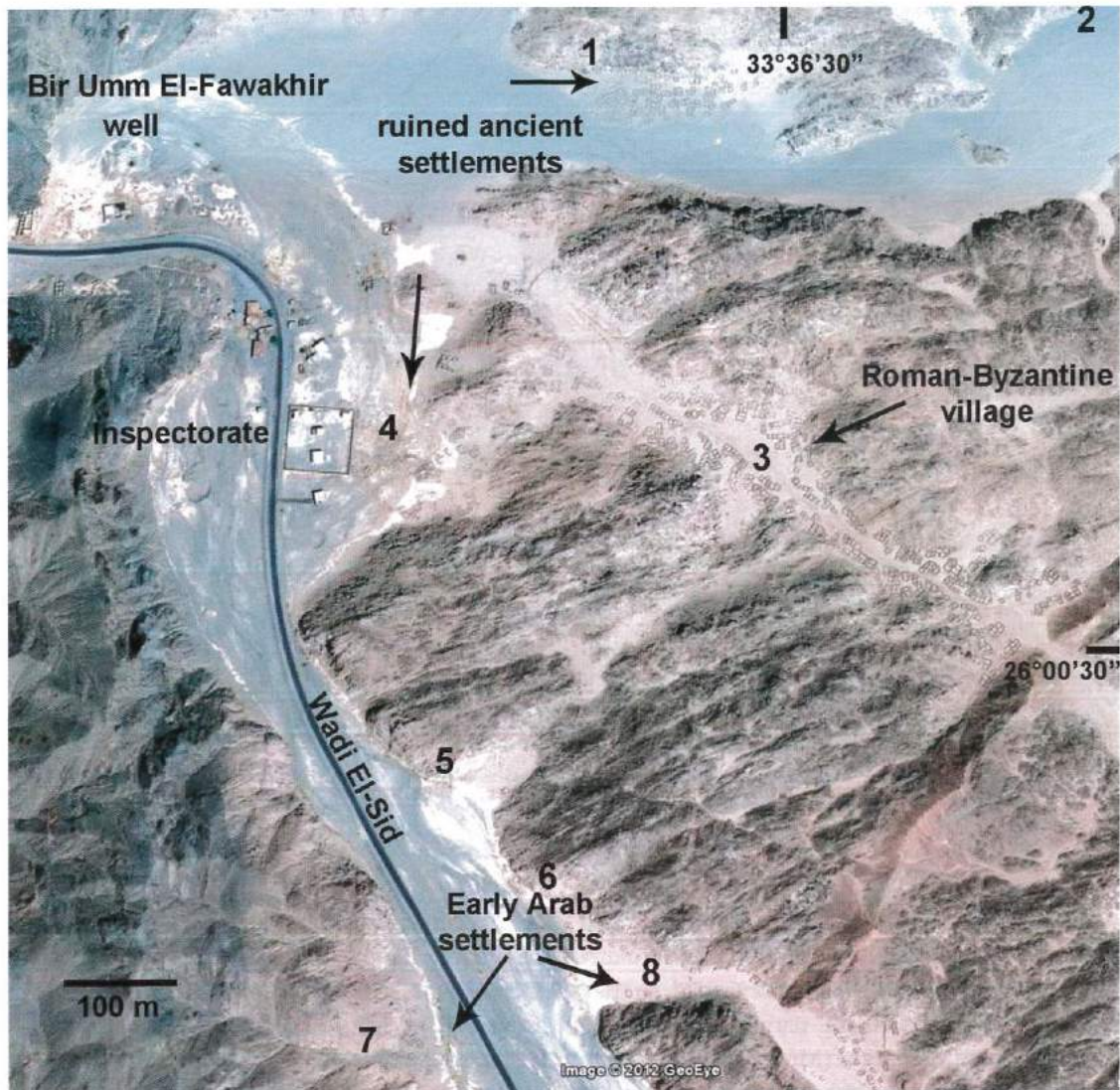


Fig. 59

Bir Umm Fawakhir Region (Google Earth Image).

After, Klemm, D. Klemm, R. 2013: 137, fig. 5.82.

Site 1:

A large site containing partly well preserved two - roomed rectangular houses with repeated occurrences of badly damaged single – roomed round huts. The houses are detached however, in some cases they had been joined together to form alignments. Outside the well preserved walls, some cooking places and stoves can be recognized, the pottery consists of many dark grooved amphora and simple unpainted sherds dating to the late Roman – Byzantine period.

Excavations did not reveal any mining tools that may indicate that the settlement had links with the bordering granite stone quarry which according to the recorded tool marks and two unfinished columns was still functioning during the Roman Empire. Moreover, the rock from the quarry has been identified among the building material used in Rome.¹

Site 2

A vast settlement of round – shaped huts near the edges of the valley bed, in a hidden point in the mountains located to the north east of site (1) indicated on the map. The site is composed of about 12 houses, located immediately behind the access way leading to the wide valley basin, where another 60 – 70 buildings are found. The huts are built from local granite and in spite of the rocks' round shapes, the walls are preserved in heights around 1.60 m that should have participated in protecting the site. The site seems to be used as a dwelling residence as no mining tools were found during the excavations. Within the site, small fragments of blue faience, large amounts of partly intact pottery from amphora and dark red slip ware with black lines dating mostly to the late Roman – Byzantine Period. ²

Fig. 60

A residence compound near the Roman granite quarries.

After, Klemm D. and Klemm, R. 2013: 139, fig. 5.84.



Site 3

In a narrow wadi about 250 m in a straight-line S of locations 1 and 2, lies the largest settlement within the district. The site consists of approximately 300, partly multi – chambered houses distributed on either side of the North west – South East oriented Wadi. The Wadi displays an aplite dike at its near end. Inside the settlement, several large rubble and pottery heaps pile up between the house walls and the slope. A cursory inspection revealed that the main pottery assemblage consisted of a dark red

¹ For more about the usage of Bir Umm Fawakhir rocks in Rome cf, Gnoli, R. 1988.

² Klemm, D. and Klemm, R. 2013:138.

slip ware with fine grooves and small handles, partly decorated with black botches and very light – colored amphora and dishes with almost white slips. According to the assemblage, the settlement can be dated to the Late Roman Period and according to the ostrakon from Fawakhir, it could be dated to the period between the first and the second century A.D. ¹

The site shows some evidences of mining activities, small heaps containing quartz ore lumps were observed and in some huts, there were the small, six – sided stone anvils from the early Arab period. Moreover, there were some intact round mills as well as apron – shaped runner stones from the Ptolemaic period.

Fig. 61

The largest and the best-preserved settlement in the Bir Umm Fawakhir district.

After, Klemm D. and Klemm, R. 2013: 138, fig. 5.83.



Site 4

The site contains the remains of approximately 150 huts dispersed in a loose arrangement, clay stoves and recent sweepings characterize the site.

According to the indications on Turin map, the shrine of Amun must have been located somewhere within this area. Along the bordering mountain façade to the south, one can make out dome – like niches with wall foundations in the foreground.²

Fig. 62

Circular hearth with clay mortar in the settlement.

After, Klemm, D. and Klemm, R. 2013:140, Fig. 5.85.



¹ Gueraud, O. 1942: 141 – 196.

² Klemm, D. and Klemm, R. 2013: 138 – 139.

Site 5 – 6

Remains of rounded house ruins are located to the east of the Wadi El – Sid which can be dated according to the round mills and cubic anvils, to the early Arabic Period. Besides, the site is in a damaged condition due to the location next to the asphalt road in Wadi El - Sid. The settlement area originally spread over the entire Wadi before the central area was destroyed by the construction of the modern road. The new road replaces the old one leading along site 1 and 2 eastward to the Red Sea from Bir Umm Fawakhir.

Site 7

A well – preserved site composed of round huts and located to the west of Wadi el – Sid and the asphalt road.



Fig. 63

Western part of the settlement (Early Arab Period).

After, Klemm, D. and Klemm, R. 2013: 141, fig. 5.86.

Site 8

A better-preserved site consisting of huts, this site is located in a more remote area in an eastern side wadi.

Site 9

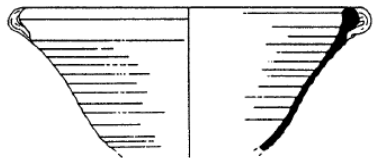
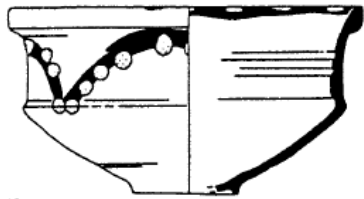
The site denotes several early Arab huts clustering around two small trial mines near the mountains as well as three larger house ruins in the Wadi bed.¹

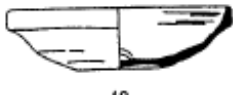
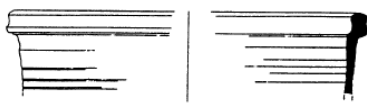
¹ Klemm, D. and Klemm, R. 2013: 139 – 140.

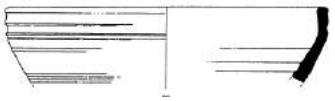
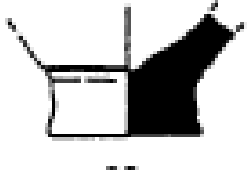
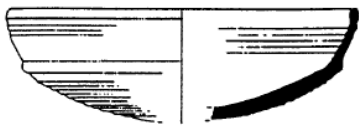
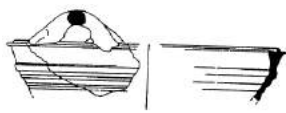
Archaeological survey of Bir Umm Fawakhir

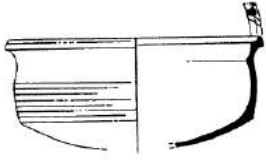
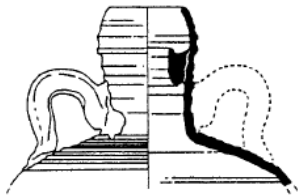
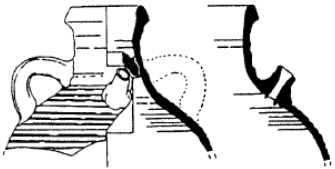
Pottery of Bir Umm Fawakhir

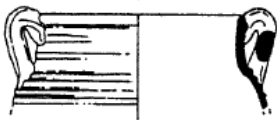
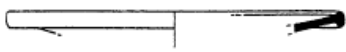
The pottery of Bir Umm Fawakhir discovered during the excavations of the Oriental Institute season (1992 - 1993).

Type	Bowl	
Total quantity	25	
Example	Description	Bibliography
	Large bowl with carinated shoulder, knobbed rim, rounded base and handle. The bowl is decorated with prominent wheel ridges on body. Color Surfaces: 5 YR 6/4 and 10R 5/6 slip on exterior and interior. Material Silt fabric Sand Grog added as temper Date Uncertain, however the decoration was common during the period between 5th – 7th century A.D.	Meyer, C. et al. 2000: 30, Fig. 55, no. 7.
	Deep bowl with carinated midsection and low ring base. Color: Fabric is reddish brown with black – rim band (worn off on exterior) and black swags on the upper exterior. White splotches are painted above the black. Date: Similar examined samples are dated back to the period between the 6th and the 7th century A.D. This type is an imitation of a late Roman D vessel, which is imported from Alexandria by the end of the 6th century and the beginning of the 7th century.	Meyer, C. et al. 2000: 36, Fig. 57, No. 81.

Type	Jar	
Total quantity	12	
Example	Description	Bibliography
	Wide – mouthed Jar with ledge on rim interior. Color 10 YR 7/3 exterior. Material coarse marl. Date Unidentified.	Meyer, C. et al. 2000: 37, Fig. 57, no. 91.
Type	Cup – Goblet	
Total quantity	22	
Example	Description	Bibliography
	Shallow cup with low ring base and triangular rim. Color: 5 YR 7/4 surfaces Material Silt small burnt out chaff voids and rounded voids. Date: This fabric might have begun in the later 5th and early 6th century A.D. most probably of Aswan products.	Meyer, C. et al. 2000: 33, Fig. 56, No. 40.
	Conical cup (goblet) with groove at midsection and painted decoration. Diameter: 16 cm. Color: 5 YR 6/4 in break with 2.5 YR 5/6 slip on upper exterior. Black – painted splotches are in two rows under rim. Date Unidentified.	Meyer, C. et al. 2000: 35, Fig. 57, No. 71.
Type	Basin	
Total quantity	13	
Example	Description	Bibliography
	Large basin or vat with channeled rim and prominent striations on body. Color: Surface 2.5 YR 5/6. Material Silt	Meyer, C. et al. 2000: 34, fig. 56, No. 50.

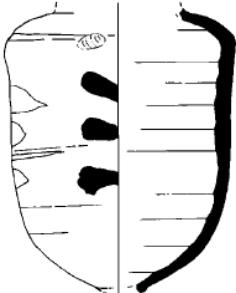
	Fabric has some medium to large – size white particles. Date Unidentified.	
	Basin with slightly carinated shoulder. Color: Reddish brown with 10 R 4/6 slip on surfaces. Date Basin can be dated to the period between the end of the 5 th to the 7 th century A.D.	Meyer, C. et al. 2000: 37, fig. 57, No. 86.
Type	Base	
Total quantity	22	
Example	Description	Bibliography
	Flat stump base of small cup or perhaps lid handle. Color: Exterior color is 10 YR 7/4. Date: Similar models can be dated back to the period between the Late first to the end of fourth or the beginning of 5 th century A.D.	Meyer, C. et al. 2000: 35, fig. 57, No. 68.
Type	Pan	
Total quantity	2	
Example	Description	Bibliography
	Pan with ridged waist and rounded base. Color: 2.5 YR 5/6 with exterior red slip. Material Silt. Date: 5 th – 6 th century A.D.	Meyer, C. et al. 2000: 34, Fig. 57, no. 58.
Type	Casserole	
Total quantity	10	
Example	Description	Bibliography
	Casserole with horizontal handle and corrugated side. Diameter: about 28 cm at rim. color: Surface 10 YR 7/4. Date: Beginning of the 5 th century A.D.	Meyer, C. et al. 2000: 31, Fig. 55, No. 19.

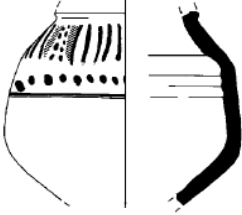
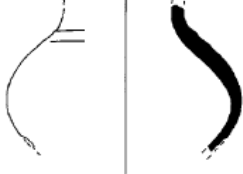
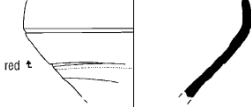
	Casserole with slightly everted ledge rim with black and white spots painted atop it. Color: Thin red core and 10 R 5/6 exterior. Material Silt Some white bits are visible in break. Date: 4th – 5th c. A.D.	Meyer, C. et al. 2000: 36, Fig. 57, no. 82.
Type	Sherd	
Total quantity	3	
Example	Description	Bibliography
	Stamped sherd with low ring base. Decorated with a design of four-leaf clover (cross) with short dashes which is a part of the outline. Color: 5 YR 7/4 with 2.5 YR 6/8 slip on exterior and interior. Material A few grog bits and dark particles are visible in break. Date: Unidentified.	Meyer, C. et al. 2000: 33, fig. 56, No. 42.
Type	Flask	
Total quantity	4	
Example	Description	Bibliography
	Flask with handle. Color Surfaces 10 YR 7/3. Material Marl. Medium amount of sand temper. Ridges are on exterior surface. Date probably between the 5th and the 6th century A.D.	Meyer, C. et al. 2000: 39, fig. 58, No. 112.
	Flask with spout, neck strainer and handle. Color Surfaces 10 YR 6/3. Material Marl Much sand is visible in break numerous ridges are in shoulder area.	Meyer, C. et al. 2000: 39, fig. 58, No. 113.

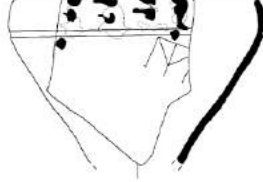
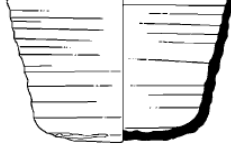
	Date Similar examples are dated to the second half of the 3 rd century A.D.	
Type	Cooking pot	
Total quantity	3	
Example	Description	Bibliography
	Cooking pot with prominent ribbing on body below shoulder. Color: Interior color is 5 YR 6/4 with 10 R 4/6 exterior slip. Material Some small white bits were seen in break. Date Unidentified.	Meyer, C. et al. 2000: 38, fig. 58, No. 105.
Type	Plate	
Total quantity	1	
Example	Description	Bibliography
	Plate with knobbed rim. Rim Diameter: 22-26 cm. Color: 10 R 6/6 in break and exterior with semi – lustrous. 10 R 5/8 slip on interior and rim exterior. Material Fabric is compact with small white and dark particles. Date Similar examples can be dated to 580 – 600 A.D.	Meyer, C. et al. 2000: 40, fig. 58, No. 120.
Type	Unidentified	
Total quantity	1	
Example	Description	Bibliography
	Bowl or cup with small flange at midsection, rim and base are not preserved. Color: 5 YR 7/4 with 2.5 YR 5/4 slip on upper exterior. Date Unidentified.	Meyer, C. et al. 2000: 36, No. 76.

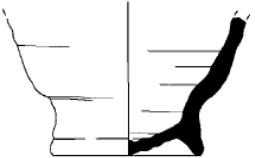
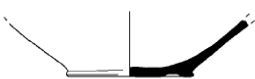
The pottery of Bir Umm Fawakhir discovered during the excavations of the Oriental Institute season (1996 - 1997).

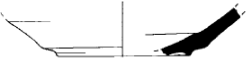
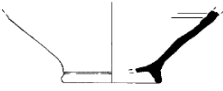
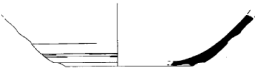
Type	Bowl	
Total quantity	51	
Example	Description	Bibliography
	Large deep bowl with handles. Color: Red – brown Material Silt Date: Similar forms are found and could be dated back to the period between the late 5th – 7th century A.D.	Meyer, C. et al. 2011: 116, no. 87.
	Large bowl Color: Bright orangey fabric 2.5 YR 5/6 Red slip exterior and interior 10R 4/6 Material Silt, abundant mica, medium amount of sand, limestone bits and some chaff. Date: 5th – 6th century A.D.	Meyer, C. et al. 2011: 122, No. 118.
	Polished Bowl with flanged rim and chattering with a worn exterior. Color: Pink 2.5 YR 6/6 Red slip interior and exterior 10R 5/8. Material Pink fabric with abundant black bits and mica, medium amount limestone chunks and few red bits. Date: Similar products from Elephantine are dateable to the last quarter of the 4th to the second quarter of the 6th century A.D.	Meyer, C. et al. 2011: 124, No. 132.

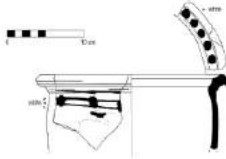
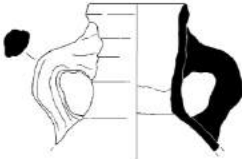
	Bowl with elaborate rim. The exterior of the rim is grooved while the underside has string marks and a remnant of chattering. Color: Pink lighter than 10R 6/6 Red slip interior 10R 4/6 to 2.5YR 5/8. Material Aswan pink fabric. Date 5th – 6th century A.D.	Meyer, C. et al. 2011: 130, no. 163.
	Small bowl. Color: Medium-hard pinkish fabric 5YR 7/4 Rim fired red 2.5YR 5/6. Material Aswan pink fabric with abundant black bits, some dark brownish chunks, red bits and mica and small chaff bits. Date: Similar fabrics from Elephantine are dateable to the late 5th – early 7th century A.D.	Meyer, C. et al. 2011: 130, no. 164.
Type	Jar	
Total quantity	24	
Example	Description	Bibliography
	Small painted jar The "degenerate vine leaf" decoration looks characteristic of the Coptic/byzantine period, but the shape is somewhat problematic. Color: Pink 5YR 7/4. Red slip exterior 2.5 YR 5/6. Black and white painted spots. Material: Aswan pink fabric. Medium amount of mica. Black bits. Limestone bits. Date: Unidentified.	Meyer, C. et al. 2011: 130, no. 169.

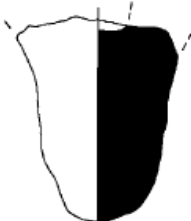
	Small jar with painted decoration. Dimensions: 10 cm. Color: Red – brown 2.5YR 5/8 with thick gray core. The exterior is torn but it still preserves its cream slip exterior 10YR 8/3, black painted decoration with little red. Material: Medium hard silt. Medium amount of sand. Some limestone chunks. Mica. Date: Unidentified.	Meyer, C. et al. 2011: 124, no. 125.
	Small globular jar Dimensions: 9 – 11 cm. Color: Pink fabric 5YR 7/4 Red slip 10R 4/8 Material: Abundant black bits. Mica. Medium amount of limestone bits. Small amount of sand. Date: Unidentified.	Meyer, C. et al. 2011: 120, no. 112.
Type	Cup – goblet	
Total quantity	6	
Example	Description	Bibliography
	Goblet Color: Pink fabric. Pink with reddish rim 7.5YR 7/4. Rim 2.5YR 5/6. Material: Abundant limestone bits. Medium and small size black bits. Some small black chunks. Date: Similar examples from Berenice and Shenshef are dateable to the 5th – 6th century A.D.	Meyer, C. et al. 2011: 118, no. 98.

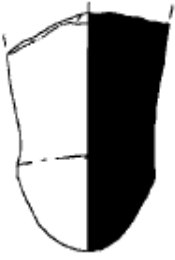
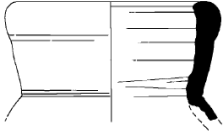
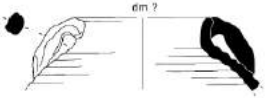
	Painted goblet The goblet has a red brown slip on the exterior extending below the grooves under the rim. The decoration is composed of black and yellowish white "degenerate vine leaves", painted over the slip. Toward the bottom of the vessel are the remains of a red brown floral motif Color Pink 5YR 7/6. Red exterior 2.5YR 5/6. Black and yellowish white spots. Red brown floral design. Material Aswan pink fabric. Abundant black bits. Medium amount of light red bits and limestone chunks. Some small sand particles. Date 4th – 5th century A.D.	Meyer, C. et al. 2011: 130, no. 167.
	Painted goblet with pot mark that was incised before firing. the goblet is decorated with a degenerate vine leaf decoration. Color Pink – beige Red slip interior and exterior above groove. Black-brown and cream spots. Material Aswan pink fabric. Abundant black bits. Medium amount of light red bits and limestone chunks. Some small sand particles. Date Late 4th – middle 6th century A.D.	Meyer, C. et al. 2011: 130, no. 168.
	Irregular rimmed Cup, decorated with wheel striations inside and outside with some extra clay. Color: 10YR 7/3 Material: Marl. Medium amount of red and black bits. Limestone.	Meyer, C. et al. 2011: 136, no. 191.

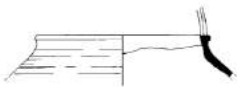
	Some sand. Date: Unidentified.	
Type	Base	
Total quantity	19	
Example	Description	Bibliography
	Ring base, possibly from goblet. Color Pink-brown 2.5YR 6/6 section 2.5YR 5/4 exterior. Material Silt. Some sand. Black bits. Limestone bits. Mica. Date Unidentified.	Meyer, C. et al. 2011: 116, no. 91.
	Low ring base with faint combed lines on exterior. Color Red – brown with purplish core. Section: 2.5YR 5/8 Surface: 2.5YR 5/4 Material Silt. Medium amount of mica. Few limestone bits. Date Unidentified.	Meyer, C. et al. 2011: 116, no. 92.
	Ring base. Color Red – brown Section 2.5YR 4/6 Cream slip or deposit on surface. Material Silt. Medium amount of white bits. Some chaff. Few black chunks. Little mica. Date Unidentified.	Meyer, C. et al. 2011: 116, no. 93.
	Ring base Color 2.5YR 3/4 interior surface. Material Uncertain. Date	Meyer, C. et al. 2011: 116, no. 94.

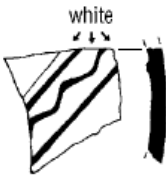
	Unidentified.	
	Very worn low ring base for a large bowl with a base that bulges down below the base ring. Dimensions: 8 cm Color More pink than 5YR 7/4 Red-orange slip interior and exterior 10R 5/8. Material Pink fabric. Abundant black bits. Medium amount of limestone bits. Some mica. Few red bits. Date 6th – 7th century A.D.	Meyer, C. et al. 2011: 120, no. 113.
	Ring base Color Light yellow – brown core 2.5YR 6/6 Orange – yellow surface 2.5YR 5/6 Material Hard pink Aswan ware. Abundant large black bits and small sands. Few limestone bits. Date Unidentified	Meyer, C. et al. 2011: 120, no. 114.
	Ring base Smoothed inside with two incised lines outside. Color Red – brown fabric with thick light grey core. Material Uncertain. Abundant black bits. Much mica. Medium amount of limestone bits. Date Unidentified.	Meyer, C. et al. 2011: 124, no. 134.
	Ring base, possibly from a jar. Color Red – brown surfaces 2.5YR 5/2 Thick gray core Material Silt. Abundant mica. Some angular sand chunks.	Meyer, C. et al. 2011: 134, no. 187.

	Some yellowish limestone bits. Some large black particles. Many small voids. Very well – levigated clay fired hard. The breaks are clean with a slick clay appearance. The base was wet smoothed, but few bits of excess clay are still attached. Date Unidentified.	
Type	Flask	
Total quantity	1	
Example	Description	Bibliography
	Flask rim and neck Color: 5YR 7/3 Material: Marl. Date: Unidentified.	Meyer, C. et al. 2011: 136, No. 194.
Type	Basin	
Total quantity	2	
Example	Description	Bibliography
	Basin with painted decoration Color: Light tan fabric 2.5YR 6/4. Thick grey core 5YR 6/2. Red slip exterior and interior. Black paint over white. Material: Marl with abundant black and gray bits, abundant limestone chunks, some sand and few red chunks. Date: Similar examples from Ashmunein can be dateable to the period between 400 – 600 A.D.	Meyer, C. et al. 2011: 150, No. 251.
Type	Amphora	
Total quantity	13	
Example	Description	Bibliography
	Amphora rim, neck and handle, Fingerprints are pressed on the internal parts in the opposite part to the handle. Color Light red – brown section 5YR 6/4. Red slip exterior and into interior 10R 5/6.	Meyer, C. et al. 2011: 144, no. 225.

	Material Silt. Medium amount of sand. Mica. Limestone chunks and bits. Large chaffs. Date Late Roman Amphora 1 (4th – 7th century A.D.).	
	Small amphora neck and rim. It may be a very small late Roman amphora 3 type. No handles or handle scars are left. Color Dark red – brown 2.5YR 4/6. Material Silt. Some small voids. Date Unidentified.	Meyer, C. et al. 2011: 124, no. 126.
	Poor conditioned, crooked – shaped Amphora toe. Color Brown 7.5YR 5/4. Material Silt fabric. Limestone chunks and slivers. Perhaps mica. Date Late Roman Amphora 7 (6th – 7th century A.D.).	Meyer, C. et al. 2011: 118, no. 102.
	Amphora toe. Color Brown 7.5YR 5/4. Material Silt. Date 6th – 7th century A.D.	Meyer, C. et al. 2011: 118, no. 103.

	Amphora toe. Color Brown 5YR 4/4. Material Silt. Date Unidentified.	Meyer, C. et al. 2011: 116, no. 90.
	Amphora shoulder. Dimensions: max. 10 cm. Color Dark red – brown fabric with gray – black core. Section: 5YR 4/3. Material Silt. Abundant limestone bits and mica. Date Unidentified.	Meyer, C. et al. 2011: 116, no. 89.
	Amphora rim and neck. Color Red – yellow surfaces 5YR 6/6. Tan section layers 7.5YR 6/4. Thick grey core 2.5YR 5/6. Material Marl. Abundant mica. Medium to small size gray - black bits. Some limestone chunks. Red bits. Date Unidentified.	Meyer, C. et al. 2011: 120, no. 105.
Type	Cooking pot	
Total quantity	3	
Example	Description	Bibliography
	Cooking pot with handles Color: 10YR 7/3 2.5Y 7/4 exterior slip Material: Marl. Medium number of black chunks and bits. medium number of brown chunks. limestone bits. some reddish bits and sand. Date:	Meyer, C. et al. 2011: 118, no. 96.

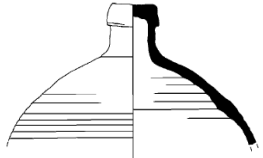
	Similar fabrics from Elephantine are dated to the 3 rd – 4 th century A.D.	
	Cooking pot Color: 2.5YR 7/2 in section. Material: Marl. Porous and gritty. Abundant black bits and limestone chunks. Medium amount of red bits. Some chaff. Date: Examining similar fabrics but different in color from Elephantine. It could be dated to the 5th – 7th century A.D.	Meyer, C. et al. 2011: 124, no. 130.
Type	Casserole	
Total quantity	6	
Example	Description	Bibliography
	Casserole with piecrust rim. Color Red – brown clay with red layers either side of brownish core. Chocolate brown surface 5YR 4/4. Material Silt. Much mica and sand. Some limestone chunks. Few bits of chaff. Date Similar fabric is dateable to the 5th century A.D.	Meyer, C. et al. 2011: 122, no. 121.
	Casserole Color Red – brown silt with gray core. Red slip exterior and interior. Material Typical silt. No chaff. Date Uncertain.	Meyer, C. et al. 2011: 122, no. 123.
Type	Sherd	
Total quantity	14	
Example	Description	Bibliography
	Decorated sherd of an open form. Color Light red brown fabric 2.5YR 5/6 with tan core 5YR 6/4.	Meyer, C. et al. 2011: 124, no. 129.

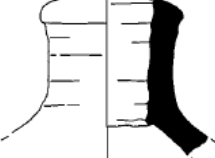
	Red slip interior and exterior 10R 5/8. White stripe with black painted lines. Material Silt. Many burnt out voids. Abundant limestone bits and chunks. Sand. Few gray bits and chunks. Few red chunks. Unmixed clay. Date: Unidentified.	
	Sherd with stamped cross, The bulge on the right side of the profile drawing is probably part of a ring base. Date Early 7th century A.D.	Meyer, C. et al. 2011: 128, no. 158.
	Sherd with stamped sunburst or flower.	Meyer, C. et al. 2011: 128, no. 159.
	Sherd with stamped palm leaves and sunburst. Date The period between the late 3rd to the 6th century A.D.	Meyer, C. et al. 2011: 128, no. 160.
	Sherd stamped with cross in rectangular designs. Color Pink 2.5YR 6/6. Red slip interior and exterior 10R 5/8.	Meyer, C. et al. 2011: 128, no. 161.

	Material Pink fabric. Medium amount of sand and small bits. Date Unidentified.	
	Very worn Painted sherd with fish shape, an eye is visible in the middle and what seems to be a back fin and scales behind it. The curve of the sherd suggests that it came from a bottle, bowl or plate. Color Red – brown with black – brown paint. Surface 2.5YR 5/8. Red slip 2.5YR 5/6. Material Silt. Mica. Medium black bits. Date: Unidentified.	Meyer, C. et al. 2011: 134, no. 189.
	Painted sherd Color Red – brown with a chalky slip and a design of lines and spots in black – brown paint. Material Silt. Date: Unidentified.	Meyer, C. et al. 2011: 134, no. 190.
Type	Pan	
Total quantity	1	
Example	Description	Bibliography
	Carinated pan Color: Bright red – brown silt with medium thick gray core, purple layers on either side. Material: Silt. Abundant mica. Medium amount limestone bits. Some limestone chunks. Date: 6th – 7th century A.D.	Meyer, C. et al. 2011: 122, No. 117.

Type	Lid	
Total quantity	1	
Example	Description	Bibliography
	Lid with three handles that appear to have been added after the piece was fired as they are very crude compared to the fabric of the rest of the lid. Color Red – brown 10R 5/6. Material Silt. Abundant limestone and mica. Some black chunks. Date Unidentified.	Meyer, C. et al. 2011: 134, no. 186.
Type	Qadus	
Total quantity	1	
Example	Description	Bibliography
	Qadus toe. The base has a knob that could hold a robe and it is chipped. Color: Orange 2.5YR 5/8. Red exterior and interior slip 10R 5/6. Material: Silt. Limestone bits and chaff. Mica. Date: Unidentified.	Meyer, C. et al. 2011: 134, No. 188.
Type	Plate	
Total quantity	17	
Example	Description	Bibliography
	Plate with stamped decoration. Color 5YR 5/6 in break. Purplish layers either side of core. Red slip interior and exterior. Material Egyptian red slip ware. Abundant mica. Medium and very small sand particles. Medium amount of limestone bits and chunks. Date Unidentified.	Meyer, C. et al. 2011: 128, no. 151.

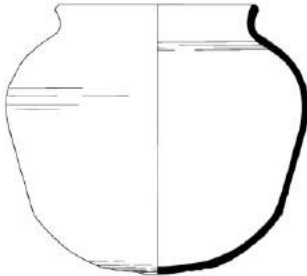
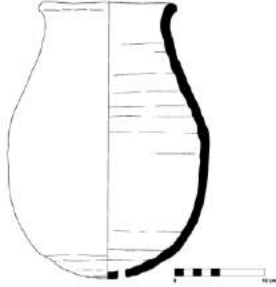
	Stamped plate with five crosses of which surfaces are torn and no polish remains. Aswan pink fabric. Color Red-brown 5YR 4/4 with red core. Red slip interior and exterior 10R 4/6. Material Silt. Abundant mica. Medium amount of limestone bits. Date Unidentified.	Meyer, C. et al. 2011: 126, no. 135.
Type	Bottle	
Total quantity	3	
Example	Description	Bibliography
	Rim and neck of a small bottle. Color polished slipped exterior red and Interior light brown. Light red-brown fabric 5YR 6/4 to 5YR 6/6. Exterior red 10R4/6. Material Imported sherd. Abundant mica. Very small black bits. Some limestone bits. Date Unidentified.	Meyer, C. et al. 2011: 128, no. 152.
	Late Roman Amphora 1 fabric Bottle rim and neck with a trace of a top of a handle. Color Creamy surface 10YR 8/3 More pink than 5YR 6/4 in section. Material Abundant white and gray sand particles. Shiny black bits. Clear bits. Date Unidentified.	Meyer, C. et al. 2011: 144, no. 224.

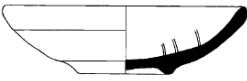
	Bottle Color Bright red – brown. Red – brown to brown surface. Material Uncertain fabric. Mica. Medium to small black bits. Date Unidentified.	Meyer, C. et al. 2011: 146, no. 237.
Type	Unidentified	
Total quantity	12	
Example	Description	Bibliography
	Lid or Qadus Color 10YR 8/4 surface 10YR 6/4 in break Material Marl. Porous and gritty. Medium amount of black bits and larger chunks. Medium amount of red bits and limestone chunks. Some mica. Date Unidentified.	Meyer, C. et al. 2011: 136, no. 195.
	Shallow bowl or plate with stamped cross. Color Pink, lighter than 10R 6/6. Red slip interior and exterior 10R 5/8. Material Pink fabric. Abundant black bits. Medium amount of small sand particles. Some limestone bits and pinkish chunks. Date 3rd – 6th century A.D.	Meyer, C. et al. 2011: 128, No. 157, p. 126, no. 136.

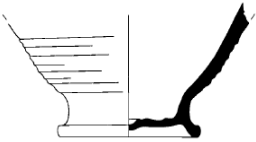
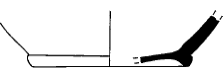
	Jar or bottle Color Exterior 7.5YR 5/2. Break 2.5YR 6/6. Material Oasis ware. Abundant black bits. Red chunks. Medium amount of red bits (grog) and long white (limestone) particles. Pinkish chunks (unmixed clay). Sand. Date Unidentified.	Meyer, C. et al. 2011: 146, no. 240.

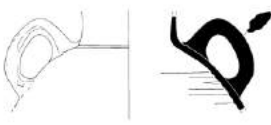
The pottery of Bir Umm Fawakhir discovered during the excavations of the Oriental Institute season (1999 - 2001).

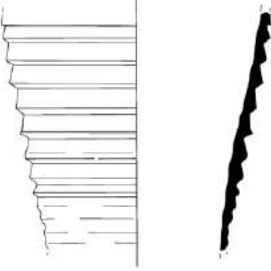
Typology	Bowl	
Total quantity	42	
Example	Description	Bibliography
	Bowl Color Fabric 5YR 7/4. Yellow - cream slip 10YR 8/3. Material Pink ware. Fine black specks. Few large white bits (sand). Few large red – brown bits. Date Unidentified.	Meyer, C. et al. 2014: 40, No. 28.
	Deep bowl with tough white post – break concretion. Color Fabric 7.5YR 7/3 to 6/2 (grayish). Surface 2.5YR 6/6 where not covered by concretion. Material Pink ware. Many fine black bits with few larger. Date Similar fabrics are dateable to the period between the 5th - 7th c. A.D.	Meyer, C. et al. 2014: 40, No. 29; Mysliwiec. K. 1987:116 – 117, no. 1319.
	Large bowl Color Red – brown slip 2.5YR 4/6. Red – brown fabric 2.5YR 5/6. Material Silt Abundant fine black bits. Few white bits.	Meyer, C. et al. 2014: 48, No. 71; Mysliwiec. K. 1987:118 – 119, no. 1377.

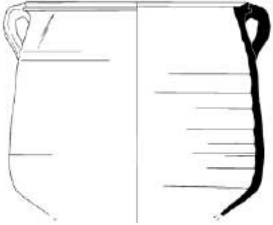
	Few medium size black bits. Little chaff. Date Similar fabrics can be dated to the period between the 5th - 7th c. A.D.	
Typology	Jar	
Total quantity	22	
Example	Description	Bibliography
	Jar rim and part of neck Color Fabric 2.5YR 6/8. Gray core 2.5YR 5/1. Material Silt. Fine black and white sand. Some medium – size black and white bits. Date Unidentified.	Meyer, C. et al. 2014: 64, No. 122.
	Globular jar Color Interior and exterior surfaces 10R 5/6. Material Silt Date Most probably, the early 6th century A.D. It has earlier parallels such as a Ptolemaic pot from El – Tod, dated to the 2nd century B.C.	Meyer, C. et al. 2014: 66, No. 129; Pierrat – Bonnefois, G. 2000: 324, fig. 277.
	Jar with five holes in bottom, possibly for making cheese. Material Red – brown fabric. Date Unidentified.	Meyer, C. et al. 2014: 68, No. 135.

Typology	Cup – goblet	
Total quantity	6	
Example	Description	Bibliography
	Small cup Color Interior 5YR 6/8. Exterior 5YR 5/6. With 2.5YR 5/6 rim. Material Pink fabric. Black, red, white bits. Mica. Sand. Date 5th – 8th c. A.D.	Meyer, C. et al. 2014: 37, No. 10.
	Cup with red – slipped rim Color Core 7.5YR 7/4. Interior 7.5YR 6/6. Exterior 7.5YR 7/6. Exterior rim 2.5YR 5/6. Material Pale fabric of Aswan fine ware. Numerous red, black, white bits. Sand. Fine chaff. Date Comparative studies refer to the period between 5th – 8th c. A.D.	Meyer, C. et al. 2014: 37, No. 11.
Typology	Base	
Total quantity	12	
Example	Description	Bibliography
	Small kick – up base Color Core 7.5YR 8/6 to 7/6. Exterior 5YR 7/4 to 7/6. Interior medium brown – yellowish cast 7.5YR 5/6. Material Pink fabric. Date Uncertain.	Meyer, C. et al. 2014: 44, No. 44.

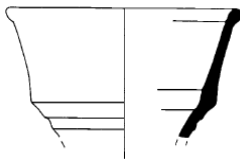
	Base of large bowl or jar Color Surface and fabric 10YR 8/3. Material Marl. Much sand. Abundant black. Gray. Red bits. Red and gray chunks. Date Unidentified.	Meyer, C. et al. 2014: 46, No. 57.
	Ring base Color Blackened. Surface 7.5YR 7/6 to 10YR 3/1. Dark gray core 10YR 3/2. Material Silt. Sand. Red and black bits. Date Unidentified.	Meyer, C. et al. 2014: 70, No. 140.
	Ring base Color Exterior 7.5YR 6/4. Interior 7.5YR 5/4. Core 7.5YR 6/6 to 10YR 4/1 (gray). Material Silt. Sand. Mica. White bits. Date Unidentified.	Meyer, C. et al. 2014: 70, No. 141.
	Ring base Color Exterior 5YR 7/8. Interior 5YR 5/6. Core 2.5YR 5/6. Material Silt. Black and white bits. Date Unidentified.	Meyer, C. et al. 2014: 70, No. 142.

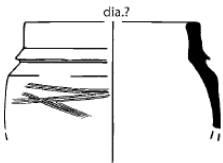
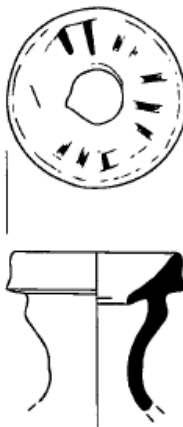
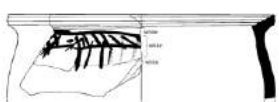
	Ring base probably of a jar Color Exterior 7.5YR 6/4 to 10R 5/4. Interior 10R 5/4. Core 2.5YR 5/6. Material Silt. Date Unidentified.	Meyer, C. et al. 2014: 70, No. 144.
Typology	Basin	
Total quantity	4	
Example	Description	Bibliography
	Basin with club rim and a diagonal gouge. Color Red slip. Slip 2.5YR 5/6 exterior and interior. Fabric 5YR 6/4. Material Silt. Sand. Small black and white bits. Few white chunks. Date Unidentified.	Meyer, C. et al. 2014: 64, No. 121.
Typology	Amphora	
Total quantity	5	
Example	Description	Bibliography
	Late Roman Amphora 5, neck, shoulder, handles with ridged exterior. The most characteristic feature of this example is the handles almost touching the base of the neck, a form that was widely distributed and of which samples are found in Palestine, Jordan and Egypt. Color Exterior slip 10YR 7/2. Surfaces 5YR 5/8 with gray core. Material	Meyer, C. et al. 2014: 72, No. 149.

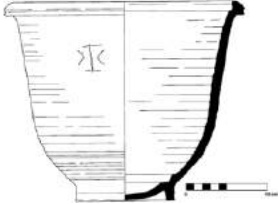
	Sand. White chunks. Little black. Date This type of Amphora is reported from a wide range of sites in Egypt from Esna, Elephantine and Antinopolis and they can be dated to the period between 5th – 7th c. A.D. The Late Roman Amphora 5 type is of Palestinian origin but amphorae were also produced in Egypt (Alexandria) from the late 6th c. A.D. through the 7th century A.D. in (Mareotis region and Abu Mina) and as late as the second half of the 12th Century (Central Sinai).	
	Late Roman Amphora 7, Egyptian amphora body segment reconstructed in the field lab. Color Not noted. Material Silt. Date This type of Amphora is common between 6th – 7th centuries A.D. in Middle Egypt. They were probably used to transport wine, olive and oil but some have been shown to have remains of fish bones, acacia pods and olives. Once emptied of their original contents, amphorae were often reused for a wide variety of purposes.	Meyer, C. et al. 2014: 72 - 74, No. 150.

Typology	Cooking pot	
Total quantity	3	
Example	Description	Bibliography
	Large, deep, handled pot with a gouge near one handle. Color Fabric and interior 2.5YR 6/4. Red slip exterior 2.5YR 4/6. Material Silt. Small red bits. White bits. Sand. Date Unidentified.	Meyer, C. et al. 2014: 54, No. 101.
Typology	Casserole	
Total quantity	4	
Example	Description	Bibliography
	Casserole with piecrust rim. Color 2.5YR 5/6 throughout. Material Silt. Very crumbly and flaky Abundant sand. Few white bits. Date 5th – 7th c. A.D.	Meyer, C. et al. 2014: 52, No. 90.
Typology	Sherd	
Total quantity	12	
Example	Description	Bibliography
	Stamped sherd with a rosette. Color Reddish color. Material African red slip. Date The rosette is a common motif from the late 4th to the early 5th c. A.D.	Meyer, C. et al. 2014: 34 - 36, No. 3.

	Body sherd with a burnished surface decorated with zigzags. Color Black interior 10R 5/4 to 4/2. Fabric 10R 4/1. Material Handmade. Abundant medium – size and large white bits and Chunks. Date Unidentified.	Meyer, C. et al. 2014: 36, No. 5.
	Stamped sherd with a duck design in the center surrounded by leaves and sunbursts. Color Unidentified. Material Egyptian red slip ware. Date Late Roman period.	Meyer, C. et al. 2014: 38, No. 16.
	Stamped sherd with the XP cross. Color Red slip. Material Silt. Date 5th – 6th c. A.D.	Meyer, C. et al. 2014: 38, No. 18.
	Stamped sherd with a cross design. Color Red slip. Material Pink ware. Date 5th – 6th c. A.D.	Meyer, C. et al. 2014: 38, No. 19.

Typology	Plate	
Total quantity	8	
Example	Description	Bibliography
	Stamped plate with a rosette design. Color Fabric 5YR 7/6. Surface 2.5YR 6/8. Material Pink fabric. Fine black and white bits. Few medium – black bits. Date 3rd – 5th c. A.D.	Meyer, C. et al. 2014: 38, No. 14.
Typology	Spout	
Total quantity	1	
Example	Description	Bibliography
	Spout Color Fabric 10YR 7/3. Surface 5Y 8/2. Material Marl. Abundant fine sand. Many small red and black bits. Date Similar example from a house in the temple of Seti at Gurna is datable to the 5th – 7th century A.D.	Meyer, C. et al. 2014: 46, No. 56.
Typology	Funnel	
Total quantity	1	
Example	Description	Bibliography
	Funnel Color Pink. Surfaces 10YR 8/3 cream Fabric 2.5YR 66. Material Fine white bits. Little fine to medium – size red bits. Few medium – size white bits (Sandy). Date Unidentified.	Meyer, C. et al. 2014: 42, No. 40.

Typology	Bottle	
Total quantity	3	
Example	Description	Bibliography
	Bottle neck with combed decoration. Color Surface 2.5Y 8/2. Fabric 7.5YR 7/4. Material Aswan fabric. Small white and black bits. Few medium size white bits. Date Similar examples from Amarna are dated to the middle of the 6th century A.D.	Meyer, C. et al. 2014: 42, No. 39.
	Bottle with very narrow opening. A model which is very well attested at Bir Umm Fawakhir. Color: Thick red slip. Black paint on interior of mouth flange. Fabric 5YR 6/8. Material: Silt. Date: Most probably 3rd – 4th century A.D.	Meyer, C. et al. 2014: 70, No. 139.
Typology	Vase/krater	
Total quantity	12	
Example	Description	Bibliography
	Krater with everted, grooved rim. Color Reddish slip. Black frond – like decoration painted on white band below rim. Core 2.5YR 6/2 to 6/4. Exterior slip 2.5YR 5/6. Material - Silt. - Sand. - Some small black bits.	Meyer, C. et al. 2014: 56, No. 106.

	- Burnt out chunks or "bursters" on interior surface. Date Unidentified.	
	Bell – shaped krater, decorated with an incised mark and slightly elliptical at rim (27.9 – 39.7 cm across). Color red slip. 10R 6/6 to 5/6 to black streaks. Material No breaks to show fabrics but mainly silt. Date Similar findings are dated to 5 th – 6 th century A.D.	
Typology	Tank / vat	
Total quantity	2	
Example	Description	Bibliography
	Very large vat Diameter: 50 cm Color: Surface 10R 5/6 with 10R 4/1 gray core. Material: Silt. Sand. Many black bits. Chaff. Date: 3 rd – 5 th century A.D.	Meyer, C. et al. 2014: 60, No. 115.
Typology	Lid	
Total quantity	4	
Example	Description	Bibliography
	Lid Color Surface 10YR 8/2. Fabric 7.5YR 7/2. Material Aswan fine ware. Some medium – size and fine red bits. Date Unidentified.	Meyer, C. et al. 2014: 42, No. 37.

Dipinti

Recovered dipinti include reused Late Roman 1 amphora. These dipinti are notations scribbled in red ink on the shoulder, body, and sometimes the neck of Late Roman 1 amphorae.

The dipinti are not very legible due to the following reasons:

- The ink is fugitive.
- The writings are highly cursive.
- The sherds are often of small size.

The late Roman 1 amphorae were mainly used for wine transportation and they were scribbled all over the course of being traded.¹

The inscriptions are divided into different types such as:

1. A large scrawl one on the shoulder.

A type that usually starts with a large christogram, two or three illegible letters, a vertical slash or cross, and numbers indicating the quantity in the container, so many ξέστης or *sextarii*. There may also be abbreviations of sacred names such as Θε(ός) or Κύρ(ιος).²

2. Names and numbers in small letters under a handle.

3. A large – letter inscription on the neck.

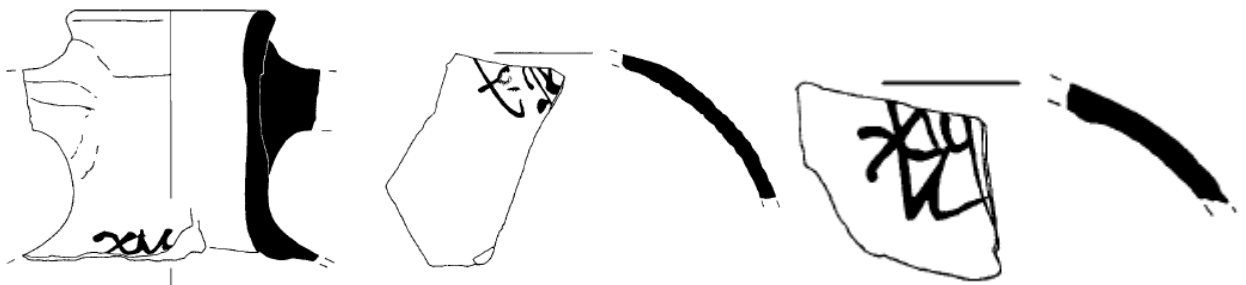


Fig. 64

Dipinti with a large scrawl on the shoulder.

After, Meyer, C. et al. 2014: 78 - 79, Figs. 37 (c, d) - 38 (g).

¹ Meyer, C. et al. 2014: 77 – 80.

² Fournet J.L. and Pieri, D. 2008: 184 – 202.

This type generally contains inscriptions with two names (Greek and local names) and some numbers, of which the names might refer to a major trader or merchant and a local producer while the numbers (usually in the last line) could be lot numbers such as a batch of amphorae or the quantity of wine transported. Therefore, these inscriptions could most probably pertain to the collection of various local wine sources by a major trader at an emporium on the coast.¹

The presence of Late Roman Amphora 1 sherds and dipinti at “Bir Minayh” attests the importance of hauling wine amphorae to even the most remote, short – lived sites in the Eastern Desert.²

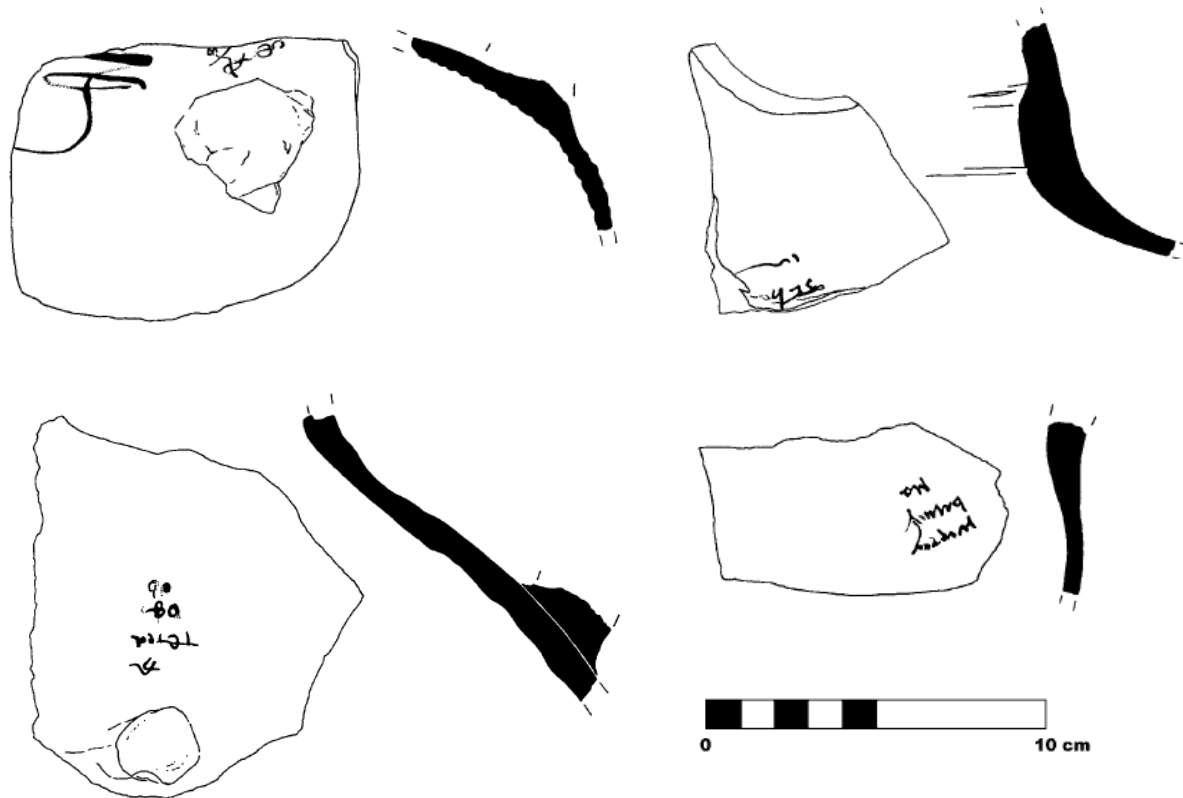


Fig. 65

Late Roman Amphora 1 sherds

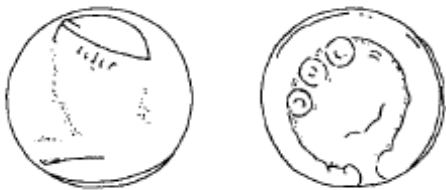
After, Meyer, C. et al. 2014: 79, Figs. 38 (c) – 39 (c, f, e).

¹ Fournet J.L. and Pieri, D. 2008: 195 – 199; Meyer, C. et al. 2014: 77.

² Lassanyi, G. 2010: 284 – 285.

Coins of Bir Umm Fawakhir

The coins recovered from the Bir umm Fawakhir 1999 excavations are small, bronze, and poorly preserved. The scarcity of coins is normal in the desert as there is little to spend money on. Moreover, very few records deal with the minuscule bronze coins. None of Bir Umm Fawakhir coins has a characteristic stamp or inscriptions such as a cross, a monogram, or a large character for a denomination. Despite their poor condition of preservation, the coins can be dated to the period between the late 4th and 6th century A.D.¹

No.	Coin	Description
1	Bronze coin 	Decoration: A wreath on the reverse side while the obverse is completely worn away. Diameter: 11.57 mm Date: Unidentified
2	Bronze coin 	Decoration The reverse may have had a wreath inside which the three circles are almost clear. The obverse depicts the emperor facing left. The coin has no trace of inscriptions. Diameter 11.59 mm Date Similar coins from other sites are dated to the period between the 4 th and the 5 th century A.D.

¹ Meyer, C. et al. 2014: 81 – 83; for comparative studies used to date the coins discovered cf., Sidebotham, S. E. and Wendrich, W. 1999: 183 – 199. Castrizio, D. 2010; Tolstoi, J. 1968.

3	Bronze coin 	Decoration The reverse is decorated with a winged victory or an armed figure. The right arm is raised and does not seem to hold any emblem. Diameter 9.56 mm. Date Similar examples are dated back to the period between the late 4 th century and the 5 th century A.D.
4	Bronze coin 	Decoration: The coin is decorated with a human head characterized by an unusual headdress, sunken eyes, large nose, defined lips, and folds of the cloak. Few inscriptions are preserved on the obverse. The reverse had a spiky wreath or perhaps a crude inscription which is now worn to a barely raised "c" shape. Diameter: 9.56 mm. Date: No parallels are discovered yet.
5	Bronze coin 	Decoration No design is visible due to the very bad state of preservation. Diameter: 9.51 mm. Date Unidentified.

6	A very small bronze coin 	Decoration The decoration of the reverse preserves much of a wreath and few letters, apparently the common "VOT MVLT" inscription with some numerals (perhaps XX). The obverse shows a few remnant letters of an encircling inscription and a fairly clear bust, the straight headbands ending in dots, prominent eyebrow, dot eye, triangular nose, defined lips and hair rendered as horizontal lines on the neck. Diameter 8.47 mm. Date: Parallels come from the reign of Justinian (527 – 565 A.D.).

1.4.7. Bir Hammamat (Persou II)

Geographical Location

The Fort of Bir Hammamat, is located about 81 km from Coptos and 95 km from Myos Hormos. It is implanted at an altitude of 312 m, at the western mouth of Wadi Hammamat, in the point where the bed of the wadi is about 200 m large. The *praesidia* controls a crossroad of valleys: a north-south crosses the east-west oriented wadi Hammamat.¹

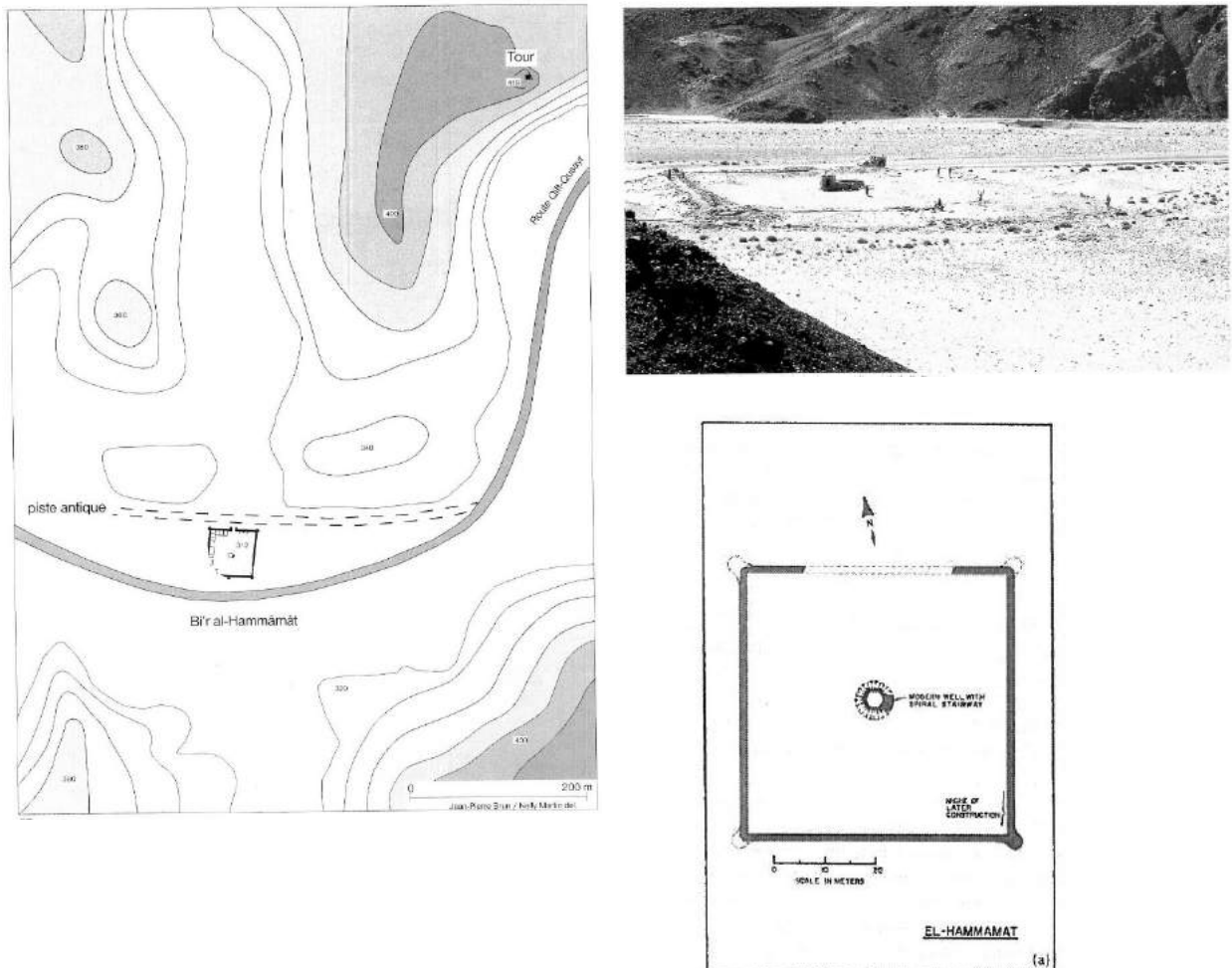


Fig. 66

Plan of Bir Hammamat.

After, Brun, J.P. 2006 c: 149, fig. 56 – 57;

Zitterkopf, R.E. and Sidebotham, S.E. 1989: 172, fig. 3 (d).

¹ Brun, J.P. 2006 c: 91.

besides, several tombs, can be labeled by stone circles dug at the foot of the northeastern hill of which dating is unspecified, but it seems that they should be the relics of the Muslim use of the site. Indeed, the fort was reused by the Arabs as a stop on the pilgrimage road to Mecca. During this period, an outdoor mosque was built in the southeast corner and a large heptagonal well 4 m wide and 26 m deep was dug in 1830 and it was provided with a staircase, enlightened by many openings around the well. There is a squared tower at about 600 m north of the fort at the top of an eminence of 419 m. It was a subject of a survey.¹

The fort

The fort of Bir Hammamat is a rectangular form of which the center was occupied by the well while the southeast corner kept the remains of the mosque. The clearance has concerned the enclosure, measuring 53.5 meters by side, that was once defended by four rounded towers at the corners. The two northern towers have a diameter of 4.15 m at the base, while the southeastern tower is of 3.75 m. The southern curtain was reinforced in a second phase by a solid rectangular tower measuring (3.30 m x 2.25 m). During the clearance process, a tomb dated back to the Islamic era was discovered to the north of the northwestern tower (this tomb has not been excavated yet).

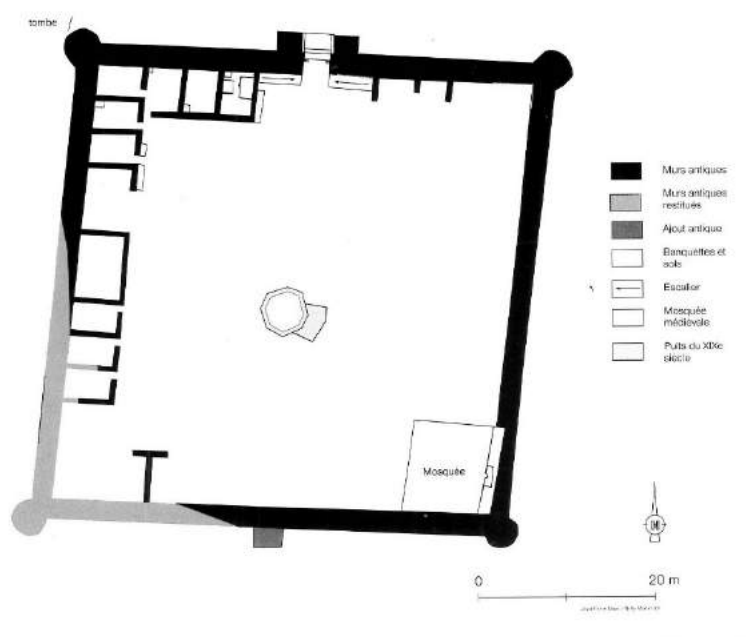


Fig. 67

A. Plan of the *Praesidium* of Bir Hammamat,

After, Brun, J.P. 2006 c: 150, fig. 59.

B. The remains of the mosque and the well. After, photography of the researcher.

¹ Brun, J.P., Cuvigny, H. and Redde, M. 2006: 208.

I. The door and foundation text

The door represents a threshold form of three “Bekhen” stone slabs, flanked by two footstep bearings. There were two door window frames of which only the foundation remains. The entrance was defended by two solid square towers, larger than 2.75 m, which protrude about 2.14 m if compared to the curtain.

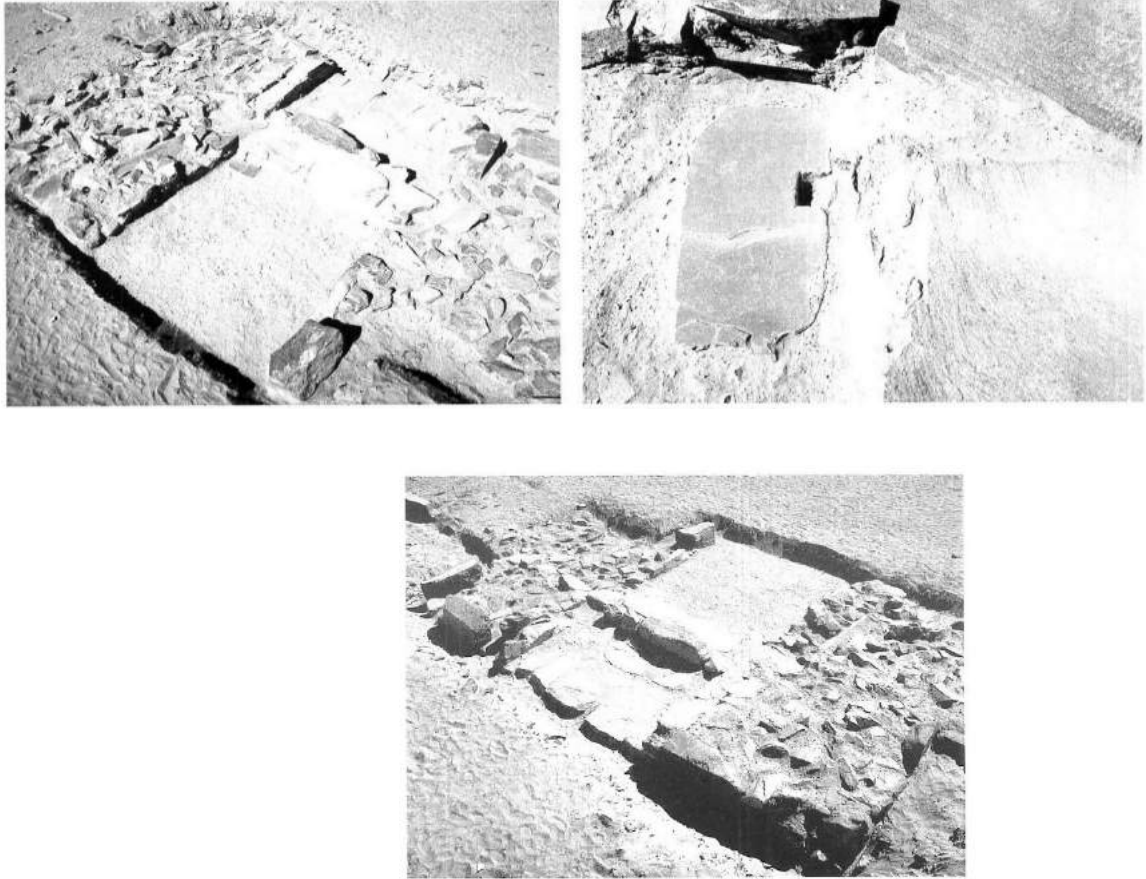


Fig. 68

A. The door of Bir Hammamat.

B. The door threshold.

C. The rectangular towers.

After, Brun, J.P. 2006 c: 151 – 152, figs. 60, 62, 63.

The western tower was established in the same time of the curtain which disappears in the façade of the tower, unlike the eastern corner, in which it continues over 1.75 m inside the tower. The base of the walls of the towers is constructed of large Bekhen stone blocks, of which one carries a Nabatean inscription. Between the towers, the passage was slabbed. There, among the spoiled upper parts of the towers, of which the French expedition has examined some fragments, white limestone splinters that formed a part of the foundation inscription. This limestone appears to be from the quarries of Ptolemais that recalls the story of the Decision of the “*Ala Vocontiorum*” (Transferred from Coptos to Palmyra between 179 and 183 A.D.), who supervised the extraction and bringing the limestone blocks in addition to the excellent “Bekhen” stone of Wadi Hammamat.



prae]f(ect-) Aeg(ypti) * [
] . bo * prae[f?
 pra]esidium aed[if-
] vac. [

Fig. 69

The foundation text of the *Praesidium*.

After, Brun, J.P. 2006 c: 152, fig. 65.

Four fragments of a very tender white limestone apparently belonging to the last three lines could be reassembled (27.5 x 30 cm, maximum 8.5 cm wide) on which the epigraphic field was painted in red. The area where the letters [aed], in line (3), seems to have been remade, this is visible through the more smoothed surface, the sharp, deeper and more elegant engraving. However, the epigraphic field seems worn and the letters are incised with a less steady hand. Moreover, five other non-relative fragments bear some insignificant letters.

In the inscription, (prefect of Egypt) can be recognized in line (1) and probably that of a prefect of Berenice, whose cognomen was most probably "Turbo") as the lintels of several *praesidia* of the road commemorate the construction of these forts instigating the prefect of Egypt and the prefect of Berenice. ¹

¹ Brun, J.P. 2006 c: 93.

The towers were accessed by two symmetrical stairs, about 1.10 to 1.50 m wide, situated in a similar position to those of Maximianon and Hamra. The angle of the wall bearing the staircase is based on a sarcophagus outline of bekhen stone. Other sarcophagi bases, which are used now as water troughs around the well, probably come from the ramparts, where they were reused to reinforce the angles.

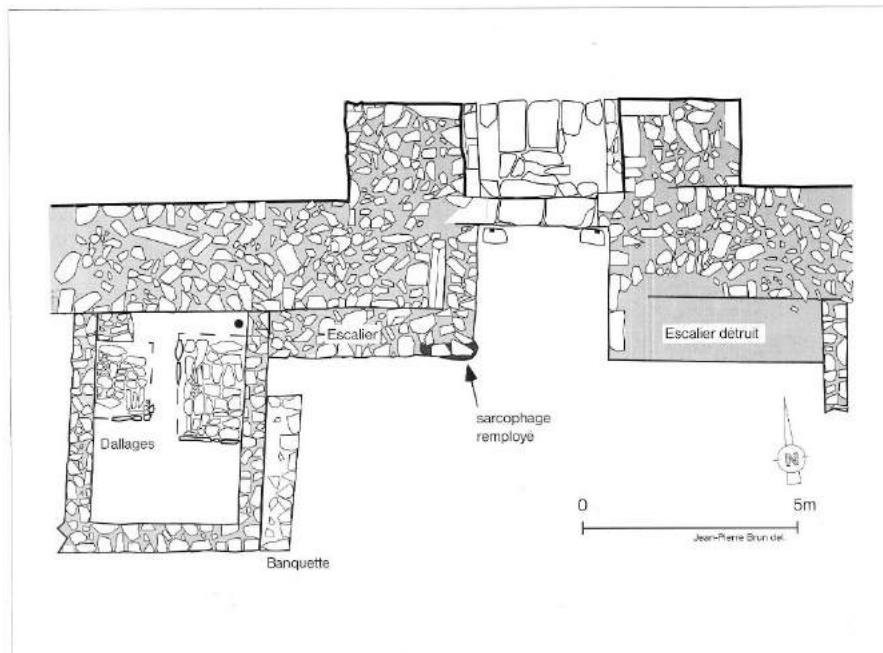


Fig. 70

A detailed plan of the door and the excavated barracks.

After, Brun, J.P. 2006 c: 151, fig. 61.



Fig. 71

A. Bekhen stone sarcophagus in Bir Hammamat.

After, Brun, J.P. 2006c: 152, fig. 66.

B. Broken sarcophagi beside the well of Hammamat.

After, photography of the researcher.

In a second phase, the walls of the towers were limiting the passage by double walls built of clay on the pavement of the passage. They correspond to a wide bench similar to those on the foot of "Qusur al-Banat". In a third phase, the threshold was an entrance, or at least the façade was raised to strengthen the defensive capabilities. There is no possible element to date these three stages because the stratigraphy of this sector included only two layers: the slabbed floor and the level of the walls collapse, both virtually sterile.

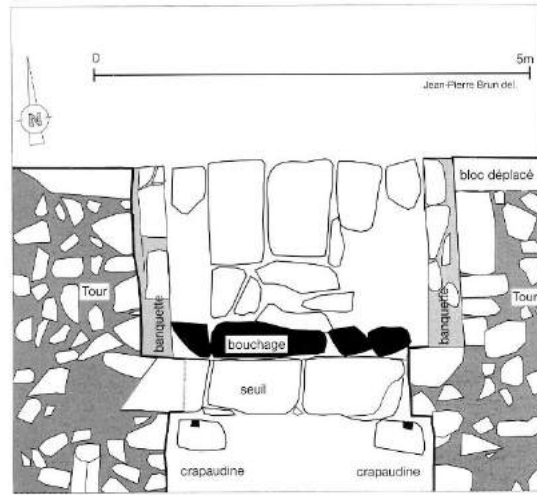


Fig. 72

Details of the pavement and the sealing of the door.

After, Brun, J.P. 2006 c: 152, fig. 67.

II. Barracks against the north rampart

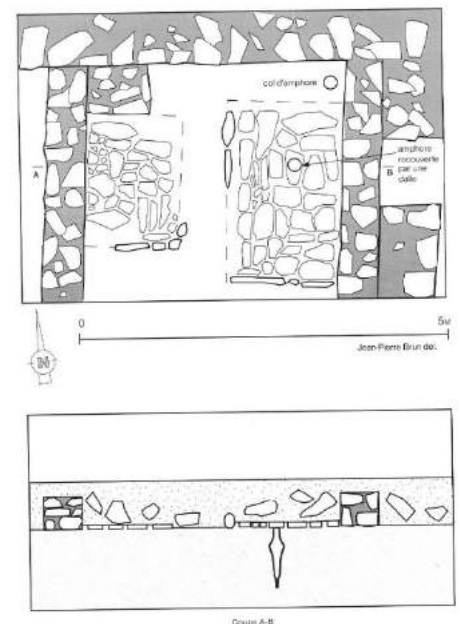
Inside the fort, under the sand, it was possible to clear the leveled walls of the barracks on the northern and western sides. The first room situated to the right upon entering the fort measures 4.80 x 3.40 meters including a gravel floor, two slabs of stone and a fireplace. The ground was covered with a layer of straw brought by wind during the abandonment of the room. Above this level, the level of the collapsed walls extends. The paving stones were limited by edged blocks.



Fig. 73

The pavement of the barracks to the west of the door.

After, Brun, J.P. "Bir Al-Hammamat", p. 153, fig. 68, 70.

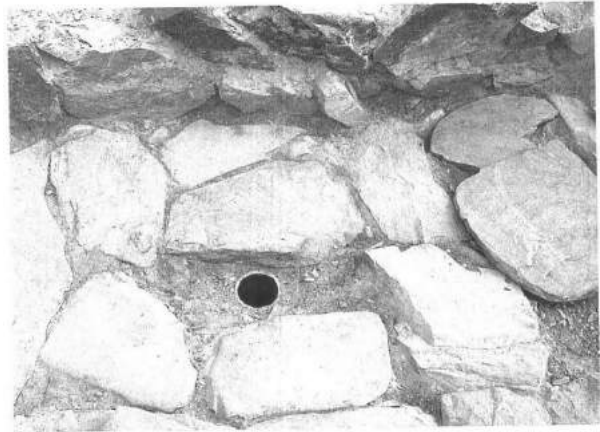


Under the western pavement, a low-necked amphora was buried vertically, it was tapped by a slab. A neck of an amphora was also buried in the northeastern corner of the room.

Fig. 74

The detailed pavement of the barracks
(with the buried amphora).

After, Brun, J.P. 2006 c: 153, fig. 69.



The findings are similar to those of Maximianon (El Zarqa), a thin walled goblet, white body containers, jugs and water bottles of Aswan workshops, pots, a glass plate dated to the period between 75-225 A.D. and a cup with a depression that dates back to the 2nd century AD. The eastern façade of the eastern wall of the room was doubled with a bench in a second phase of construction. The embankment located behind the wall of the bench contains numerous fragments of amphorae (AE3).

III. Constructions onto the western, southern and eastern walls

Barracks against the western ramparts were partially recognized. The only leveled wall was cleared. regular rooms measuring 5 x 3.2 m, with 0,90 m wide door, to the south or to the north, surround a larger central room measuring 7 x 5 m. Two apartments include an outdoor seat, to the right of the entrance. A survey was executed along the southern side to clear the room situated in front of the entrance, where one *sacellum* was expected, moreover, a home dated back to the Islamic era has been found.

The mosque, situated in the southeastern corner, has not been cleared but its layouts are clear, its west side presents a sandstone mihrab, which is a semi –circular Niche with 0.60 m in diameter. Surveys have been realized on the area outside the door to try to locate a possible dump, but without success. Some accumulations of potsherds were found on the borders of Wadi Hammamat, most probably due to the floods that should have evacuated the ruins from the fort.¹

Fig. 75

The mosque of Bir Hammamat.

After, Brun, J.P. 2006 c: 154, fig. 71.



¹ Brun, J.P. 2006 c: 94.

1.4.8. Al-Muwayh (Krokodilo)

Geographical Location

The *praesidium* referred to in the ancient times as Krokodilo (Modern **AL-Muwayh**) is located at 65 km from Coptos and 116 km from Myos Hormos, with an altitude of 229 m.¹

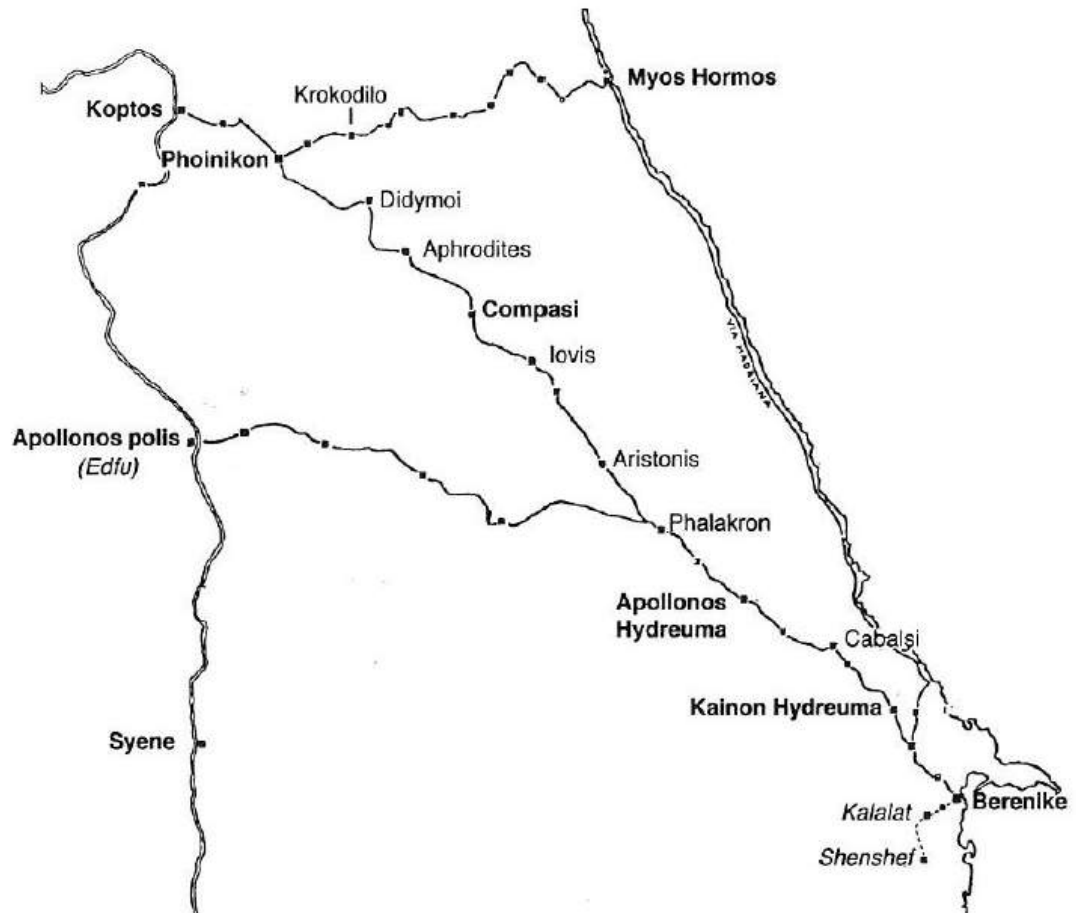


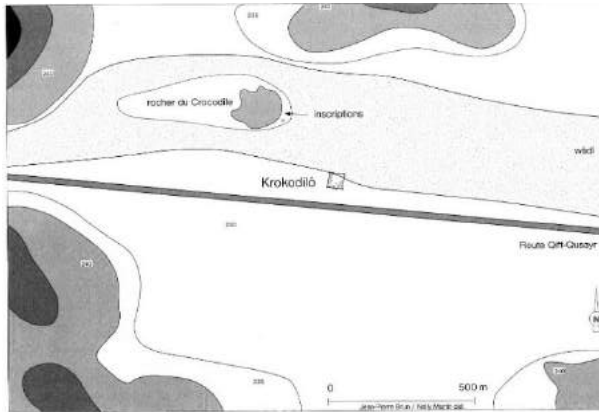
Fig. 76

The geographical location of Krokodilo.

After, Bagnall, R. S. et al. 2001: 330, fig. 5.

¹ Brun, J. P. 2006 d: 77.

It forms a north-south rectangle, which in its current state, opens to the south by an axial door. A dump relatively well preserved but completely covered with sand stretches to the southwest of the door, parallel to the curtain. The fort was built in the middle of a flat area, about 250 m from an outcrop of sandstone, up to thirty meters, whose form has given its name to the *praesidium*. In several places on the north, east and south, the rocky outcrop presents small cliffs containing Ptolemaic and Roman graffiti. Besides, ostraca of the dump kept a trace for certain persons who lived or passed by the *praesidium* such as Dida and Dace.



A



B

Fig. 77

A. The site of Krokodilo on the Myos Hormos road.

After, Brun, J. P. 2006 d: 142, fig. 33.

B. The crocodile rock that gave the name to the site.

After, Bülow-Jacobsen, A. 2006 a: 59, fig. 18.

Moreover, a dedication is engraved in honor of an Emperor that should be identified, for chronological reasons, as Trajan. Several other persons such as (Apollinaris, Chaireas, Athaenos, Môenos and Salaïos) had engraved their names in the site.¹

The wadi is approximately 2 km wide in the site where the *hydreuma* is constructed, the 400-m wide wadi bed is surrounded by sandstone cliffs.

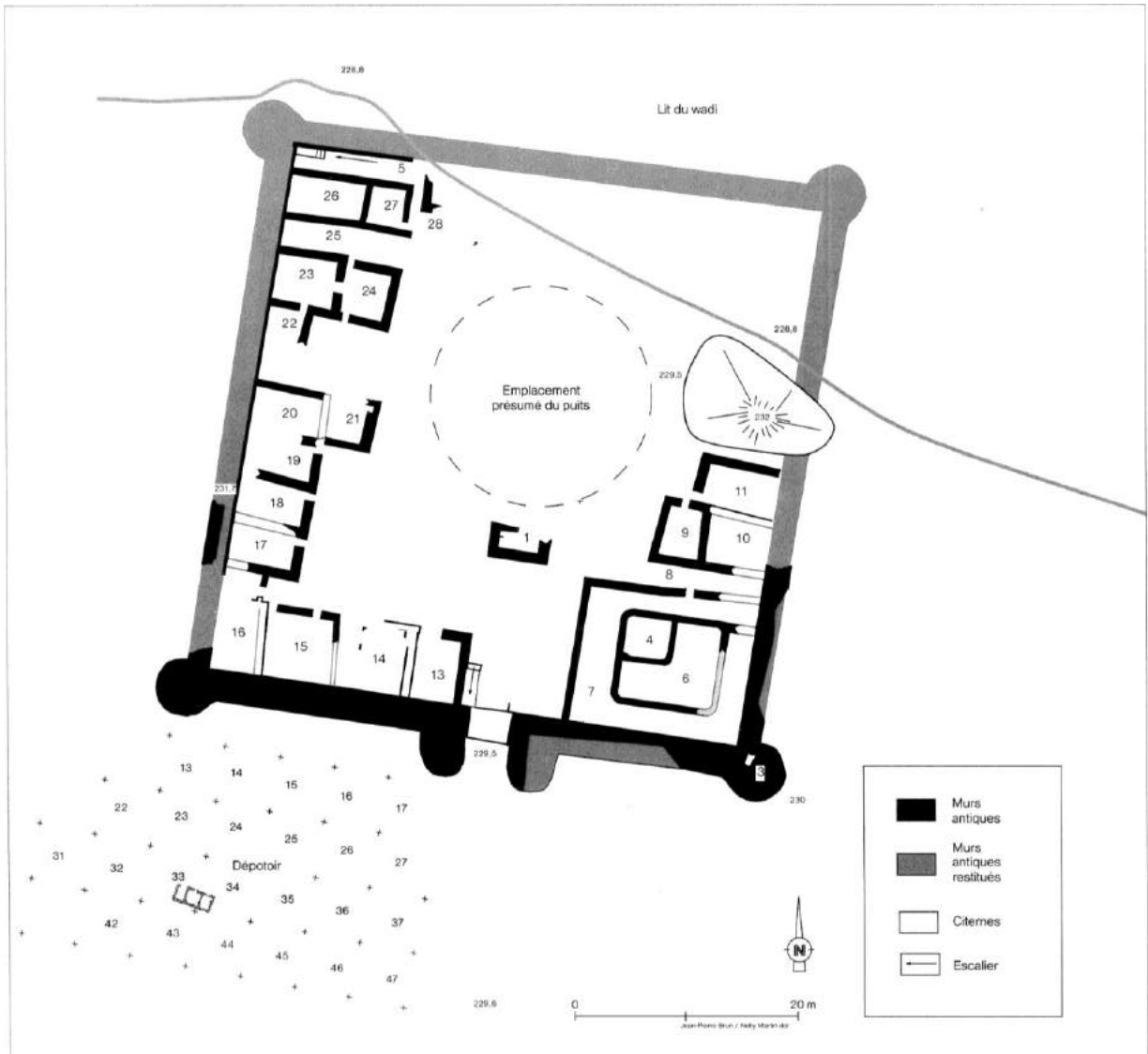


Fig. 78

Plan of the *praesidium* (Krokodilo).

After, Brun, J. P. 2006 d: 143, fig. 35.

¹ Bülow-Jacobsen et al. 1995: 103 – 124.

The heavy rain waves have destroyed the entire north side of the fort and the northeast corner. The stones of the wall were dragged several hundred meters downstream and the thick mud beds were deposited inside the fort. These alluvial deposits have made the research in the central and northern parts of the fort more difficult as well as having a certain idea about the existence of a well.

Therefore, this case is confusing as it can be constructed following the model of Qusur al-Banat, where the court is not equipped with a well, or the other *praesidia* that have the same rectangular plane (Bir Hammamat, Maximianon, al - Hamra and Dawwî), built around a large central well.

It should be noted that the exterior eastern and western curtains of "Krokodilo" were deposited as in the case of the *hydreumata* containing a well. Therefore, the well should have existed, and it was completely clogged by alluvium.¹

The original entrance was probably located on the north side and there would have only limited room for a well in the area covered by mud, it might have not been a large sink diameter, as Maximianon (16 m), but most probably like the modern well of Bir Sayyala (3.40 m diameter) or Bir Hammamat (4 m diameter).

¹ Further comparisons with *hydreumata* containing two cisterns of two different construction phases, cf., Grimal, N. 1998: 537.

The Fort

I. Description

The fort is a square construction that measures 48,10 m from east to west and 47,60 m from north to south. The southern curtain wall has a thickness of 2,80 to 2,90 m and the western curtain of only 1,90 m. Thus, the overall dimension amounts to 53,30 m from north to south and 52 m east to west. Therefore, it should have been a square of approximately 180 feet square (53,30 m). The corner towers are rounded of which only the southeastern tower is sufficiently well preserved to allow to measure a diameter of 5,30 m (18 feet.) In addition to two other semi-circular towers flanking the door.

Inside the *praesidium*, curtains were accessed by stairs, one to the west of the entrance, and perhaps a second symmetrical to the east, one in the northwest corner and probably three in each one of the angles. An isolated building, similar to those of Maximianon and al-Hamra, was in the axis of the entrance.

Barracks were backed by four curtains, their current state is the result of several alterations, indicating a certain period of use. In the beginning, it seems that their disposal has been relatively steady, as in Bir al-Hammamat and Dawwi: long pieces of 5.90 m (20 feet) and variable widths (4 – 6 m on the south side and 3,30 m on the west side), including access corridors. Then some parts were added in front of some barracks and entire sectors have been remade in the northwest corner, the kitchen and in the east side. The barracks in the north side have almost completely disappeared. In the southeast corner, barracks give way to a large cistern constructed of lime.

The walls of the fort are generally elevated in rubble and various modules of which those of the wall are significantly larger than those used in the construction of barracks. The walls, including the ramparts, parapets and walls of the barracks are built of clay. The wall seems to have a composite construction method: the cuffs are bound to clay but the internal padding is constructed of stones and gravel without binder. whitewash of good quality lime is used only in the cistern, and in this case, it is not mixed with broken tile, but only sand and gravel.

II. The Door

Initially, the southern façade of the fort appears to have no door. It seems that there had been a continuous curtain deeply founded in the wadi alluvium of which the foundation thickness is 0.80 m until two apertures inside and outside the curtain showed an identical stratigraphy. Besides, alternating layers of sand, gravel and natural formation reach the soil of use which corresponds to the foundation of a projection.

Fig. 79

The door and the ruins of the original curtain.

After, Brun, J. P. 2006 d: 144, Fig. 36.

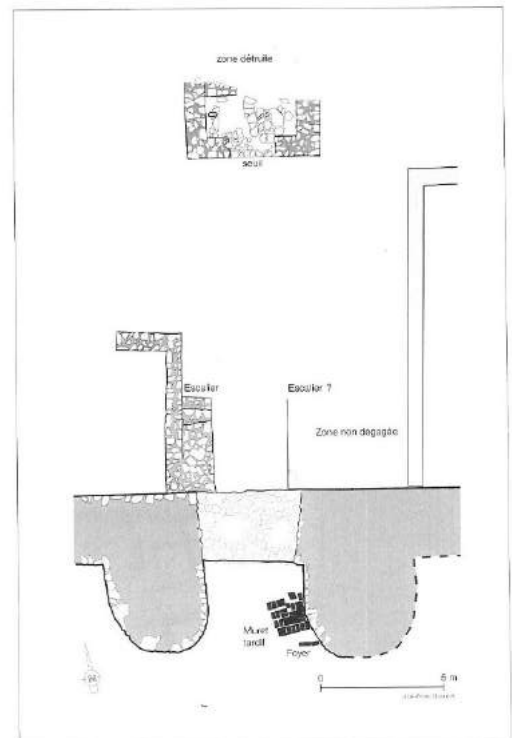


Outside the door, however, it reveals the remains of a narrow completely sterile trench foundation which cuts the alluvial levels, one soil of use has been highlighted. This soil is located on the surface of the wadi alluvium and it had apparently served throughout the occupation of the fort. If the original door was on the southern side, most probably, it should have been located to the north, as Maximianon, Bir al-Hammamat, Qusur al-Banat, Al-Hamra etc. However, the north side of the fort had been destroyed by the wadi, during a second phase, the middle part of the southern curtain wall of the fort was probably pierced to provide a door. Horseshoe towers, about 4 m wide and protruding for about 3.80 m (nearly 13 feet), Were built on both sides of the entrance.

They flank a space of 4.20 m narrowed by the sidewalls of the gate to 2.9 m (about 10 feet). The towers were bonded to the primitive curtain, which means that the external cladding has been stripped till the foundation. However, the towers are not as deeply founded as the curtain and their foundations are joined to that of the original wall. Moreover, this refurbishment re-used some neatly trimmed sandstone blocks, from an earlier construction. The French expedition survey conducted in the north side of the door shows an exactly similar stratigraphy to the outer parts, without priors at the door level.



(A)



(B)

Fig. 80

A. The tower flanking the door to the west.

B. A detailed plan of the door with the towers.

After, Brun, J. P. 2006 d: 144 - 145, figs. 37, 39.

Two explanations are envisaged:

- Both construction phases are generally contemporary and correspond to a change of the running project.
- The original soil was kept constant by regular cleanings.

Similar examples of maintenance such as the case of Maximianon incentive an examination of the second explanation.

The exact layout of the door is not known because its structures were dismantled during late antiquity and the Islamic period. However, hidden blocks show that there must have been, as in the cases of Maximianon and Dawwi, abutments and a sandstone lintel. These blocks present numerous engravings, including some Nabatean graffiti.

The doors should swing in center plates, such as Bir al-Hammamat or Qusur al-Banat, but they were not found; likewise, a sandstone foundation inscription should have existed, but an inscribed fragment was discovered, comprising a ledge that once bordered the epigraphic field.

Towards the interior parts, the passage was limited to a width of 3 m by two walls probably corresponding to the access stairs of the towers flanking the door. Only the western staircase was cleared. It was built with clay measuring 1.20 m wide. Finally, in a third phase, after an abandoning marked by a sandy deposit, the door was partially blocked by a wall.



A



B

Fig. 81

A. The stairs flanking the door and the row of barracks attached to the southern rampart.

B. The late wall that blocked the entrance.

After, Brun, J. P. 2006 d: figs. 40 – 41.

This wall was built with baked bricks, recovered in a building located inside the fort forming probably the cover of the cistern. The bricks measure 30 x 15 x 7 cm like the thermal basins of Maximianon. The wall blocking the door was 1 m long, that formed an angle towards the north. It spared, towards the internal part of the door, a paved brick shelter. To the South of the wall, there was an outbreak limited by three bricks. From both sides of these structures, the primary soil was covered with an occupancy layer containing coals and ceramic furniture.

Furthermore, residual fragments of the 2nd century A.D. are attributable to this phase including 14 vases and 6 amphorae among them, there are a bowl, a cup, 3 vases and a section with four handles of a common type of Wadi Fawakhir.¹

The six amphorae are divided between one Late Roman Amphora 1 and three Gempeler, all datable to the 5th – 6th centuries. Moreover, the lack of amphorae LRA 7 indicates an early dating in that range, around the 5th century A.D.

In the modern times, the door was dismantled and two excavations were digging through the foundations, to the substrate. They contained the glazed ceramics and fragments of an Ottoman pipe (dated to the second half of the 19th century). The silting and destruction of superstructures then formed a thick layer of debris.

III. The West Curtain

The curtain has been cleared for about 5 m on the west side of the fort. The walkway, built of clay, is preserved and is located at a height of approximately 2.50 m above the floor of the entrance. The walkway is 1.10 m wide and the parapet is about 0.85 m (3 feet). The latter should bear the elevation around 3.50 m besides, an intact oil lamp (Frog type) was discovered in front of the parapet.

IV. The Southeast Tower

The corners of the fort were defended by solid towers comprising in the upper part, a room or platform. In the southeast tower, measuring 5.30 m in diameter or 18 feet, a door jamb was reached. The opening gave access to a circular space (2 m in diameter), whose floor was raised to 20 cm if compared to the walkway.

The presence of a door suggests that the towers had a higher elevation than the curtains and were probably covered. Flat roofs should have been restored as no tiles were found. The towers were to be provided with openings, but the level of the remaining traces does not allow any conclusion. Moreover, several large fragments of Amphora (AE3) were discovered on the ground level of the tower.

¹ Analogous to that published by Meyer, C. 1995 a: fig. 15, No. 5.

V. Stairs of the North-Western Tower

The cleaning of the inner corner of the north and west curtains revealed a corridor of 11,90 m long and 2.06 m wide, leading to the northwest corner. In this corridor, there was a staircase leading to the tower, whose steps are made of large trimmed sandstone blocks (0.90 m wide and about 30 cm high).

Two construction phases are visible. the curtains and the stairs belong to the first phase, which occupied originally a larger space. A stone and clay construction was leaning against the western curtain and two stones to the east seem to limit a house. This could be the remaining part of a first kitchen, of which use would have generated a bed of coals and ash that passes under the north wall of the barracks. This occupancy soil left some pots, a bowl and a bottle.

In the Second phase, building with rampart was leveled and passages were limited to 2.06 m. The original floor of the room continued to be used and a circular oven of 1 m in diameter was built. The use of this oven generated a thick layer of ash, in which a dozen of amphorae funds, a jug and a pot were found.

Much later, a new furnace with parts from the top of a jar, of which use could have been dated to a period prior to the walls and silting. It was marked by white paste pitcher and fluted rising belly which are some characteristics of Fawakhir and Elephantine vases.¹



Fig. 82

North - Western stairs

After, Brun, J. P. 2006 d: 145, fig. 42.

¹ Meyer, C. 1995 a: 220, fig. 21.

VI. The Central Building

The Building is located in the axis of the door; this building was totally cleared. It measures 5.30 m from east to west (about 18 feet). However, from south to north, the building is kept on only 3.30 m whereas, the northern part was washed away by the floods of the wadi.

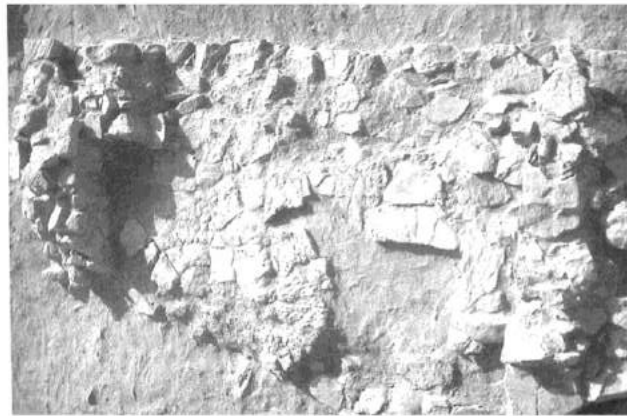


Fig. 83

The central building. After, Brun, J. P. 2006 d: 145, fig. 43.

The perimeter walls are very thick (0.80 m). The beginning of an East-West division is kept on the edge of the destroyed area. This wall delineates an antechamber measuring 1.60 m deep of which soil is recovered with slabs of sandstone. Two tiles show signs of sharpening, perhaps later in the main occupation of the fort. In the northwest corner, there was a house delineated by posed stones. The building can be reached through a large opening of 1.80 m, with a walkway to reach the paved floor, raised about 25 cm.

VII. Barracks

The barracks are surrounded by four curtains of which the flat roof served as a clearing space and maneuvering behind the rampart. Entering the *hydreuma*, to the left side, a row of rooms open on the court with large doors of about 0,80 m. The rooms above the western rampart are in a regular condition (6,80 m long and 3,40 m wide), some rooms are preceded by an antechamber while some others are interconnected, excavations revealed that there was a kitchen in this sector, but comparing with the plan of Maximianon, it can be assumed that these pieces were parts of the "*Praetorium*".

In the eastern part of the *hydreuma* beyond the cistern which occupies the southeastern corner, there are three rooms which seem to correspond to barracks. Two surveys were conducted in the south curtain wall, of which the first, has delivered a layer of sand and rubble lying on the original soil forming the surface of the wadi, and it was revealed that the walls were internally coated and filled with a mortar mud. While the second survey revealed the same layer of filling, based on a slurry bed of 10 cm in thickness, covering the virgin soil. Therefore, it seems that the fort was abandoned after a large cleaning.

VIII. The Cistern

Despite, the cistern is covered by a thick layer of rubble and sand, the leveling courses of the few walls were released. The walls are built of lime and covered with a fine white layer of lime and sand that covers the bottom. Two construction phases are visible. Initially, the basin measured 7.4 m (25 feet) x 8.5 meters (about 29 feet) to a depth of 3.35 or (11 feet) with a capacity of about 200.000 liters. In a second phase, a compartment measuring 4 m x 3.6 m (approx. 12 x 14 feet) with a height of 2.66 m was built in the northwest corner of the previous cistern walls. It cannot be determined if there is a settling basin or a reduction in the storage capacity at 37.000 liters.

Both working campaigns have left traces in the dump including a gravel deposit that could correspond to digging cuttings and a layer of lime wasted discharges associated with the construction of the large cistern. White washed stone and lime remains were also found, they could possibly correspond to the renovation phase, which would be placed in the (B2 phase) of the dump. The filling of the cistern is made of alternating layers of windblown sand and fine clay slurry, which show a long process of natural alluvial deposit after the abandonment of the *hydreuma*. In the bottom, some stones materialize an abandoned level. while no dating evidence has been revealed.



Fig. 84

The cistern.

After, Brun, J. P. 2006 d: 145, fig. 44.

The External Dump

The dump is located in the southwest side of the door (to the right side going out of the door), in an area which originally stretched horizontally at the foot of the southern wall. It was almost completely dissected covering about 600 m² of which 400 m² were excavated while the non-excavated 200 m² consist of deposits to the south and the west of the original mound. It is largely composed of layers of sand, ash, straw and archaeological material slipped on the edge of the central repository. In these levels, furniture and ostraca are degraded and it did not seem useful to identify.¹

Stratigraphy and ostraca distinguished between two main phases:

Phase A: First embankments, a phase that seems related to the construction.

Phase B: Real layers of detritus.

I. Phase A

The Construction of the Cistern

The (Phase A) corresponds to massive deposits that form the basis of the dump. Their characteristics are (rubble, gravel layers and lime beds), besides, chronological homogeneity indicates that they were deposited in a single work campaign, which seems to have started with the cleaning and demolition of barracks (Phase A1), followed by the digging of the cistern (Phase A2) then a second cleaning phase (Phase A3). Deposits of (Phase A) delivered several fragments of lamps representing Athena, whose only parallel to our knowledge, come from Coptos.

These rubbles were transported from the *hydreuma* through the door that was opened in the southern curtain, presumably for the same work campaign. From a chronological point of view, these deposits contain datable furniture from the reign of Trajan. Moreover, the construction of the door and the digging of the cistern are dated to the period after 110 A.D. and, like the deposits of (Phase B1), they are datable to the second half of the reign of Trajan. Therefore, this work campaign occurred between 110 and 115 A.D.

¹ Details of the dump survey made by the French team in Krokodilo, cf, Brun, J. P.2006 d: Fig. 146 – 147.

II. Phase B

The Dump

This period was marked by the construction of a small building and the discharge of garbage.

Pigs' lodge

The east-west oriented building that used to be opened towards the north, measures 3.55 m long and 1.70 m wide. This building is divided into three cubicles measuring 0.75 m in the east, 1.10 m in the center and 0.80 m in the West. The walls are built of sandstone and clay representing a single face of which only 0.50 m height is kept. This feature and the small thickness of the collapsed layer suggest that the walls did not rise above one meter.

The three lodges were equipped with an opening to the north measuring approximately 0.40 m and they are labeled at the bottom by stones. Besides, a pit filled with straw, gravel and covered with ashes was connected to these structures. There is no doubt that these lodges including raised thresholds (to keep piglets and allow easy exit from the sow) were used to house pigs, whose breeding in the surveyed region is evidenced by the ostraca and discarded bones.¹

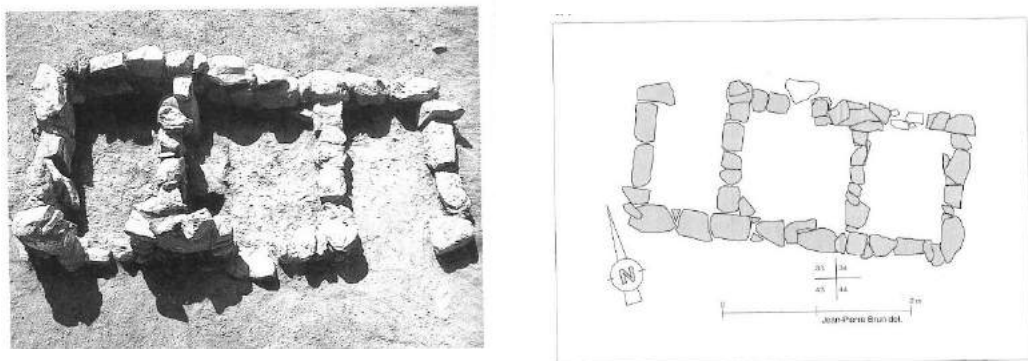


Fig. 85

The pigs' lodge.

After, Brun, J. P. 2006 d: 148, Figs. 50 – 51.

¹ A comparable construction can be found in the villa *Settefinestre* (Italy), it is a vast and regular construction built with lime, with cubicles arranged around a courtyard. It has raised thresholds and feeders, as in Krokodilô and Didymoi, the size of the cubicle is of 3 feet height and just over 3 feet wide. These stalls served to protect pigs from the sun, and they should be covered and narrow enough to allow the animal to find a shelter, while reducing his movements to promote its fattening.

The dating is a problem because garbage deposits that started to be accumulated in “**Phase B**” seem regular and usually of a certain magnitude. Unlike the dump of Maximianon, very few layers correspond to daily garbage deposits. These secondary deposits, resulted from periodic cleaning of the *hydreuma* and it seems that, garbage was voluntarily spread to promote the feeding of pigs. The formation of the dump was smooth and quick. However, deposits can be categorized in four phases, it is difficult to try to determine its precise chronology.

Phase B1

Accumulation of Garbage in the First Embankments

The dating elements are rare including:

- An extremely worn coin, probably issued during the reign of Nero.
- Two amphorae of Cilicia.

The long-term productions are:

- Few sherds of the Eastern Sigillata B.
- Some glassware.
- Cups (that can be dated to the period between the late 1st and early 2nd century A.D.).
- One balsamarium.
- Fragments of a decorated plate of which production was previously dated to the last quarter of the 2nd century A.D. however, the beginning of production should have been traced during the first quarter of the 2nd century A.D.



Fig. 86

The dump (phase B).

After, Brun, J. P. 2006 d: Figs. 52 – 53.

Phase B2

The Growth of Deposits Towards the West and South

The ostraca folder "Apollon-Priscus" appeared in this phase. It is composed of about fifty texts, mostly concentrated in the layers of (Phase B3). Findings are divided between imported amphorae (Cilician, Italian and Gallic) and glass (two bottles, one goblet, one balsamarium and one plate).

Phase B3

Abandonment and Burying Pigs in Boxes

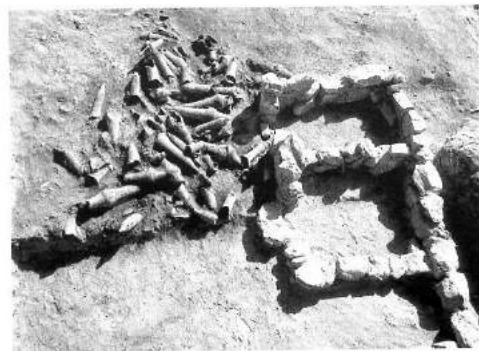
this phase is marked by the pursuit of deposits to the south, followed by the abandonment of pigs' lodges and their progressive filling with rubbish. Stratigraphy indicated ash layers and of straw - gravel interrupted by a succession layer containing lime and a deposit of thirteen amphorae (AE3), but not broken-necked, thrown into a pit dug for this purpose. In addition to seventy-seven amphorae of which at least 30 are almost complete were found.

This phase has delivered many ostraca, including one dated to the reign of Trajan (about 116 A.D.) and dispersed elements of an amphora covered with copies of official letters, dated to year 2 of Hadrian (118 A.D., O. Krok 87).

Fig. 87

Phase B3 (Filling of the lodges).

After, Brun, J. P. 2006 d: 149, fig. 55.



Phase B4

The Last Sediment

The end of using the dump is shown by a thick embankment of sand and almost sterile gravel (35 cm thick), followed by a layer of straw, a bed of ash and a level of broken amphorae and dishes that yielded 142 amphorae. These deposits are covered with ashes, clusters of stones and sand. Few ostraca dated to this phase have been found. However, the most accurate dating element is an italic manufacturing mortar bearing the mark *Velox d(e) f(iglinis) I L(ucii) Opp(ii) Ant(onini)*, this tile factory and brick was active during the reigns of Trajan and Hadrian.

III. Phase C

After the abandonment of the fort, the dump was covered with:

- A layer of windblown sand.
- Organic materials extending on the outskirts of the dump.
- Ashes and sherds deposited by runoff and wind action.

This very reworked level contains only furniture from eroded layers. It uncovered:

- A billion coin that dates to year 10 of the emperor Nero.
- Two sherds of amphorae of Cilicia.
- Two Italian amphorae.
- Fragments of a cup.

Ceramics of al-Muwayh (Krokodilo)

A well-preserved dump was excavated in 1996-1997 during the French excavation work in the southwest side of the door. This dump was formed under Trajan and Hadrian. The oldest Ostraca date back to the 103 A.D. and the most recent levels revealed an ostracon of 118 A.D., then the fort had been abandoned during the reign of Hadrian, probably around 120 AD. Therefore, the amphorae represent a well dated context around the first quarter of the 2nd century A.D. Moreover, the dump revealed 2048 amphorae of which 98% are of Egyptian origin.¹ Excavations in the *hydreumata* of “Muwayh” revealed 1957 examples of alluvial paste Amphorae in addition to 37 amphorae from the “Lake Mariout” and 16 other types of amphorae.²

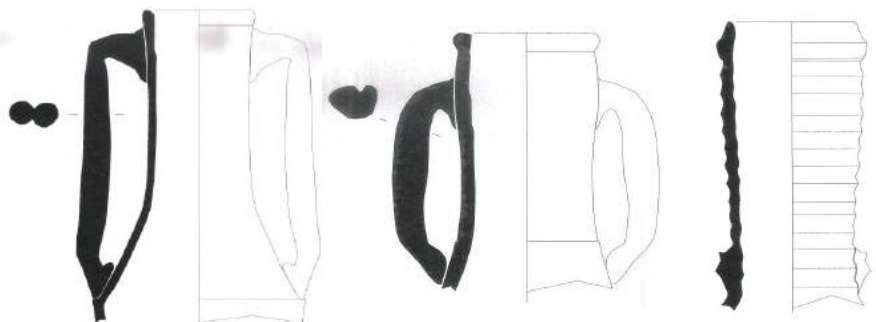


Fig. 88

Amphorae of Muwayh (Krokodilo).

After, Brun, J. P. 2007: 517 - 518, figs. 13 - 14 (1 - 3).

¹ Brun, J. P. 2007: 516.

² Brun, J. P. 2007: 518.

Imports are represented through:

8 examples of Italian Amphorae that represents about 20% of the imports discovered in the dump.

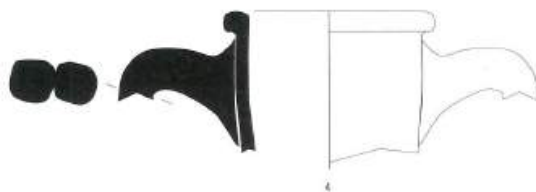


Fig. 89

Imported amphorae in Muwayh.

After, Brun, J. P. 2007: 518, fig. 14.4.

6 examples of flat bottomed little amphorae, probably Campanian of “Le Formiche” type.



Fig. 90

“Le Formiche” amphorae of Muwayh.

After, Brun, J. P. 2007: 511 – 512, figs. 8 -9.

- 20 examples of amphorae from Laodicea (Lattakia) representing about 51% of the imports.

Fig. 91
Amphorae from Laodicea (Lattakia).
After, Brun, J. P. 2007: 518, fig. 14.5.



- 2 examples of Gaulish Amphorae.

Fig. 92
Gaulish Amphorae.
After, Brun, J. P. 2007: 518, fig. 14.6.



1 example of amphorae of Knidos.

7 examples of undetermined Eastern amphorae including one "Knossos 39".

Chronology

The history of Krokodilo can distinguish between four construction phases.

I. The first period of occupation represents a square *hydreuma*, probably with a well and a door located to the north, where the tracks used to pass. The dating of this phase remains uncertain due to the absence of both the foundation inscription and the dump that used to be in front of the north gate. It can be assumed that it was built later than the beginning of the reign of Trajan, however, nothing precludes a Flavian time dating.

II. Secondly, the north side of the *hydreuma* was devastated perhaps as a result of a flood and a new door was opened to the south, as a better protected side. To open this door, the old curtain was pierced and two towers were built on either sides of the entrance. Afterwards, axial building was then built, perhaps to monitor the entrances and exits. This is probably the same period of digging the cistern in the site of the former barracks and throwing the rubble next to the door (phase A). The digging of the cistern and the opening of the south gate can be dated to about 110 A.D. or shortly after.

The fort was intensely occupied until the reign of Hadrian, as evidenced by the discharges in the dump (state B). Dated ostraca to the reigns of Trajan and Hadrian and the archaeological material is very homogeneous. The imports have a significant proportion of Eastern Sigillata B, but also few vases from either Italy (Red flat Pompeian, Italic mortar with trademarks that date back to the reigns of both Trajan and Hadrian) or North Africa (clear sigillée A) and glassware decorated vases that can be dated to the early 2nd century A.D.

III. It is possible that the *hydreuma* was abandoned after a flood that destroyed its northern flank as (Phase 3) corresponds to a period of abandonment between the second quarter of the 2nd century A.D. and the 5th century A.D.

IV. During (Phase 4), that can be dated to the 5th century A.D., while the gold mining at Bir Fawakhir was experiencing an intense exploitation, the ruins of the *hydreuma* were used as a temporary shelter. A cabin was constructed, halfway step between Laqita and Fawakhir, reusing the walls of the towers as side walls and the bricks for the wall and the floor. Traces of this reoccupation are visible in various locations, including the space nearby the northeastern stairs. Given the speed of the dump formation process, it can be stated that the final (Phase B4) is attributable to the second half of the reign of Hadrian.

1.4.9. Qusur al-Banat Geographical Location

The site is located at 50 km from Qift, about 150 meters south of the modern road in the bed of the wadi, opposite to a large isolated rock on which various inscriptions were identified.

The Wadi is very wide at this point. It receives a southern tributary that sometimes silted the fort itself and carried the dumps. The level of the gate of the fort is located at 189 m, while the rocks to the north, rise to 200-204 m.¹

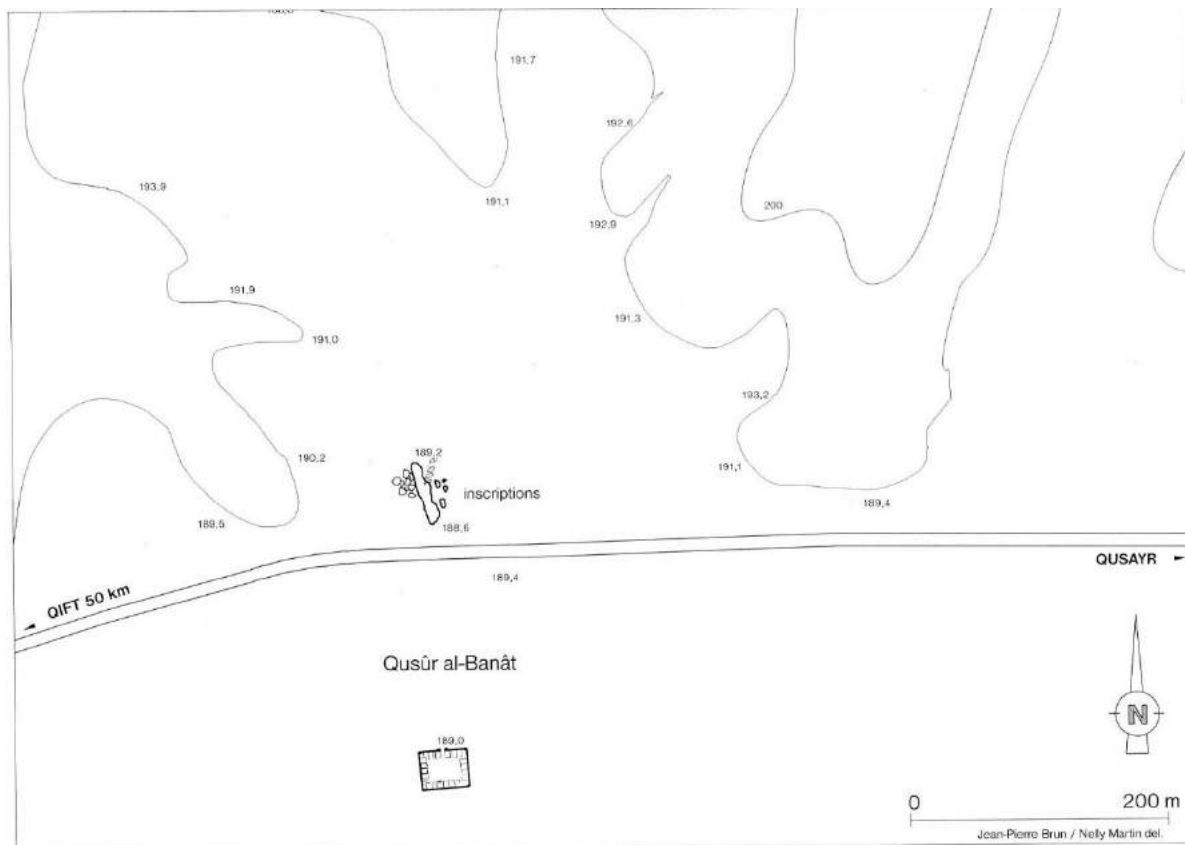


Fig. 93

Qusur al-Banat.

After, Redde, M. 2006 b:138, fig. 20.

¹ Redde, M. 2006 b: 73.

The fort is completely preserved, except for its northeastern corner, which is ruined. The monument is kept on a maximum height of 1.80 - 1.90 m, which is not sufficient to preserve the walkway. Moreover, the interior is covered by sand. ¹

General Description

The fort is a rectangular construction (about 38.60 x 31.20 m), with rounded corners. The walls were built of sandstone while the interior walls were built of grit, the stones are assembled using the dried soil mud of the Wadi. No corner towers are still visible, nor any internal parts, except for the north side, from both sides of the single door. ¹

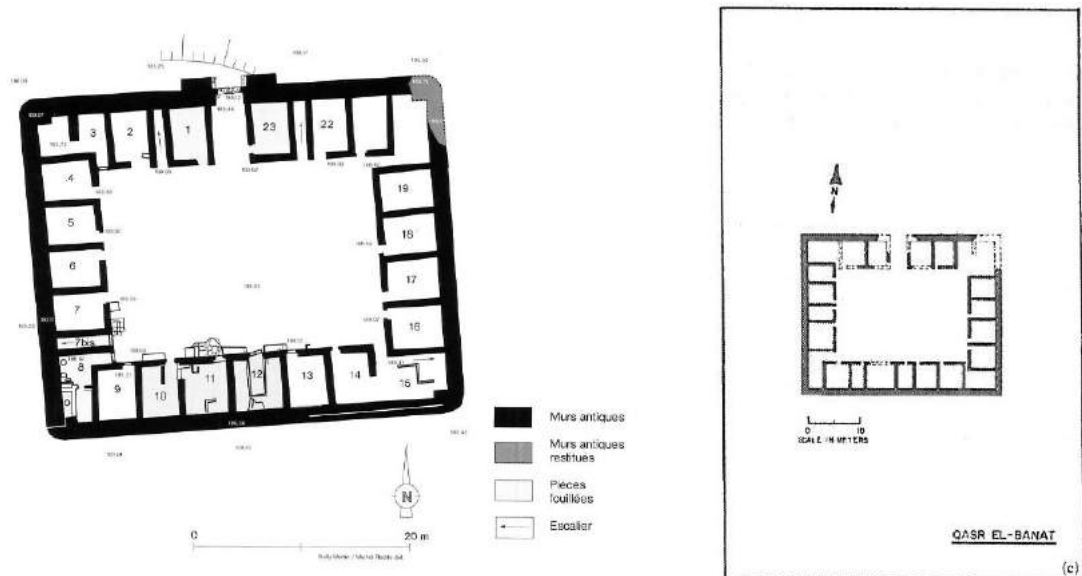


Fig. 94

Plan of the *praesidium*.

After, Redde, M. 2006 b: 139, fig. 22; Zitterkopf, R.E. and Sidebotham, S.E. 1989: 173, fig. 4 (C).

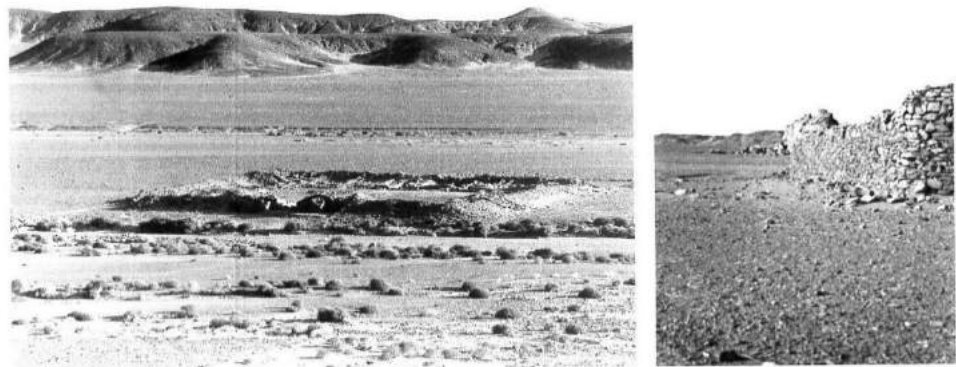


Fig. 95

Qusur al-banat and the western curtain that doesn't exist anymore.

After, Redde, M. 2006 b: 138, fig. 21 (a - b).

¹ Redde, M. 2006 b: 73 – 74.

The 1.45 m large curtain, is constructed of irregular blocks in their shape and dimensions in which the clearance of the southwest corner revealed an internal buttress. This curtain can be reached by four stairs, perpendicular to the wall. Two of them frame the door, beyond the first room that adjoins it. The other two stairs are located on the eastern and western curtains, near the southern angles. The staircases were filled with gravel from the wadi and the stone footboards were disappeared.

All parts are installed against the inner face of the curtain, they are rectangular spaces, with quite regular dimensions (from 4.50 to 5 m x 3.50 to 4 meters approximately), opened onto the central courtyard.

The presence of large shale slate suggests that the living spaces of the fort were covered with this material. No masonry floor appears in these residential rooms, except for some parts. The central courtyard does not include any pavement and the floor consists of the wadi alluvium.¹



Fig. 96

Construction details of the curtain

After, Redde, M. 2006 b: 139, fig. 23.

¹ Redde, M. 2006 b: 74.

However, some stone slabs are arranged along the row of the southern parts and the front stairs of (Room 7). benches of stone and mud, covered with a white coating, frame the access to parts (10, 11, 12) (Fig. 94). The court seems to have been well preserved and a manual north-south trench in the axis of the door has indeed revealed no change in the stratigraphy of the wadi.¹

Excavated Parts

I. The door and foundation text

The excavation of the single door opening to the north, revealed the presence of two prominent and solid square towers measuring about 2.80 x 2.80 m. and clearly linked to the curtain wall outside.

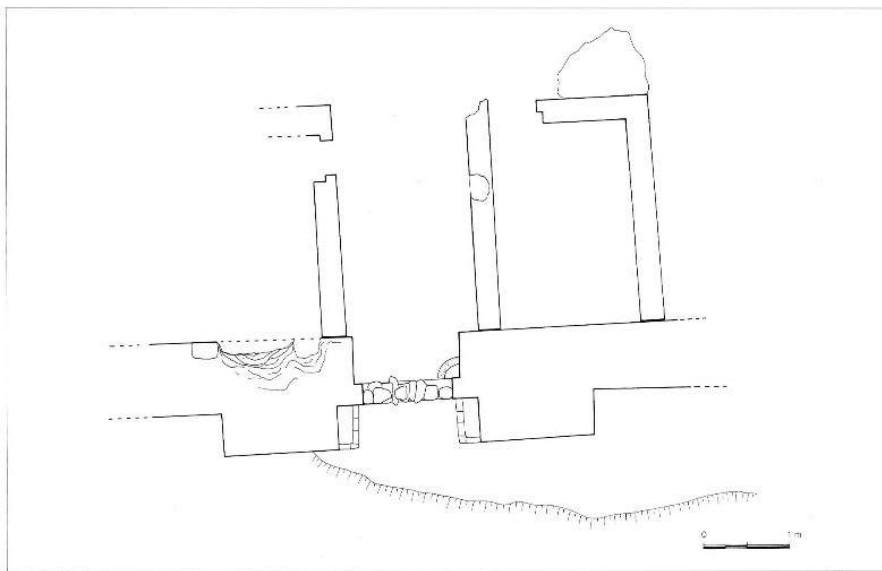


Fig. 97

The door plan and view from outside and inside.

After, Redde, M. 2006 b: 140, figs. 24 – 26.

¹ The rapid survey conducted in 1987 by J.-C. Golvin had assumed the existence of a well in the southeast corner of the *hydreuma*, but it appeared that it was a simple recently dug hole by the Bedouins, Cf., Redde, M and Golvin, J. C. 1986 – 1987: 5 – 64.

The passage, 2 m wide, included a monolith sandstone threshold and the single leaf door frame, resting in a hollowed center plate dug into the ground to the northwest side. The passage is constructed of clay.

various fragments of white plaster, crushed on the ground, were spotted during the excavation of the French archaeological mission. Besides, a mud brick bench appears to have existed outside the door. In a later phase, the door was blocked by boulders.

During the excavations, a fragmentary inscription was revealed, of which the main part was discovered to the south of the passage, in addition to some fragments to the north. Given the location and shape of the stone, it should have been the foundation text.

It represents a fragmented block of sandstone, that measures about 0.10 m thick, Tabula ansata, of which maximum dimension is 43 x 41 cm. Height Letters: 4.2 to 4.4 cm.

The inscriptions are framed by a double peripheral molding of which only the lower left corner is preserved. Molding and dovetail are painted white while the interior trim is accented with yellow ocher. The text reads:

Vale [

Et Anton

praesidi

[.

1



Fig. 98

The foundation text of the *praesidium*.

After, Redde, M. 2006 b: 141, Fig. 27.

¹ Redde, M. 2006 b: 75.

It is more difficult to assess the width of the stone. however, inscriptions should have been almost square or on the contrary quite elongated but at least half of the stone is missed, besides, the last line is composed of 6 to 15 letters. The first word of the last line is obviously “*praesidium*” the word that commonly referred to the military posts of the Eastern desert.

The inscription is obviously a foundation text that should have included a sort of formula that indicates the function of the “*Praesidi[um] aed(ificauit) or f(aciendum) c(urauit)*” along the length of the gap. It is very likely that the dedication brings to the forefront the name of the emperor, followed in the second and the third line by the name of the officers under the responsibility of whom the construction works are performed (prefect of Egypt, then prefect of the competent military troop or prefect of Berenice). The beginning of the third line may indicate such a character, but it cannot be proved formally as “*Valerius Frontinus*” can thought to be the prefect of “*Ala Herculiana*” that stationed in Coptos in 185 A.D., which is naturally quite tempting but impossible to be proved.

The line before the last line needs more attention as it starts with the copula that can be considered as a consular couple. The next word implies to “*Antonius or Antoninus*”.¹ Therefore, the date could be 202 A.D. which is contemporary to “*Seuero III and Anton[in]o coss*”, however, this assumption cannot be formally proved.

¹ Consular couples are not all known, which is hesitating especially between L. Antonius Albus, consul in (101 AD.), M. Antonius Rufinus (131 AD.), L. Antonius Albus (about 131 AD.), Marcus Antonius Hiberus (133 AD.), Q. Antonius Isauricus (circa 142-144 AD.), Antonin (140 and 145 AD.). Moreover, M. Antonius Zeno (148 AD.), C. Arrius Antoninus (about 170 AD.) cannot be neglected. Cf., Redde, M. 2006 b: 76.

II. Room no. 12

The room, facing the entrance, was entirely cleared. It measures approximately 5.40 x 5.60 m. This part includes a particular device that can be accessed through a central gate measuring 1 m wide, with well-preserved piers and without stone threshold. This gate was sealed in a late phase of the life of the fort.

A clay central aisle, with traces of crushed lime plaster, probably felt from the walls, separates two raised side benches of about 0.50 m height and 1.50 m wide. In the back side of the room, along the south curtain wall, ruins of a shrine still exist, slightly raised relatively to the two side benches, and separated from them by the remains of a wall, in the southwest, with two superimposed mortar levels.¹

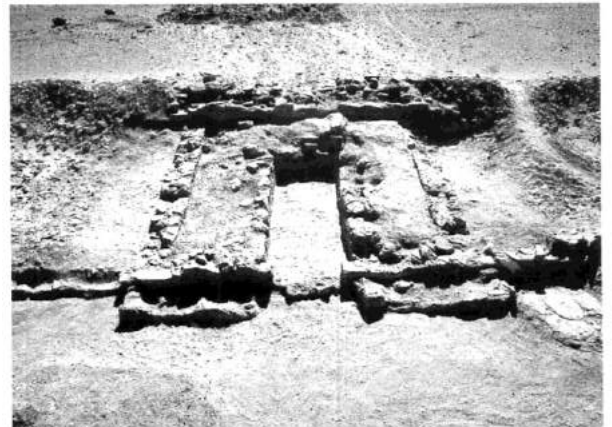
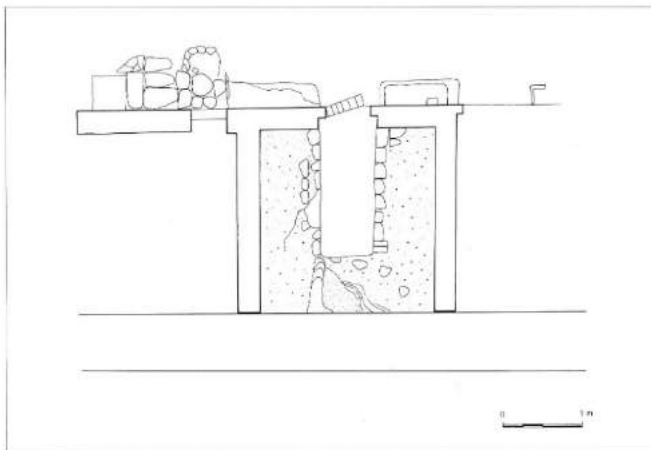


Fig. 99

Sketch and ruins of room no. 12.

After, Redde, M. 2006 b: 141 – 142, figs. 28 – 30.

¹ Redde, M. 2006 b: 76.

III. The south-western corner

The clearance of the southwestern corner revealed successive developments that appears to be related to the soldiers of the *hydreumata*.

- One of them (Room no. 8) has provided an interesting papyri dossier in the form of the letters received by Decimus centurion.
- The southwestern corner of the room has a small bench enclosed by stone walls, with gravel filling that contained a central jar.

The room was divided into two parts to the east and the west during a later phase of occupation to the original construction.

Ostraca were essentially contained in small *loculus* arranged against the western curtain, in the edge of the seat, and close to a small house located in the northwest corner, facing the entrance. This house is simply defined by a series of stones.¹

Room (no. 11), is slightly larger than the average (4.70 x 4 m), it had initially its access to the north of the courtyard. then, this access has been blocked, and a second access was drilled to the west, towards room (no. 10), to constitute a larger "apartment".



A



B

Fig. 100

A. Room (no. 12), the ruins of the shrine.

B. Room (no. 8).

After, Redde, M. 2006 b: 142, fig. 30 -31.

¹ Redde, M. 2006 b: 76 – 77.

Room (no. 11) has two quite ruined small *loculi* stone, whose function is not clear. The excavation revealed the presence of a large “Pithos”, which is a small niche that seems to have been made in the wall, near the southeast corner of the room.

Room (no. 10) shows the addition of a north-south wall, near the entrance to the courtyard. This helped to install a small mud brick bench along the northern wall of the room.

Remains of a house are still visible in the southeast corner; here also a small niche seems to have been dug in the thickness of the wall, near the southeast corner.

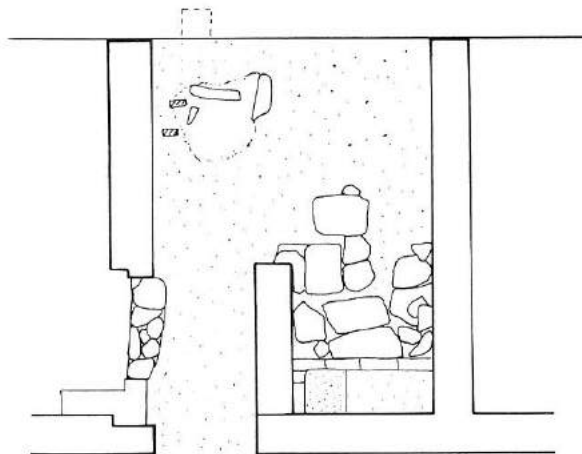


Fig. 101

Sketch of Room no. 10.

After, Redde, M. 2006 b: 142, fig. 32.



Archaeological Findings

The dump was blown away by the wadi and the excavations of the fort have yielded little equipment that must be related to the last phase of occupation. Essentially, the furniture is close to that of the final phase of Maximianon.

The fine ceramic is rare such as:

- One cup – goblet with slip decoration.
- Three cups.
- Tableware manufactured in Aswan.
- 26 vases of the ceramic of Coptos.
- Four pieces of cruets.
- Twenty-seven vases of culinary dishes including casseroles and pots.
- Four alluvial paste vases (a bowl with two handles, a knife and two closed vessels) were not known in this site until similar samples were found in the later levels Didymoi, that could match the last contributions to the site in the early 3rd century.
- 62 pieces of (AE3) Amphorae that can be dated to the end of the 2nd and early 3rd century AD.
- Fragments of 14 jars, bearing a relief decoration under the rim. ¹

¹ Redde, M. 2006 b: 77.

Chapter II

The Port System of the Qift – Quseir Road

2.1. Introduction

2.2. Coptos (Qift)

2.2.1. Roman Settlement

2.2.2. Excavations of Coptos

2.2.3. Archaeological Findings

2.3. Myos Hormos (Quseir Al Qadim)

2.3.1. Geographical Location

2.3.2. The Importance of Myos Hormos

2.3.3. The ancient town of Myos Hormos

2.3.4. The Harbour area

2.3.5. The Settlement

2.3.6. Archaeological Findings

2.3.7. Chronology of the port of Myos Hormos

2.4. Mersa Gawasis

2.4.1. Geographical Location

2.4.2. Religious Aspects of Mersa Gawasis

2.4.3. Archaeological Findings

2.4.4. Chronology

2.5. The Ancient Red Sea Ports

2.6. Port System in the Red Sea

2.7. Destination of the Seafaring Expeditions

2.1. Introduction

The central sector of the Egyptian Eastern desert was served by three main ports linking between the Nile and the Red Sea coast during the period between the Pharaonic and the Roman period which are:

I. Coptos.

II. Myos Hormos (Quseir El Qadim).

III. Mersa Gawasis.

2.2. Coptos (Qift)

Coptos is one of the most ancient religious centres of Upper Egypt, it was the cult centre of Min (Gbtw). ¹

In addition to this prominent religious significance, the city enjoyed a leading economic position due to its location in the crossroad between the Nile valley and the shortest desert road linking between the Nile and the Red Sea coast through Wadi Hammamat. Ancient Coptos was inhabited since at least the Early Dynastic Period, it was the capital of the Fifth Nome of Upper Egypt. The geographical position made Coptos an important trade centre and a gateway to the greywacke quarries and the mineral resources of the Eastern Desert.

By the Greco – Roman time, with the opening of trade routes from the Mediterranean to India through the Eastern Desert, Coptos became a major Trans-ship point, an ancient site the lies today under the modern village of Qift.

By the 1st century A.D. the rules of the eastern trade were well – established, from Alexandria, it took 12 days sailing southwards along the Nile River until Coptos, almost 650 km.

The city was a major river port and an important commercial clearing house for the eastern goods arriving across the desert from the Red Sea ports. Consequently, Coptos functioned as a base for trade associations, transport firms and served as the headquarters of the various government representatives who monitored and taxed the flow of import and export commodities. Its economic weight was considerable particularly during the Ptolemaic and Roman Periods as anyone crossing the eastern desert was should have paid a tariff that was paid in Coptos, receiving in return a travel permission that would be inspected at the military installations along the route. These passes raised revenues, allowed officials to monitor traffic, and ensured that any armed civilians using the roads were on legitimate business. By the time of embarkation, the desert roads would be filled with various types of personnel travelling to the Red Sea ports. ²

¹Nur El Din, A. 2009: 187 (Translation from Arabic).

² Mclaughlin, R. 2010: 29 – 30.

A famous imperial stela known as the Coptos tariff recorded the value of the tax tariff:¹

A helmsman of the Red Sea, 8 Drachmas,

A ship's lookout, 10 Drachmas,

A guard, 5 Drachmas,

A sailor, 5 Drachmas,

A shipbuilder's servant, 5 Drachmas,

An artisan, 8 Drachmas.²

This can be considered as a remarkable evidence for this traffic and a source of information providing us with vital details about ancient loading operations in this area. In addition to the importance dealing with the argument of the eastern commerce.

Another important evidence that reflects the economic prosperity of Coptos, is a collection of ostraca called the "Nicanor" archive which provides further valuable information about the caravan transport operations that supplied the Red Sea ports during the Roman era. This archive was found at Coptos and consists of transport receipts from a small family who ran a company that was active from 6 A.D. To 62 A.D. This company held important contracts to deliver monthly food supplies to Roman garrisons stationed in the desert. The head of this business was a Greek - Egyptian called Nicanor who owned a small caravan that probably numbered at least 36 camels.³ Therefore, it was suggested that Roman businessmen hired Nicanor to transport their cargoes across the desert, and when these goods arrived safely, their agents at the ports would issue an ostraca receipt to acknowledge delivery. Nicanor, or the member of his extended family who was making the delivery, would then return to Coptos with the receipt. This receipt could then be used to verify that the delivery had been executed exactly as agreed.⁴

There are 88 ostraca in the Nicanor archive stating the member of Nicanor's family who transported the goods, the quantity and type of freight convoyed, the delivery destination, the name of the individual who received the consignment, and the date when these dealings were concluded.⁵ The Nicanor archive therefore provides valuable information about the identities and activities of Roman Businessmen who were operating at the Red Sea ports.

¹ It is a large stone inscription that provides important information about the travelers who were crossing the Egyptian Eastern desert during the Roman period, the text dates to around 90 AD once stood in some prominent public location at Coptos and it records tolls to be paid by travelers leaving the city for the Red Sea ports. People were taxed according to their occupations and the inscription also records tolls to be paid on pack animals and other unusual transports such as funeral possessions. As this desert crossing was the main route to the Red Sea ports, this text indicates the many occupations involved in Roman trade voyages to the distant east, cf., Mclaughlin, R. 2010: 16.

² Mclaughlin, R. 2010: 30.

³ Young, G. K. 2001: 53.

⁴ Mclaughlin, R. 2010: 15 – 16.

⁵ Van der Veen, M. 2011: 67.

2.2.1. Roman Settlement

Coptos remained undoubtedly a major Upper Egyptian city throughout the second and the first millennia. This can be proved by the large number of Coptic objects and inscriptions that are dated to this period. Particularly impressive is the inscription of Parthenios, son of Paminis, Lesonis of Isis who remained in charge under the Roman emperor Tiberius, Caligula, Claudius and Nero.¹

About 25 inscriptions, reflecting his activities in the site were collected: re-built walls, doorways, various chapels and sanctuaries for Isis and Horus/Harpocrates, as well as Geb and Nut.²

However, very little is known about the general layout of the city in Roman times, the several Roman inscriptions discovered suggest a thorough reorganization of the walls and street layout, a situation confirmed by the high number of doors, colonnades and porticos erected inside and around the sacred precincts between the reigns of Caligula and Nero. It might have been under Claudius that porticos were also added along the main streets, such as the colonnade along the north wall of Min temenos, or the smaller ruined portico overlooking the eastern street. Here, there is an interesting dedicatory inscription of a tradesman from Aden, Arabia that dates to 70 AD. And reflects the importance of the position of Coptos for the international commerce in this early period. This inscription may testify the rich religious syncretism of the era and complementing the Roman geographer Strabo's description of the site as a cosmopolitan trade centre and a common city for both the Egyptians and the Arabians.³

Today, the growing market village of Qift encircles ancient Coptos and it is encroaching upon the numerous archaeological remains, therefore, the site is clearly in danger of disappearing entirely.

¹ Paminis was an Egyptian businessman who used to send one of his sons into each town to manage his extensive eastern trade interests. Parthenios, one of his sons, seemed to be wealthy enough to leave temple inscriptions at Coptos in 32 A.D., which recorded an expensive dedication to Isis. Cf., McLaughlin, R. 2010: 32 – 34.

² Pantalacci, L. 2012: 8.

³ Strabo, 17.1.44.

2.2.2. Excavations of Coptos

Large – scale excavations at the site were concluded by Flinders Petrie in 1893 – 4 and by Adolf Reinach and Raymond Weill in 1910 and 1911. Both expeditions focused on the ruins in the southeast sector of the modern town, where Petrie found remains of a sacred enclosure (temenos) ¹ dominated by a temple of Min, Isis and Horus. According to Petrie, this temple was built by Thutmosis III and was probably rebuilt and enlarged by Ptolemy II, with numerous dedications by later Ptolemaic kings and Roman emperors through Caracalla. Although Petrie found no architecture earlier than the 18th Dynasty, artefacts excavated under and around the temple, including torsos of three colossal statues, indicate cultic use of the area by the Early Dynastic period, and probably earlier. ²

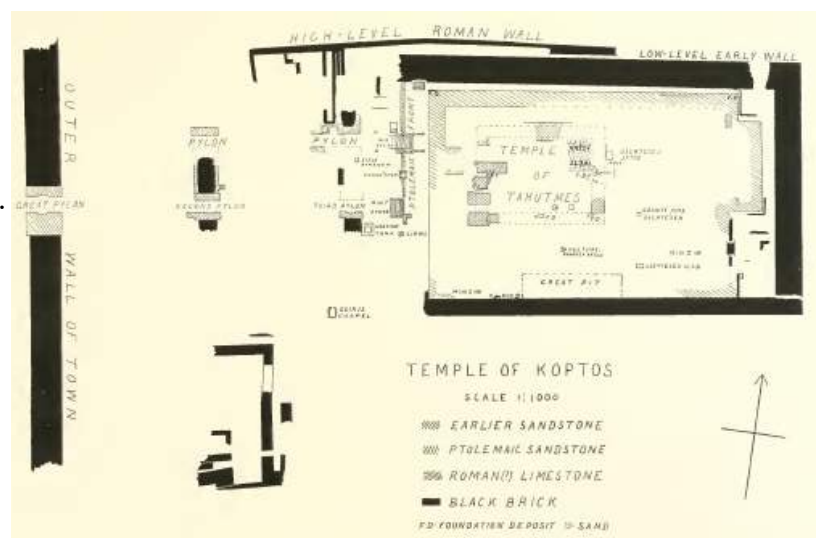
For the most part, Reinach and Weill worked to the southwest of the temple, where they found several small temples, shrines and dedications range in date from Nectanebo II (26th Dynasty) to Ptolemy XIV, and Roman emperors from Augustus through Claudius. ³

The earliest temple here was dedicated to the god Geb, who appeared to be the principal deity worshipped in this sector. Houses attributed to the reign of Diocletian were built over the temple wall and attest the end the cultic use of the area. Moreover, an area of Christian churches was explored to the west of Petrie's temple. The size and architectural quality of this complex convinced Reinach that Coptos must have been one of the metropolis of the Coptic church. Moreover, The French team explored some Roman houses outside the east wall of the temenos and a temple in the northern suburb of el – Qal'a, built during the reign of Tiberius. ⁴

Fig. 102

The temple of Coptos.

After, Petrie, W. M. F. 1896: pl. 1.



¹ Temenos is a piece of land cut off and assigned as an official domain, especially to kings and chiefs, or a piece of land marked off from common uses and dedicated to a god; a sanctuary, holy grove or holy precinct. The concept of temenos arose in classical Mediterranean cultures as an area reserved for worship of the gods. Cf., Leight M., B. and Vitebsky, P. 2000; Antonaccio, C. M. 1995.

² For further information, cf., Petrie, W. 1896.

³ Reinach, A. 1912.

⁴ Bard, K. A. and Shubert, S. B. 1999: 799.

From 1987 to 1995 a team composed of members of the university of Michigan in collaboration with the university of Asyut under the leadership of Sharon Herbert and Henry Wright excavated in the Ptolemaic – Roman levels to the north and the east of the temple of Min.

The primary objective of this expedition was to produce a datable stratified sequence of local ceramics that would allow a close dating and better understanding of the Greco – Roman trade routes to the Red Sea, if analysed in conjunction with findings from the fortified stations in the Eastern Desert.

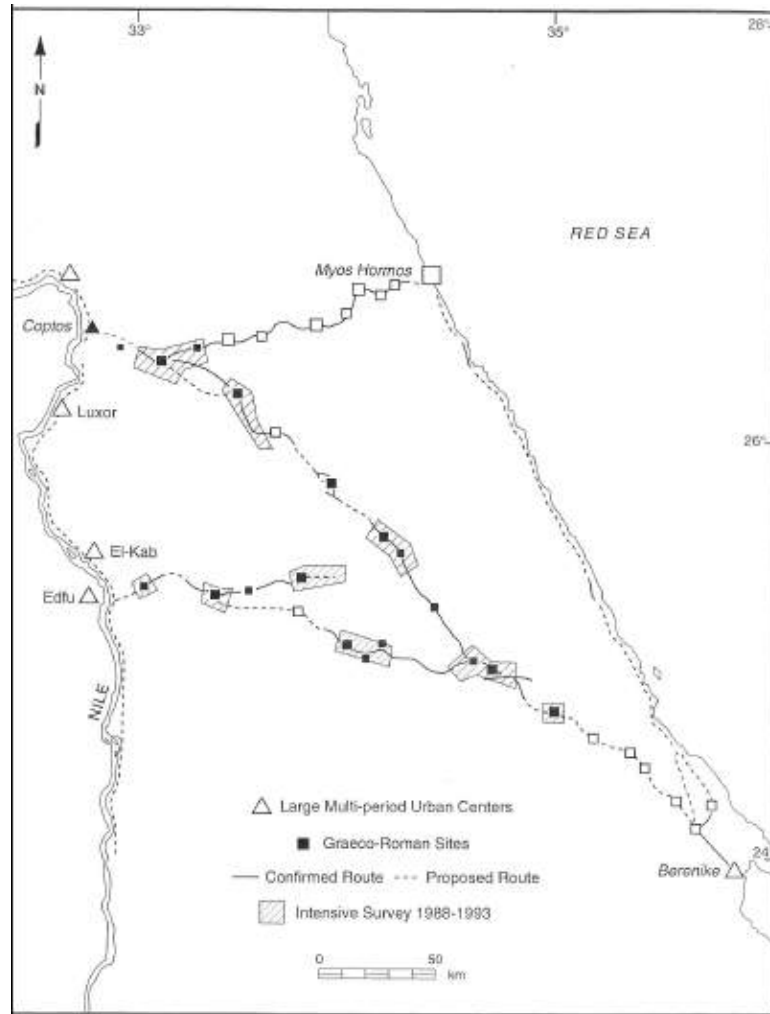


Fig. 103

Areas excavated by the Michigan – Asyut expedition.

After, Herbert S. C. and Berlin, A. 2003: p. 224, fig. 112.

Stratified deposits ranging in date from the Middle Kingdom to the Fifth century AD were found in addition to some evidences that dated the eastern temenos wall to the reign of Nectanebo I or II and a series of early Ptolemaic houses within the temons.

Remains of a later (mid – second century BC) temenos wall, supplanting that of Nectanebo, were found to the north of the temple. Interestingly, the room in the northeast angle of this wall was decorated by painted stucco in Macedonian style imitating carved stone blocks.

In 2002, with the support of IFAO, the French archaeological mission in Coptos under the supervision of the university Lumiere - Lyon team, took over the exploration of the site and re-excavated the main structures explored by petrie and Reinach which are:

- The temple of Osiris.
- The chueches in the west and their baptistery.
- The temple of Min and Isis.

Cleaning process occurred in 2005 to the supposed location of the southeast corner of the temenos of the great temple. A few dozen blocks of coquina frames belonging to three different doors were delivered.

Cornice lintel of the most impressive of these doors was in the name of the famous son of Parthenios Pamin, and dated to the 9th year of the reign of Nero.

The monument was dedicated to Isis “Great goddess”, but the name of Emperor Antoninus confirms that the door was still in use till the middle of the second century AD.¹

¹ <http://www.ifao.egnet.net/archeologie/coptos>

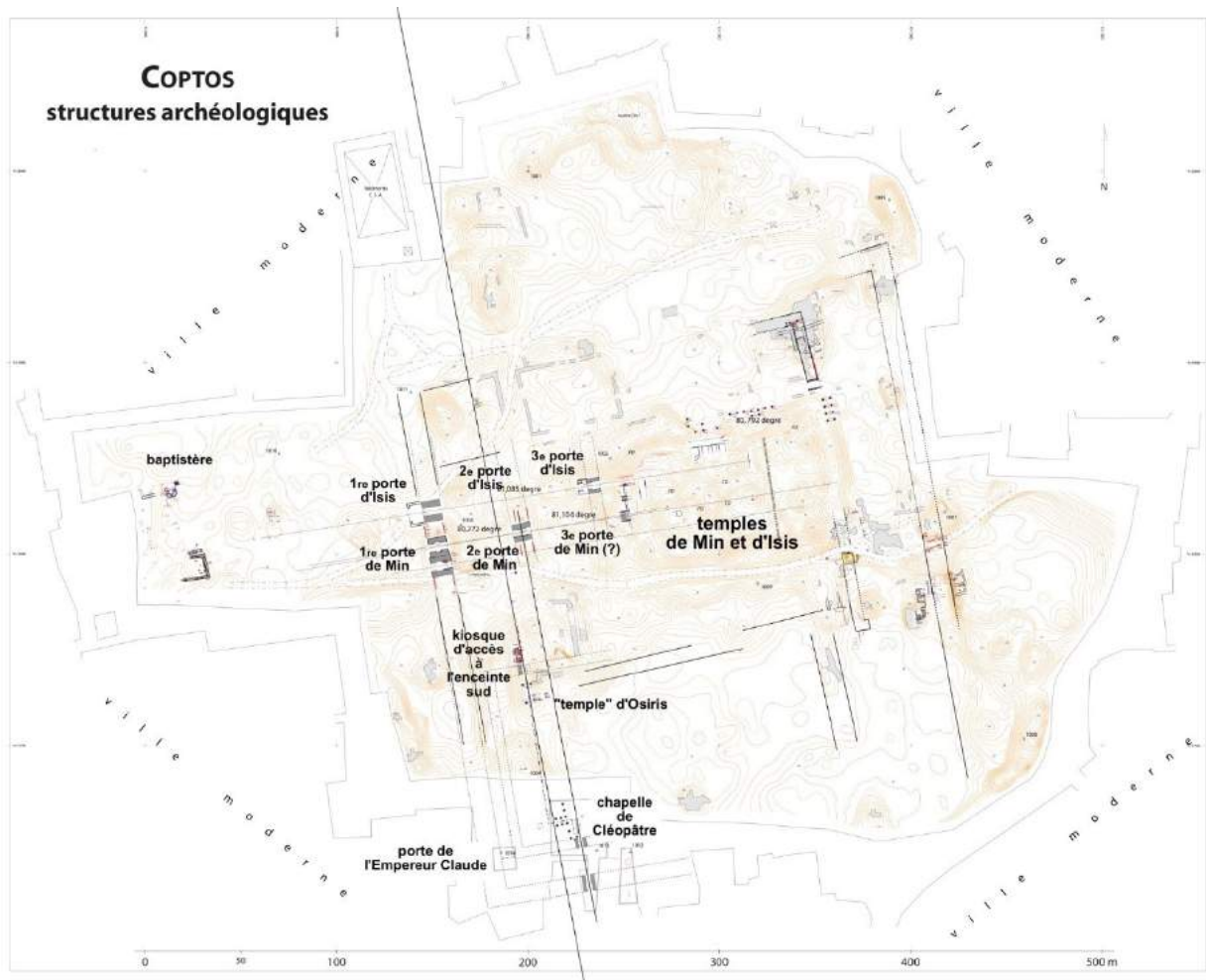


Fig. 104

Topographical map of the archaeological zone of Coptos.

After, <http://www.ifao.einet.net/archaeologie/coptos>

2.2.3. Archaeological Findings

Late Period Funerary Stela

Coptos Inv. No. C91 AS1.

Dimensions: 0.22 m height and 0.19 m width.

A round-topped stela was found during the excavations below a Late Hellenistic pottery dump and above a 26th Dynasty mudbrick wall.

The limestone stela has missed its upper part, where there had been an inscription, and the surfaces of both lower corners but otherwise is intact. There are small pits in the relief surface overall while the upper section of the back is missing. The stela is carved in low, flat, raised relief and preserves no traces of paintings. It shows the male deceased presenting a formal bouquet to an enthroned falcon-headed deity who might have been Re-Horakhty.

The deceased approaches the god, perhaps moving slightly behind the dais of his throne. The man sports a shaven head, a collar necklace, and a drape, which hangs off his arms. Behind the deceased, a woman, probably a relative (mother or wife), stands in a gesture of adoration and prayer, her right arm raised with palm turned forward and her left arm falling naturally at her side.

The woman wears a heavy wig which covers her ears and hangs down to her chest. Atop her head sits an ointment cone, which may have been tripartite. She carries an attribute in her lowered, left hand, perhaps the loop of a sistrum.

The deity is shown mummified and seated on a royal divine throne, which has a low back, a square inset, and placed on a dais. Although the damage of the left corner makes it difficult to know for certain, the dais may be represented in the stepped form of the symbol of truth, perhaps a reference to Marat, the personification of physical and moral law of the universe.

The deity wears a collar with beaded fringe, he holds the crook and flail (symbols of authority and kingship), and is crowned with the sun disk encircled by the sacred Uraeus.

Traces of an inscription remain on the top, proper left side, both in the raised rectangle above the female figure's left arm and in the text ending in Amun above the woman's head.

Some of the iconographic elements of the Coptos stela can be traced back to the New Kingdom, indicating the survival of earlier styles such as:

- The man's costume, particularly the sleeves hanging off his arms
- The cone-like, backward slope of the man's head.
- The woman's squared, long wig which covers her ears.
- The formal bouquet carried by the deceased is common in New Kingdom reliefs and paintings.

However, the tendency both to have the composition fill the entire stela (with no text below) and to have the figures fill all of the empty space is very much in the tradition of the Third Intermediate Period. Besides, the enthroned figure of Raharakhty of which

the most accurate parallel is dated to the 25th Dynasty. Therefore, the material, subject matter, composition, style, and iconography allow us to draw some tentative conclusions dating the stela from Coptos to the period between 680 to 650 B.C. generally to the 25th (747-656 B.C.) or early 26th Dynasty (664-525 B.C) preserving earlier, Third Intermediate Period and New Kingdom iconography that remained part of the artist's visual repertoire. ¹



Fig. 105

The Late Period stela discovered in Coptos.

After, Friedland, E. A. in Herbert, S. C. and Berlin, A. 2003: 222, fig. 111.

¹ Friedland, E. A. 2003: 221 – 223.

Amphora

The lengthy occupation of Coptos permits study of the development of both the site's Egyptian amphora chronologies and the history of amphora imports from elsewhere in the Mediterranean. Such evidence is useful for studying the history of Egyptian commerce, especially Egypt's role in linking the Mediterranean to trade routes through the Red sea. Although the quantitative data from Coptos is not detailed enough to track specific imported types, certain important features of the record have emerged.

Egyptian amphorae of Coptos

Four Egyptian amphora types are quite common at Coptos alongside isolated fragments of other Egyptian types. The chronological evidence from the Coptos excavations and from finds of these types at other sites helps both to define developments of these types through time and to clarify the apparent range of contemporary variation within each type. Egyptian amphorae were produced either from Nile clay or from finer calcareous clay. Nile clay jars are found from the 3rd century B.C. through all Roman phases.¹

These Nile clay fabrics were divided into three general groupings based on texture and coarseness, especially in terms of the presence and density of straw temper, mica, and quartz visible under low magnification. The variations in the amphora fabrics have not been related to either chronological or typological differences, but the range of appearance of the fabric is instructive.

The calcareous fabric is limited in use to the Type I Hellenistic amphora. This fabric too shows variation both in the presence of quartz and other non-calcareous inclusions and in the density of packing of the lime inclusions. The variation in this fabric for the Hellenistic amphorae does not, however, correlate with noticeable differences in form or chronology.

The most noticeable shift in the use of the major amphora fabrics occurs roughly between the Hellenistic and Roman phases at Coptos. Hellenistic Egyptian amphorae use both calcareous and Nile clay fabrics. Throughout the Roman periods, however, amphora production is dominated by the use of Nile clay fabrics, the few calcareous sherds are probably residual remains of Ptolemaic jars. A similar pattern has been noted at other sites where there is a sufficiently lengthy occupation to preserve this shift in practice.²

¹ Herbert, S. C. and Berlin, A. 2003: 24 ff.

² For more examples cf., Gempeler, R. D. 1992: 19 – 21.

These amphorae types are divided as follow:

I. Egyptian Type 1

amphorae were produced largely from the calcareous fabric, but examples likely to belong to this group and made of Nile clay are also listed in the field counts. These amphorae are rarely found outside Egypt and not often published, even from Egyptian sites. The few publications with more than one example of this type rarely have sufficient data to consider development of the form over time.¹

The finds from Coptic, therefore, provide important evidence for the type's development.

Type I amphorae have a heavy, rounded rim on a thick cylindrical neck. The handles attach just below the rim and curve in toward the joint between the neck and shoulder. The wide cylindrical body ends with a thick, peg-like toe with a bulb at the end, hollowed underneath. There is some development over time in the shape and proportions of the rim, neck, handles and toe. This amphora type first appeared and is quite common at Coptos in the early 3rd through mid-2nd century B.C. The last point at which Type I amphorae are present to any significant degree is in the construction fills, probably dating to the first half of the 1st century B.C. The evidence from Coptos suggests that the 1st century B.C. marks the end of production of this type.²

No production sites are known for this type, the distribution of finds however, suggests a limited production area either near Coptos or further south in Upper Egypt.

¹ Mond, R. and Meyers, O. 1934: 147.

² Gempeler, R. D. 1992: 197.

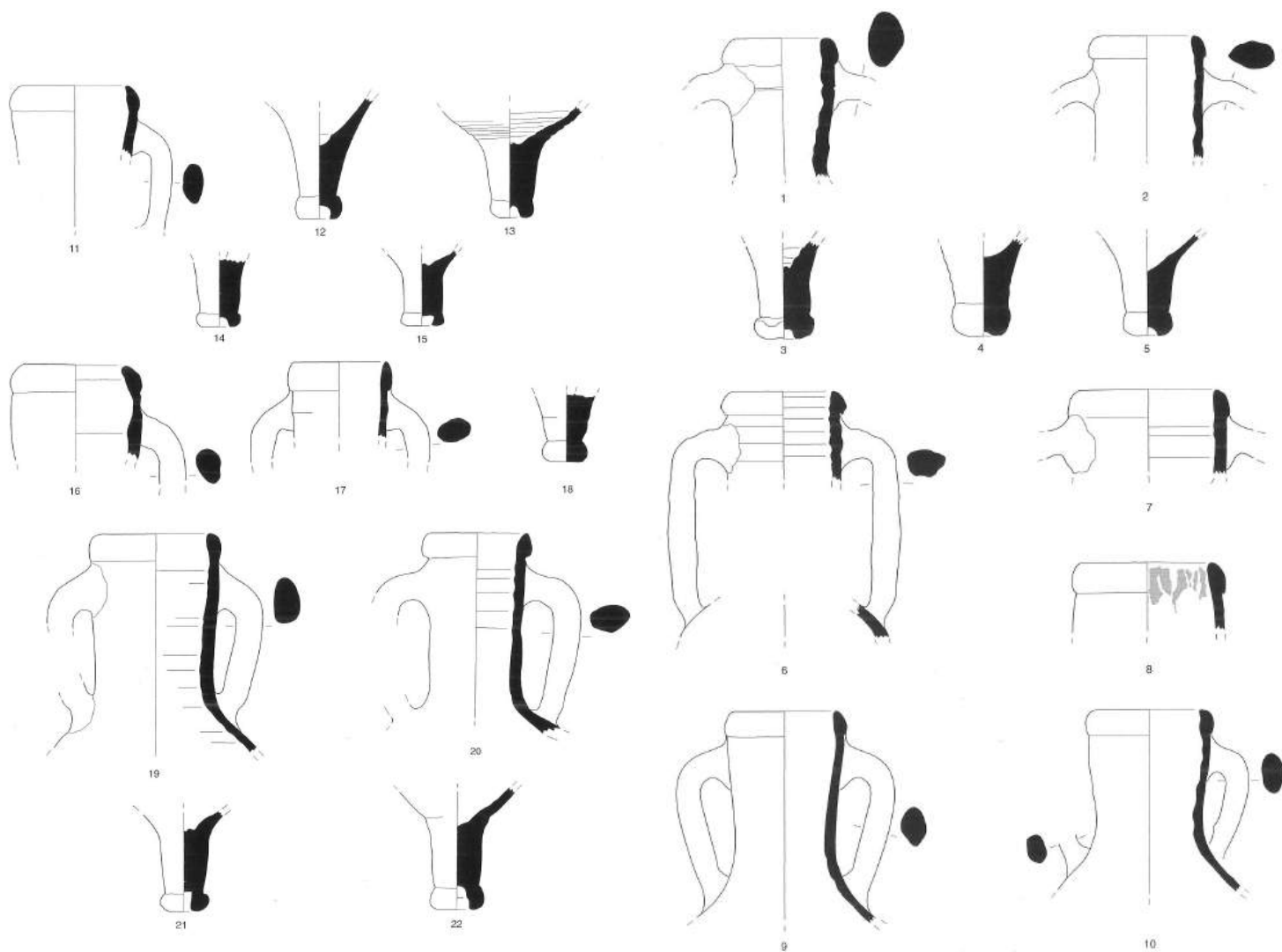


Fig. 106

Egyptian Type I Amphora of Coptos.

After, Lawall, M. in Herbert, S. C. and Berlin, A. 2003: 166, fig. 101 - 102.

II. Egyptian Type II

The second Hellenistic amphora type found at Coptos is similar in profile to jars found at kilns near Naukratis at Kom Dahab and on the Mediterranean coast at Tell al-Haraby. The Coptos examples occur primarily in Nile clay fabrics. A more precise comparison with fabric types from Naukratis would be interesting but has not been carried out.¹

This amphora type has a squared off rim of varying proportions, often angled outward. Type II has a cylindrical body over a short, peg-like toe. These are often simple spikes with a rough, perhaps not even deliberate hollow in the base.

These amphorae are dated to the early 3rd through mid-2nd century B.C. Nile clay is present in a slightly higher percentage than the calcareous fabric, and many of the Nile clay fragments probably come from Type II jars. The sequence of finds from Coptos suggests a date for Type II in the late 3rd and early 2nd century B.C.

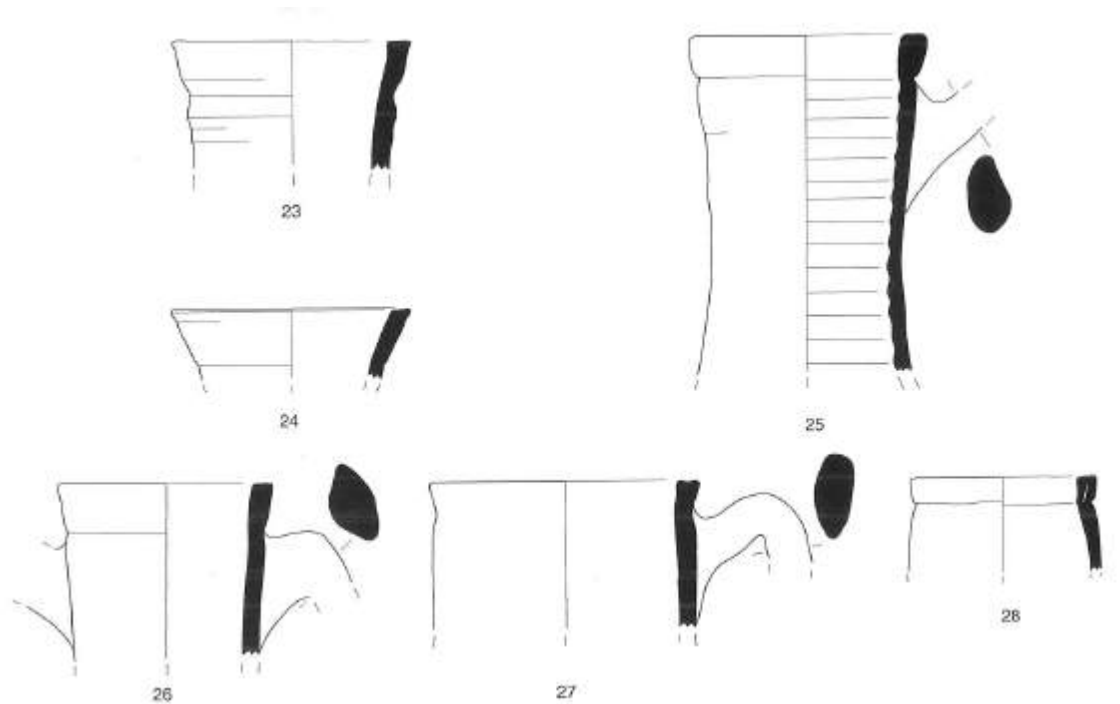


Fig. 107

Egyptian Type II Amphora of Coptos

After, Lawall, M. 2003: 171, fig. 103.

¹ For similar examples cf., Coulson, W. D. E. and Wilkie, N. 1986: 72, fig. 19; Coulson, W. 1981: 5 – 6.

III. Egyptian Type III (*Bitronconique*)

The third Coptos type, made entirely from Nile clay is the frequently exported “*bitronconique*” amphora. This type is characterized by a pair of vertical handles near the top of a long thick neck. Both the upper and lower attachments of the handles rest on the neck itself; the neck widens out to the shoulder well below the lower attachment point of the handle. These basic parameters encompass wide variation, some of which relates to development through time. Early examples, mostly datable to the 1st century A.D. often have heavy handles, usually placed just below the rim; a heavy cylindrical body, clearly set off from the neck; and a solid spike toe.¹

Middle forms of Type III, those dated from the Late 1st through the 3rd century A.D. have smaller handles, often overlapping the rim. Their bodies have a more biconical form. The neck of these middle-stage jars can widen smoothly into the body. In other cases, the distinct shoulder region is retained, but the body has a globular upper section before tapering to a heavy conical toe. At the end of the series in the 4th and 5th century A.D. the body tapers to a heavy knob-like toe.

Examples at Coptos first appear in the second half of the 1st century B.C. through the 1st century A.D. Various forms of rim appear within this phase, including both a flat-topped, angular rim and various rounded and thickened rims in addition to, an example of the narrow spike toe typical of the earlier versions of these jars. This toe form is attested at Quseir al-Qadim perhaps early in the 2nd Century A.D. and at Al-Zarqa before the end of the 2nd century.²

The apparent scarcity of the 3rd century amphora forms here may relate to the economic uncertainties and political instability of the times. Although Type III amphora fragments continue to be found at Coptos, perhaps even into the 6th century A.D. the later form of the type with the knob-like toe does not appear. It seems that Coptos was only importing and consuming significant quantities of these jars in the 1st and 2nd century A.D.

¹ For similar examples from Quseir cf, Witcomb, D. and Johnson, J. 1979: pls. 22 d – e, 23 m – p, 301 m, 320; Witcomb, D. and Johnson, J. 1982: pls. 13d, 27b, 24n, 26r.

² Witcomb, D. and Johnson, J. 1982: no. 14g; Al Zarqa: Brun, J. P. 1994: 22, fig. 12.

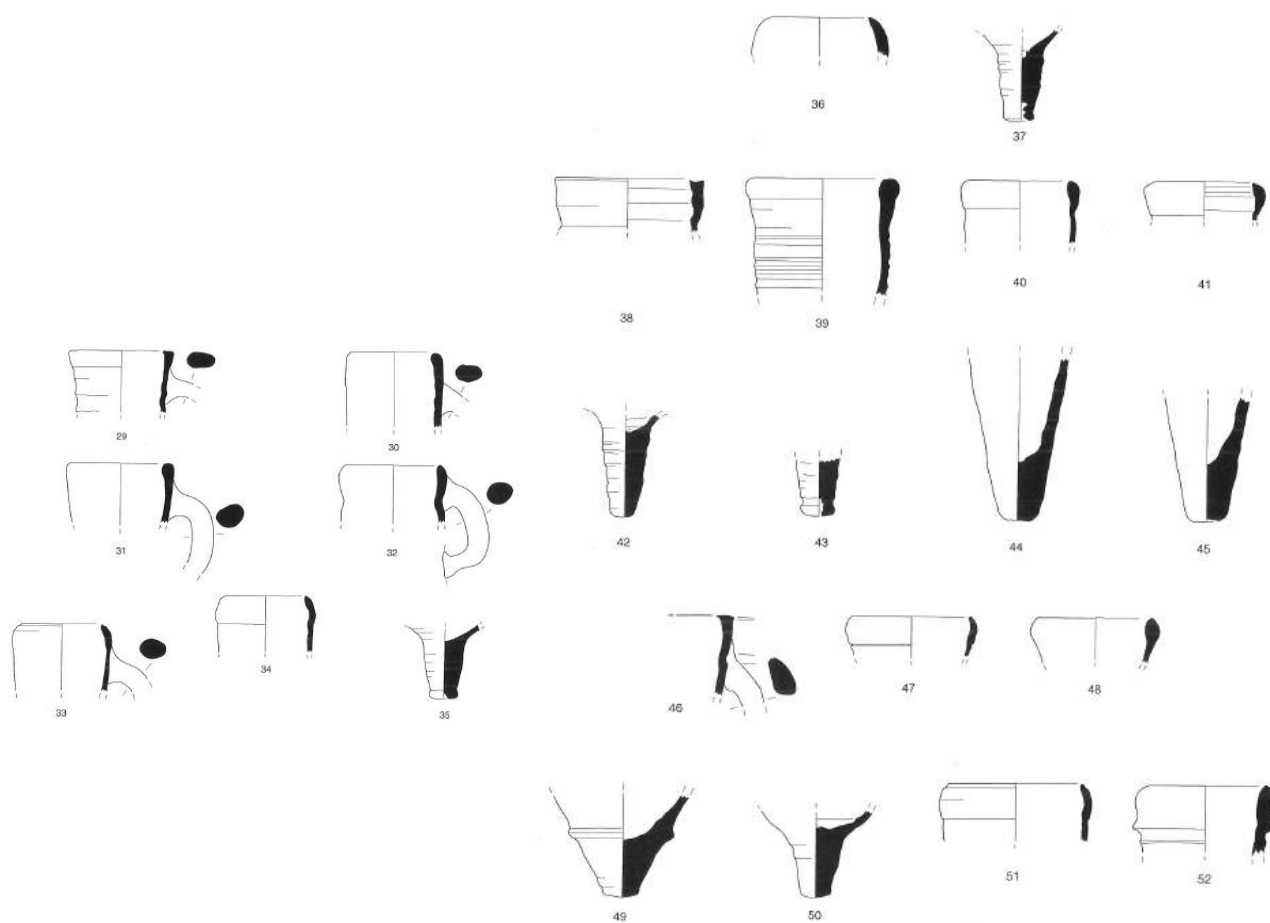


Fig. 108

Egyptian Type III Amphora of Coptos.

After, Lawall, M. 2003: 174, fig. 104 - 105.

IV. Egyptian Type IV (Carthage LRA 7)

The fourth and latest Egyptian amphora type at Coptos is the much smaller: though quite common, Nile clay amphora classified as Carthage Late Roman Amphora (LRA) type 7.¹ This amphora is considerably smaller than the preceding type.²

Type IV is characterized by a narrow neck, 8 cm or less in diameter, with crude loop handles at the joint between the neck and shoulders. The body is carrot-shaped with deep wheel-ridges over much of the surface. The toe is a solid, heavy, tapering peg. There is considerable variation within these general features, the height of the neck projecting above the handles seems to decrease through time; shoulders tend to widen and become more clearly distinguished from the body below, either by a high clay ridge or a sharply angled turn down to the body. Earlier handles tend to have a taller, narrower profile, attaching closer to the neck, later handles attach more closely to the edge of the shoulder with a squatter profile.

Although many of the fragments found at Coptos do not preserve the most diagnostic elements, they are best compared with the earliest versions of this type at other sites. Similar jars are dated to the period between the 4th century and the 6th century A.D. Type IV is most commonly found in the context that can be dated to the 5th and 6th century A.D. The apparent absence at Coptos of any of the later developments of Type IV developments, suggests that the Egyptian amphorae at the site may not continue beyond the 5th century A.D.³

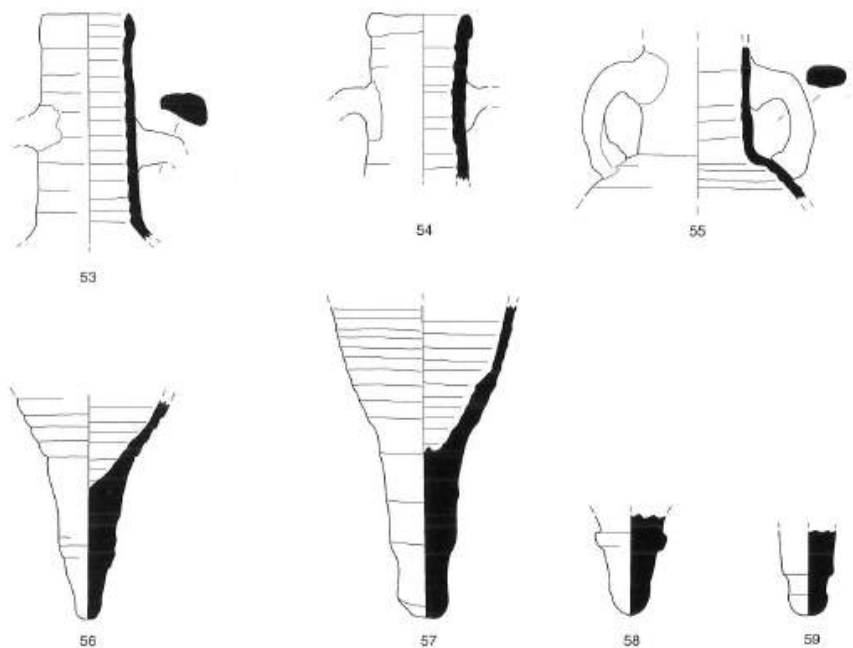


Fig. 109

Egyptian Type IV Amphora of Coptos.

After, Lawall, M. 2003: 178, fig. 106.

¹ Hayes, J. W. 1976: 117; Riley, J. A. 1981: 121, fig. 10.

² Egloff, M. 1977: 114 – 116.

³ Bailey, D. M. Davis, W. V. and Spencer, A. J. 1982: 16 – 19, figs. 4 – 5.

V. Other Egyptian Forms

Alongside these four Egyptian types, there are a few examples of other amphorae in Egyptian fabrics. A rare Hellenistic type in calcareous fabric is represented by a heavy peg toe with a low relief band around the join between the toe and body.

This type also appears in Ptolemaic contexts at Berenice (in Nile clay). Various forms of triangular-section rims appear throughout the Coptos stratigraphy. Although these resemble the Greco-Italic amphorae of the 4th century B.C. and later, the Egyptian forms tend to have narrower necks and thinner rims. Moreover, the triangular rims at Coptos are found perhaps in the 4th or 5th A.D.

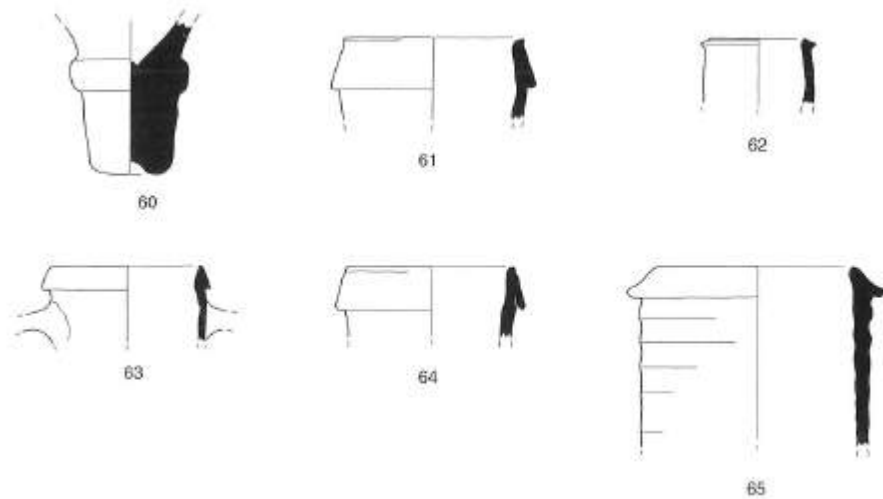


Fig. 110

Other Egyptian forms.

After, Lawall, M. 2003: 180, fig. 107.

VI. Imported amphorae

Since no evidence indicates that the Egyptian types were necessarily manufactured at or near Coptos, all can be considered import to some extent. Despite the position of Coptos along a major trade route, imports from outside Egypt altogether are surprisingly rare.

Seventeen Rhodian stamps range in date from the second half of the 3rd c. B.C. through the early 1st century B.C. with most pieces falling into the late 3rd and late 2nd century B.C. One possible Knidian stamp and one Koan stamp were found as well as two Brindisian stamps datable between 150 and 50 B.C.

VII. Aegean amphorae

The bulk of the earliest imports are from Aegean producers, examples of the Aegean imported rims and toes, probably from the southern Aegean, strengthen the 3rd century B.C. date for the early part of this phase (66).

Parallels were found in examples dating to the second half of the 3rd century B.C. from Athens, Alexandria, and elsewhere. Aegean imports continued to arrive in the Roman period. Excavations recovered fragments of Middle Roman Amphora (MRA) 7 form, datable to the 3rd or 4th century A.D.

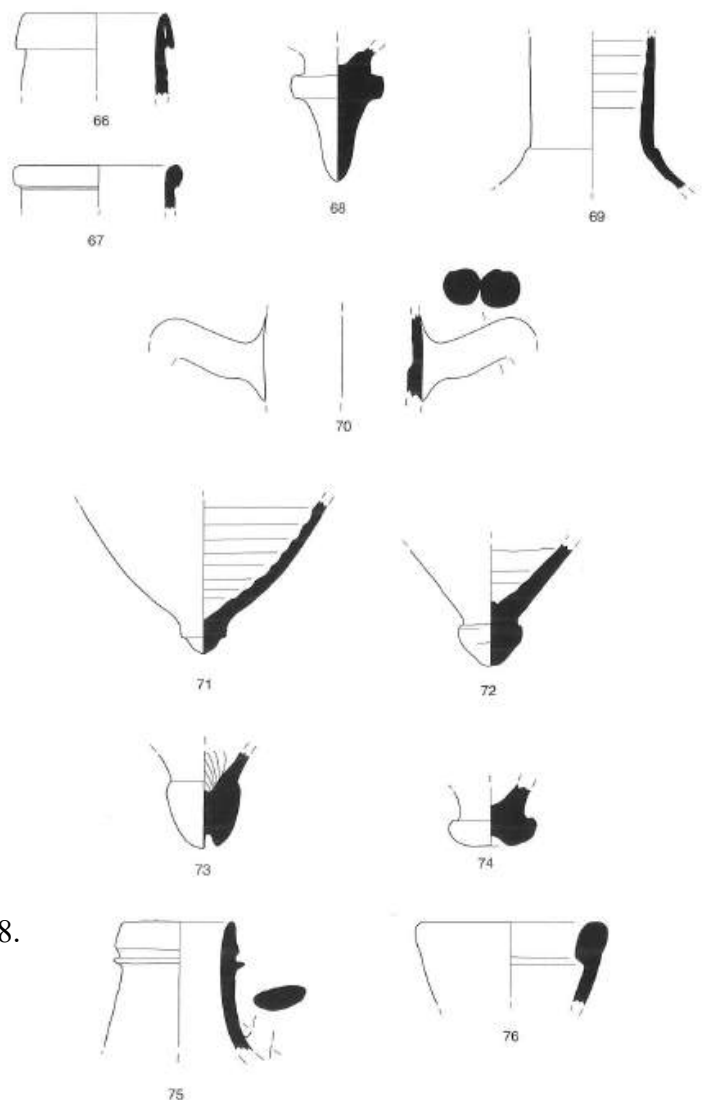


Fig. 111

Aegean imported Amphora.

After, Lawall, M. 2003:182, Fig. 108.

VIII. Western Mediterranean Amphorae

The western Mediterranean imports probably date within the 3rd century B.C. The earliest of these are represented by a “Greco-Italic” rim in a fabric that appears North African. In the late 2nd and early 1st century B.C. there are fragments of Brindisian amphorae to supplement the two Brindisian stamped handles.

The presence at Coptos of Italian imports continued with fragments which date to the late 1st century B.C. through the early 2nd century A.D. The amphorae of secure identification are attributable to Sicily in addition to fragments of Middle Roman Amphorae Type I.¹

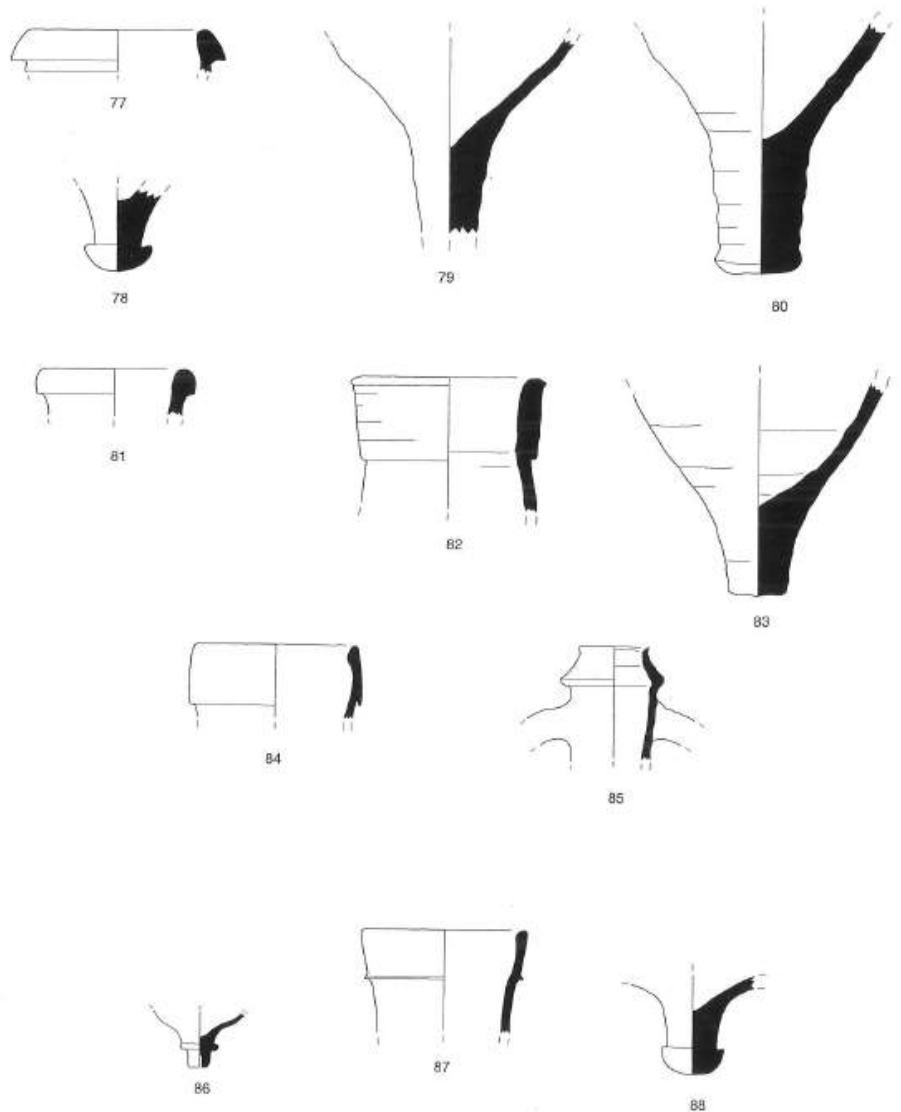


Fig. 112

Western Amphora.

After, Lawall, M. 2003: 184, fig. 109.

¹ Lawall, M. 2003: 179 – 181.

Even a very general consideration of the finds from Coptos suggests that a rough sketch of the commercial history of the region might run as follows:

- From the 3rd through the mid-1st century B.C. commerce seems quite consistent as both Egyptian and imported amphorae are present with imports tending to comprise a quarter of the amphora assemblage.
- The finds at Coptos are particularly useful for the typological and chronological study of the 3rd and 2nd century B.C. Egyptian amphorae. Moreover, the Koan and the Campanian amphora types found at Coptos are also found in sites in India, which is the opposite end of the trade route.
- Berenice is significantly less than Coptos by the 1st century B.C. to 1st century A.D. in the proportion of imported material in 3rd and 2nd century.
- The “bitronconique” jars, Coptos Type III, of the 1st and 2nd century A.D. attest Coptos prosperity in the early Empire. By the same time however, the proportion of imports begins to decline.
- The rarity of later examples of Type III jars and imports of the 2nd and 3rd century A.D. suggests a decline of commerce at Coptos such a situation echoes the archaeological records of other Roman period Egyptian sites where occupation is interrupted or activity seems to decline in the 3rd century (Al-Zarqa, Tell el-Maskhuta, Mons Claudianus, Quseir, and Abu Rawash).

These sites all support the widely-held belief that trade through Egypt declined sharply as a result of the general upheaval in the Roman empire during the 3rd century A.D. A slight resurrection of Coptos trading fortunes seems to occur in the 4th century, and yet the absence of Later forms of Coptos Type. IV and other later amphora forms may suggest a subsequent decline in Coptos role in the trans desert trade routes.

Imports reappear albeit rarely, yet these are never so common at Coptos as imported micaceous water jars - Late Roman amphora 3 are at Berenice. The absence of expected 5th century and later Egyptian amphora types at Coptos together with the scarcity of Late Roman imports support the hypothesis of reduced activity across the Eastern Desert after the 4th century A.D. some sites remain active but fewer than was the case in the earlier Empire. ¹

Eventual coordination of the amphora finds from the Coptos excavations with amphora finds from the desert survey and other sources (especially commercial papyri and ostraca) should further clarify the history and structure of commercial shipping across the Eastern Desert. ²

¹ Sidebotham, S. E. 1991: 34; Sidebotham, S. E. Zitterkopf, R. E. and Riley, J. A. 1991: 619 – 622.

² Lawall, M. 2003: 187.

Imported Hellenistic stamped amphora handles

Stamped amphora handles discovered in Coptos are divided in different classes such as:

The Rhodian class.

The Koan class.

The Knidian class.

The Latin class (Greco-Italic and Brindisian).

These stamped handles are left in storerooms near the site but they were photographed in the field to provide the basic identification regarding the finds. The predominance of Rhodian stamps (17 pieces) at Coptos is in keeping with the plentiful finds of stamped amphora material in Egypt (especially Alexandria) and Syro-Palestine.¹

Most of the discovered pieces during the excavations (22 stamped handles) were surface finds or finds from the many badly disturbed contexts however, only 7 handles are derived from well-defined phasing. Some pieces clearly postdate the production date around the end of the 2nd - early 1st century B.C. However, the ceramics from the fill in that locus were overwhelmingly Hellenistic and consequently the stamped handle's date around the end of the 2nd century B.C. and others with a preserved frame are dated to the late 3rd century B.C. It is interesting that all the well-dated stamped handles found in Hellenistic contexts date to the second half of the 3rd century B.C. The range of the entire handle assemblage from Coptos spans one and three-quarter centuries.²

¹ Ariel, D. T. 1990: 17, table. 1; Lund, J. 1993: 367 – 369.

² Ariel, D. T. 2003: 193 – 200.



Fig. 113

Different examples of imported Hellenistic stamped Amphora Handles discovered in Coptos.

After, Ariel, D. T. in Herbert, S. C. and Berlin, A. 2003: p. p. 194 – 199.

Coins of Coptos

The coins discovered in Coptos are rare as only 13 pieces were found, either bronze or highly debased silver. They extend in time between the (4th – 3rd century BC) and (4th – 5th century AD). Coins were all scattered with no continuity in time but they document some kind of activity on the site for at least three – quarters of a millennium.¹

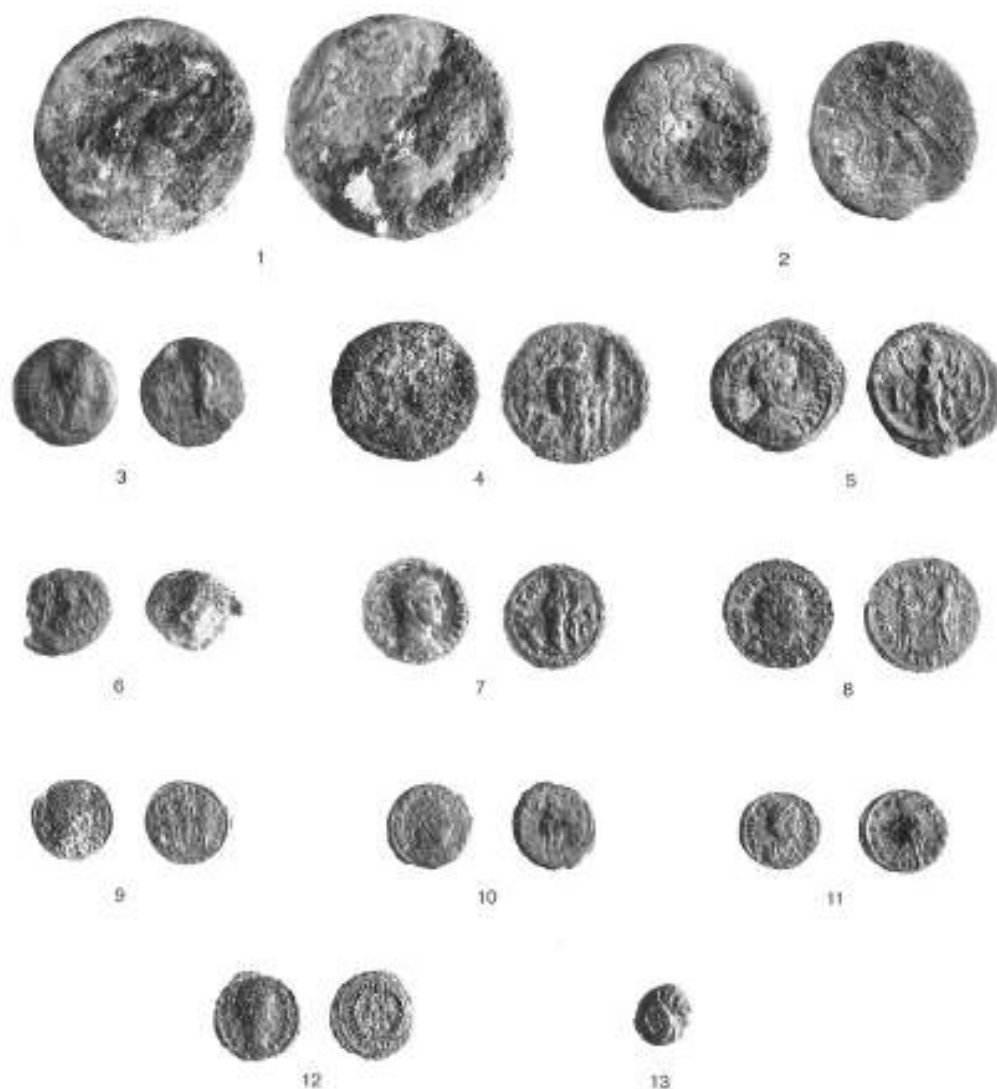


Fig. 114

Coins of Coptos.

After, Buttery, T. V. in Herbert, S. C. and Berlin, A. 2003: 202, fig. 110.

¹ Buttery, T. V. 2003: 201.

2.3. Myos Hormos (Quseir Al Qadim)

2.3.1. Geographical Location

The ancient port of Myos Hormos is located between the Red Sea and the mountain foothills of the Eastern Desert, near the modern city of Quseir, some 600 km south of Cairo, 150 km from the banks of the Nile. Approximately 8 km to the north of Modern Quseir, opposite a stretch of modern hotels, lies the site of Quseir El Qadim (Old Quseir).¹

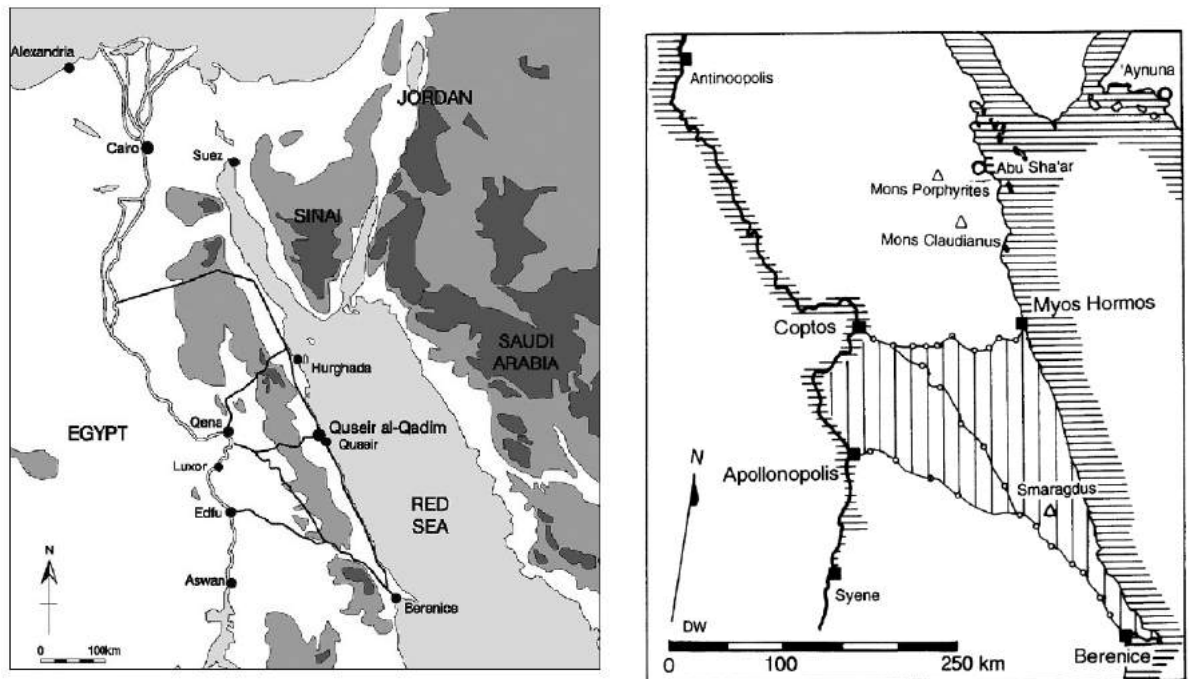


Fig. 115

A. The Geographical location of Myos Hormos (Quseir El Qadim).

After, Tully, G. 2009: fig.1, p. 66.

B. Map of the ancient ports between the Nile and the Red Sea (Isthmus) described in Strabo.

After, Whitcomb, D. 1996: 771, fig.5.

¹ Tully, G. 2009: 65 – 66.

2.3.2. The Importance of Myos Hormos

Myos Hormos seems to have been the main port for embarkation to the distant East by the time of Augustus as harbour facilities at Berenice may have been relatively poor in comparison with Myos Hormos.¹

Strabo described the large harbour at Myos Hormos with a “winding entrance” and the early Roman investment in the Myos Hormos route probably ensured that this road had greater facilities and was more secure for travellers. Besides, being endowed with the shorter desert crossing (Wadi Hammamat) meant that it was cheaper to deliver outbound goods to this port than to Berenice.

By the mid-1st century A.D., Berenice and Myos Hormos shared equally important roles in the Eastern trade. The Nicanor Archive mentions deliveries to Myos Hormos almost as often as it records goods sent to Berenice. During this period, the larger commercial companies were maintaining agents and facilities at both ports such as the Egyptian businessman “Paminis” who sent one of his sons into each town to manage his extensive Eastern trade interests.

Myos Hormos was a business town and much of the population would have been temporary residents engaged in facilitating or conducting commercial operations. In the beginning, the town was a collection of basic, but functional, buildings constructed from field stones, mud brick, reef coral chunks and salvaged timbers. Most of these buildings served as temporary dwellings, workshops or makeshift storage places. Excavations carried out in the desert ruins of Myos Hormos revealed how the port were developed. In this arid landscape, most of the supplies necessary for survival had to be brought by sea, or hauled across the Eastern Desert.

Sand was taken from nearby quarry pits to the shore to reclaim land from the edge of the lagoon, as a part of the new harbour construction and thousands of Roman amphorae were closely packed together in dense upright positions to create an artificial foreshore. This landing feature was more than 60 metres long and must have been built to receive ships and manage their cargo operations. Moreover, archaeologists have identified larger buildings near these harbour facilities that could be the remains of government facilities or the warehouses of wealthy trading firms. An enclosure was also found on the outskirts of the port that may have been a caravanserai for housing large numbers of camels in preparation for the desert treks to Coptos. The 1st century A.D. witnessed an increase in caravan traffic travelling the desert routes to Myos Hormos. Three pieces of graffiti from the Augustan era have been identified on this road, compared with ten graffiti and further seven firmly dated to the Tiberian period.²

¹ Sidebotham, S. E. 1986: 49; Sidebotham, S. E. 2008: 170.

² Sidebotham, S. E. 2006: 54, 81.

2.3.3. The Ancient Town of Myos Hormos

This settlement was founded outside the region rather than arising from a local population concentration, this settlement is artificial and totally dependent on external relationships. The principal players were a diverse group of the Romans, Egyptians, Indians, and Arabs of the Red Sea region, as implied from the languages discovered.

The analysis of the organization of the settlement suggests a separation of residential from official structures, the *castellum*, *horreum*, and harbour. The community had two foci, the *castellum* embracing administrative, protective, and possibly religious functions, and the harbour localizing economic functions.

The analysis of the original design of the town, that laid out by the *agrimensores*, is only one aspect of its physical organization. It seems unlikely that further excavations would find only this precise configuration. There are two reasons for this expectation. The first is that close adherence to this town plan would require constant governmental supervision, one resulting from incremental investment in urbanization, typical of a classical town. Manifestly, this did not occur; the profits (and reinvestments) from commerce were taken elsewhere.

Little is known about the structural organization of Arabian and Indian settlements regarding the size and the extent to which traditional Egyptian town organization might be applied outside the agriculturally based Nile valley remains to be studied.

The point here. is that the study of Roman period remains at Quseir has a strength in the interlocking lines of evidence from different regions; but this situation also implies a marginalized, temporary settlement which ultimately cannot be a typical phenomenon, except perhaps at another port. ¹

¹ Whitcomb, D. 1996: 757.

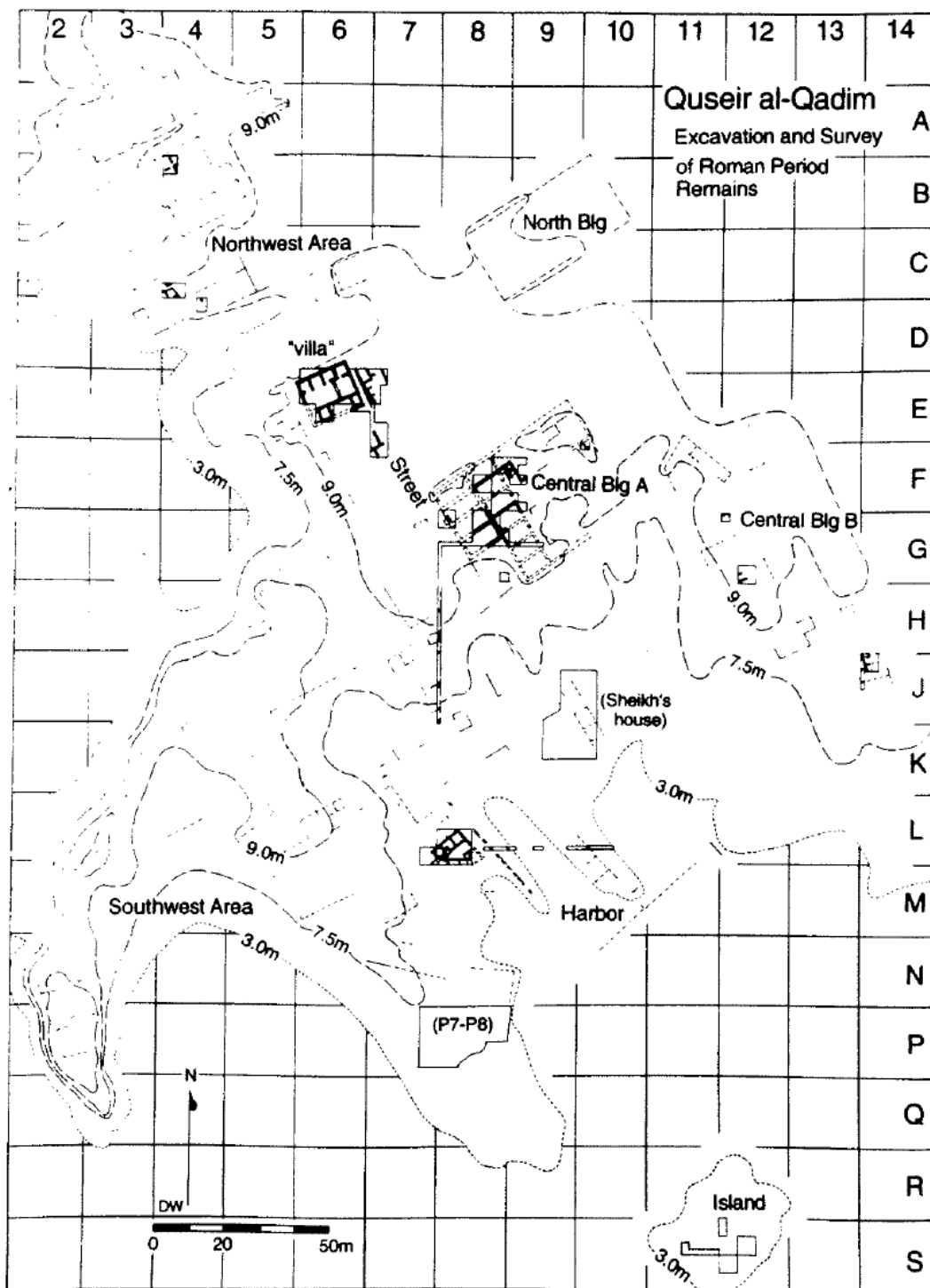


Fig. 116

Roman relics of Quseir El Qadim (Myos Hormos).

After, Whitcomb, D. 1996: 767, fig.1.

2.3.4. The Harbour Area

South of the ruined fields of the ancient city, there is a relatively uniform “sabkha”, or mud flats of which the northeast and southwest edges, where the sloping ruins began, were marked by parallel wall fragments. The slope behind the southwest wall was excavated as L8c, attention was focused on surface indications of intensive burning. The 1980 excavations revealed a circular structure set into a rectangular building with a number of small rooms or bins. These bins and much of the surrounding area were filled with ashes and numerous heat-cracked basalt grinding stones. This complex may now be identified as a bakery on the strength of a better-preserved example found at Abu Sha'ar.¹ It may be noted that the bakery at Abu Sha'ar was associated with horrea identical to the “White Building” of Myos Hormos.²

Between the parallel walls edging the “sabkha”, there was a sort of spine extending into the sabkha; this mounding resembled nothing so much as a mole and contained several walls of similar orientations, seen in 1978 test trenches and surface indications. Several walls joined this spine at right angles, suggesting shallow structures. The northwest limit of the “sabkha” was a heavily eroded slope with numerous lengths of a wall again at right angles to the spine and peripheral walls. The resulting configuration of these planned walls is a rectangle measuring 60 m by 48 m, a structural element of the port labelled Reg. IV (fig. 117).

If this area was developed as a structural complex, its area corresponds precisely with that occupied by the internal structures of Abu Sha'ar. The functional elements of that *castellum* stripped of its fortifications. Like that site, the spine may be interpreted as a central passage or street with *horrea* and other structures on either side. The structures of Reg. VI (fig. 117) have with an orientation differing from the remainder of the town; this characteristic of quays and other harbour elements is well attested in other ports, such as Alexandria.

An extension of the western wall of this area also marks the limit of the « island, » extensively excavated in 1978. This mound was hypothesized to have been the spoil of dredging operations, an ancient effort to keep the harbour clear.³

This interpretation was apparently overlooked by Peacock, who also failed to notice the series of sondages placed into the “sabkha” in a preliminary effort to determine the existence of the harbour.⁴ Presuming some shallow holding capacity in the “sabkha” area, the relatively narrow entry from the bay suggests a *cothon* type of harbour, such as at Carthage or Motya.⁵

It is nevertheless difficult to imagine these quays and even this small bay servicing more than a dozen dhows, let alone 120 Roman merchantmen which Strabo reports sailed from Quseir to India yearly. The account of Strabo stresses the increased trade during the Roman period as he stated about 120 ships available for the Indian trade after 25 B.C.

¹ Sidebotham, S. E. et al. 1989: 153.

² A similar installation, another probable bakery with a corner location, is reported at El Zaraqa in Grimal, N. 1994: 421.

³ Whitcomb, D. 1979: 43.

⁴ Peacock, D. P. S. 1993: 226 – 232; for the beginning of the investigation of the (Sabkha) to have a comprehensive reconstruction of the ancient landscape, cf., Whitcomb, D. 1979: 61 – 62.

⁵ Isserlin, B. S. J. 1971: 178 – 186.

It can be surmised that these were the remnants of the Arabian campaign invasion fleet, over 200 vessels of burden and warships, This fleet was presumably distributed among several ports, especially the arsenal at Arsinoe. ¹

Mentioning the connection with Myos Hormos reflects the predominance importance of this port in the Indian trade. The presumed existence of a lagoon functioning as a shallow harbour may have had a minimal size of 700 x 200 m (14 ha). ²

This lagoon was gradually silted from the Wadi al - Anz (Wadi Abu Unis) on the north and the Wadi Quseir al-Qadim on the south. the catchment area for these wadis is not as large as that of modern Quseir. The Wadi of Quseir al-Qadim was the only practical route to the Wadi Hammamat and the Nile valley. ³ This suggests that land transportation would have followed a track west and north of the lagoon and entered the town in line with the street between Reg. II and III (fig. 117), convenient to both the horreum and animal lines.

¹ For more about this fleet, cf., Sidebotham, S. E. 1986: 69 – 71.

² Peacock suggested a lagoon about 5 times larger, stretching farther to the south, cf., Peacock, D. P. S. 1993: fig. 2.

³ The Wadi also leads to Bir Nakhil which is a *praesidium* and mining settlement, cf., Prickett, M. 1979: 320 – 322; the road between Wadi Quseir El Qadim and Wadi Nakhil has a guard tower in which early Roman ceramics were discovered. Prickett, M. 1979: 314, fig. 44.

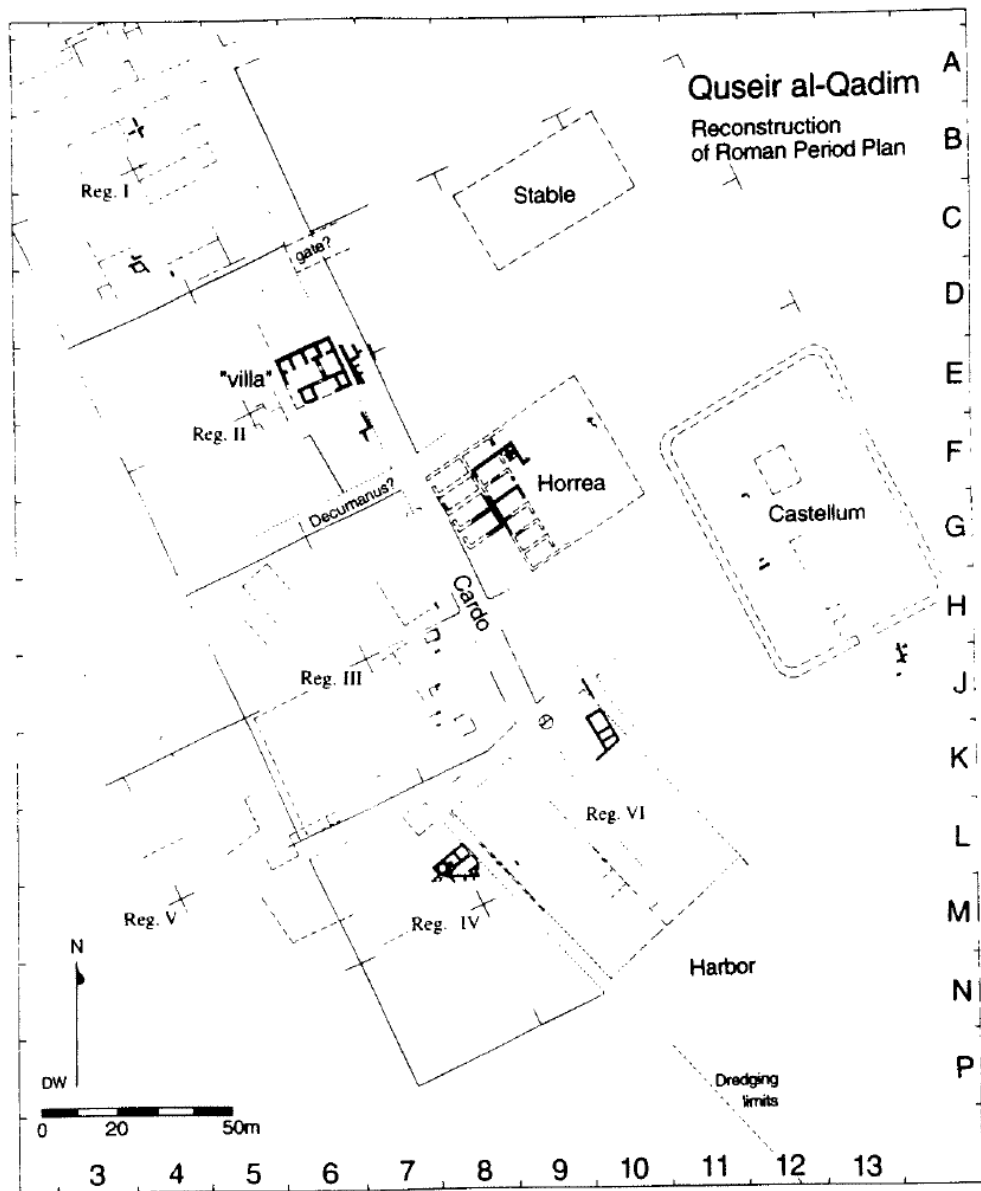


Fig. 117

Plan of the Roman town of Quseir.

After, Whitcomb, D. 1996: 768, fig.2.

2.3.5. The Settlement

The overall character of the site is an orthogonally planned complex, arranged against the steep, western edge of the raised coral beach. There was no wall around the settlement. The principal buildings are two large complexes of mounded earth, labelled Central Building A and Central Building B. To the northwest and southwest are extensive ranges of low structures and debris. To the southeast is the flat expanse of the “sabkha” or mud flats sloping toward the beach and small bay.

I. Central Building A

Portions of this building reveal a series of rooms with vaulted ceilings on the southwestern side, the fallen brick vaulting resting on piles of debris, suggest a period of abandonment before its collapse. Walls were standing for about 2.5 – 3 m high, but the solid mass of caliche or rock salt near the surface made it feasible to excavate only alternate squares.¹

A corresponding series of rooms may be postulated under the mounding to the northeast, as well as closing rooms and walls to the north and south. Some indication of the unity of this structure is provided in a staircase located in the northwest corner of the building, this staircase turned around a pillar and a limestone treads was made. Besides, a controlled access was opened from an antechamber with a locking doorway. Other than one amphora and a few vessels fallen from upper floors, most materials had been cleaned from these rooms before abandonment. Attached to the west of this building was a row of rooms, each measuring 9 x 4 m, called the White Building (due to the light-yellow bricks used).²

The floors were carefully tiled with bricks and one room had a series of holes against the wall, presumably for standing amphorae. A burial wrapped in Roman textiles was placed in the collapse of the vaulting, indicating destruction during the Roman period.

Central Building A may be provisionally identified as an *horreum*. Following Rickman's analysis, warehouses of the Roman period tended to be courtyard in plan. The *Horreum* of Epagathiana in Ostia, dated to the mid-2nd century A.D., provides a startling parallel to the elements excavated and suggested by surface contours at Quseir.³

This *horreum* measures 28 x 36m, with an attached row of shops (8 m deep) opening on to the street. Storerooms are ranged around a courtyard with two corner staircases leading to the second floor, this building is a distinctive type at Ostia and opinions vary as to its character it seems to have been a private storehouse for expensive goods, one in which individual merchants might rent a storeroom, rather like an oriental khan.⁴

¹ Whitcomb, D. 1996: 750, footnote 14.

² Most of the bricks used in the site of Myos Hormos are unfired red – brown, however, the superior quality of these yellow clay bricks led to extensive robbing out and reuse during the Islamic period, a millennium after abandonment.

³ Rickman, G. 1971: 30 – 38, fig. 3; Becatti, G. 1940.

⁴ Rickman, G. 1971: 37 – 38.

II. Central Building B

This high mound forms the most prominent feature on the site, lying above the beach and east of the remainder of the site. Several small soundings revealed a complex of mud brick walls and fallen debris cemented into a hard mass of caliche. Little of the architectural character of this building was revealed except for a relative depression in the centre suggesting a courtyard arrangement.

The absence of a city wall may indicate that the locus was an administrative headquarter or a defensive surrounding of which the *castellum* was estimated to defend the town. The building could have been an example of the small forts of the early Roman empire with rounded corners and internal towers which are relatively rare in the East. The size of these forts usually ranges from 1,5 ha. to a more regular 3.5 ha. ¹

An example of such small forts can be found in the eastern desert of Egypt in the fort of Mons Claudianus of which the earlier phase is dated to the mid-2nd century, constructed as a rectangle without towers (about 3.85 ha.). ² The dimensions of this *castellum* are 75 x 52m, a configuration which fits comfortably in the mounding at Quseir.

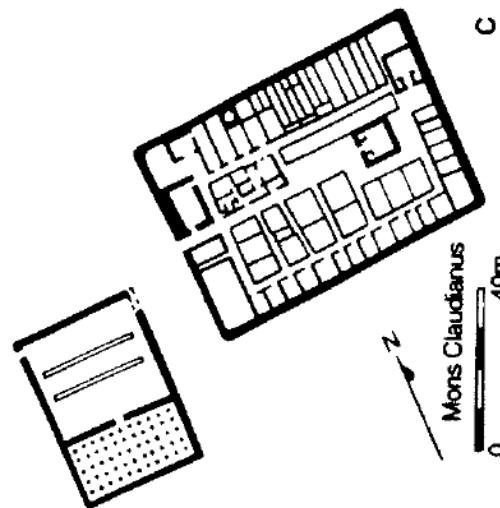


Fig. 118

Architectural model of Mons Claudianus.

After, Whitcomb, D. 1996: 769, fig. 3c.

¹ Kennedy, D. and Riley, D. 1990: 138 ff.

² Kraus, T. et al. 1967: 116 – 129.

III. A Northeast Structure

The survey of the site revealed a rectangular structure north of the “Central Building B”. In contrast to that complex, however, the limited structural debris in the northeast suggests only a simple enclosure. This suggests a function as a stable, or “animal-lines” Parallels may be drawn from Mons Claudianus and a number of stations on the Abu Sha’ar road, most of which have stables in a similar position relative to the principal building.¹

IV. The Northwest and Southwest Areas

Both Quseir and Mons Claudianus had similar functions, they were settlements created for an economic purpose the one for extracting architectural stone and the other for facilitating the trade with India. Neither settlement was a Roman city in its classical sense.²

These were not loci for entertainment or comfortable living, much less intellectual pursuits. The potential for urban embellishments might have been felt by the inhabitants of Quseir, but the key factors of administrative, religious, and commercial functions were rudimentary, or more accurately, geared toward the primary purpose of international trade. Thus, beyond the individual structures described above, the remainder of the site exhibited a homogenous archaeological character, plentiful indications of thin mud brick wall and piles of refuse, concentrations of sherds and organic remains. A number of soundings into these structures were made;

The Roman “villa” is labelled, this structure seems typical of the architecture of the entire western part of the site, the residential sector of the settlement. This residence fronted a street and, with surface remains planned, gave some indications of the axial organization of this area. One may posit the beginnings of city plan, that the site may have received attentions from some agrimensores.

These land surveyors were normally in charge of founding new colonies in the country areas, this work also involved laying out of new towns. The basic unit of measuring was the *mils* (120 Roman feet on each side, or 35.5m), four *actus* made an *heredium*. in practice, the layout of cities was in *insulae* of widely varying size.³

Given the size of the Quseir ruins, it seems unlikely that standard imperial *insulae* were contemplated, even if a potential for expansion and prosperity was imagined. Nevertheless, an analysis of these remains in terms of *heredia* may reflect the initial layout or foundation of the port. A base line, or limits west of the shops attached to the *horreum* was taken as the line of the *cardo*, the principal north-south street. The northwest corner of this structure produces a “best-fit” for a series of *heredia* along the western part of the site.

¹ Such animal lines are discussed in Meredith, D. 1952: 96.

² The Red Sea ports are described as “squalid places”, cf., Sidebotham, S. E. 1991: 12 – 38.

³ Dilke, O. A. W. 1985, p.p. 88ff.

The northern *herediurn*, Reg. I (fig. 117), was only incompletely developed and seriously encroached over the *cardo*. The *limites* between this and Reg. II follows a major drainage line (possibly worn down from travel) and may be extended as a line north of the stables. This line may have been a “wall” of the original rectangle, this suggestion is strengthened by surface remains of a square structure at the crossing of the *cardo* and this line, possibly marking an original gate or tetra pylon. This street might have been the *decumanus* connected to the principal route inland. Reg. II (fig. 117) contains the “villa” fronting the *cardo*. The less regular structures across the street seem to be encroachments on the original street, a pattern which may have predominated over the idealized plan presented here.

Two further *heredia* may be plotted to the south, Reg. III and IV (fig. 117); numerous lines among the surface remains seem to indicate planning according to this orientation. There is some indication that additional acts, possibly an *heredium* labelled Reg. V (fig. 117), were planned toward the southwest, the ground becomes very dissected at this point, limiting the scope or need for planning.

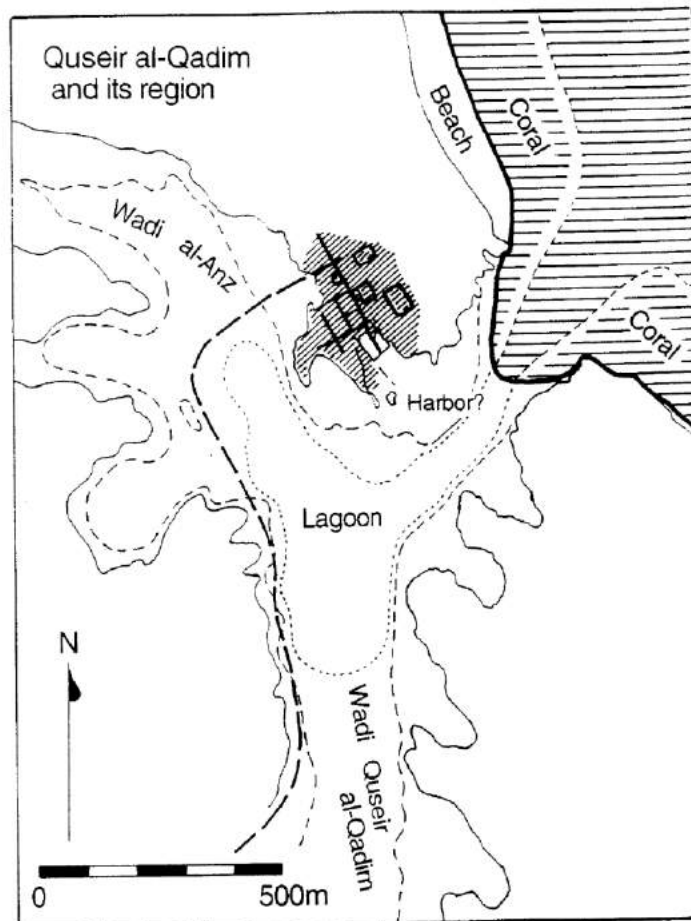


Fig. 119

Map of the region surrounding Quseir El – Qadim.

After, Whitcomb, D. 1996: 770, fig. 4.



Fig. 120

Current situation in the ancient port of Myos Hormos.

After, photography of the researcher (June 2016).

2.3.6. Archaeological Findings

Documentary Evidences

One ostrakon with reference to Myos Hormos, that can be considered as an internal documentation, shows that Quseir supported a military detachment, a garrison under a *curator praesidii* which may have numbered 50 to 100 men.¹

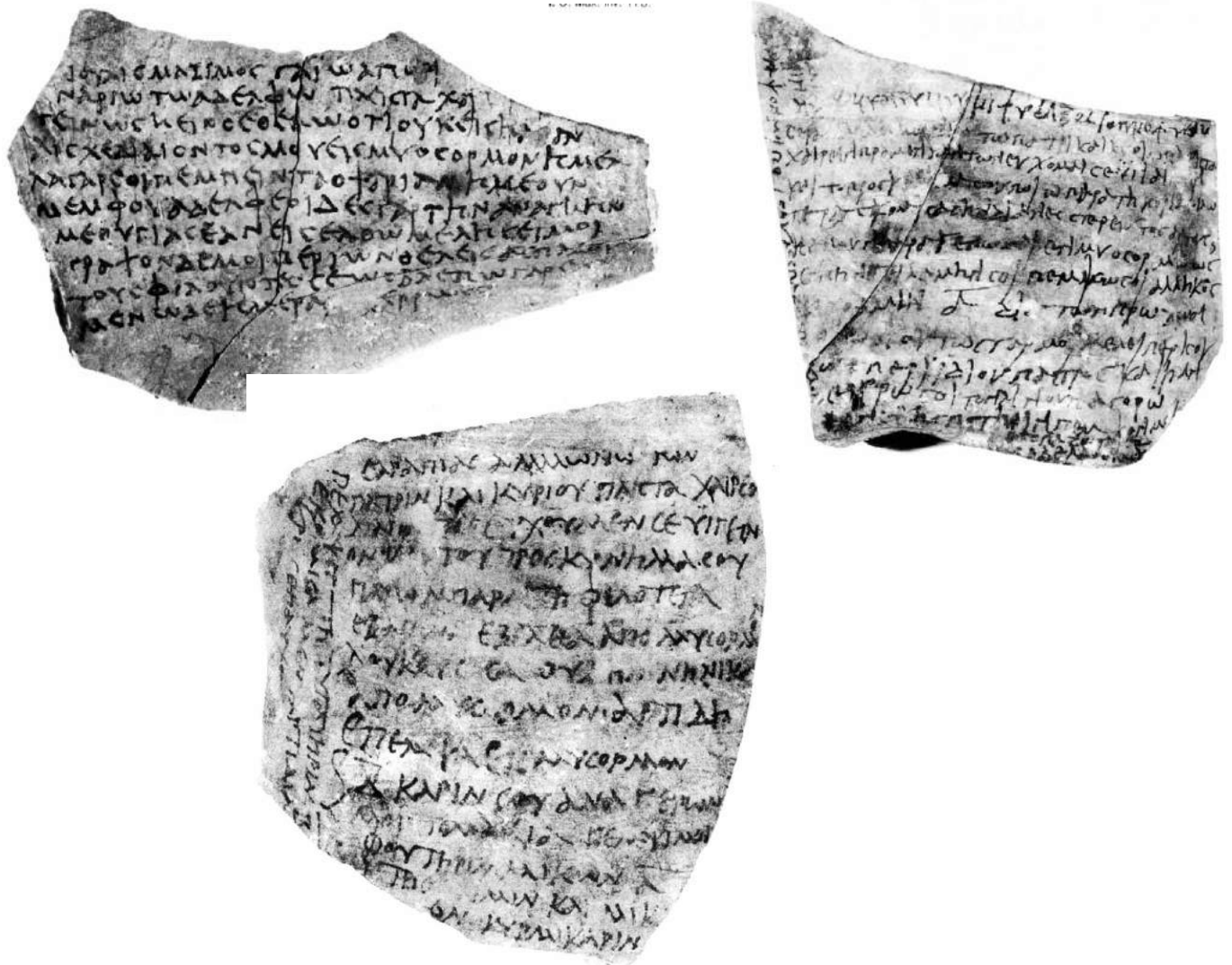


Fig. 121

Inscribed fragments that identified the ancient Myos Hormos.

After, Bülow – Jacobsen, A. et al. 1994: pl. I, II.

¹ Bagnall, R. S. 1986: 1 – 60, cat. 45.4 – 5; Bülow – Jacobsen, A. et al. 1994: 27 – 42.



Fig. 122

Inscribed fragments identifying Myos Hormos.

After, After, Bülow – Jacobsen, A. et al. 1994: Pl. III, IV.

Internal documents suggest the garrison was in place from the beginning of the 1st through the first quarter of the 2nd century A.D. This agrees with numismatic evidence, of occupational activity; the three seasons of excavations produced only one worn Ptolemaic issue and one coin of the third century. The majority of the coins were bronze (*aes*), with a few billon tetradrachms. The identifiable coins are attributable to the reigns of Claudius, Nero and the Flavian emperors (41 - 96 A.D.) and a later coin of Hadrian (117-138 A.D.) which suggests an activity in the 1st and early 2nd centuries. One should caution that of the coins identifiable as Roman only 1/5 could be attributed more precisely, due to water and salt damage.¹

The excavations produced an impressive list of languages used in or around this settlement such as Latin, Greek, Demotic Egyptian, Tamil, Nabataean, and South Arabian. The occurrence of Tamil is perhaps the most interesting for the India trade. Two inscriptions on pottery have been shown to record personal names in old Tamil.

² Not only do these graffiti correspond to Tamil on pottery at Arikamedu, but one of the names is found in the Arikamedu corpus.³ The sherds were found in the structures across the road from the Roman "villa", these buildings seem to encroach over the original street, suggesting a second century date; such a date appears to agree with the palaeography.

This area also showed evidence of iron working, a traditional Indian activity; more important are the numerous ceramic types which appear to be in Indian style, if not actual manufacture. The nearby Roman "villa" had a cellar door made of cedar; and in the northwest, other architectural elements made of teak. Analysis of other small wood artefacts of the Roman period indicated that virtually all came from outside Egypt. and most from species are native to Iran and India.⁴ Connections with Arikamedu have been explored before, it can be stated here that the terra sigillatas, amphorae, and coinage (except for gold) found at Arikamedu are precisely duplicated in the assemblages recovered at Quseir.⁵

¹ Sidebotham, S. E. 1986: 55.

² Whitcomb, D. and Johnson, J. 1979: pl. 27. J.

³ Wheeler, R. E. M. 1946: 109 – 114; Salomon, R. 1991: 731 – 736.

⁴ Whitcomb, D. S. and Johnson, J. 1982: 337; Hiebert, F. T. 1991: 127 – 159.

⁵ Whitcomb, D. 1996: 750.

The British excavations of Myos Hormos uncovered a pier, jetty or artificial extension of the coast comprising many thousands of recycled early Roman amphorae. Unfortunately, this does not give much information about the overall appearance of the early Roman harbour works at Myos Hormos. It indicates a rather jerry – rigged and ad hoc approach to harbour construction, which is consistent with the overall appearance of the port, built as it was of coral chunks, sea shells, readily available stones, and mud brick so as to keep overhead minimal building costs.¹

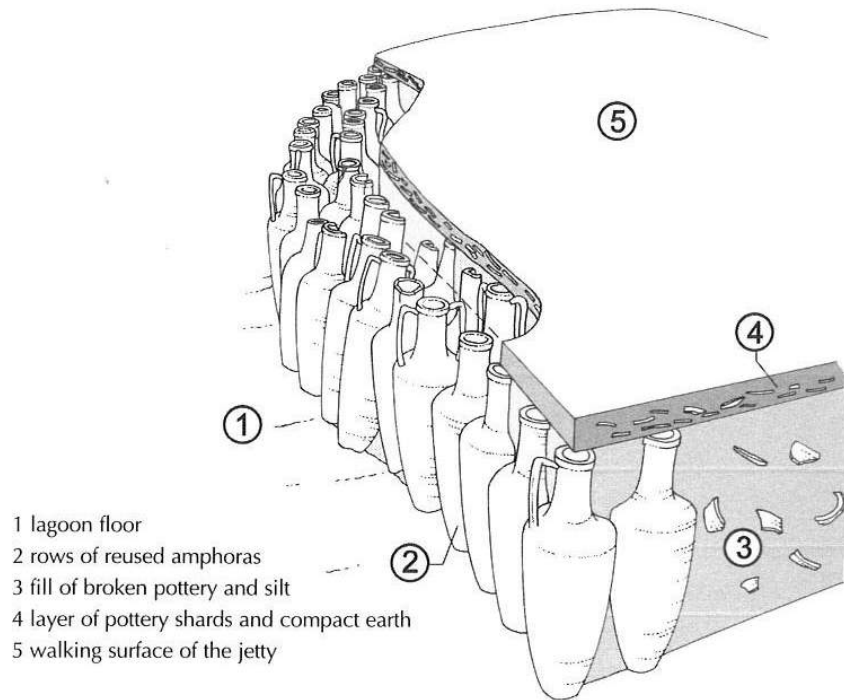


Fig. 123

A reconstruction of the artificial extension of the coast in the harbour of Myos Hormos.

After, Sidebotham, S. E. 2008: pl. 7.16, p. 171.

¹ Sidebotham, S. E. et al. 2008: 170 – 171.

2.3.7. Chronology of the Port of Myos Hormos

The foundation of Myos Hormos by Ptolemy II Philadelphus (285-246 B.C.) has been widely assumed, yet there is no direct evidence. The attribution is implied from the tradition of Agatharchides, written over 150 years later and available only in quotations (Diodorus, Strabo, and Photius). The name implies an unofficial, non-royal foundation, however, the other ports of Ptolemy II are all named for his female relatives.¹

The text of Agatharchides, as found in Photius, states that a later name for the port was Aphrodite's harbour. The remains of the possible Ptolemaic port can be under the modern town of Quseir, this idea hinges on four hieroglyphic inscriptions from a Ptolemaic temple discovered by Weigall in 1907, He noted that « on one of them was the name of a certain Duau, followed by the hieroglyph “*niwt*” representing the town written twice to indicate the existence of two ports». Recent consensus among Egyptologists stands against this reading; a more plausible reading might be “deities of the underworld, rather than a proper name”.²

The stones seem to indicate a temple that might have been dedicated to “Hathor”, that was associated with Aphrodite. Although this was the principal Egyptian deity worshipped in the region to the east of the Nile, a temple of Hathor strengthens the idea of Aphrodite's harbour and may refer to the site of modern Quseir.³

Some scholars suggest that a series of square towers or route markers may lead toward the modern town and may be dated to the Ptolemaic period, however, the results of the excavations at Coptos especially Ceramics, were used to identify the Hellenistic components along the routes of the eastern desert.⁴ According to the description of Strabo, it seems to be limited to the temples, churches, and temenos walls recovered later by Petrie and Reinach.⁵

The Roman port can be dated between the 1st century BC and the 3rd century AD and it continued to be a harbour until the Mamluk period, therefore, it is of considerable archaeological significance. The port of Myos Hormos was first excavated in the late 1970 by a team from the university of Chicago concluding that the site constituted the remains of the small Roman port of Leucos Limen (the white harbour).⁶

However, further investigations of the team of Southampton university (five field seasons between 1999 and 2003) revealed Quseir El Qadim to be of much greater archaeological importance. During these excavations, a papyrus fragment, dated to the 25th of March of 95 A.D., was discovered confirming that the site was the Ptolemaic and Roman port of Myos Hormos, alongside the port of Berenice, some 300 km to the south, the port was central in trading networks between Rome, the Mediterranean and the East. The site was abandoned for about a millennium until it was revived in the medieval Islamic era during the Ayubbid and Mamluk dynasties then by the 13th

¹ Burstein, S. M. 1989: 136. No. 1.

² Weigall, A. E. P. 1913: 21 – 24, 61, pl. X; the reading is limited to the hand copy of Weigall, moreover, further stones, apparently from a Ptolemaic temple were found in 1978 in the modern town, this was reported by Professor A. M. A. H. Sayed during his excavations in the Red Sea region.

³ Whitcomb, D. 1996: 760.

⁴ Whitcomb, D. S. and Johnson, J. H. 1979: 319; For the identification of the Ptolemaic sites cf., Wright, H. T. and Herbert, S. 1993: 11. A survey that deals with the routes leading to Berenice.

⁵ For the excavations in Coptos, cf., Reinach, A.J. 1910.

⁶ Tully, G. 2009: 65 – 66.

century, the site became an important Mamluk centre and Waqf port, acting as a hub for trade and a passage point on the pilgrimage route to Mecca and Medina.¹ By the 15th century the site was once again deserted, thereafter, activities moved to Quseir city, about 8 km south of the ruins of Myos Hormos.

2.4. Mersa Gawasis

2.4.1. Geographical Location

The most ancient Pharaonic site identified in the Red Sea is Mersa Gawasis.² The site (26° 33' 26" N, 34° 02' 11" E) is located on the base of a fossil coral terrace at the northern end of Wadi Gawasis, about 23 km south of Safa and 55 km to the north of Quseir. The site covers an area of about 650 m (east - west) by 320 m (north - south), and it is delimited by the seashore to the east, the bed of Wadi Gasus to the south and a playa to the west.³

A paved road along the coast and a railway, which cross the site from north to south, divide the site into eastern, central and western sectors.

- The eastern sector, between the seashore and the coastal road, has been disturbed by abandoned military installations and gravel quarrying.
- The central sector, between the coastal road and the rail road, has been almost destroyed but isolated areas with deposits up to about 50 cm thick have been preserved.
- The western sector of the site, between the railway and the playa is still well preserved.⁴

The modern name (Mersa Gawasis) that means "Harbour of the spies", is applied to the ancient "*saww*" port and it connects the creek with a period when relatively small Islamic patrol – boats hid in it, darting out to spy on the movements of enemy shipping.⁵

¹ Tully, G. 2009: 66.

² It was excavated in two successive campaigns by the Egyptian archaeologist Abdel-Moneim Sayed. Cf., Sayed, A. M. 1977: 140 – 178; Sayed, A. M. 1978: 69 – 71; Sayed, A. M. 1983: 23 – 37.

³ Bard, K. A. and Fattovich, R. 2011: 107 – 108.

⁴ Bard, K. A. and Fattovich, R. 2007: 29.

⁵ Sayed, A. 1978: 70, no. 5.

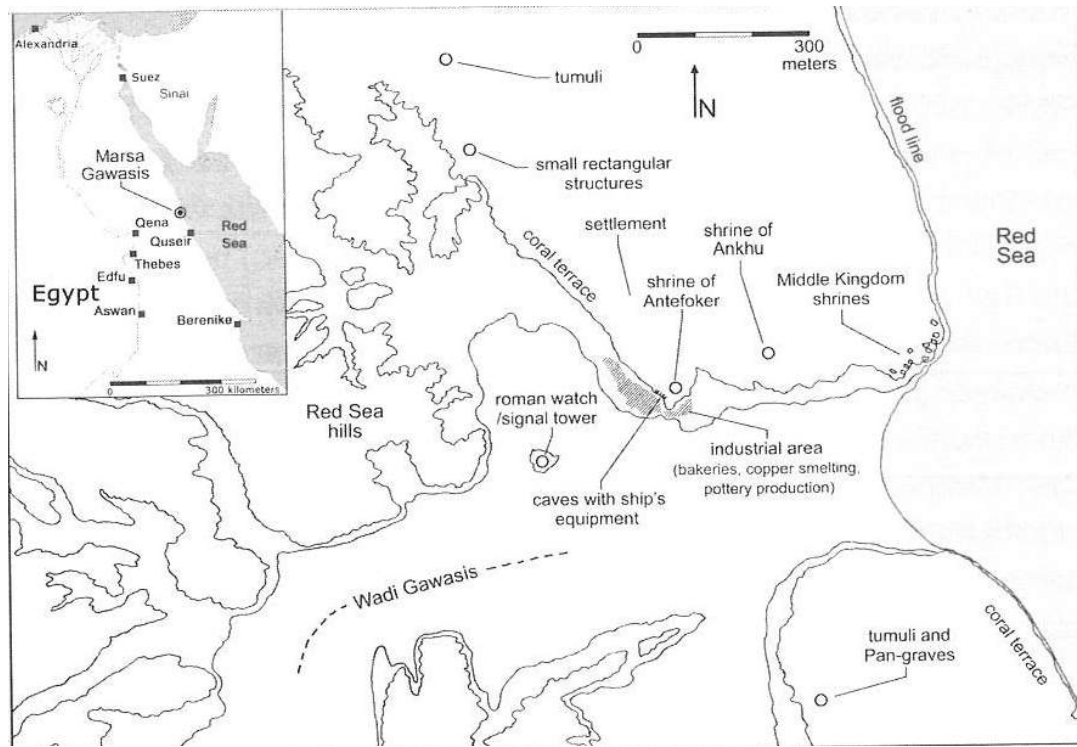


Fig. 124

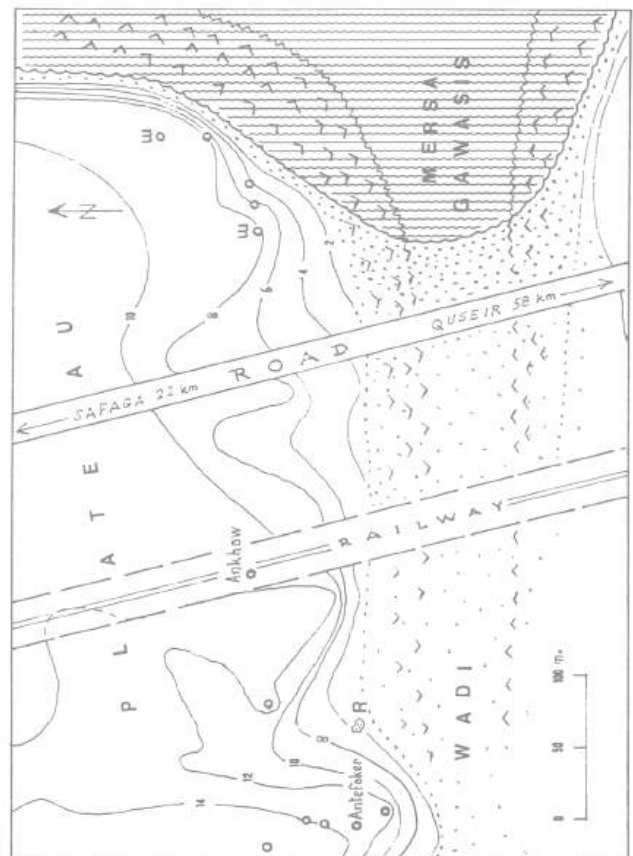
Detailed map of the site of Mersa Gawasis.

After, Sidebotham, S. E. et al. 2008: fig. 7.3; Bard, K. and Fattovich, R. 2011: 106, fig. 1.

Fig. 125

Site map of Mersa Gawasis.

After, Sayed, A. M. 1977: 149.



2.4.2. Religious Aspects of Mersa Gawasis

Over thirty stelae, in the niches carved on the western wall of the coral terrace, suggest that in the late 12th Dynasty the core area of cult activity moved from the edge of the sea at Mersa Gawasis to the western slope of the coral terrace at Wadi Gawasis. These stelae were probably associated with a small ceremonial structure consisting of four upright boulders, and with a large curved wall cut into a natural stratum of cobbles at the top of the southwestern slope of the coral terrace. A well preserved ceramic jar, missing only its neck, was also associated with this structure and it was probably some kind of offering.

A few Minoan potsherds were also collected close to this structure, and might have been highly valued items, possibly brought to the site as offerings.¹ The stelae record seafaring expeditions, offerings to the gods, offering scenes and offering formulae.² These stelae, including royal and non-royal commemorative inscriptions, might be interpreted as “monumental discourse,” addressed to posterity as well as an audience of viewers and listeners to create a sacred dimension of permanence.³

The different mounds and stone circles at Mersa Gawasis, together with Ankhu’s monument, probably had the same ideological purpose as the stelae, which were sometimes associated with them. The mounds were at the same time commemorative monuments and shrines, as the occurrence of stone anchors and conch shells in the foundations of the mounds suggests, and the orientation of the opening of chambers toward the sea points to symbolic behaviour within a maritime context.⁴

Min

Ceremonial structures along the edge of the coral terrace and stelae placed in niches outside gallery entrances demonstrate that rituals were performed at the harbour before the departure and/or after the return of the ships in the 12th Dynasty. Epigraphic evidence indicates that Min of Coptos was the focus of cult activity at Mersa Gawasis.⁵

A stela, dating to Year 2 of Senusret II, records a temple of Min, which might have been located at Mersa Gawasis, but no evidence of such a construction has been found at the site.

An oval platform, ca. 9 m × 10 m in area and ca. 1.2 m high, with an east-west orientation and a ramp to the west (Feature 1), 149 at Mersa Gawasis may have been an open air altar for offerings to a maritime deity, most likely Min, as several hundred conch shells like those carved on the Proto-dynastic colossal statues of this god from Coptos were collected on top of it.¹⁵⁰ These conch shells were not used to make artefacts or for food, but most of them were collected already dead and therefore their placement on top of this platform most likely had a ritual meaning. A well-preserved round-topped limestone stela that it can be dated according to the cartouche to the reign of Nymaatre (Amenemhat III).

The stela was found lying in the sand, inscribed side down, just below its original niche. Except for a small part of its upper edge, which had been partially eroded by a siliceous encrustation, the stela is in a good state of preserved. The sunk relief

¹ Wallace – Jones, S. 2010: 23 – 24.

² Mahfouz, E., Manzo, A. and Pirelli, R. 2007: 217 – 225.

³ Parkinson, R. B. 2002: 62.

⁴ Bard, K. and Fattovich, R. 2007: 40 – 44.

⁵ Mahfouz, E., Manzo, A. and Pirelli, R. 2007: 219 – 225.

decoration is carved in a field (34,5 x 23,5 cm) with a thin border incised around the edges. No trace of colour is now present and the decoration is divided into three sections:

- a) The upper register, a carved offering scene to the god Min.
- b) The central register with two symmetrical horizontal texts, in three lines.
- c) The lower register with the final part of the two texts, each inscribed in two vertical columns, flanked by the figures of two men. The profiles of the figures (especially the human faces) are sharp in outline and not very detailed in the so called "silhouette style").

Some hieroglyphic signs are only approximately drawn and some unintentional cuts appear on the decorated surface.

The upper register represents the ithyphallic god Min stands on the left, facing the right while King Nymaatra (Amenemhat III) is standing in front of him, facing the left and presenting the god with a conical loaf of cake, in his left hand. The king wears a short kilt with a rigid triangular apron, a bull's tail and an unusual crown resembling a double-plumed headdress.

The owner of the stela, Nebesu stands on the far-right side behind the king, facing the left, the figure of Nebesu is carved on a smaller scale than the king, He is depicted with a shaved head wearing a long skirt, with his arms at his sides and his hands with palms facing down, in a gesture of worship and reverence.

Two more human figures are in the lower section of the stela, on either side of the vertical inscriptions. On the right is Nebesu, standing and facing the left, with his arms by his sides. He wears the same long skirt as in the upper scene, and a short wig. On the left side, the reversed image of his brother, Amenhotep, facing the right and wearing the same cloth.

The date of the stela might still be doubtful (either the end of the 12th or the beginning of the 13th dynasty), but taking into account the general context of the site (and of this area in particular) and the fact that no other epigraphic documents were found so far at Mersa Gawasis that can be dated to a period later than the 12th dynasty, therefore, the earlier date is more plausible. ¹

¹ During the excavations of the Italo – American mission at Mersa Gawasis in 2004 – 2005, two inscribed stelae were found in the southwest area of the site in addition to a third incomplete and engraved only with a seated figure of a man. The stela in question is 38.0 cm high, 26.0 cm wide, and 10.5 - 11.0 cm thick. (**Inventory no:** WG 144 of Qift Magazine Inventory). Cf., Pirelli. R. 2007: 88 ff.

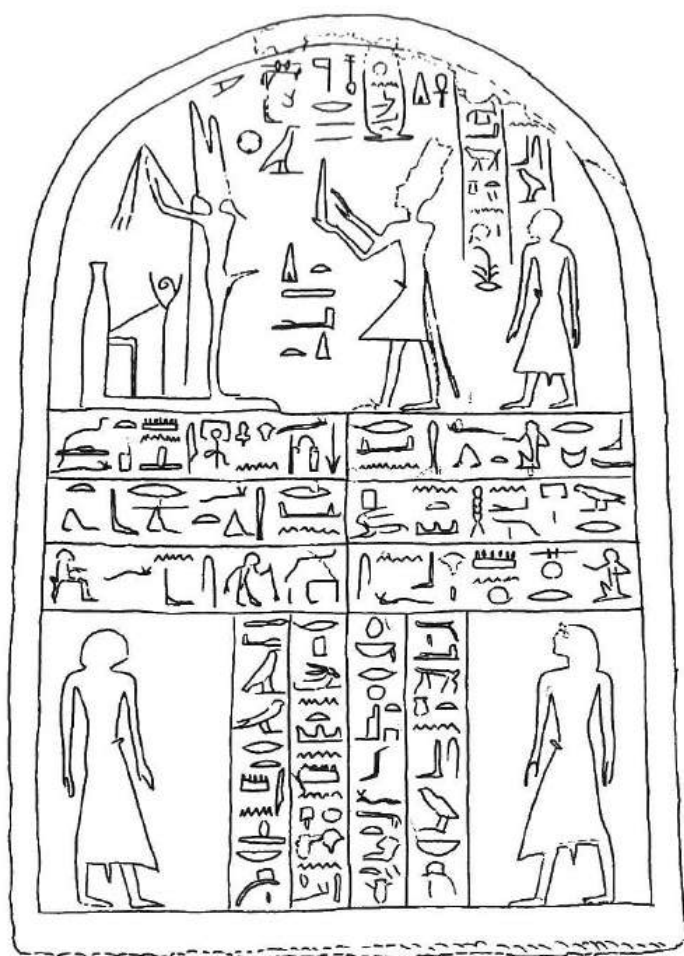


Fig. 126

Stela of Mersa Gawasis (WG. 144 of Qift Magazine Inventory).

After,

After, Pirelli. R. 2007: pl. XVII. (a-b).

Horus and Osiris

A small (badly preserved) stela records offerings to Wsir Wadj-wr (Osiris of the Great Green Sea) and *Hr-wr* (Horus the Great), suggesting that a maritime form of Osiris as well as Horus were also honoured at the harbour.

Hathor

A roughly circular enclosure, ca. 12 m × 10 m in area, with an opening to the east and a horseshoe-shaped stone arrangement inside, ca. 1.0 m × 1.2 m in area, was built at Mersa Gawasis. ¹ This structure is similar to a Middle Kingdom shrine of Hathor in the galena mining village at Gebel Zeit in the Eastern Desert. ²

The goddess may also have been worshipped at the harbour as the inscription on the stela of Ankhu mentions “Hathor, Lady of Punt”. ³

¹ Bard, K. A. and Fattovich, R. 2007: 41 – 42.

² Castel, G., Gout, J. and Soukassian, G. 1984 – 1985: 99 – 105.

³ Sayed, A. 1977: 159.

2.4.3. Archaeological Findings

The discovered materials included seals, ostraca, sycamore wooden cargo boxes that were used to contain the products of Punt (two of them are still dated by an inscription of year 8 of Amenemhat IV), In addition to few ceramic sherds of exotic origin, most probably from Ethiopia, or Southern Arab Peninsula, these findings might have been contemporary to the functioning period of the port utilization and they give a more concrete image of the existing regions along the course of these expeditions in ten years (from 2001 till 2011), the archaeological excavations allowed to have a clear idea of the different components of the site including the geological identification at the foot of the cliff in which are carved the galleries of a former lagoon that once allowed the ships to enter and to shelter from the north winds prevailing at the time of utilization of the site.



Fig. 127

The Laguna of the port of Mersa Gawasis.

After,

Photography of the researcher.

The Monument of Ankhou

Excavations brought to light the presence of a series of small votive monuments placed atop of a rocky ledge overlooking the sea, some of these structures are fairly modest and boil down to simple stone circles, others, more elaborated, including in their construction limestone boat anchors, are regularly located along the edge of the plateau. Among the discoveries, there are two monuments, erected at about 90 m one from the other, bearing inscriptions that gave a clear idea about the usage of the site during the Middle Kingdom of Egypt. The small chapel of Ankhu, dated to year 24 of Sesostris I, evokes the beginning of an expedition to Punt.

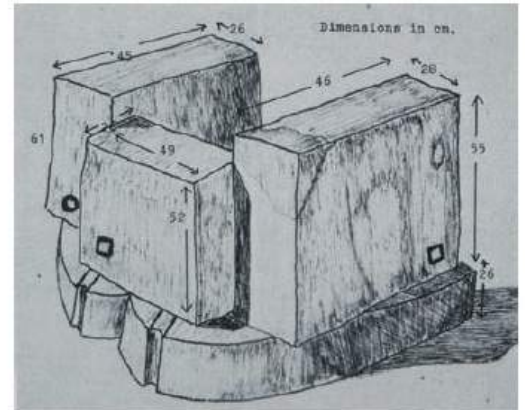
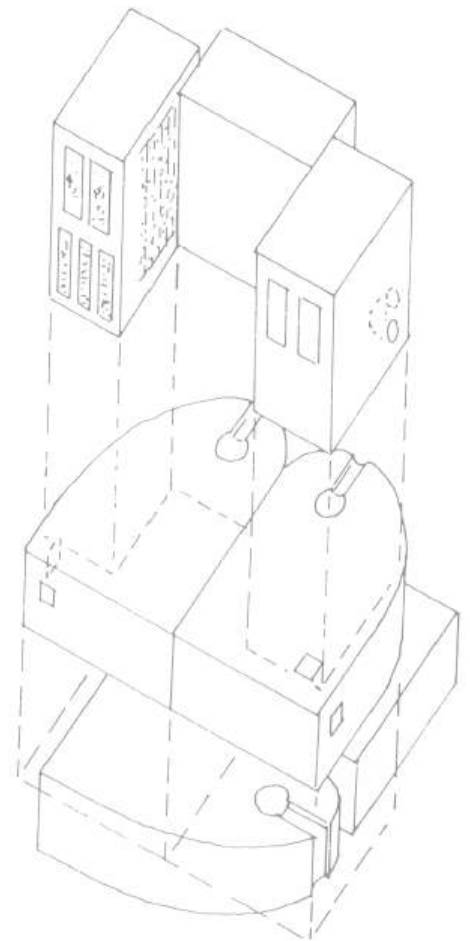


Fig. 128

The monument of Ankhou.

After, Tallet, P. 2015: 34, fig. 3;
Sayed, A.1977: 157, pl. 13 and fig. 2.



The Monument of Antefoker

The monument of the vizier Antefoker, probably reveals the procedures of shipments, stating that boats designed in the Nile valley are reassembled on the coast, probably after being transported in detached pieces.¹

The results of these first excavations were spectacular, it included an abundant inscribed material, including hieratic ostraca and jars labels dated to the Middle Kingdom, mentioning Punt, this discovery confirmed that the site was utilized as a harbour.

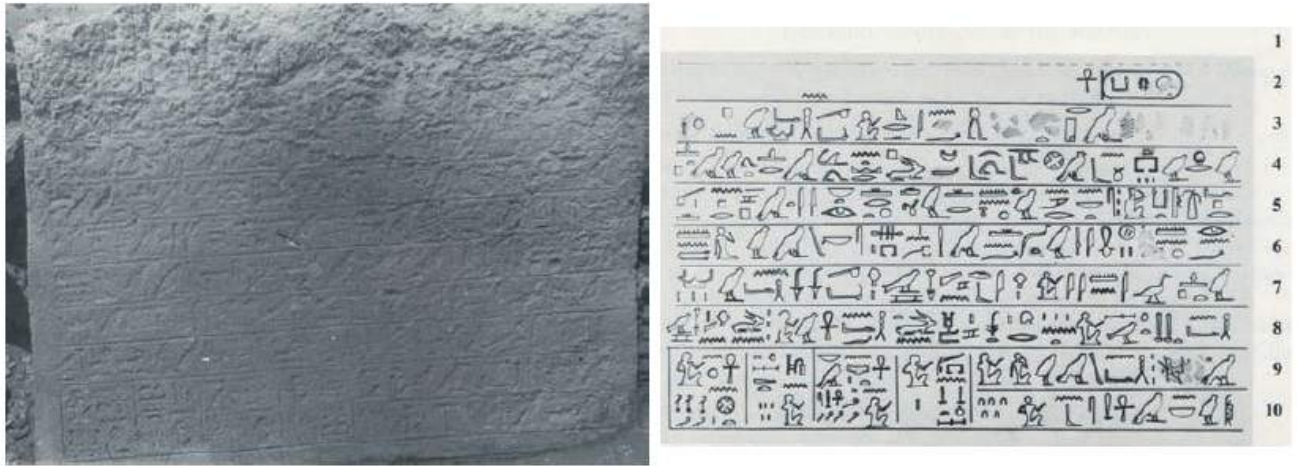


Fig. 129

Stela of Antefoker.

After, Sayed, A. 1977: pl. 16.

¹ First interpretation in Sayed 1977, for a more recent interpretation cf, Farout, D. 2006: 43 – 52; The resumption of excavations in 2001 under the auspices of an Italian-American team led by K. R. Bard and Fattovich, however, confirmed the results concluded thirty years earlier.

The Rope Cave

These excavations elaborated one of the site characteristic features which is the presence of the rock slope where the chapels were installed, a series of eight galleries dug in the limestone bed rock that contained at the time of their discovery, an abundant number of marine equipment, especially several pieces of cedar wood boats, many anchors sometimes reused in the consolidation of the walls and an impressive heavy gauge coils of rope still up in one of these caves.¹

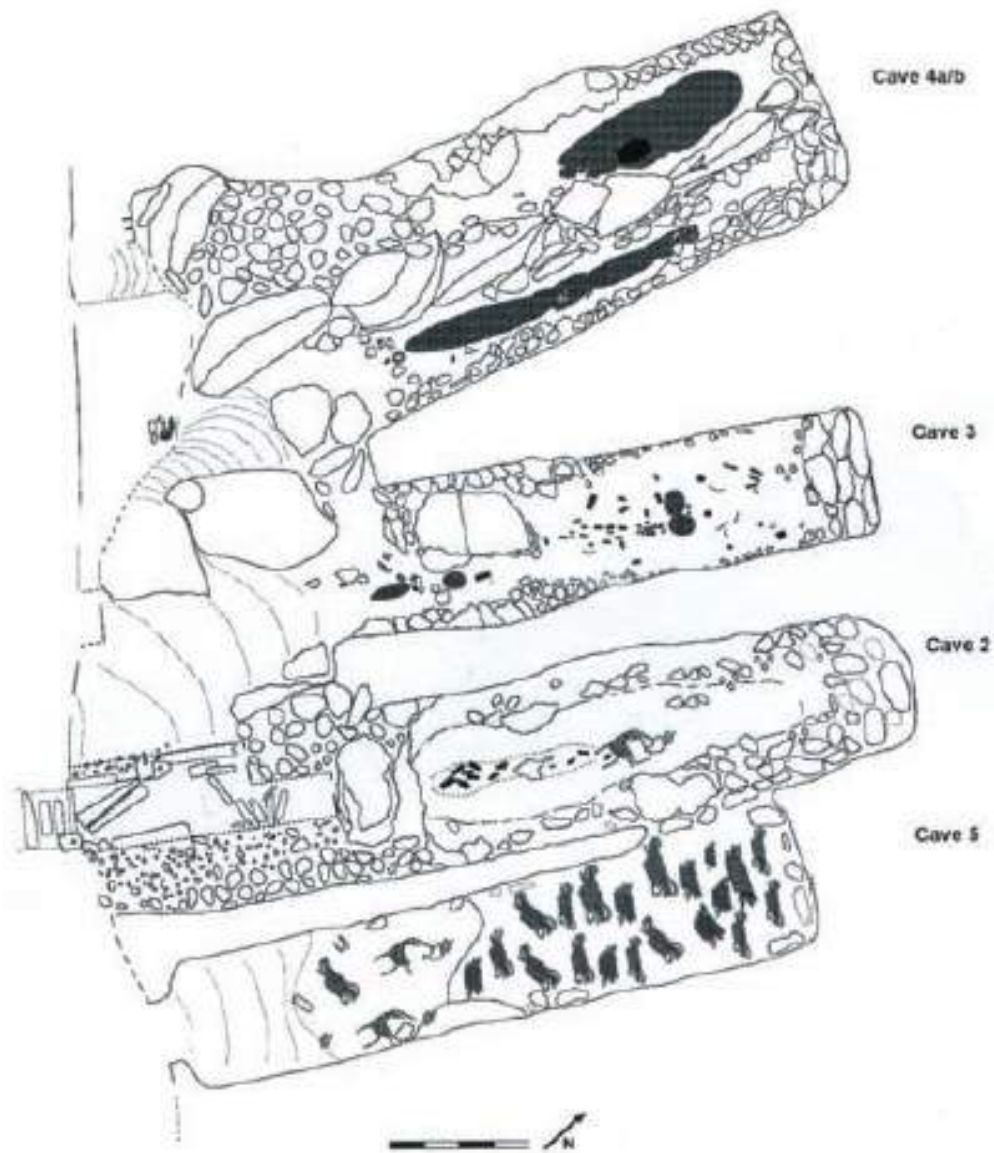


Fig. 130

Galleries of Mersa Gawasis.

After, Tallet, P. 2015: 35, fig. 5; Bard, K. and Fattovich, R. 2007: fig. 7; Tallet, P. 2009: 697, fig. 7.

¹ Bard, K. and Fattovich, R. 2007: 189 ff.

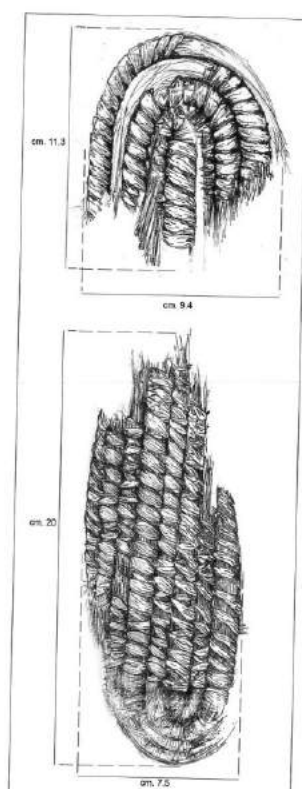
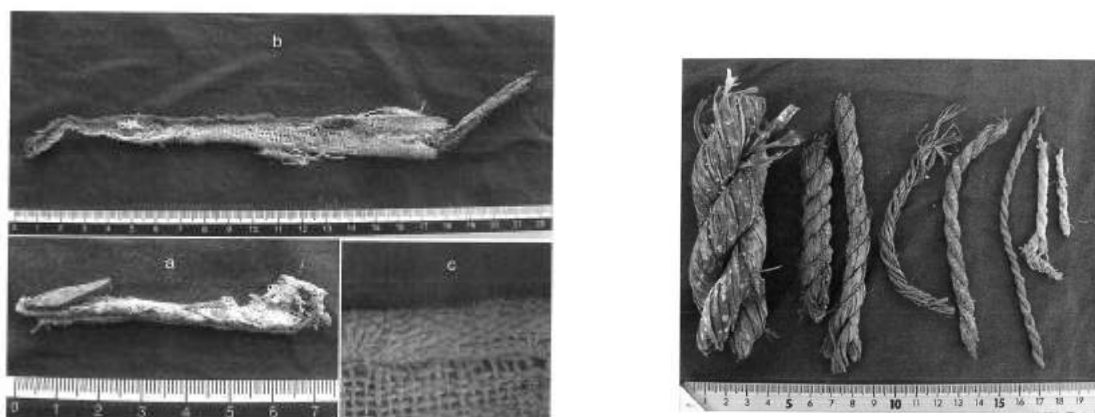


Fig. 131

Different kinds of cordages including a rope bag and a papyrus sandal.

After, Bard, K. and Fattovich, R. 2007: figs. 71 – 78.

Commemorative stelae dated throughout the history of the site, set in the wall above the entrances to the galleries by the different missions who attended the scene during the period of functioning, many of these stelae were found in place in niches carved for them or at the foot of the rock in different levels of siltation of which six are still bearing the titles of different rulers of the 12th Dynasty such as (Senusret II, Senusert III and Amenemhat III). These stelae were sometimes associated with the dates of the missions and the repeated mentioning of Punt, confirming the use of the site for a period of over 150 years.



Fig. 132

Entrance of the galleries and niches that once bore the stele.

After, Tallet, P. 2015: fig. 6.

2.4.4. Chronology

In terms of timeline, this port utilization of the site can be dated to the Middle Kingdom, that was also provided by the ceramic material. However, this assumption does not confirm its use as a departure port towards Punt along the Egyptian history, as the port of Mersa Gawasis became less important starting from the New Kingdom which is a more plausible hypothesis.

Archaeological and textual evidence provide a chronology for use of the site of Mersa Gawasis as a harbour in pharaonic times.¹ The typological sequence of the ceramics and nine radiocarbon dates consistently demonstrate that the harbour was used in the Middle Kingdom (ca. 2055–1650 BC).² Most of the ceramics date to the period between the 12th and the early 13th Dynasties.³

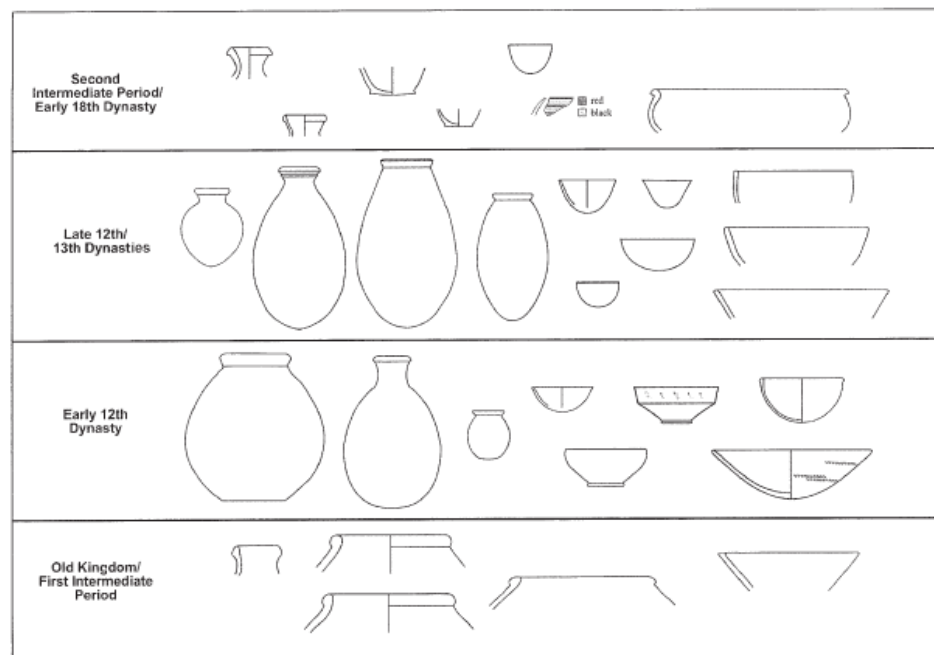


Fig. 133

Ceramic sequence in Mersa Gawasis

After,

Bard, K. A. and Fattovich, R. 2011: 109, Fig.3.

¹ Bard, K. A. and Fattovich, R. 2007: 241 – 243.

² Sayed, A. “on the non – existence of the Nile – Red Sea canal (so called canal of Sesostris) during the Pharaonic times”, in Sayed, A. 1993: 127 – 147, fig. 1.

³ Manzo, A. and Perlingieri, C. 2007: 115 – 125; Wallace-Jones, S. 2008: 43–50; Wallace-Jones, S. 2010: 17–25.

despite the bad conditions of preservation, these documents can be considered very significant for our knowledge about the site, it not only provides confirmation that the harbour was in continuous use over an extended period, but it also points once again to the complex role of this area where administrative offices, storage and even cultic activities appear to have been performed in different periods of the long life of the site.

Chronology of certain monuments discovered in the site of Mersa Gawasis depended on different aspects such as:

I. The human silhouettes are strictly comparable to other stelae dated to the 13th Dynasty. ¹

II. A few potsherds dating to the late Old Kingdom/First Intermediate Period and late Second Intermediate Period/early New Kingdom suggest that the harbour was used occasionally in these periods as well (although it is very unlikely that expeditions occurred during the First or Second Intermediate Period). ²

III. Four charcoal or wood samples provided calibrated radiocarbon dates between ca. 2000 and 1600 BC, which are consistent with the use of the harbour in the first half of the second millennium B.C. The calibrated date of one charcoal sample falls within the First Intermediate Period and the early Middle Kingdom.

- One sample of cedar wood was dated to 2200–1890 B.C. and possibly supports the use of the harbour at the end of the Old Kingdom.
- The date of another sample from rope falls within the late Middle Kingdom - Second Intermediate Period - early New Kingdom.
- Two samples were dated to 1520–1100 BC and 1260–1050 BC, respectively, and suggest use of the harbour in the New Kingdom.

IV. Epigraphic evidence (on stelae, wooden boxes and ostraca), including stelae recorded in the mid-1970s, confirms that the harbour was used throughout most of the 12th Dynasty, during the reigns of Senusret I, Senusret II, Senusret III, Amenemhat III (ca. 1831–1786 BC), and Amenemhat IV (ca. 1786–1777 BC). ³

¹ Pirelli, R. 2007: 102 – 105.

² Manzo, A. and Perlingieri, C. 2007: 115–25.

³ Mahfouz, E. 2008: 267–334; Pirelli, R. 2007: 87–110; Sayed, A. 1977: 140–78; Sayed, A. 1983: 23–37; Mahfouz, E. Manzo, A. and Pirelli, R. 2007: 217–238.

2.5. The Ancient Red Sea Ports

Sea navigation occurred in the Red Sea region along the western side of the Suez gulf in the ancient ports of Ayn Soukhna, Wadi el – Jarf and Mersa Gawasis,¹ the port that will be the subject of the next pages together with both Coptos and Myos Hormos as they served geographically the central eastern desert linking routes between the Nile and the Red Sea.

By the 1st century A.D., the routine of Eastern trade was well established. From Alexandria, it took twelve days sailing south along the river Nile to reach Coptos almost 650 km distant from Alexandria. Roman merchants returning from the distant East would follow these same trade routes, crossing the Eastern Desert and loading their Eastern cargo onto barges at Coptos to be taken by river north to Alexandria and the Mediterranean.

Skilled craftsmen making the journey to the ports would have been required for ship construction and maintenance. Indian society also sought Roman artisans for their foreign expertise, so subjects of the Empire could travel east to make their fortunes. By contrast, on the return from a trade voyage the offloading of Eastern cargo would have been a rushed operation, as merchants scrambled to deliver their retail goods to Alexandrian markets in the shortest possible time. The transport operations managed by caravan firms continued throughout the year and it seems that private guards were hired to protect companies of travellers from bandits. The larger caravans probably contained hundreds of men and animals, including scores of drivers and dozens of guards.²

Strabo stresses that waters around this port were not very favourable for shipping. He writes that Berenice has a coast roughened by reefs and submarine rocks and most of the time it is subject to tempestuous winds facilities at Berenice fell into serious disrepair during the later Ptolemaic era and Roman authorities were slow to restore the port.³

By the Roman times, Myos Hormos and Berenice became the two most important Red Sea ports in the Eastern trade. Journeys from Coptos to these ports were made transferring trade goods and supplies across the busy desert routes. Myos Hormos was approximately 180 km distant from Coptos and it took six or seven days to make this journey.⁴ However, Berenice lay further south at the very edge of Roman territory, Consequently, the desert crossing was longer and it took almost 12 days to travel by caravan the 370 kilometres to this port.⁵

¹ Tallet, P. 2015: 31.

² Adams, C. 2007: 83, 207, 223.

³ Sidebotham, S. E. 1986: 52; For more about the port of Berenice, cf., Adams, C. 2007: 225; McLaughlin, R. 2010: 29 ff.; Whitewright, J. 2007: 85 – 87; Tomber, R. 2008: 63.

⁴ Sidebotham, S. E. 1986: 49 - 53; Adams, C. 2007: 35 – 36.

⁵ Sidebotham, S. E. 2008: 159.

2.6. Port System in the Red Sea

It was assumed that five Graeco – Roman ports, named in the *Periplus Maris Erythraei* had harbour works, although the form they took has not been clarified. Structurally, they could hardly have resembled Mediterranean harbour works, the conditions varied between Mediterranean and Red Sea therefore, engineers have had to solve new problems in the Red Sea uninhabited desert shores.

Cairns are conical piles of rough stones usually made up by local people who maintain them as between seasons, the stones topple and spread into shallow piles. In the Red Sea region, cairns as well as *hydreumata*, towers, inscriptions, the remains of edible shells etc. punctuate the routes that connected Ancient Egypt with the Red Sea ports.¹

The dangers of the Red Sea coast can be summarized in:

- The lack of good natural shelter is aggravated by strong onshore winds which drive ships towards a combination of coral reefs, pinnacles and fringing – reefs. Moreover, the corals are liable to change through the time due to their nature as living organisms.
- The wadi routes used to be important in linking between the Nile and the Red Sea ports as sailing down of the Red Sea is safe, whereas using its coastal channels to touch in along its shores is still so perilous that regular cabotage, even by engine driven vessels, has never replaced road transport.
- Wadi routes from the Nile are still used, besides, it is important to know that without trees no boat – building tradition can grow up naturally so the ancient Egyptian imported both the foreign know - how as well as foreign woods when building their Red Sea fleet.
- Shipping was the main reason for the existence of towns in these barren zones, traders needed temporary seasonal residences that can be reflected by the quality of the towns described as either “Squalid” or “instable” according to the trade patterns. It should have been the case of the 500 sailors and the 3200 soldiers recorded on the Antefoker stela as there is no evidence that their troops and technicians did more than camping at “Saww – Mersa Gawasis”.²

¹ About the use of the Quseir – Coptos road cf., Bernard, A. 1972; Tchernia, A. 1992: 293 – 301; Trigger, B. J., Kemp, B. J., O’connor, D. and Lloyd, A. B. 1983; Froste, H. 1996.

² Sidebotham, S. E. 1991: 27; Johnston, J. H. 1977: 389 – 398.

2.7. Destination of the Seafaring Expeditions

The epigraphic evidence from Mersa Gawasis records two destinations of the seafaring expeditions which are Bia-Punt and Punt.¹ Although Bia-Punt is usually considered a mining-region of Punt, the inscriptions dating to Amenemhat III demonstrate that they were separate regions at least in the late 12th Dynasty. Their location is still debated, but the African coast and hinterland along the southern Red Sea in Sudan and Eritrea is the region better fitting the textual, iconographic and archaeological evidence about Punt.²

The archaeological evidence at the harbour site confirms that the expeditions were navigating as far south as Eritrea and Yemen, and suggests that the communities settled along the coast and immediate hinterland of both sides of the southern Red Sea were in some way participating in Egyptian maritime trade in the nineteenth-eighteenth centuries B.C.

The foreign ceramics found in the Red Sea ports include:

- Fragments of Nubian ware from the region of the 4th Cataract in Sudan.
- Gash Group ware from the Sudanese-Eritrean borderland at Kassala.
- Ancient Ona ware and early Adulis ware from the Eritrean - Sudanese lowlands and Eritrea.
- Malayba ware from the Aden region of southern Yemen.
- Sabir ware from the Yemeni Tihama.

The fragments of Malayba ware, Gash Group ware, Ancient Ona ware, early Adulis ware and Nubian ware were found in assemblages dating to the late 12th Dynasty. However, few fragments of Sabir ware were found in assemblages dating to the early New Kingdom.³

Moreover, raw materials point to a southern location for Punt as African ebony (*Diospyros* sp.) could be obtained from the north-western slopes of the highlands in Eritrea.⁴ While, Obsidian occurs both on the coast at Adulis and the Danakil hinterland of Eritrea, and in Yemen.⁵

The occurrence of charcoal of red mangrove wood (*Rhizophora/Bruguiera* genus) in assemblages dating to the late 12th Dynasty at the harbours might also be evidence that the seafaring expeditions reached the coast of eastern Sudan or Eritrea. Today, the red mangrove (*Rhizophora mucronata*) grows over the whole coast of Sudan to the south of the border with Egypt, while the species *Bruguiera gymnorhiza* occurs over the whole coast of eastern Africa.⁶ The best overlap of the area of distribution of ebony and gold sources in the Eritrean western lowlands and northern highlands, together with the occurrence of potsherds at Mersa Gawasis from the same region, suggests that Bia-Punt was located in present-day northern Eritrea but the location of Punt is more ambiguous. The occurrence of Malayba potsherds at Mersa Gawasis suggests a location in the coastal regions of southern Yemen, but this evidence is scant. Possibly in the second millennium B.C. there was an inter-regional trading circuit between the

¹ Expeditions to Punt were attested on the Palermo stone since the reign of the 5th dynasty king "Sahure – 2490 B.C.", cf., Tallet, P. 2009: 692, fig. 4.

² Fattovich, R. 1996: 15–29; Kitchen, K. A. 2004: 25–31.

³ Manzo, A. 2007: 130 – 131.

⁴ Fattovich, R. 1991: 257–72, fig. 1.

⁵ Khalidi, L. 2007: 35–43.

⁶ Bard, K. A. and Fattovich, R. 2011: 128

coastal regions of the southern Red Sea, in Eritrea and Yemen, which would support the hypothesis that the Egyptians met South Arabs who frequented the African coast.¹ It is not clear if the Egyptians were navigating along both coasts of the northern Horn of Africa and western Arabia, and thus included regions on both sides of the Red Sea into their trading circuit, or they met South Arabs on the African coast and engaged in exchange there.

¹ Khalidi, L. 2007: 35 – 73.

Part II
Cultural Heritage Values of the Quseir - Qift Road

Chapter III
Gold Mining in Bir Umm Fawakhir

3.1. Introduction

3.2. Chronology of Bir Umm Fawakhir

3.2.1. During the New Kingdom

3.2.2. During the Ptolemaic Period

3.2.3. During the Roman Period

3.3. Remote Sensing of Bir Umm Fawakhir

3.4. Natural Resources of Bir Umm Fawakhir

3.4.1. Gold

3.4.2. Granite

3.4.3. Serpentine rocks

3.4.4. Gabbroid sheets

3.4.5. Volcanic sediments and intermediate to basic lava association

3.4.6. Granodiorite

3.5. Evolution of the Gold Mining Techniques in Bir Umm Fawakhir

3.5.1. Pre - Dynastic and Early Dynastic Periods

3.5.2. Old and Middle Kingdom

3.5.3. New Kingdom

3.5.4. The Ptolemaic Period

3.5.5. The Roman – Byzantine Period

3.5.6. The Modern Era

3.6. Gold Mining Phases in Bir Fawakhir

3.7. Logistics

3.1. Introduction

Bir Umm Fawakhir is one of the characterized large, well-preserved and exceptionally complete sites along the Quseir – Qift road.

3.2. Chronology of Bir Umm Fawakhir

The occupation of this area is attested from the Old Kingdom, but the most obvious remains are dated to the Greco-Roman and Byzantine eras. The area of Jabal Shahimiyya (south of the current cafeteria) was the most densely occupied.

3.2.1. During the New Kingdom

The most noticed evidence for the ancient Egyptian Bir Umm Fawakhir is the Turin Papyrus (20th Dynasty) that functioned once as a map of the bekhen stone quarries in Wadi Hammamat and the gold mines of Bir Umm Fawakhir.¹

The actual existing ruins in the settlement site of Bir Umm Fawakhir which are preserved in the form of the grouped houses date back to the Greco – Roman period. However, no doubt that an earlier and probably smaller New Kingdom settlement occupied the same site.² Then as in later times, the walls of the huts would have been built of unhewn and non - mortared stacked stone (the locally available pebbles and cobbles of granite) with the roofs and perhaps also the upper walls constructed of thatch, the Ptolemaic and Roman workers would certainly have cannibalized these earlier structures when they built their huts.

The papyrus map indicated that the shrine of Amun as a large building that could not be similar to the temples constructed of blocks of cut stone in the Nile Valley because no such blocks are found in the ruins. Most likely, the shrine of Amun was a small structure built with walls of stacked stone just like the nearby huts. Perhaps a good analogue of the gold workers' settlement during the reign of Ramses IV is the well – preserved collection of huts, complete with a shrine to Amun (all built of unhewn and non - mortared stacked stone), dating from the same period and located on the high ridge between Deir El Medina and the valley of the kings.³

The texts describe a cistern that was probably built to hold water drawn from the well. The water would have been used to separate the gold from the pulverized vein quartz by a process of gravity separation. Perhaps the brown area surrounding the cistern and nearby stela of Seti I was where the gold ore was brought for crushing and washing. The colour of the area matches the brown bands on the adjacent pink hill and so many denote an accumulation of discarded tailings.

The brown patch was interpreted as it may indicate a cultivated area as if the gold workers did not grow crops they would have had to import their needed food products from the Nile Valley, a Journey that would have lasted three days. Moreover, the papyrus indicates that a white limestone stela of Sety I was erected at Bir Umm Fawakhir to commemorate the king's reopening of the gold mines.

¹ Harrel, J. A. and Brown V. M. 1992: 3 – 18.

² Vercoutter, J. 1989: 155 – 189.

³ These huts were used as temporary lodging by the tomb – builders from Deir El Medina. Cf., Bruyere, B. 1936: 329 – 340.

The three radiating brown bands on the pink hill were interpreted as the shadows casting by the adjoining hills at times of low sun which is an untenable interpretation.¹ However, they represent the gold – bearing quartz veins as the granite of Fawakhir contain abundant pyrite (an iron sulphide mineral usually referred to as "fool's gold") when the iron in the pyrite is oxidized, the veins are stained reddish brown.²



Fig. 134

Fawakhir gold deposits in the central part of Turin Papyrus.

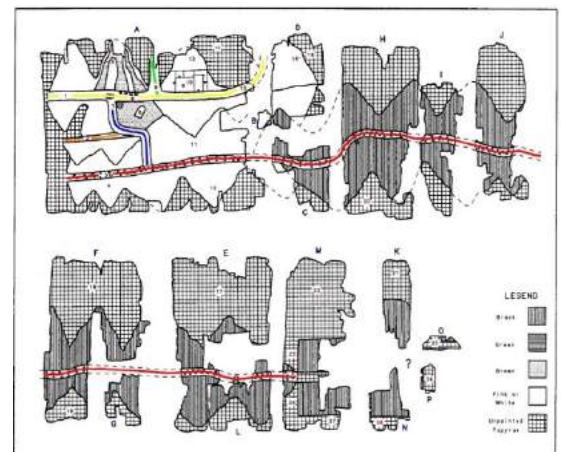
After, Klemm, R. and Klemm, D. 2013: 134, fig. 5.79.

Fig. 135

The reconstruction of Harrell to the Turin Papyrus map indicating a cistern or "water reservoir".

After, Harrell, J. and Brown, V. M. 1992: 87,

Table 1 - fig. 3.



¹ Klemm, R. and Klemm, D. 1985: 73-87.

² Harrell, J. and Brown, V. M. 1992: 99.

3.2.2. During the Ptolemaic Period

The Ptolemaic presence in Bir Umm Fawakhir is resumed in the ruins of the temple of Ptolemy III of which the inscribed piece of column is now lying by the steps of the rest house. ¹

The temple was located on the east side of the Wadi between the mouths of Wadi El – Sid and the so called southeast wadi, the site which corresponds with the location of the shrine of Amun on the papyrus map. This temple was described by the early writers as having columns of either basalt or granite and an area of 3.7 x 6.7 m and it was demolished during the gold mining and the road building activities ²

This black serpentine column was discovered during the building of a house for the Antiquities services; it appears to be the only surviving trace of the Ptolemaic temple. The column bears the lower portions of two columns of inscriptions including titles and epithets of the king in addition to the cartouches of Ptolemy III “Euergetes”. These inscriptions describe the king as "Beloved of Min" due to his function as the main deity of the region, that helped in dating the inscriptions between 246 and 222 B.C. ³

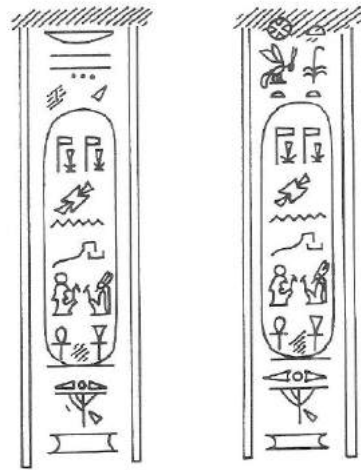


Fig. 136

Ptolemaic column inscriptions in Bir Umm Fawakhir.

After, Meyer, C. et al. 2000: 81, Fig. 52.

¹ Meyer, C. 1995: 199;

Weigall had detected the presence of a temple in 1907, this temple was dedicated by Ptolemy III Euergetes, cf., *Weigall, A. E. P. 1913*: 49-50.

² Weigall, A. E. P. 1913: 49 – 50; Engelbach, R. 1931: 134.

³ Meyer, C. 2000: 26.

3.2.3. During the Roman Period

The Roman period is witnessed through a watch-tower over the western gap leading to Bir Umm Fawakhir, in addition to, some sherds, faience fragments and graffiti in a nearby cave. ¹

The granite quarries and perhaps a cut stone wall belonged to a large building or way *hydreuma*, these quarries are considered as roman relics considering that the Romans were mostly using the granites, porphyries, breccia verde antica and other stones that used to be extracted from the Egyptian Eastern desert. Moreover, the Roman occupation of the site is attested through a small cave decorated with Roman graffiti and paintings. ²

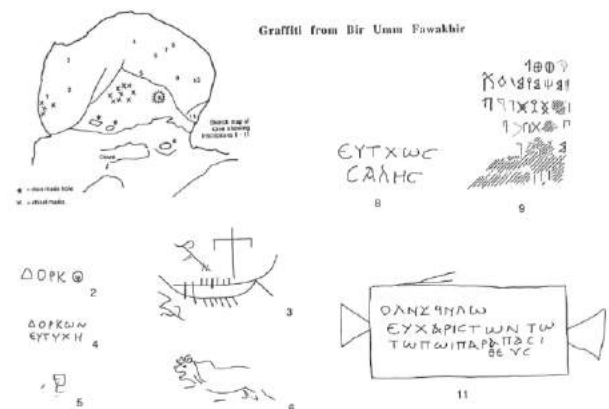
The walls of the cave are inscribed with eleven carved or painted graffiti including designs such as a ship and a lion in addition to some Greek inscriptions of the common "Good Luck" type written in reddish paint by Dorkon and Sales. ³

The most elaborate are the graffito (no. 11) which is composed of a carved four – line inscription enclosed in a tabula ansata design of which the content is an inscription of a man called Longinus who is giving thanks to all the gods in this place that indicates a pre-Christian date and a South Arabic epigraphy dated to the 1st or the 2nd century which is not a standard inscription. Therefore, the graffiti of this cave seem to be dated back to the pre-Christian époque or around the first three centuries A.D. ³

Fig. 137

Man-made cave Graffiti of Bir Fawakhir.

After, Meyer, C. 1995 a: 200, fig. 4.



¹ Meyer, C. et al. 2000: 20.

² Cuvigny, H. 2006: 284.

³ Meyer, C. 1995 a: 192 – 224.

3.3. Remote Sensing of Bir Umm Fawakhir

The digital image processing of “ASTER” offers a powerful tool in identifying the variations in surface mineralogy, structural elements, and geologic contacts to map the lithology of the Fawakhir area and determine the potential localities of altered zones of gold mineralization.¹

Visual interpretation and quantitative image processing including band ratio and principal component analysis (PCA) coupled with fieldwork could be very successful in lithological mapping of the gold mineralization. Satellite images were used to differentiate between certain rocks and minerals using the spectral characteristics of the lithological units.²

Furthermore, such spectral characteristics enabled the determination of the fractures and lineaments that allow hydrothermal fluid migration leading to large zones of alteration and gold precipitation.³ Thus, a Lithological Mapping of Bir Fawakhir using ASTER can be recognized characterizing:

- The serpentinites identified by pale red colour.
- Metavolcanics with pale blue colour.
- Gabbro with pale brown colour.
- Diorite with dark green colour.
- Pink Granite with green colour.⁴

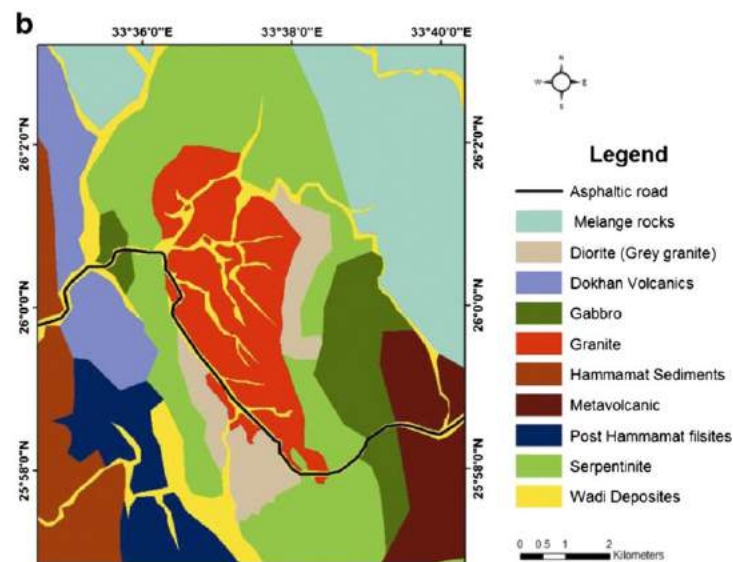


Fig. 138

Final Litological map of the Fawakhir area

After, Abou El-Magd. I et al. 2015: 3528, fig. 4b.

¹ OkadaK, Ishii M. 1993: 126 – 128; Bedell RL. 2001: 329–334.

² Abdeen M. M., Allison T. K., Abdelsalam M. G., Stern R. J. 2001: 289.

³ Cox S.F. 1999: 123–139.

⁴ Abou El-Magd. I et al. 2015: 3523 – 3536.

3.4. Natural Resources of Bir Umm Fawakhir

The Eastern Desert is divided into three major segments: northern, central, and southern, each segment is characterized by differences in gross lithological constitution and differently enhanced structural styles. Bir Umm Fawakhir is geologically characterized with both gold and hard stone mining activities that was evidenced through the fire-settings still in situ, discarded grinding stones and hand-held stone hammers in many sites in addition to the abandoned workings such as small trenches, shafts, and quarries.

3.4.1. Gold

The Ancient Egyptian differentiated between the noble metals as gold, silver and *dʿm*, and base metals such as copper, bronze, iron and lead.¹

Gold was referred to as: *nbw*, *ḥd* and *dʿm*, all the three terms used the determinative  that can be read as "*nbw*".² The ancient documents mentioned "*dʿm*" in the same way as gold and silver in the context of rewarding officials and as tribute brought to Egypt from the south.³

Some scholars considered the three terms , , and  as variants of the same meaning. However, the three terms indicated three different materials in the external appearance and colour that most probably were gold, silver and electrum respectively.⁴

Nature of the ancient Egyptian gold

Gold is a metal which is formed deep within the earth's crust, it is forced up through fissures in rocks to form veins, usually in quartzite. This vein or reef gold can be mined and it needs a hard work to break and grind up the rocks to release the particles of gold, sometimes washed down into the streams and rivers where they congregate as alluvial or placer gold. Over further geological timespans some of this gold is incorporated into new rock formations.⁵

Native gold, in the primitive form as recovered from the earth can vary in composition, mainly it is accompanied with silver that can be homogeneously alloyed with gold up to 50 per cent in addition to the possibility of the existence of copper, iron, tin and other members of the platinum family of metals.

Traditionally, gold is considered gold when it contains over 75 per cent of pure gold however, it is electrum when it is gold – silver alloy with less than 75 per cent gold.

The composition of an ancient gold object can reflect four possible practices:

- Gold can be used as found.
- Gold can have silver, copper, sometimes both and occasionally other materials alloyed with it for aesthetic, practical or even fraudulent reasons.
- Gold can be purified (refined) and employed in a pure or near - pure state.

¹ Harris, J. R. 1961: 32 – 50.

² Gardiner, A. 1957: 505; for gold and titles related to the treasury of gold cf., *wb*, I, 518, 5 – 8.

³ The tomb of *P3 sr*, TT 367 (Fakhry, A. 1943: 396) and the tomb of *Nb .n (y) kmt*, TT 257 (URK. IV, 997.5); Lucas, A. and Harris, J. R. 1962 reprinted 1989: 234.

⁴ The Australian Center for Egyptology. 2008: 59.

⁵ Ogden, J. 2000: 161.

- Gold can be refined and then alloyed down to the desired fineness level by careful measured additions of silver, copper or other metals. ¹

Concluding, Ancient Egyptian gold purities can thus range from under 50 per cent up to 90 per cent or more. Purities over about 85 per cent appear to be rare before the late period

Use of gold in ancient Egypt

Gold had a symbolic value because of its close association with the gods and the king. The color of gold and its property as a metal to glisten and gleam likeness it to the sun, which in the ancient beliefs is the manifestation and body of the deity, this is expressed by the familiar notion of gold being the "flesh of the gods", found in the book of the heavenly cow.²

In the theology of divine kingship, metaphors of light and air, which occur for example in the royal title "Golden Horus" express that the king is understood to be associated with the sun and of the same solar sacredness as the gold himself. ³

3.4.2. Granite

The Fawakhir granite is a coarse crystalline rock, mottled gray to pink in color, comprising crystals of quartz clusters, feldspar (plagioclase), variably distributed pink feldspar (orthoclase), and tiny spots of black biotite and stained-opaque mineral hematite. In many localities, the pink feldspar crystals are large, up to 1.5 cm long, giving the rock a porphyritic character. In addition, there are still younger dykes of pink felsite, pegmatite (respectively fine-grained and coarse-grained acidic rocks), and numerous quartz stringers and veins invading the granite. Fawakhir granite is variably heterogeneous and consists of a wide range of composition between gray granodiorite to pink alkali feldspar granite with mafic xenoliths derived from the pre-existing rocks. It is jointed and exfoliated, resulting in the normal rectangular pattern and in spheroidal masses of granite respectively. ⁴

In addition, this causes a breakdown of feldspar crystals into kaolin in some places. There are three main sets of joints, as a result, Fawakhir granite is easily cut for blocks.

Boulders and cobbles were used for quarrying purposes, or due to its massive setting, the granite was cut by means of lines of close spaced large wedge shaped holes into which were hammered iron wedges to split the rock into blocks.

This granite was used by the Romans in the 1st and 2nd centuries A.D. only for columns and pillars and for tiles; it can be found in Rome, Verona, Venice (reused in St. Mark's Basilica), Pompeii, Herculaneum, Leptis Magna, Apollonia, Tyre. ⁵

The buildings of the local settlements are made of cobblestone and small boulders of the local granite debris which were abundantly lying on the neighbouring ground. This

¹ Ogden, J. 2000: 162.

² Daumas, F. 1956: 1 - 17; Derchain – Urtel, M. 1974: 83 – 104. For translation cf., Wente, E. F. 2003: 290

³ Assmann, J. 1976: 756 – 786.

⁴ Meyer, C. 1995 b: 44 ff.

⁵ Lazzarini L. 2002: 223-266; Borghini G. 1989.

granite was used locally by the Romans/Byzantine for special structural purposes like bars, tiles, lintels, jambs.¹



Fig. 139

A granite quarry in Bir Umm Fawakhir.

After, Coli, M. and Baldi, M. 2013: 15, fig. 7.

¹ Coli M. and Marino L. 2008: 74-81.

3.4.3. Serpentine rocks

The serpentine rocks occupy the western part of the wadi settlement, of which the colour ranges from greyish green, green to black or earthy khaki for the altered rocks. The serpentine rocks may be medium to coarse grained, locally banded, massive, with dull, waxy texture and a smooth to splintery fracture. They are crisscrossed by veins of fibrous chrysotile serpentine, joint fillings of magnesium carbonate, and granitoid offshoots as well. These rocks are intensively altered and sheared in places and are associated with well-developed actinolite – tremolite, chlorite, talc schist, relict olivine and rare basaltic pods.¹

A partial destruction of the quarry was reported, due to a recent quarrying activity, but the few remains of Roman buildings are still present.² The Serpentina Moschinata was commonly used since the Pre-dynastic period to the New Kingdom and perhaps was partially used during the Ptolemaic period. The Romans used this ornamental stone for tiles (Baia, Pompeii, Herculaneum, Rome, Leptis Magna, Cyrene, Cos) as well as some small statues.³

3.4.4. Gabbroid sheets

The gabbroid sheets are dark grey, medium to coarse grained, melanocratic, composed mainly of hornblende amphibole, a few interstitial feldspars (ophitic, subophitic texture) and relics of olivine and pyroxene.

3.4.5. Volcanic sediments and intermediate to basic lava association

These are reworked pyroclastics and volcanic deposits, mainly volcaniclastic breccia conglomerates associated with intermediate to basic volcanic lava. These volcanic deposits are both pillowed and non-pillowed and are predominantly aphyric in texture. Vesicles and amygdaloidal structures developed in these lavas; the cavities are filled with aphanitic cement.⁴

3.4.6. Granodiorite

The rock is mottled pink and light gray, coarse to mainly medium grained granodiorite with oligoclase, quartz and microcline plus minor biotite and accessory minerals (apatite, magnetite, muscovite, sphene and zircon). It is gradational with granite which is also abundant in the area and some specimens may be granite.⁵ It was quarried for export from Egypt by the Romans who used it for small columns and pavement tiles, however, no sculptures are known.⁶

¹ Hussein, A. A. 1962: 511 – 566.

² Brown, V. M. and Harrell, J. A. 1995: 221 – 234.

³ Aston B.G., Harrell J.A., Shaw I. "Stone", In Nicholson P.T.-Shaw I. eds. 2000: 5-77.

⁴ Meyer, C. 1995: 46.

⁵ Nicholson, P. T. and Shaw I. 2000: 38.

⁶ Gnoli, R. 1988: 148; Klemm, R. and Klemm, D. 1993: 355; Brown, V. M. and Harrell, J. A. 1995; Lazzarini, L. 1987: fig. 7.

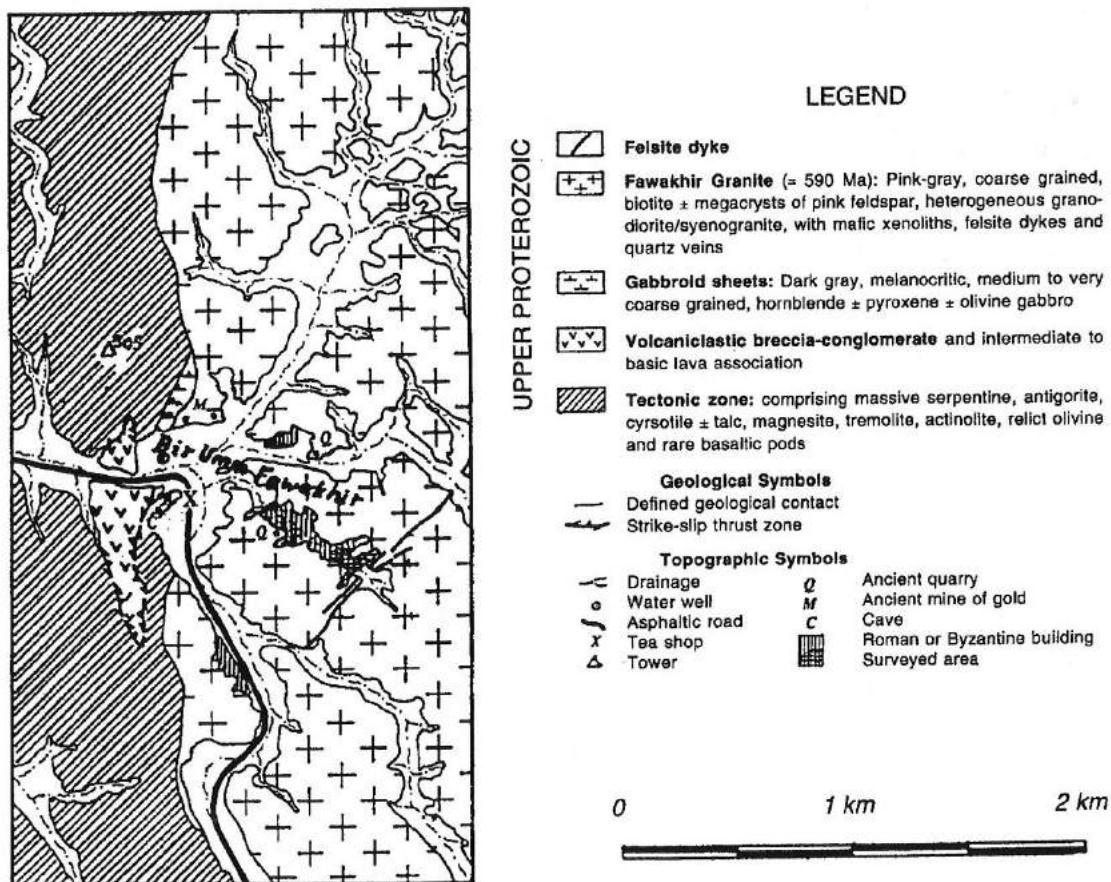


Fig. 140

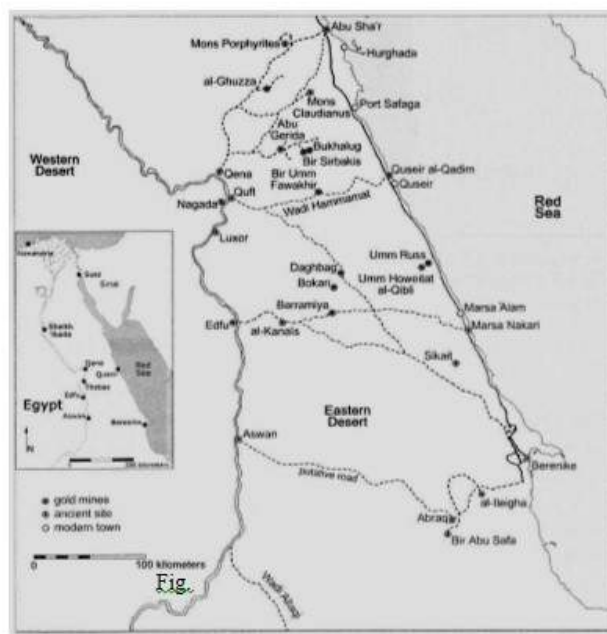
Geological map of Bir Umm Fawakhir

After, Meyer, C. 1995 b, 83 – 86, fig. 5.

3.5. Evolution of the Gold Mining Techniques in Bir Umm Fawakhir

Egypt has a long history of gold mining dating back to Pharaonic times, an activity that continued by the Greeks, Romans and Arabs attested by the existence of worn waste piles and ruins at old mines that vary in character and suggest multiple periods of operation.

There are more than 95 known gold deposits and occurrences in Egypt, mainly associated with the Precambrian Basement Complex of the Eastern Desert. The last gold mine (Bir Umm Fawakhir) was closed in 1958. It is worth mentioning that estimated 1,710 tons of gold has been produced from alluvial/colluvial and hard rock deposits.¹



A



B

Fig. 141

A. The gold – mines of the central eastern desert.

After, Sidebotham, S. E. 2008: 214, fig. 9.1.

B. Bir Umm Fawakhir and Wadi El Sid area with

The various ancient sites (Google Earth Image). After, Klemm, R. and Klemm, D. 2013: 133, fig. 5.78.

Geographic positions:	
Fawakhir mine:	26°00'48" N, 33°36'10" E
Centre of the Roman/Byzantine settlement:	26°00'36" N, 33°36'27" E
El-Sid mine, administrative building:	25°59'15" N, 33°36'23" E
New Kingdom settlement in Wadi el-Sid:	25°58'47" N, 33°37'04" E

¹ Meyer, C. 1995 b: 44.

3.5.1. Pre - Dynastic and Early Dynastic Periods

Gold production must have taken place in Ancient Egypt as far as the Pre-dynastic time (about 3500 B.C.) that was very well attested through discoveries of gold artefacts. ¹

Statistical analysis of the geological environments around Pre- and Early dynastic mining sites indicate that the earliest prospectors concentrated their mining activities on well-selected geological targets of gold enriched quartz veins, mainly in granodioritic rims of Neoproterozoic granitic intrusions, belonging to the so called older and younger granites of the Eastern Desert. Furthermore, discoveries of the oldest mining tools are connected to mining sites associated with superficially altered quartz vein systems, which originally contained a variable copper-sulphide mineralization, that is almost completely leached out and which has been re-deposited as typical green malachite (and some other green secondary copper minerals) within the host rock's joint system. Obviously, this green staining guided early prospector to the auriferous quartz veins. Apart from gold, the malachite enriched sites also were mined for copper, therefore, gold mining started in Pre-dynastic time with open pits and moderate underground activities. ²



Fig. 142

Trench of an Early Dynastic gold mining site at Abu Mureiwat, (Eastern Desert, Egypt).

After,

Klemm, R. and Klemm, D. et al. 2001 a: 648, fig. 6.

¹ Kroeper, K., Wildung D. 1994: 162, pl. 44.

² Castel, G., Mathieu, B. 1992: 51–65.

During this early period, the gold-bearing quartz veins were crushed in situ to a fine powder fraction by huge calabash-shaped stone hammers of 6–10 kg weight that should have been held with both hands.

In this way, the gold slivers within the quartz were liberated for later processing. This mining method formed conspicuous smooth surfaces, both at the walls and the stopes of the underground operations. However, until now no convincing field evidence for a gold concentration procedure could be discovered. Considering the hydro-metallurgical concentration processes applied during later periods of gold production, comparable methods can possibly be assumed for this epoch as well. Apart from the large two handed stone hammers, different types of discus-shaped hammers have also been found within Pre-dynastic sites. This hammer type was used only to gain lumpy quartz ore from the brittle vein systems, which was powdered later by the large hammers.¹



Fig. 143

Abandoned fine-grained granodioritic two-handed stone hammers from Pre- to Early Dynastic Higalig gold mine, southern Eastern Desert, Egypt.

After,

Klemm, R. and Klemm, D. et al. 2001 a: 648, fig. 7.

¹ Klemm, R. and Klemm, D. et al, 2001 a: 648.

3.5.2. Old and Middle Kingdom

During the Old (2700–2160 B.C.) and Middle Kingdom (2119–1794 B.C.) the previously described prospecting method of searching for malachite staining in the host rocks continued in general, but in addition hematite enriched quartz veins (in places with barite) became important for exploration and, in case of gold discovery, for subsequent mining targets.

Old Kingdom gold mining techniques continued with in situ crushing of the gold-bearing quartz vein systems, but two new basic types of stone hammer were developed: an oval stone axe of 2–5 kg weight with a chiselled notch for a forked wooden stick and a cylindrical one-handed stone hammer with a chiselled, ergonomically formed handle.

With the advantage of these new mining implements a more effective exploitation of the auriferous quartz veins could be established. ¹

The presence of antimony ores in association with gold has been noted in the Eastern Desert at Wadi Ballit and Fawakhir, and so it should be mentioned also that the area was used as a source for gold used for the sceptre of the Second Dynasty king "Kha-sekhemwy". ²



Fig. 144

Stone hammers used in Old and Middle Kingdom times,
From Abu Mureiwat gold mining site, Eastern Desert, Egypt.

After,

Klemm, R. and Klemm, D. et al. 2001 a: 649, fig. 8.

¹ Klemm and Klemm et al. 2001 a: 648 ff.

² Lucas, A. 1962: 226 – 227; Ogden, J. M. 1976: 138 – 144.

During the Middle Kingdom, this tool inventory in general continued, but additional stone mortars were introduced, allowing for the lumpy quartz ore to be crushed first to about pea-sized grains and then for grinding it to a powder fraction. Again, no archaeological evidence for further gold recovery treatments during this period could be discovered.

The remark of the provincial ruler, Ameni, who is quoted in his Beni Hassan tomb as having said "I forced their (Nubian) chiefs to wash the gold" gives a clear hint that hydro-metallurgical concentration processes were well established during these periods.

This is suggested by the ergonomically formed handle of the one-hand stone hammers, fitting best in a hand of 18–20 cm in size, rather than one of 11–13 cm, which was the average for the Nile valley population at that time. Furthermore, this could be verified by sporadic finds of typical Nubian pottery.

On the other hand, it has to be emphasized that typical Egyptian pottery of that time, such as red polished "Meidum" bowls were also frequently discovered in the surveyed surface remains, which can be seen as a hint for stronger Egyptian control of the mining operations, in contrast to the previous Egyptian restriction on gold trading, only few gold mining sites dating from the Pre- and Early dynastic times till the Middle Kingdom are shown.

This corresponds with the low number of known gold artefacts from those early periods, compared to the later periods. However, quite a few of the early mining sites might have been so intensively overprinted by later operations that today no older surface remains are still visible. ¹

The first military campaign in the 18th year of Sesostri I (1956–1911 B.C.), at the beginning of the Middle Kingdom, was most probably organised to gain access to the Nubian gold. It is recorded by the Sestoris I nomarch Ameni, in his tomb at Beni Hassan, that he undertook expeditions to Nubia from where he returned with gold and gold ore for his king. However, almost all ancient gold mines of these early times are collapsed, and any estimation of the maximum depth without archaeological excavations is debatable; nevertheless, depths in open trenches of up to about 25 m seem realistic. ²

The earliest representation of gold recovery is found in the tomb of Baqt III at Beni Hassan (BH 15) that dates to 1900 B.C. where gold washing techniques can be obviously noticed including a washing table depicted in a plan view. ³

¹ Ballet, P. 1987: 1–16.

² Newberry, P.E. 1893: pl. 8.

³ Baqt III was an Egyptian official and great chief of the Oryx nome (the 16th nome of Upper Egypt) during the 11th Dynasty (end of the first Intermediate Period), cf., Grajetzki, W. 2006: 112 – 113; Chappaz, J. L. 1983: 34 – 40.

3.5.3. New Kingdom

Gold production started in the 18th dynasty and collapsed completely by the end of the Ramesside period as from the reign of Amenophis IV throughout the Ramesside period (about 1300–1100 B.C.), no archaeological evidence for Pharaonic gold mining south of Wadi Allaqi could be detected. Besides, gold production activities seem to have been suspended throughout the entire Late Period until the early Ptolemaic times.¹

Gold mining operations were more concentrated in the central Eastern Desert starting from the New Kingdom (1550–1070 B.C.) onwards, predominantly south of the Qena - Safaga road, and the eastern portion of the Red Sea hills. Due to the conquest of Nubia, exploitation of the Wadi Allaqi area and deep into the North-Eastern Sudan also became possible.

Moreover, the gold prospecting targets were significantly enlarged: in the vicinity of the older mining sites, quartz vein systems free of hematite and green copper aureoles were also successfully prospected. The ancient prospectors were profoundly aware of the general structural control of gold-bearing veins, they followed only veins of these known productive orientations and ignored the many others running divergently within the same prospecting area.

The ancient miners prospected the new productive vein strike directions, which might be regarded as a hint for basic geological-structural knowledge. In addition, unexplored new areas with an enlarged geological framework were prospected during New Kingdom times.

Emphasis was placed on geological environments characterized by basaltic–(amphibolitic) and serpentinitic lithologies with or without black shales, in the vicinity of granitoid batholiths. Furthermore, due to the systematic exploration of remote desert regions during New Kingdom times, granitic–granodioritic areas in the southern and eastern parts of the Eastern Desert became new and important prospecting and mining targets. These were extended to the Wadi Allaqi and even to the North-Eastern Sudan.

As an important innovation, intensive gold prospecting and processing were extended to include wadi-working operations, where gold-bearing quartz samples were systematically picked from the coarse-grained fractions of the wadi sediments. At these sites, the simultaneous employment of hundreds of workers was possible, in contrast to the severely limited number of miners in underground workings. Archaeologically these wadi works are preserved in extended settlements along the exploited wadis.²

Normally house ruins remain only at the wadi boundaries, parallel to the hillsides as the remainder of the settlements was mostly washed away by sporadic floods, but in few cases, ruins still cover entire wadi sites. Consequently, these sites led to an enormous increase in gold production, documented by an increase of known gold artefacts.

In addition to the greatly expanded mining activities, a radically new milling technique had a strong impact on gold production at the onset of the New Kingdom: millstones up to 80 cm long and 30–50 cm wide, with a flat and oval-shaped grinding plane, and

¹ Klemm, R. and Klemm, D. et al. 2001: 654; Sidebotham S.E. et al. 2008, p.p. 213 ff.; Coli, M. and Baldi, M. 2013: 11 – 12.

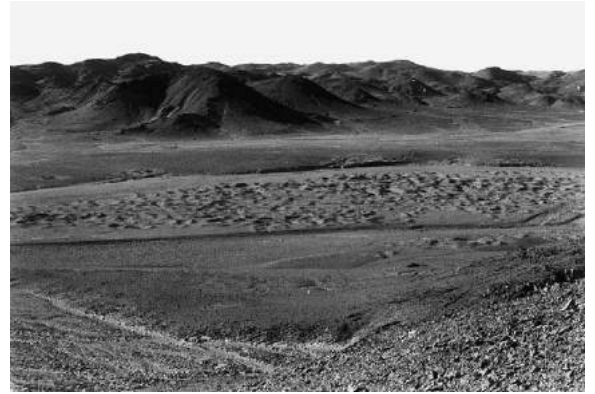
² Klemm, R., Klemm, D. 1994: 189 – 222.

differently sized sets of mill stones used with one or both hands were introduced. These stone mills are similar to the flour mills commonly used in the Nile valley since very early times.¹

Before milling, the initial lumpy ore was crushed down to about bean-sized particles with a double-sided stone anvil of about 30 x 30 cm and a rounded stone pestle of 0.5–2 kg weight. Demonstrably, the separation of barren and gold-bearing quartz fragments exclusively by eye was perfected by the workers, as small and uncommon remaining mine dump heaps in the wadi grounds today contain only milky white and translucent barren quartz gravels.



A



B

Fig. 145

A. New Kingdom oval shaped andesitic stone mill and grinding stones from Wadi Allaqi, southern Eastern Desert, Egypt.

B. Remaining New Kingdom waste dam heaps at Umm Garaiyat, Wadi Allaqi, southern Eastern Desert, Egypt.

After, Klemm, R. and Klemm, D. et al. 2001 a: 652, fig. 11 – 12.

¹ Roubet, C. 1989: 473–489; Klemm, R. and Klemm, D. et al. 2001 a, p. 650.

Separation of gold from the fine-milled quartz powder fraction was managed by washing as attested by preserved tailing dumps. At first view these tailings appear as mostly pink to reddish heaps of quartz sand, analogous to normal desert sand. Investigation with a simple hand lens, however, reveals both sharp edged quartz grains which are artificial products as well as remaining gold concentrations of about 3–5 g/t. This rather high residual gold content unfortunately caused the destruction of many ancient gold production sites at the beginning of the 20th century, when modern gold production started with cyanide leaching of the old tailings, thus destroying most of the preserved and untouched original archaeological sites.¹

Inclined gold washing tables constructed of stone fragments, consolidated by primitive clay/sand mortar and with a surface covered by a layer of the same material, can be observed at few distances of the New Kingdom gold production sites. The lengths of these washing tables vary between 2.2 and 4 m, and they are 40–60 cm wide and 80–100 cm high, corresponding with an inclination angle of 15–20 grades. The Ramesside Period tomb of Kha'y, the gold washer of the treasury, at Saqqara revealed a scene of gold washing with what appears to be grinding with a sloping washing table.²



A



B

Fig. 146

A. Gold works in the Tomb of Kha'y at Saqqara.

After, Ogden, J. 2000: 162, fig. 6.4.

B. Inclined Arab period washing table. This type of washing table could be archaeologically assigned in use from New Kingdom times.

After,

Klemm and Klemm et al. 2001 a: 652, fig. 13.

¹ Schweinfurth, G. 1903: 268–280.

² Martin, G. T. 1991: 131, fig. 90.

At the end of this slope, the washing water was recovered in a box about 60 cm deep and wide, walled by stone slabs and sealed again with the described mortar. Here also the detritus of the quartz tailings was deposited, from where it was dumped close by, at the tailing heaps, still partly preserved in many cases today. A mortar-sealed and stone slab protected gutter conducted the water back to a large, 80 x 60 cm basin, from where the water was recycled for further gold washing processes, most probably with primitive shadoufs (a scooping bucket conveyor, still in use in Egypt and Nubia today).¹

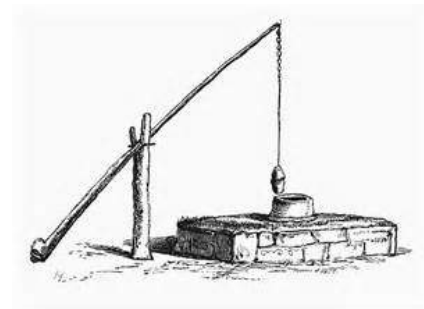


Fig. 147
The shaduf.

After, <http://www.digopaul.com/it/english-word/shaduf.html>.

No direct archaeological evidence exists for the preparation of the planar surface of the inclined table, to separate the fine-grained gold particles liberated by the grinding process from the quartz ore. Due to the lack of any archaeological relicts in this

¹ A **shadoof** or **shaduf** (an Arabic word, شادوف, *šādūf*; also, anciently known by the Greek name κήλων or κηλώνειον, *kēlōn* or *kēlōneion*) is an irrigation tool. A less common English translation is **swape** and it is also called a **well pole**, **well sweep**, or simply a **sweep** in the US.

It uses a bucket attached to a lever with a fulcrum fixed in the ground. The shadoof was an early tool used by Mesopotamian and Nile River peoples to draw water and it is still used in many areas of Africa and Asia. Cf., Larowe, G. 1913. *Webster's Revised Unabridged Dictionary* "Definition of "Swape".

respect, it might be assumed that the covers of these inclined tables were of organic materials. Here in general two possibilities are likely, either a wooden grid or simply sheepskins, as both were commonly used in the more recent past for separation of gold slivers and quartz sand fractions.

The sheepskin hypothesis is supported by the supposition that sheep were available at the mining sites as food, and further, both the lanolin grease and the washed fibres of the sheepskins would have trapped the sharp-edged gold particles whereas the barren quartz particles were carried off with the water suspension. Finally, burning the pelts containing the gold particles yields a raw gold product, but obviously, no witness to this last possible step of the gold recovery procedure would remain.

Refining process and melting with either blowpipes or foot - bellows were also attested in the New Kingdom wall scenes such as the example in the New Kingdom tomb of Puyemra at Thebes (TT 39), in which gold is being melted with one man operating a pair of foot – bellows. However, a second man appears to be stirring the crucible with one hand while blowing through a blowpipe into the crucible. This would certainly help to oxidize any base metals present, particularly if extra lead or lead oxide was added (True cupellation).¹

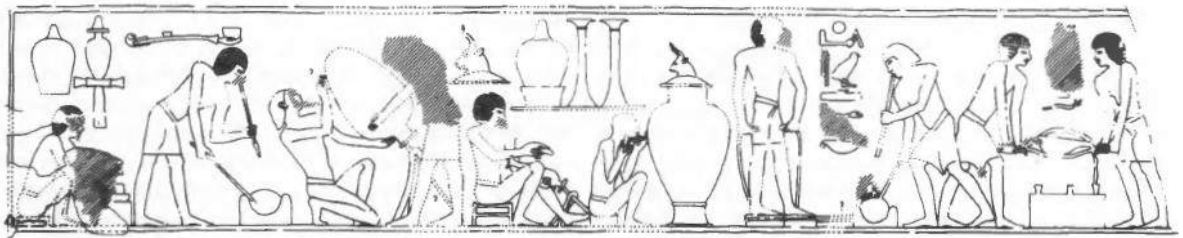


Fig. 148

Gold working scene from the Theban Tomb of Puyemra (TT39).

After, Ogden, J. 2000: 155, fig. 6.2.

¹ Ogden, J. 2000: 163.

After the mining process, the gold would have been transported to the centres where it was worked. For security and ease of recording, the gold would have been melted into ingot rings and large nuggets, of which the transfer process can be observed in the New Kingdom wall paintings. Ancient gold used to be weighed carefully with specific gold weights then by the New Kingdom, gold, silver and copper were weighed together using some specific inscribed weights.¹



A



B

Fig. 149

- A. Weighing of gold, displayed as both ring ingots and dust bags above and below the weighing scene, Tomb of Paheri at El – Kab, 18th Dynasty.
- B. Gold weights of stone with different values, preserved in the National Museum, Khartoum.

After, Klemm, R. and Klemm, D. 2013: 24, figs. 2.3 - 2.4.

¹ Klemm, R. and Klemm, D. 2013: 23.

working sites of New Kingdom times were constructed mainly of 3–4 roomed houses, with dry stone walls about 30 cm wide and up to 1.5 m high and, in many cases, with a front terrace.¹

Mining technique improved significantly in NK times, mainly with the introduction of bronze chisels, which allowed a much more selective separation of the gold-bearing quartz generations of a multiphase quartz vein from the barren parts of the host rocks. The miners followed selectively the most promising ore shoots, which resulted locally in a somewhat chaotic pattern of the underground operations. Fortunately, in most mines supporting pillars at sufficiently safe spacing ensured the safety of the ancient miners as well as our recent samplers. During the New Kingdom, no sophisticated ventilation of the underground operations was developed, limiting the maximum depth of operation to about 30 m, the maximum depth for maintaining a sufficient oxygen level by normal circulation for men and burning oil lamps. The distribution of the many New Kingdom gold production sites in Egypt and north – east Sudan provides an impression of the very extensive gold production operations carried out during New Kingdom times.



Fig. 150

The New Kingdom gold – mining settlement of Tilat Gadalla, Eastern Desert, Egypt.

After,

Klemm, R. and Klemm, D. et al, 2001 a, p. 654, fig. 15.

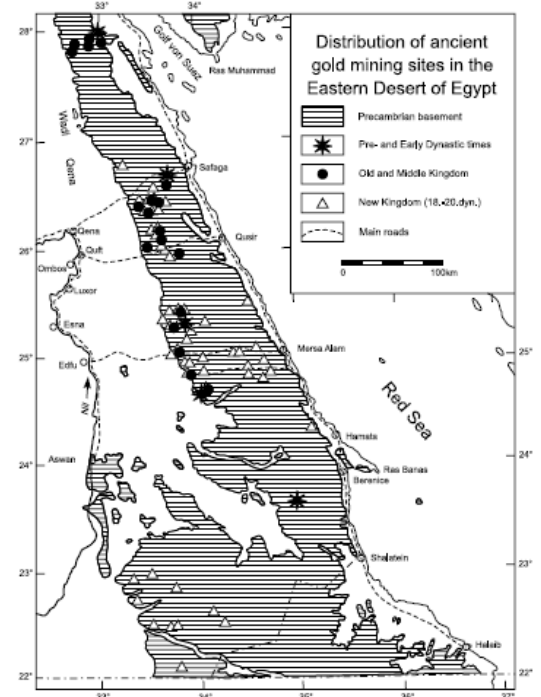


Fig. 151 (Right)

Distribution of the gold production sites in the Eastern Desert of Egypt starting from the Pre – dynastic till the New Kingdom.

After, Klemm, R. and Klemm, D. et al, 2001 a: 650, Fig. 9.

¹ Klemm and Klemm et al. 2001 a: 653 – 654.

3.5.4. The Ptolemaic Period

The ancient New Kingdom Pharaonic mining sites were reorganized and mined out as no new prospecting strategies were developed starting from the Ptolemaic Period. The reason for the reduced Ptolemaic gold mining activities in the Central Eastern Desert of Egypt are not reported in historical documents, but the Roman sources mentioned that large parts of the Eastern Desert and Nubia were not subdued due to the aggressive attitudes of the local nomadic tribes, which the Romans called Blemmyes. The Bisharin tribes inhabiting this region today are regarded as their descendants, and still habitually carry swords and daggers.¹

The mining was again limited by underground shaft termination at a final ventilation depth, approximately 30 m below surface (below which oil lamps are no longer able to function). Only those mines which were located close to the desert roads were further exploited or re-established in Ptolemaic and Roman times.²

In fact, the known Ptolemaic gold mining sites cluster mainly within the central Eastern Desert around the west-east running Qena - Safaga, Qift - Quseir, Edfu-Berenice and Laqeita - Berenice roads, where fortifications guaranteed at least some safety. Sometimes, previous abandoned mines were re-opened during the digging of horizontal and diagonal shafts into the sides of mountains following the quartz veins, to maintain stability, the shafts had the entrances reinforced by dry-stone walls and platforms at various levels to help in raising and lowering workers, baskets, tools, and ore. Ore crushing and grinding stones, perhaps predominantly of Ptolemaic and Roman times, can be seen in abundance in the gold mining areas of the Eastern desert.³



Fig. 152

Main shaft of a gold mine following a mineralized quartz vein.
After, Coli, M. and Baldi, M. 2013: 12, fig. 3.

¹ Sidebotham, S. E. 1991: 177–189.

² Murray, G.W. 1925: 138–150.

³ Ogden, J. 2000: 162.

Milling technique and ore processing were improved by the Ptolemies. They used concave shaped mill stones of 70–80 cm length and 30–40 cm width, with parallel incised, 2 mm deep grooves on the milling plane. Semi-circular two-lugged millstones of 5–10 kg weight were moved by hand over the grinding plane, milling the pea-sized crushed quartz into a powder fraction and setting free the fine gold slivers. With this swinging milling method, the whole process was about five times more effective than earlier methods. For crushing, the old anvil and pestle system remained, but with an enlarged size of the crusher stone.¹

Samples discovered from Bir Umm Fawakhir are:

A. Rough blocks 15-20 cm in diameter with a pecked depression on the top.

This type was used in the first stage of gold reduction to break up the raw quartz chunks and pick out the pieces worth the effort of grinding.

B. Concave grinding stones about 60-70 cm long.

The Ptolemaic samples are large and heavy with a two handled mill stone, a two handled grinding stone, together producing a swinging milling technique and thereby increasing the fineness of the quartz ore powder fraction, while the Pharaonic samples are usually flat.² As for the backbreaking work and the division of labour depending on age and gender at Ptolemaic gold mines was graphically described and recorded by Diodorus Siculus.³

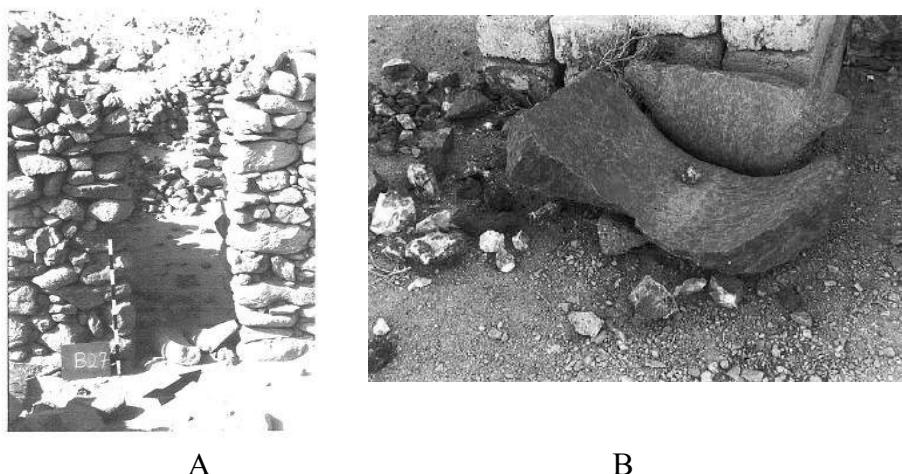


Fig. 153

A. Concave grinding stone near the arrow tip. After, Meyer, C. 1995 a: fig. 12.

B. Concave shaped Ptolemaic gold mill from Gidami gold mining site, Eastern Desert, Egypt.

After, Klemm, R. and Klemm, D. et al. 2001 a: 656, Fig. 17.

¹ Klemm and Klemm et al. 2001 a: 655.

² Klemm, R. and Klemm, D. 1991.

³ Ogden, J. 2000: 162; for the description of Diodorus, cf., http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Diodorus_Siculus/3A*.html.

3.5.5. The Roman – Byzantine Period

Gold production decreased dramatically during Roman and Byzantine times, due to continuous attacks by the desert tribes (Blemmyes). The Roman presence in the Eastern Desert was restricted exclusively to the well protected desert roads, with fortifications spaced at about a day's walk. It became economically ineffective to protect the many gold mining sites scattered all over the desert. Only a few highly productive sites close to the protected roads remained operable during Roman times. Despite the highly evolved Roman prospecting experience, the gold mining activities in the Eastern Desert dropped nearly to zero in contrast to other regions of the Roman Empire. The final improvement in the effectiveness of gold processing was the import of the Roman quern technology which is originally a Celtic invention.¹

This type of a round mill, of 30–45 cm in diameter, consists of a basal stone with a disc-shaped hollow in which a round convex upper turning stone was fitted that had a central axial hole and a lateral one for the handle stick. The quern produced an even finer powder fraction with an improved gold recovery in about a third of the time required by the earlier method. The crushing stones are of characteristic small size (about 15 x 15 cm) and were used as both hammers and anvils. The same tools remained in use until Arab times and querns are still used today within rural areas as flour mills.²

For Byzantine times, very poor archaeological evidence for gold mining exists. Even for the settlement at Bir Umm Fawakhir which was inhabited during Byzantine times, no unequivocal proof for gold ore dressing could be found.³

The rotary querns are introduced by the Romans and predominantly used during the Arab times, they are about 70 cm in diameter. Examples of both upper and lower stones were found during the oriental institute excavations. These mills are made of granite, porphyritic granite, or another tough stone.

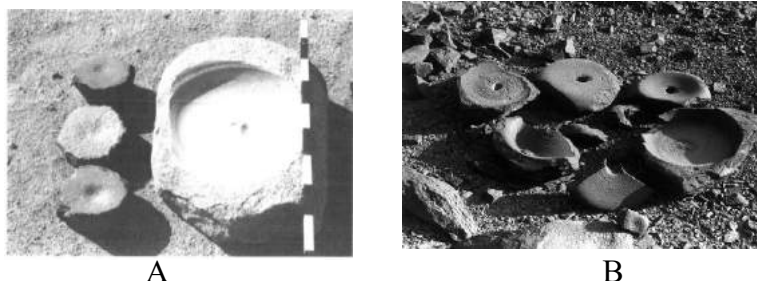


Fig. 154

(A) Samples of Gold crushing stones and the lower part of the rotary grinding tool (Eastern Desert, Egypt). After, Meyer, C. 1995 a: 222, fig. 16.

(B) Cylindrical granitic rotation stone mill (quern) with well - preserved upper rotation stones for central and peripheral handle sticks from a mining camp in the Nubian Desert, North Eastern Sudan.

After, Klemm, R. and Klemm, D. et al. 2001 a: 657, fig. 19.

¹ Childe, V.G. 19 –26; Cauuet, B. 1991: 149–181.

² Klemm and Klemm et al. 2001 a: 657.

³ Meyer, C. and Heidorn, L. 1998: 197–209.

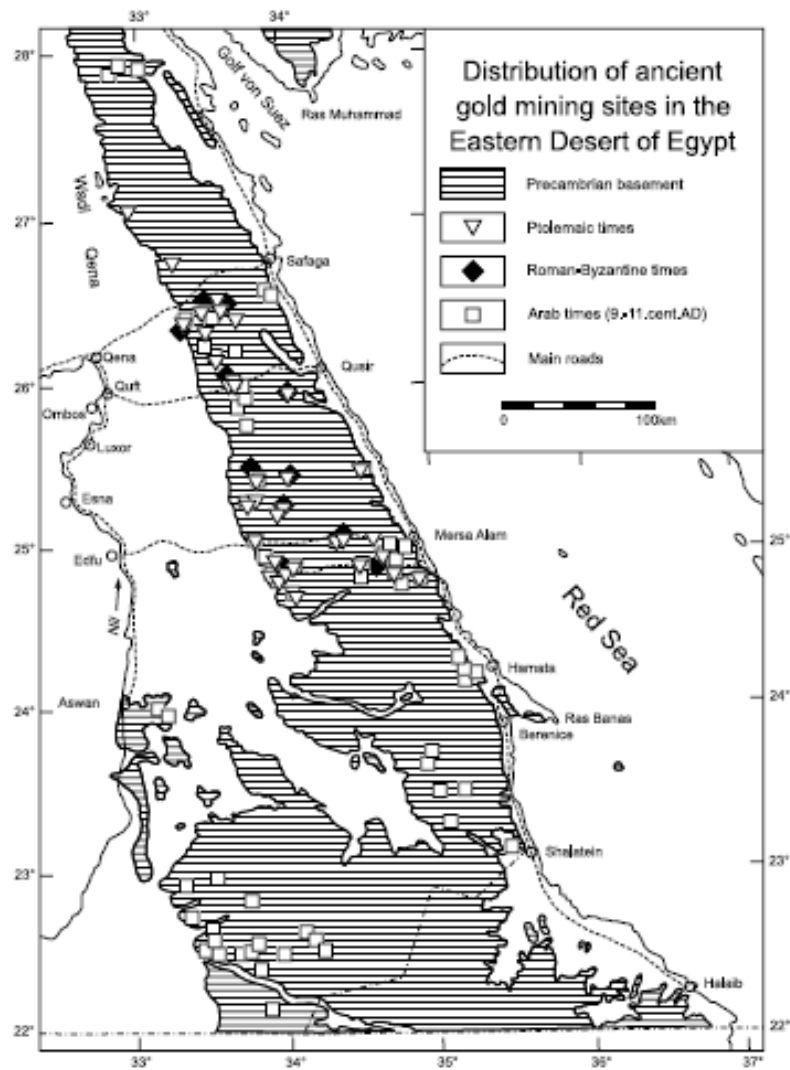


Fig. 155
The Ptolemaic, Roman-Byzantine and Arab gold production sites in the Eastern Desert of Egypt.

After, Klemm, R. and Klemm, D. et al. 2001 a: 655, Fig. 16.

3.5.6. The Modern Era

The old tailing heap at Bir Umm Fawakhir was reprocessed around the turn of the last century and later between 1930 and 1950 by the Italian count Louison, whom commonly the local Bedouins refer to as "il cont". During these campaigns, considerable gold quantities were gained that caused the destruction of a large Ptolemaic settlement. ¹

The surroundings of Bir Umm Fawakhir never played a meaningful role as a gold mining district. Only two reasonably large mines cut into the red granite. They had apparently been established by Conte Louison as adits to ancient mines for exploration and development purposes. ²



Fig. 156

Shaft, tools and the car of the Conte

(remains of the last exploitation of Bir Um Fawakhir).

After, Photography of the researcher.

¹ For more about the site in the modern period cf., Langwieder, G. 1994.

² Klemm, D. and Klemm, R. et al. 2001 a: 657 – 658.

3.6. Gold Mining Phases in Bir Fawakhir

In the recent times, further geological surveys have been made, some aided by satellite photographs indicating that the exploitation of Egyptian gold is still under consideration. The gold mining regions in or adjacent to Egypt essentially stretch southwards through the eastern desert from roughly the level of Qena – Quseir to the borders with Sudan. However, the north and north-eastern parts of Bir Umm Fawakhir contain some remains of mining activities attesting the ancient prospecting for the noble metal and its extraction from surface pits, trenches, and shafts and primitive underground mines.

Gold occurs in veins made up of massive milky quartz with disseminated gold and sulphide minerals (galena, pyrite, chalcopyrite, pyrrhotite, and sphalerite). The mineralized veins are structurally controlled, being fissure fillings or confined to zones of intensive fracturing that have approximately east – west trends, moderately dipping to the south.

The Eastern Desert gold from Bir Umm Fawakhir (Hammamat mines) to Abbad region was referred to as "Gold of Coptos" as Coptos was an important trading port on the Nile which controlled most of the eastern desert products.¹

Gold mining activities continued extensively in the eastern desert from the pre – dynastic times onward.²

In the Pre-dynastic and Early Dynastic times, exploitation was sparse but it was spread over much of the eastern desert right down to the region between Aswan and Ras Banas. Few evidences in situ for the direct exploitation of the "gold of Coptos" even if a number of textual evidences indicated the importance of the "Gold of Wawat" further in the south during the Middle Kingdom until the Late New Kingdom.³

By the beginning of the New Kingdom, the Eastern Desert mines became more economic again most probably due to the newly developed mining technologies or to the changing political situation in the south as in the late New Kingdom, the focus seems to be switched back to the Eastern Desert that is very well evidenced by the Turin map of gold mines that reflects the interest in the Coptos gold during the 20th Dynasty.

Finally, mining activities occurred during the 20th century with reported production of almost 7 tones between 1902 and 1958 as it will be explained in the next pages.⁴

¹ Ogden, J. 2000: 161.

² A combined geological survey that studied 130 ancient gold mining sites in the eastern desert, cf. Klemm, R., Klemm, D., 1994: 189–222.

³ The Middle Kingdom stela of Sa – Hathor preserved in the British museum that commemorates the trip of Sa Hathor to the south to supervise the gold – mining and gold washing. Cf., Ogden, J. 2000: 161.

⁴ Sabet et al. 1976: 201 – 212.

According to Diodorus, the mining steps used to be as follow:

- The work started with locating the quartz veins where the gold was found by the overseers as the gold of the Eastern desert used to be imbedded in quartz veins that are distributed through the igneous basement rocks, from which extracting the gold ore was extremely expensive and hard work.
- Young boys entered the mineshafts and carried out the ore while older men took the ore and pulverized it with iron pestles in stone mortars until it was reduced further in size.
- Old men and women used to take the resulting residue and put it into mills standing in rows and in groups of two or three to be ground resulting fine flour.
- Those working in the dark, narrow and twisting tunnels carried lamps tied to their heads and forced their bodies to twist in contorted forms to negotiate the small spaces.
- Many individuals working in the mines had been condemned to them for criminal offenses or as captives in war.
- The mining activities took place day and night as there was no escape except a cruel death either in the mines or in the futile attempts to flee into the vast menacing desert.
- Miners made fire to heat and crack the gold – bearing quartz veins then they used to crush the crumbled bits using sledges and further reduced these fragments into smaller pieces using hammers.
- The end of the process involved skilled women who took the fine powder and distribute it on an inclined board then they used to pour water over it.
- The water washed away the unwanted lighter – weight material leaving only the heavier gold behind. That ore was then placed in measured amounts into terracotta jars.
- The next process was to mix the terracotta with lead, salt, tin and barely bran and the jars were then closed with lids and sealed with mud.
- This mixture used to be baked in a kiln for five days and nights then the jars should be removed and allowed to cool. Subsequent examinations of the Jars' contents revealed almost pure gold with few impurities.
- The guards were foreigners who spoke different languages from the miners so that there was minimal possibility of collusion. ¹

¹ http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Diodorus_Siculus/3A*.html.



A



B

Fig. 157

A. Entrance to a mining shaft, Wadi Bakariya, Eastern Desert.

B. Mining tools (Two-handed pounder and an unused granite mortar).

After, Tratsaert, B. J. M. 2012: 252, Fig. 15.11 – 15.12.

3.7. Logistics

I. Fuel Needed for kilns

Terracotta oil lamps have been found in the mines that have been used for lighting. A sculpted relief showing a miner carrying a lamb is preserved in the mining museum in Bochum, Germany.

II. Transportation of Rocks from the Mines

The boys convoying the rocks from the mines would have used leather or woven sacks, buckets or baskets and examples have been found in many ancient mines from around the Roman World.

III. Grinding Facilities

Large circular – shaped ore crushing devices were made of hewn stones carefully fitted together and possessing depressions along their long axes to allow a large vertical grinding wheel to be driven by a draft animal.¹

This technology arrived in Egypt during the Ptolemaic period from Attica, the region around Athens which is famous for the silver mining.



A



B



C

Fig. 158

(A – B) Grinding facilities in the gold mining areas

After, Sidebotham, S. E. 2008: pl. 9.1 – 9.2.

C) Remains of a circular heavy mineral concentrator from Daghabag gold mine, Eastern Desert, Egypt. After, Klemm, R. and Klemm, D. 2001 a: fig. 18.

¹ Sidebotham, S. E. 2008: 213 – 219.

IV. Gold Washing

Large washing tables have been found in the eastern desert, often constructed of stone and mortar but these have been seen at only few gold mines in the regions. The references to gold washing occurred in the 19th Dynasty texts of Seti I (1306 – 1290 B.C.) associated with his rock cut temple at Kanais, in addition to another reference registered on a stela from Kubban dating to the reign of Ramses II (1290 – 1224 B.C).¹

¹ Breasted, J. H. 1906: 117, no. 282.

Chapter IV

Greywacke Quarries of Wadi Hammamat

4.1. Introduction

4.2. Wadi Hammamat

4.3. The Historical Importance of Wadi Hammamat

4.4. Greywacke in the Ancient Egyptian texts

4.5. Geology of Wadi Hammamat

4.5.1. Hammamat Series

4.5.2. The Pan African Basement of the Eastern Desert

4.6. The Bekhen Stone (Greywacke)

4.7. Greywacke quarries of Wadi Hammamat

4.7.1. The Eastern Quarry

4.7.2. The Western Quarry

4.8. Greywacke Quarrying through the different Historical Phases

4.8.1. The Pre-Dynastic Period

4.8.2. Early Dynastic Period and Old Kingdom

4.8.3. Middle Kingdom

4.8.4. The Second Intermediate Period

4.8.5. New Kingdom

4.8.6. The Persian Period

4.8.7. The Ptolemaic Period

4.8.8. The Roman Period

4.9. Quarrying Phases

4.9.1. Extraction

4.9.2. Transportation

4.9.3. Logistics of the Quarry Site

4.9.4. The Use of Bekhen Stone

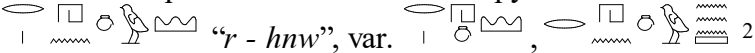
4.10. Chronological List of Greywacke Objects

4.1. Introduction

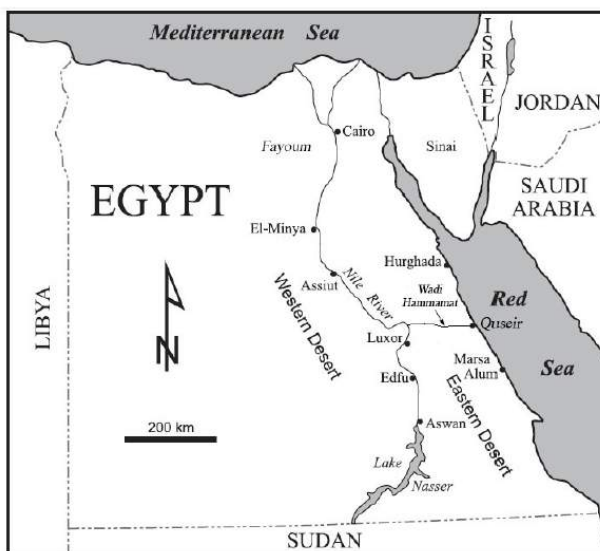
Wadi Hammamat is an unusual as narrow flat valley, easily reached, across the massive mountains of the Eastern range. In modern times, a road passes through this area of fragmented sharp rocks, threatening jagged boulders pointing skyward, and a realm of unstable ravines where only a few thorn bushes and cacti manage to grow.

4.2. Wadi Hammamat

Wadi Hammamat (Valley of the baths, which is named because of the half-worked tubs, actually Roman Sarcophagi, abandoned there) represents the name applied to one of the shortest overland routes across the Eastern Desert connecting the Nile valley town of Quft (ancient Coptos) with the Red Sea port of Quseir (ancient Myos Hormos).¹

This wadi represented in the Turin Papyrus was known in the ancient times as wadi
 “*r - hnw*”, var.

Finding stone classifications in ancient written records is difficult, although there is a consensus that greywacke was known as the bekhen (*bhn*) stone, from at least the Middle Kingdom onwards, with the topographic term “mountain of bekhen” emerging by the New Kingdom.³



A



B

Fig. 159

A. Geography of Wadi Hammamat. After, Siddall, R. 2013: 2, fig. 1.

B. Unfinished sarcophagus in Wadi Hammamat. After, Klemm, D. and Klemm, R. 2001 b: 633, fig.2.

¹ Lucas, A. and Rowe, A. 1938: 127 – 129; Bloxam, E. 2015: 793, fig. 1.

² Wb, II, 398.

³ WB, I, 471; Harrell, J.A. and V.M. Brown. 1992: 81–105.

The massive and widely jointed deposits of greywacke occur as a series of blackish-brownish hills at the midway point between the Nile valley and Red Sea (75 km east of Quft). Where the wadi narrows to less than 100 m is where the best quality deposits occur, and these are largely contained within a 4 km stretch from the Bir Hammamat in the west to the Wadi Masaq el-Baqar in the east. Targeted extractions from the greywacke deposits are most concentrated in the region of the bekhen-mountain, within a radius of 1 km north and south of the main Wadi Hammamat route (now a modern tarmac road). ¹

The site was first discovered during the Napoleonic expeditions of the 1800s, the wadi presents a visually dramatic picture of ancient quarrying, characterized particularly by waste products (or spoil) as well as naturally weathered scree, which cascades down these hills, some from a height of over 450 m. ²



Fig. 160

Main view of the Bekhen stone quarrying area.

After, Bloxam, E. 2015: 794, fig. 3.

¹ Bloxam, E. 2015: 794.

² De Roziere, M. 1813: 83–98.

It can be reasonably assured that Wadi Hammamat greywacke was the only source used for a range of objects that were widely distributed throughout Egypt and beyond. Therefore, wide distribution patterns of greywacke from this Eastern Desert source from as early as the Neolithic (mid–late sixth millennium BC) into the Roman Period (30 BC) can be constructed, that will be the argument of the following pages.¹

4.3. The Historical Importance of Wadi Hammamat

The importance of the Wadi Hammamat as a trade route, as well as a region in which key raw materials such as greywacke, gold and granite are found besides the easy accessibility of groundwater, means that this landscape has been well travelled and well known since prehistory.²

Wadi Hammamat is well known for three reasons:

I. The role of the wadi as a thoroughfare

The function may have been less important than is often thought to be the case. Wadis (valleys) are obviously intended to facilitate circulation in mountainous areas. The case of Wadi Hammamat is particular as the abrupt massif is cut through from west to east is extremely visible when travelling through the eastern desert. At first sight, it appears that some easily navigable paths allowed travellers to circumvent this obstacle.

II. The proximity to the gold mines

The gold mining activities notably featured in the Turin Papyrus is not clearly attested in the inscriptions of Wadi Hammamat, apart from few titles of officials that refer specifically to gold mining. It is nonetheless established that the gold mines were located a little to the west of Wadi Hammamat.

III. The “Bekhen” stone quarries

Expeditions to Wadi Hammamat were undertaken from very early in antiquity so as to bring this famous stone. The inscriptions at the site and the traces of extraction demonstrate this fully, illustrating the information indirectly provided by the writings originating from the valley and the numerous masterpieces chipped in this material. The best deposits of conglomerate where ancient quarrying took place are mostly on the western side of the Wadi “Faux” where it meets the main Wadi Hammamat.³

¹ Riemer, H., Kindermann, K. and Atallah, M. 2009: 355–71; Harrell, J. 2002: 239.

² Debono, F. 1951: 60 – 62; Arkell, A.J. 1975; Vermeersch, P.M., E. Paulissen and W. Van Neer. 1989: 87–114.

³ Harrell, J.A., Brown, V. M. and Lazzarini, L. 2002: 207– 18.; Harrell, J. 2002: 239.

Therefore, the site's mineral wealth is undoubtedly what first attracted a human presence, and later, the wadi was used as a thoroughfare most certainly to the sea, to the north, east or south.¹

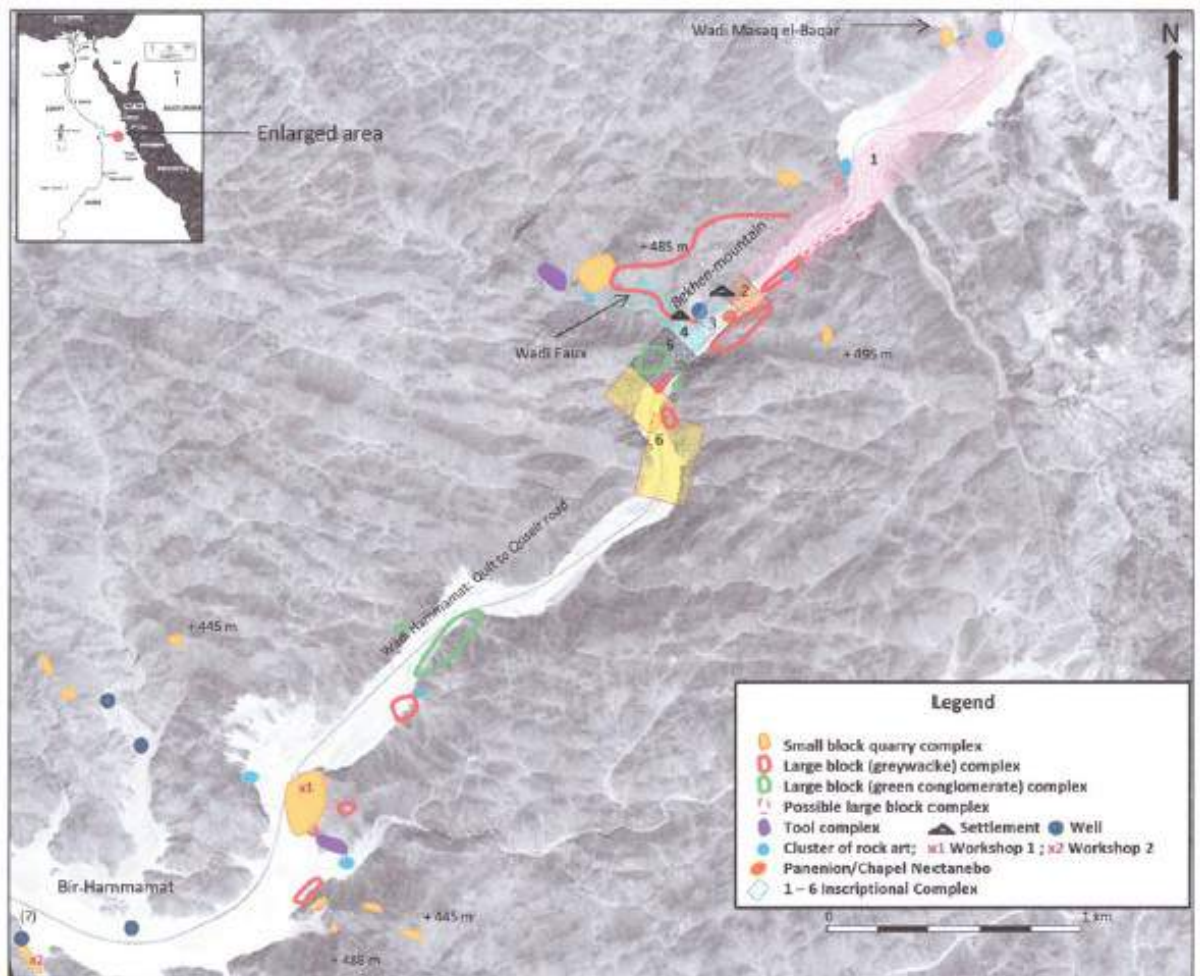


Fig. 161

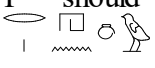
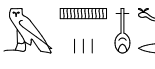
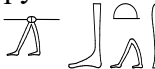
Satellite image showing the complexes of material remains across the main survey zone between Bir Hammamat and Wadi Masaq el-Baqar
After,

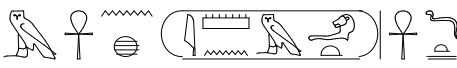
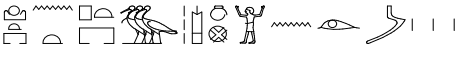
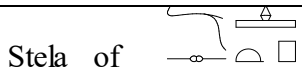
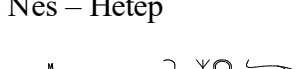
Bloxam, E. 2015: 790, fig. 1.

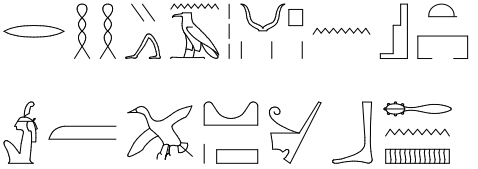
¹ Gasse, A. 2009: 133 ff.

4.4. Greywacke in the Ancient Egyptian Texts

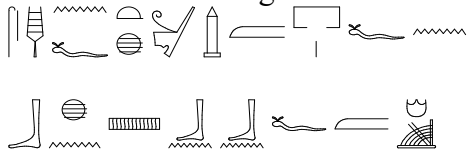
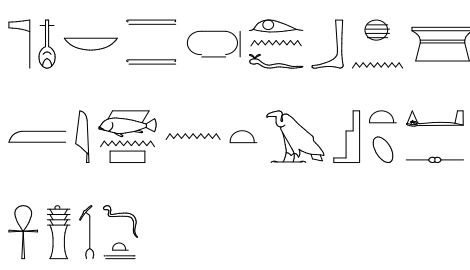
The term “Bekhen” was mentioned in several texts such as:

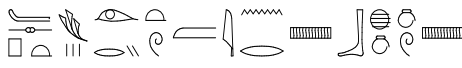
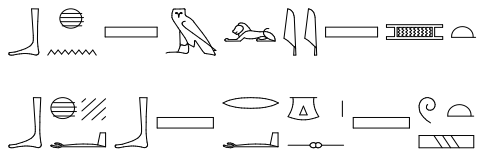
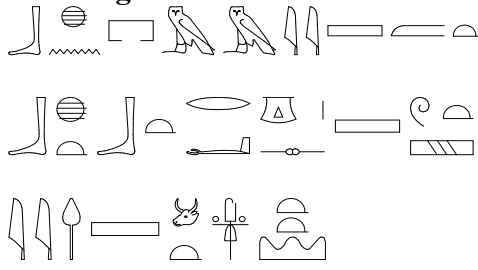
	Document	Date	Text	Bibliography
1	Limestone stela of  (<i>hr Bhn</i>), preserved in the Louvre Museum.	12 th Dynasty, Middle Kingdom.	The deceased prays to be buried in  “ <i>hrt nt Bhnw</i> ” The tomb of Bekhenw Mountain (Wadi Hammamat).	Boreux, C. 1932: 149 – 150, C. 44.
2	Rock inscription of  (<i>h^c wy</i>), overseer of the store room of the controller of works.	The 14 th year, 4 th month of the first season, day 16 of Senwsert III - 12 th Dynasty, Middle Kingdom.	 (<i>h^c wy</i>) was sent to the wadi to bring back some Bekhen stone and left there a record of his work: “His majesty commanded that I should be dispatched to  <i>r - hnw</i> , so as to bring a monument which his majesty had commanded to be made for the god <i>hry š .f</i> , Lord of Heracleopolis for the sake of the life of the king of upper and lower Egypt, Senwsert III, living forever and ever  <i>m inr nfr n bhnw</i> , monuments of a beautiful block of Bekhenw”	Couyat, J. and Montet, P. 1912: 49, No. 47.
3	Broken stela of a real acquaintance of the king Amen-em-hat III whose name is missing.	Amen-em-hat III - 12 th Dynasty, Middle Kingdom.	The text reads:  <i>m inr nfr n bhnw</i> Of the beautiful stone of Bekhenw	Couyat, J. and Montet, P. 1912: 76, No. 108.
4	Rock inscription of  Senwsret (<i>h^c wy</i>), overseer of half of the Quarrymen.	19 th year, first month of second season, day 15 of Amen-em-hat III - 12 th Dynasty,	The official was sent by the king to remove Bekhen stone for building purposes in the locality called “Ankh Amenemhat (III)” located in the region of Hawara where the pyramid of the king is situated and the building should be the king’s pyramid temple at Hawara. 	Couyat, J. and Montet, P. 1912: No. 48; Gauthier, H. 1923: 148.

		Middle Kingdom.	    <i>sbt ḥm .f r int n. f mnw m int r – hnw m inr nfr n bḥnw r mn m ḥḥ imn – m – ḥ3t ḥḥ dt</i> His Majesty sent to bring for himself monuments from the valley of “Ra-Henew” of beautiful stone of Bekhenw, as far as Ankh Amen – em – hat III, living forever.	
5	Model of a temple of Heliopolis of Sety I - Brooklyn Museum	19 th Dynasty, New Kingdom.	  <i>ṯḥnw y m bḥnw smn m iwnw3ḥt nt pt B3w iwnw ḥḥ n m3.w</i> He made two obelisks of Bekhenw stone, established in Heliopolis, the horizon of heaven; the souls of Heliopolis exult at seeing them.	Lucas, A. and Rowe, A. 1983: 133, text (F); Breasted, J. H. 1908: 99 – 101.
6	Stela of Nes – Hetep    <i>s3b n sš nsw mr mšḥ wr n nb ʔwy</i> Judge of the royal scribe and great overseer of soldiers of the lord of Upper and Lower Egypt.	Reign of Ramses II, 19 th Dynasty, New Kingdom.	  <i>Wp nsw r ʔw bḥn r in n mnw n ḥm .f</i> A Royal mission to the mountain of Bekhen to bring monuments for his majesty.	Couyat, J. and Montet, P. 1912: 111, No. 238.

9	Stela	Second year, second month of first season of Ramses IV – 20 th Dynasty, New Kingdom.	The text contains a reference to a personal visit of the king to the Wadi. The text states that his majesty ordered his officials to make a record of the visit, on the stela, which is referred to as:  <i>Mnw pn n st nhḥ m ḏw pn n bhṇ m h3w t3 nṯr</i> This monument of the place of eternity in this mountain of Bekhen, near God's land.	Couyat, J. and Montet, P. 1912: 112, No. 240; Gauthier, H. 1923: pt. VI, 24.
10	Stela	3 rd year, second month of third season, day 27 of Ramses IV, 20 th Dynasty, New Kingdom.	This monument contains an account of a great expedition to the Wadi. In lines 11 and 12, The king commands two scribes  (<i>R^c msw ᵚš3 ḥb</i>) and  (<i>hri</i>) and a priest of the temple of Min in Coptos  (<i>wsr m3ᵚt Rᵚ nḥt</i>). The text reads:  <i>r ḥhy n3 wpw n st m3ᵚt m p3 ḏw n bhṇ</i> To search the (wepew)¹ of the place of truth, in the mountain of Bekhen. Line 19 reads: There were transported for them (the quarry workers), supplies from Egypt	Couyat, J. and Montet, P. 1912: 34, No. 12; Erman, A. 1894: 472 – 475.

¹ Referred to as of uncertain meaning in Lucas, A. and Rowe, A. 1983: 136, footnote, 4.

			of Bekhen stone It is impossible to indicate in which connection as the beginning of the text is missing.	166, No. 1870.
16	Two small obelisks with missing parts of Nectanebo II – now preserved in the British Museum, no. 523 – 524.	XXXth Dynasty, Late period.	These monuments were dedicated to the god Thot of Hermopolis, and on each of them the king informs us that:  <i>sḥꜥ .n .f tḥn m pr .f n bḥn bnb n .f m ḥmt</i> He has set up an obelisk in his (Thot's) temple, of Bekhen stone with a pyramidion of black copper.	Long, G. 1846: 50, 324 – 328; Hall, H. R. 1930: 395, fig. 218; Varille, A. 1934: 95. For further readings cf, Habachi, L. 1977.
17	Broken naos of (<i>sn – nww- šps</i>), an official of Arsinoe, Queen of Ptolemy II (Philadelphus). The naos is discovered in Coptos and preserved in the Egyptian Museum, Cairo. Cat. Gen. 70031 JE. 30770.	283 – 245 B.C., Ptolemaic Period.	The official informs us that among other things:  <i>Ir .n .i k3r m bḥn n ḥr, 'Ist, Wsir ḥry st wrt ntr ʕ3 m k3r .f</i> I made a naos (Shrine) of Bekhen stone for Horus, Isis, and Osiris upon the great throne the great god in his shrine.	Petrie, W. M. F. 1896: 21; VARILLE, A. 1934: 99.
18	Broken Altar of Ptolemy XIII. Discovered in Coptos and preserved in the Egyptian Museum, Cairo. JE. 40643, 49103.	47 – 44 B.C., Ptolemaic Period.	On one side of the altar and below the sign of heaven, is the following hitherto unnoticed mention of Bekhen stone.  <i>ntr nfr nb t3wy ... ir n .f k3r bḥn m inr n mut (.f) st di .s ʕnh dd w3s dt</i>	Lucas, A. and Rowe, A. 1938: 143, Text (R).

			The beautiful god, the lord of Upper and Lower Egypt, Ptolemy III. He has made a Bekhen altar, a shrine for his mother Isis, that she may give (him) life, Stability and welfare, forever.	
19	Wall inscription of Ptolemy XIII. Great temple of Dendera.	47 – 44 B.C., Ptolemaic Period.	The text refers to a receptacle in which was the image of Osiris and from which plants germinated  <i>hsp ir .tw m inr bhnw</i> A plant receptacle which is made of stone of Bekenw	Mariette, A. 1873: pl. XXXV, line 14.
20	Rock inscription (Lines 14, 15) of the Famine Stela - Siheil Island, Aswan.	Ptolemaic Period.	The text of this inscription mentions the names of various stones or rocks to be found in the east and west, in the river of Elephantine and in the heart of Elephantine including Bekhen stone that varied in two different publications by Brugsch and De Morgan as follows: Brugsch:  De Morgan:  <i>Bhn, mry / mmy, itbh^cb / gstb – htbt, r^cgs, white wtšy / wtšy in the beginning of the east.</i>	Lucas, A. and Rowe, A. 1938: 144 - 146, Text (T); Brugsch, H. 1891: pls. XIV, XV.; De Morgan, J. et al. 1894: 79 – 82.

4.5. Geology of Wadi Hammamat

4.5.1. Hammamat Series

The Hammamat Series clastic sediments were deposited into a Pan-African Orogeny molasses basin, broadly co-eval with the eruption of the Dokhan Volcanics, deposited between 650-580 Ma. They are sediments typical of this Orogenic setting, a series of siltstones, through sandstones (greywackes) to conglomerates. They were deformed into folds and subject to low green schist facies meta-morphism. The Main mineral present is quartz, But the stones have an overall greenish Color which is imparted by epidote, chlorite and sericite. ¹

4.5.2. The Pan African Basement of the Eastern Desert

The basement of the Eastern Desert, now exposed as the uplifted rift flank of the Red Sea, extends from the Red Sea coast around 200 km South East of Cairo, to the southern parts of Aswan and beyond (the Nubian desert). The geology is the product of one of the collisional phases of the Pan African Orogeny, a term coined to describe the amalgamation of plates which have formed what would be the continent of Gondwana (of which modern Africa is a part) during the Proterozoic to early Palaeozoic, from c. 900 – 500 Ma. ²

This represented a series of collisional events over this period which in African assembled the Kalahari, Congo, West African, Saharan and Arabian Cratons. The geology of the Eastern Desert is the consequence of the East African Orogen, caused in this region by the collision Arabian Nubian Shield with the Saharan Metacraton, which took place during the Neoproterozoic from c. 700 – 540 Ma, with at least six phases of magmatism and metamorphism over this time. ³

¹ Abd El-Wahed *et al.*, 2010; Abd El—Rahmen *et al.*, 2010; Andrew, G. 1938: 153.

² Azer, M. K. and Stern, R. 2007: 457 – 472.

“Ma” means millions of years, cf, <http://www.geosociety.org/TimeUnits/>

³ Lundmark, A. M., Andresen, A., Hassan, M. A., Augland, L. E. and Boghdady, G. Y. 2011: 227-237.

4.6. The Bekhen Stone (Greywacke)

The Bekhen Stone is the stone cultivated in Ancient Egypt, the name assigned to a slightly metamorphic silicate rock deriving from an arenaceous sedimentary rock.

It is constituted by fragments (clasts) of sedimentary and volcanic rocks, and minerals which suffered from a very low metamorphism. Its homogeneous colour ranges from dark green (due to the widespread presence of chlorite) to dark grey and black. It is a very hard rock because of the very small grain size and to the absence of porosity. Plinius compared this rock type to iron both for hardness and colour.

Its name is the most ancient name assigned to a stone. Indeed, Bekhen derives from Egyptian "*Bekhen*", whose Greek and Roman translation is "*litos basanites*" and "*lapis basanites*", respectively Italian dealers in marble called "*Basanite*" the darker and black variety and "*Basalto Verde Antico* (Ancient Green Basalt) the green variety. Because of its intense coloration and of the very small grain size, the microscopy identification of this rock is always difficult. Therefore, it was frequently confused with basalts, for having also comparable hardness.¹

The term greywacke was applied to the rocks of the qena – quseir road and to those of wadi Zeidoun further south, then the term was applied to the schistose rocks in the central part of the hill region. The greywacke which occur in Wadi Hammamat, the type area of the Hammamat series, have long been known as the source of two of the better known workable rocks used by the ancient Egyptians, and comparable greywacke types are known over a wide area in the eastern desert.²

The Bekhen Stone outcrops in the North and Central sector of the Eastern Desert, along the Quift – Quseir road from the Nile valley and the Red Sea. In this locality, the meta-sediments have a favorable cleavage development, whereas in other occurrences of the Eastern Desert, the rock is characterized by intense schistosity and is highly brittle. Instead, in the Wadi Hammamat site, an impressive quarrying activity is documented by almost 600 rock inscriptions over a time interval from Pre-dynastic to late Roman period (about 4000 BC until 300 AD). These inscriptions indicate the uniqueness of this site and its extraordinary importance to ancient Egyptian culture.

In Ancient Egypt, the Bekhen Stone was widely used as its mineralogical and textural features (the homogeneous and small grain size, the absence of structural anisotropy, the strong hardness and the extremely low porosity) makes it much suitable for sculpture. Firstly, it was used for small objects and later on for statues and sarcophaguses.³

This rock represents one of the most valuable and famous stone of Ancient Egypt, coming from one of the most important and studied quarry region, both for the historical value as for the presence of a rich rock art which accompanied the carving activity during thousand years. A great number of extremely fine carved statues were produced throughout the ancient times, with a definite maximum during the Late Period. In particular, most of the royal sarcophagi of the Old Kingdom and other hundred sarcophagi for eminent people of the Late Period, and of Ptolemaic and Roman times were sculpted of this rock.

¹ Klemm D. and Klemm R. 2001 b, p.p. 631- 642; Penny N. 1993; Nicholson P.T. and Shaw I. 2000; Gnoli R. 1988.

² Andrew, G. 1939: 153.

³ Borghi, A. et al. 2007: 10 – 11.

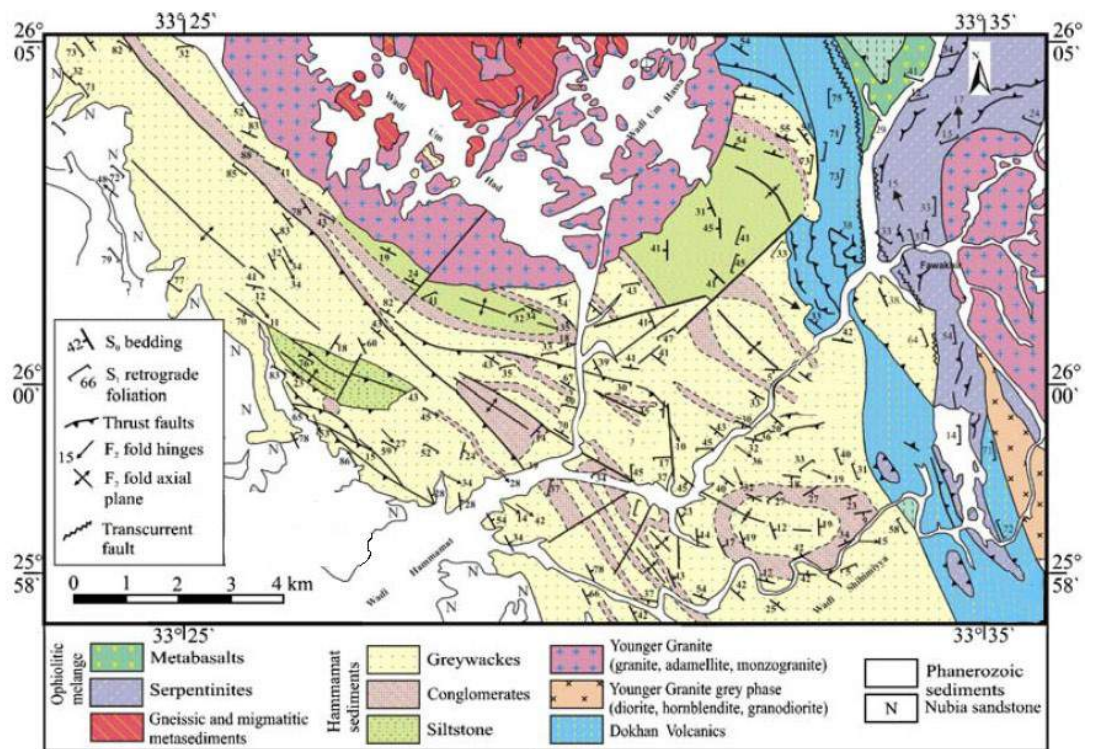


Fig. 163

Geological map of Wadi Hammamat. After, Siddall, R. 2013: 7.

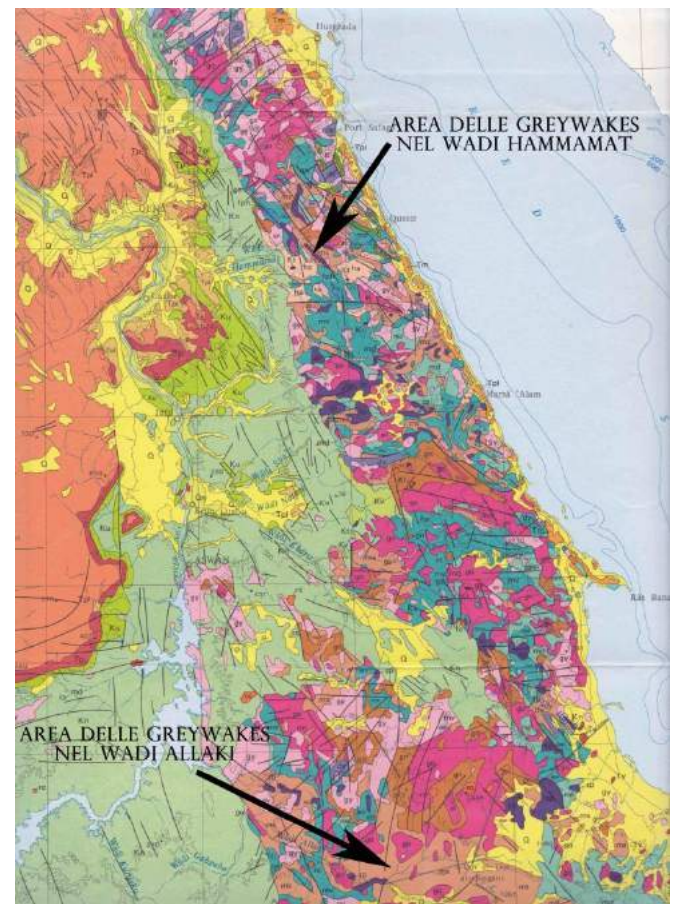


Fig. 164

Greywacke occurrences in the Egyptian Eastern desert

After, <http://www.dariodeibufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin>

The designation of Bekhen stone as meta-greywacke would be justified by the fact that the rock samples show a strong diagenesis and a slight metamorphism (anchizone). This suggests the Ancient Egyptian Bekhen stone, traditionally found scattered in some areas of the eastern desert and mainly in Wadi Hammamat. The lithologic composition of this rock series in the Wadi Hammamat thickness 4000 m, consists of a thick succession of clastic sediments including greywackes, sandstones, siltstones, slates and conglomerates such as the breccia verde antico. They exhibit green, purple and grey colors.

The post – orogenic molasse deposits of the Hammamat clastic sediments, which are regionally folded and bounded by regional faults, are best developed between 25 – 28 N and 33 – 34 E in the northern part of the central eastern desert, and tend to occupy smaller and smaller areas farther south up to Umm Garayat in the Wadi Allaqi, because of the northward slope of the basement. Their substantial development is in the North-Eastern Desert and Sinai, whereas in the southern eastern desert, the Hammamat clastic sediments are extremely reduced. The thickest succession of the sediments of Wadi Hammamat is thermally metamorphosed because of the Umm Had granite pluton, which intruded the sediments in their type locality, forming a wide metamorphosed contact aureole. ¹

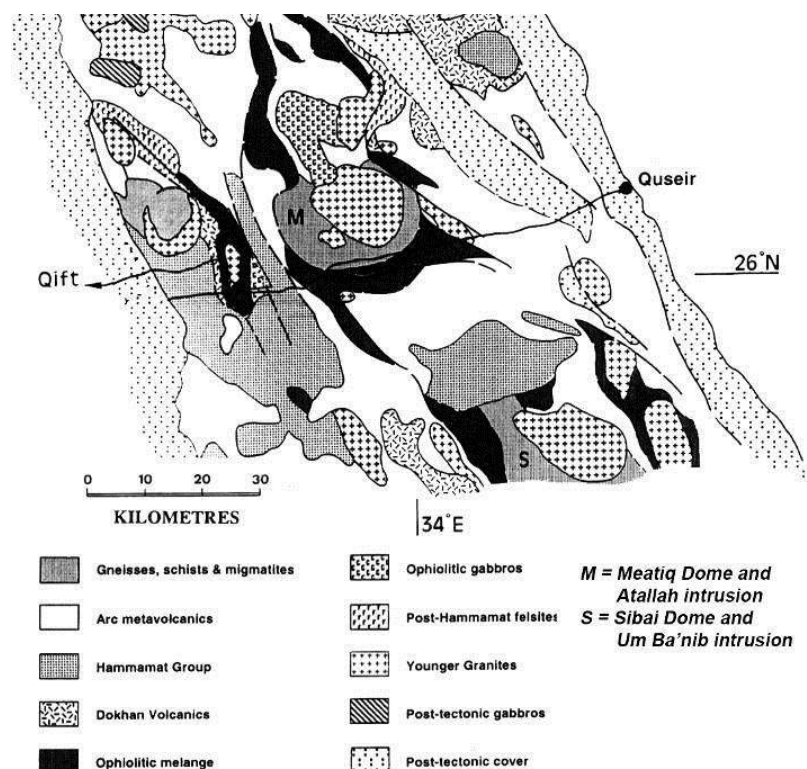


Fig. 165

Geological sketch map of the area surrounding Wadi Hammamat.

After, Coli, M. and Baldi, M. 2013: 10 fig. 1.

¹ Hassan, M. A. and Hashad, A. H. 1990: 227 – 229.

Numerous geologists have remarked on the varied composition of gravel clasts in the Hammamat series throughout the Eastern Desert as well as specifically in Wadi Hammamat.¹

The nature of the greywacke can be summarized in the following points:

- This stone, when seen only at a distance, resembles somewhat in general appearance the darker variety of the Wadi Hammamat stone, usually termed schist, but on a close examination, it is found to be what is generally called fine – grained grey granite referred to as Psamite-gneiss, this stone occurs as well at Aswan.
- Greywacke is the typical light grey Wadi Hammamat stone, usually termed “Schist”.
- Through the microscopical examination of a thin section states that this stone is the Wadi Hammamat greywacke and not schist.
- The dark color and homogeneous appearance of the inscribed surface are due to polishing. For a more definite opinion it would be necessary to cut a thin section and examine it microscopically.²

The essential features of the greywacke series are:

- Abundant plagioclase felspar as a detrital mineral
- Angular clastic grains
- Recognizable volcanic material in the conglomeratic beds
- Detrital epidote common, also unoxidised opaque or grains, chlorite and biotite.
- Rapid variation in grain of sediments.

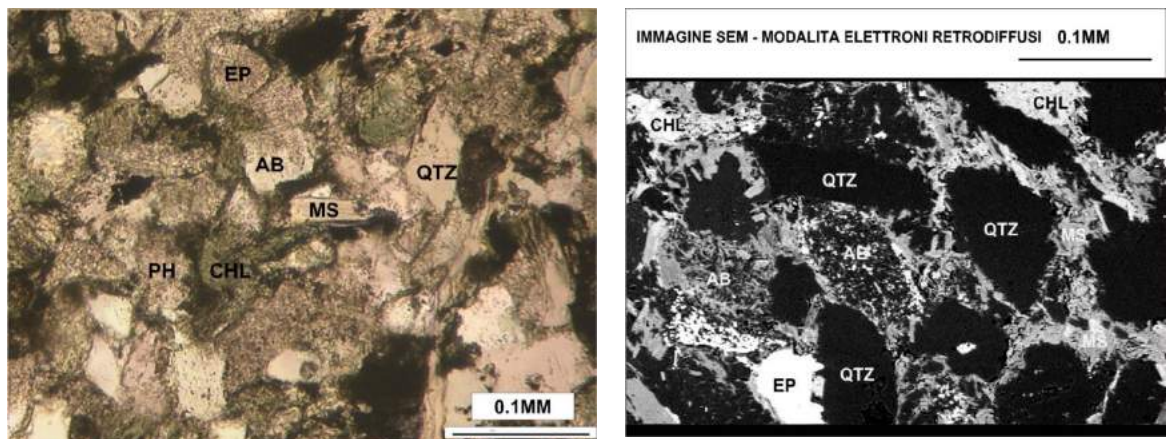


Fig. 166

Geological features of the greywacke.

After, Borghi, A. 2015; Andrew, G. 1939: pl. III.

¹ For an approximate percentage and rock types for the clasts, cf., Harrell, J. A. Brown, V. M. and Lazzarini, L. 2000: 213 – 214.

² Lucas, A. and Rowe, A. 1938: 154 – 155.

In a recent study executed on three greywacke sarcophagi preserved in the Egyptian museum of Turin it was revealed that:

The three black sarcophagi come from different archaeological sites, pertaining to different artistic-historical ages (26th Dynasty and 30th Dynasty), were sculpted of the same rock type. This rock is represented by a former sedimentary rock which underwent a metamorphic re-crystallisation at low temperature (chlorite-phengite facies), but relatively high pressure for the phengite composition of white mica. The metamorphic crystallization produced no oriented foliation but was responsible for a strong consolidation. The minero-petrographical and micro-textural features of the studied black sarcophagi are comparable to the so-called “Bekhen Stone”, outcropping in the Central Eastern Desert of Egypt.

The geological analysis of this stone revealed that:

“Bekhen Stone” is based on the petrography of the clasts, the studied sample can be considered the metamorphic product of a greywacke deriving by the dismantlement of both felsic (igneous, gneisses and schists) and basic (chlorite, epidote, Fe oxides) rocks. In addition, the rarity of K-feldspar (< 1%) reflects a provenance from igneous rocks of intermediate to basic composition. This agrees with literature, which generally supposes that this metasediments derive from a composite metamorphic or igneous basement. ¹



Fig. 167

The greywacke sarcophagi in the Egyptian Museum of Turin.

After, Photography of the researcher, See also, Borghi, A. et al. 2007: fig. 1.

¹ The first sarcophagus (Cat. 2201) comes from Sais, in the Delta of Nile river. It was made during the so-called saitic period, which assumed its name from the native town of Pharaohs who reigned in Egypt during the XXVI dynasty (664 – 525 B.C.). This sarcophagus is an extraordinary example of the Saitic art that developed a style characterised by rounded shapes, and carefully polished and modelled surfaces.

The second sarcophagus (Cat. 2202) comes from the necropolis of Asasif, near Thebe (XXVI dynasty). The Cover belonged to the sarcophagus of Ibi, who was the divine worship of God Amon, one of the highest positions of the time, directly connected to the temple of the God Amon in Karnack.

The third sarcophagus (CAT. 2203) comes from the necropolis of el-Khokha, near Thebe (XXX dynasty, 378 – 341 B.C.). The cover belongs to Shepmin, royal scribe of God Amon temple in thebe and

clergyman of the God Osiris. Cf., Borghi, A. et al. 2007: 57 – 66.

4.7. Greywacke quarries of Wadi Hammamat

The ancient quarrying activities in Wadi Hammamat consisted of two quarries that are separated by 1 km.¹

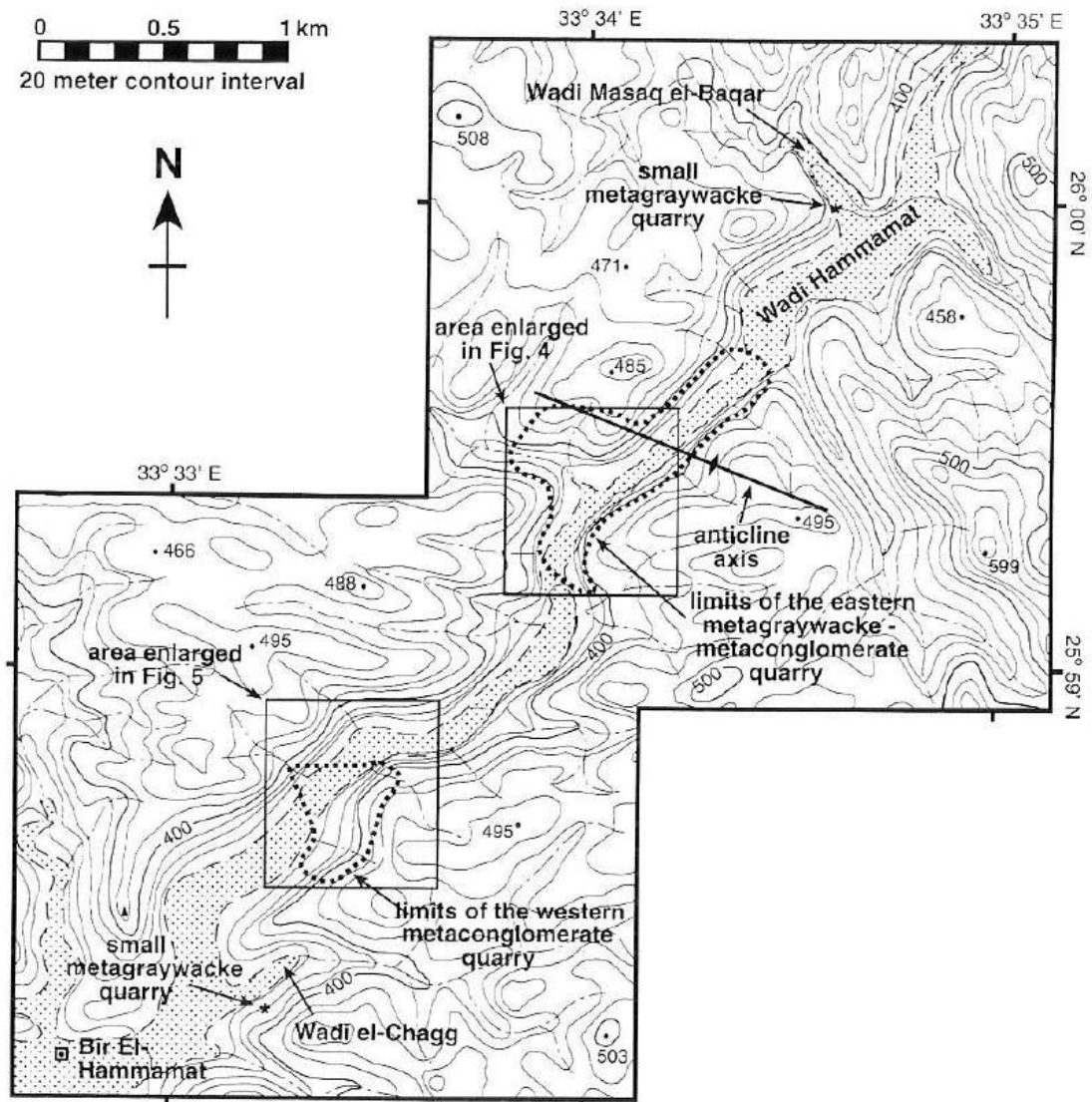


Fig. 168

The Topographic contours of Wadi Hammamat quarries.

After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 208, fig. 2.

¹ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2000: 209.

4.7.1. The Eastern Quarry

The easternmost of these (coordinates 25° 59.40' N; 33° 34.05' E), is well known today because of the thousands of extant objects carved from its meta-greywacke and because of the hundreds of inscriptions cut into its walls dating from the early dynastic period (about 2900 BC) through the early third century AD of the Roman period.¹

Although the quarry workings themselves have often been mentioned, the maps show with greater precision and topographic details, the quarry extent, features and the location of the main metaconglomerate outcrops. The quarry stones belong to a strategic unit that has been variously referred to in the geologic literature as the Hammamat series, group, formation or Metasediments. This unit dates to the Neoproterozoic era of the late Precambrian, about 600 million years ago, and has its type section in Wadi Hammamat with other outcrops scattered throughout the eastern desert. The original hammamat sediments were primarily alluvial deposits.²

The clear majority of rock occurring within the quarry is meta-greywacke sandstone / siltstone that has occasional thin lenses (generally less than 1 m thick) of space to abundant gravel – size clasts (grains larger than 2 mm across).³

Thin beds of meta-conglomerate can thus be found throughout the quarry, but thick conglomeric beds are present only in the southwestern part and it is here that the rock was quarried in the ancient times. There are two massive beds, that have thicknesses of 26 m and 44 m. The rocks within the quarry are folded into a broad, asymmetrical anticline with a northwest – southeast axis and dips of 20 – 30 ° on the southwest flank (where the two meta-conglomerate beds are found) and 25 – 40 ° on the northeast flank.⁴

On the west side of the wadi, the only traces of quarrying are seen in bed 2. However, the conspicuous workings seen there today are entirely modern. They date from about 1988, and resulted from a joint quarrying venture of the Egyptian geological survey and mining authority, the “Marmonil” company and another Italian Egyptian company, “Petrobel”. The rock that Marmonil currently markets as breccia Fawakhir was apparently obtained from bed 2. This recent activity destroyed much of the evidence of the ancient quarrying in this bed. However Roman wedge holes and inscriptions dating to the reign of king Ramses IV (about 1150 BC) still survive on some blocks, which are probably associated with the only quarrying of this rock during the Twentieth Dynasty.⁵

¹ Gundlach, R. 1986: col. 1099 – 1113.

² Grothaus, R. Eppler, D. and Ehrlich R. 1979: 456 – 590; Hassan, M.A. and Hashad, A. H. 1990: 227 – 230.

³ Aston, B. G., Harrell, J. A. and Shaw, I. 2000: 57 – 58.

⁴ Andrew, G. 1939: 163 – 176.

⁵ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 210.

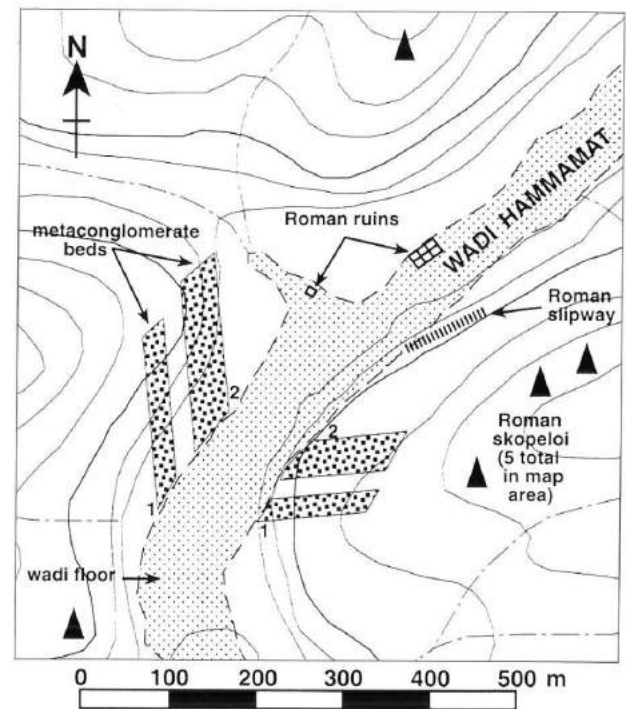
A block of meta-conglomerate was probably quarried for Ramses IV and later usurped by Ramses VI who used it for his sarcophagus.¹ On the east side of the wadi, all traces of quarrying in the meta-conglomerate are Roman and these occurring in both beds 1 and 2. On the wadi floor, at the foot of these outcrops, are several blocks of this rock with lines of wedge – shaped holes. The individual holes are 14 – 17 cm long by 3 – 6 cm wide at the tops, 8 – 12 cm deep and slightly tapering downward, and separated from adjacent holes by 15 – 29 cm. These are well within the typical size range of the Roman wedge holes found elsewhere. In few cases these holes are connected by a series of small, shallow, closely spaced pits indicative of splitting by the pointillé technique.²

Marks were not seen on the bedrock surfaces except at one place in bed 1 where there are few wedge holes. Blocks of stone must have been dislodged mainly by driving iron wedges into natural fractures. Rather than pre-cut holes, and then maneuvered downslope with levers and ropes. The two meta-conglomerate beds in the eastern quarry, lie either flush with or slightly protruding from the wadi walls, and do not look like they have lost much material through quarrying. The vast bulk of the meta-conglomerate taken from Wadi Hammamat must have come from the western quarry.³

Fig. 169

The Eastern Quarry of Wadi Hammamat

After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 209, fig. 4.



¹ Harrell, J. A. and Brown V. M. 1992: 91: The Sarcophagus of King Ramses VI, from the tomb (KV 9), in the Valley of the Kings, of which the lid is now preserved in the British Museum (EA 140) and the rest is badly damaged in the tomb.

² Waelkens, M. et al. 1988, p.p. 106 – 107.

³ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 210.

4.7.2. The Western Quarry

The western quarry is Located just southwest and within sight of the eastern quarry (coordinates 25° 58.66' N, 33° 33.40' E). Here there are two especially massive beds of meta-conglomerate with a thickness of 65 m (1) and 80 m (2). These are stratigraphically above the rocks in the eastern quarry and lie on the southwest flank of the same anticline.

The south-westerly dips in the western quarry vary from 40 ° in bed 1 to nearly vertical in bed 2, The area of most intense quarrying is in bed 1 on the east side of the wadi. There are traces of minor activity in this bed on the west side and in bed 2 on the east side. Both between the two meta-conglomerate beds and stratigraphically above them to the west are thick sequences of meta-greywacke, which are occasionally pebbly and contain thin lenses (up to several meters thick) of meta-conglomerate. The latter were extensively worked in the southwest part of the quarry, where there are several Roman slipways. From a few worked blocks near the Roman ruins, some pebbly meta-greywacke was also quarried. Probably from the outcrops above the ruins. Moreover, there is a small previous known meta-greywacke quarry, several hundred meters to the south, near Wadi el – Chagg, which is of indeterminate age. ¹

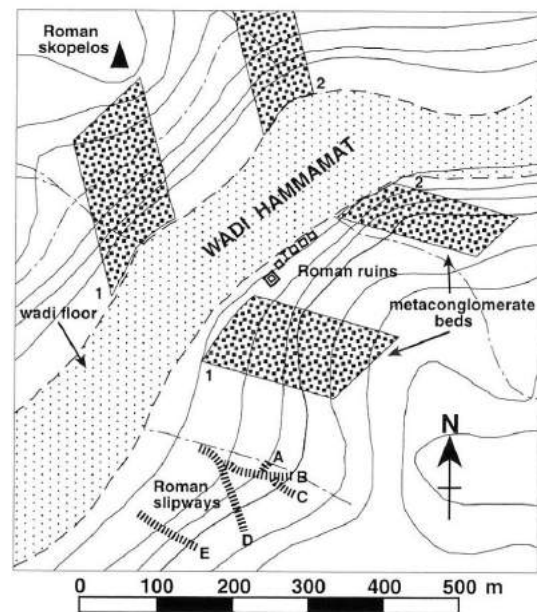
In bed 1, south of the ruins, the meta-conglomerate is well jointed and tends to naturally separate from the bedrock in sub-rectangular blocks. There are no excavation pits, slip-ways or tool marks in this area. The only indications of quarrying are the numerous sites where light – coloured joint surfaces were exposed after removal of the overlying blocks. ²

Fig. 170

The Western Quarry of Wadi Hammamat

After, Harrell, J. A. Brown, V. M. and

Lazzarini, L. 2002: 209, fig. 5.



¹ Goyon, G. 1949: 337 – 392, fig. 14.

² Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 210.

As in the eastern quarry, iron wedged must have been driven into the natural fractures to dislodge the blocks. Quarrying in bed 1 on the west side of the wadi and in bed 2 on the east side was largely restricted to working already loose blocks deposited in the ravines either crossing (bed 1) or running alongside (bed 2) the meta-conglomerate outcrops. The same is true of the workings at the heads of slipways (A) and (B). Slipways C-E, however, all descend from meta-conglomerate bedrock outcrops. The slipways, which are a few meters wide, are cleared paths where the larger pieces of rubble have been removed to the sides. Slipway (D) is the best preserved of these. In few places on slipways A and B there are traces that contained the rubble fit used to bring the surfaces up to the desired levels. ¹



Fig. 171

The letter “Q” indicates the quarried outcrop of meta-conglomerates at the head of the slipway.

Wadi Hammamat Western quarry. After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211, fig. 6.

¹ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 210.

At the confluence of these same two slipways there stands a stone cairn that is roughly cylindrical in shape and 1.0 m high by 1.8 – 2.0 m in diameter. Such cairns are a common feature of some Roman quarries in the Eastern Desert. For example, at Mons Claudianus, they are thought to have served as stockpiles of “road metal” for repairing the slipway surfaces.¹

The most conspicuous feature of the western quarry are the hundreds of meta-conglomerate blocks with Roman tool marks, including abundant wedge holes, common chisel tracks, and rare pointillé pits. No well – shaped blocks or carved objects are present, but there are at least two long, narrow, roughly rectangular blocks that may have been intended for columns.

These have dimensions of 2.8 x 0.8 x 0.6 m and 3.0 x 0.9 x 0.6 m the wedge holes, like those in the eastern quarry, are typically Roman in form and size with meticulously cut, smooth regular interior.



A



B

Fig. 172

(A) Enlarged block that may have been intended for a roman column (dimensions of 2.8 x 0.8 x 0.6 m and 3.0 x 0.9 x 0.6 m), Wadi Hammamat western quarry.

(B) Typical Roman wedge hole, Wadi Hammamat western quarry.

After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211, figs. 7 – 8.

¹ Peacock, D. Ps. 1997: 259 – 261.

Where the exteriors of blocks were weathered, a shallow (usually 1 – 2 cm deep), irregular depression was first chiselled out to reach the fresh rock, where wedge holes were then cut. The individual holes are 8 – 20 cm long by 4 – 6 cm wide at the top, and 6 – 11 cm deep with interior sides that are either vertical or slightly tapering downward. Adjacent holes are separated along a line by 6 – 30 cm except for several wedge holes in the meta-conglomerate bedrock at the head of slipway (D), all the other tool marks are seen only on detached blocks. From this iron wedges and chisels were used primarily to shape rather than extract blocks.

In one block below bed 1, on the east side of the wadi, there are two wedge holes that are very different in appearance from the typical Roman ones, as these wedge holes are more irregular in plan, larger, and cruder in execution with broad (1 cm wide) chisel marks on the interior surfaces.¹



Fig. 173

Possible late period wedge hole (Wadi Hammamat western quarry).

After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 212, fig. 9.

¹ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211.

The two holes are 14 – 15 cm long by 7+ cm wide at the top, 13 – 16 cm deep with pronounced tapering, and separated by 20 cm. The only other similar wedge holes are found in a dolerite porphyry quarry dating to the Thirtieth Dynasty (380 – 343 B.C.) of the late period.¹

In addition to the Twenty – Sixth Dynasty inscription in the quarry, the two wedge holes in the western quarry may also date to the Late Period, if not actually the Thirtieth Dynasty. This would not be surprising given the known use of the meta-conglomerate during this period.²

This inscription records a visit to the site ordered by the well – known (Montu-em-hat), who is variously identified in ancient texts as the “Fourth Prophet of Amun” and the “Prince of the city”. He ruled the Theban region during parts of the Twenty – Fifth and Twenty – Sixth Dynasties³

Along the eastern edge of the wadi, between meta-conglomerate beds 1 and 2, are the poorly preserved remains of huts with walls of unworked, dry – laid stone. These are the only buildings present in the western quarry. The outlines of 16 rooms can be seen and there are several areas with scatterings of stone from other, now destroyed structures. Fourteen of the recognizable rooms are rectangular in plan with sides between 2.3 and 3.9 m in length and walls up to 1 m high. Most huts have a single room but others are combinations of two, three or five rooms. There is one single – room hut that is circular with a diameter of 2.1 m the largest building is found at the southwestern edge of the settlement and it is very different from all the others.



Fig. 174

The 26th Dynasty inscription, reign of Psammetichus I (664 – 610 B. C.).

After, Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 212, fig. 10.

¹ Harrel, J. A. and Brown, V. M. 1999: 18 – 20.

² Examples of the use of the meta-conglomerate during the late period, cf., Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 216, table 1.

³ Shaw, I. and Nicholson, P. 2008: 182 – 183.

This was apparently the residence of the quarry manager. It has a single, nearly square room (5.3 x 5.9 m) with a 1.5 m square closet set into the back wall. The walls survive only up to a height of 0.6 m. This building sits atop a larger platform that rises 0.5 m above the present wadi floor. It must have been higher originally because the base is not buried under the wadi sediments. The sides of the platform are edged with large boulders that served to both contain the platform's rubble fill and to protect it from erosion by flash floods. Leading up to the platform and the 1.3 m wide doorway through the building's front wall is a series of stone steps.

Given the evidence of the tool marks and the known use of the meta-conglomerate, it is certain that the settlement was occupied during the Roman Period (first three centuries A.D.). It is also possible, of course, that some of the structures go back to the late period (Eighth through Fourth centuries B.C.). ¹

¹ Harrell, J. A. Brown, V. M. and Lazzarini, L. 2002: 211 – 213.

4.8. Greywacke Quarrying Through the Different Historical Phases

Identifying the time-depth of quarrying in Wadi Hammamat is the main concern of this part of the study.

4.8.1. The Pre-Dynastic Period

First human populations in Wadi Hammamat is still undetermined, however, with the area being not only a source of good quality greywacke, and water, but strategically at the midway point along the Nile Valley – Red Sea trade route, it should have been utilized since the prehistory. Debono's discoveries of archaeological sites can be dated to the Badarian Period at the Lakeita oasis and his discovery of a Pre-dynastic workshop for making bracelets (plus a small settlement), has been important in establishing some of these earlier antecedents in the Bir Hammamat region.¹

Although Debono mentioned several settlements and workshops near Bir Hammamat, his report only describes excavation of one that was referred to in a more recent study as "Workshop 1". Extremely difficult to find, even though it is only 50 m south of the main road, the workshop covers 15,000 m² of gravelly terrace, approximately 0.5 m above the flood plain.²

There is a smaller but better preserved second Pre-dynastic workshop (Workshop 2), about 1.2 km west of Workshop 1, and 200 m south of the main road up a short wadi. This position protected it from the effects of modern road building and also the ferocity of flash floods through the Wadi Hammamat.³



(A)



(B)

Fig. 175

- A. View of Workshop 1 looking to the north of Wadi Hammamat.
B. View of Workshop 2 looking to the north – east of Wadi Hammamat.
After, Bloxam, E. 2014: 19, figs. 14 – 15.

¹ Debono, F. 1951: 66 – 68.

² Debono, F. 1951: 75 – 78.

³ Bloxam, E. et al. 2014: 19 – 20.

Similarly, material culture relating to the production of greywacke, although mainly into bracelets, is strewn along a raised terrace 0.15-0.20 m above the wadi floor. Of which the workshop debris is concentrated in a smaller area comprising a 'main workshop' of approximately 270 m² that extends for 55 m alongside the base of the mountain.

It is difficult to say at this stage whether this was the original extent of the workshop, but the gully that now separates the 'main workshop' from the rest of the site indicates the potentially destructive forces of water run-off from the hills behind. By comparing the material culture in both workshops, analyzing quarrying techniques and contextualizing this information within the broader cultural landscape, some preliminary observations about Pre-dynastic to Early Dynastic greywacke production and crafting can be determined.¹

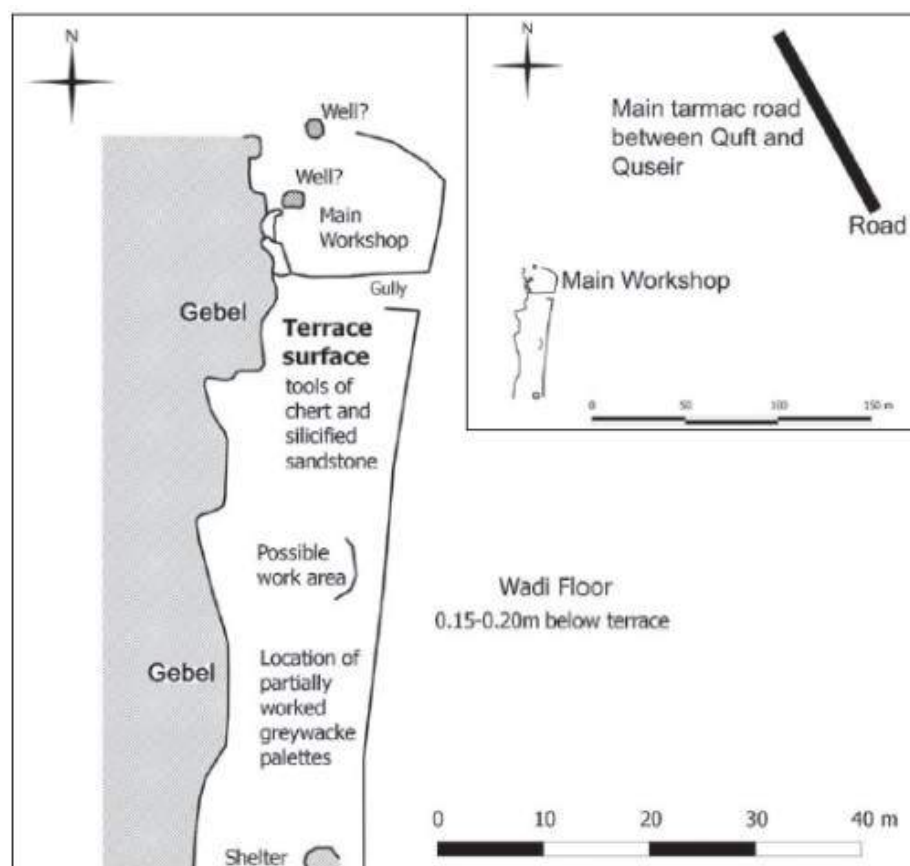


Fig. 176

Workshop 2 (Main Workshop).

After, Bloxam, E. et al. 2014: 20, fig. 16.

¹ Bloxam, E. et al. 2014: 20.

Workshops of Wadi Hammamat

1. Workshop 1

The settlement features, when excavated in the fifties of the last century, it was revealed that only a vague imprint with a much larger range of tools than visible today, in particular of chert and copper for drilling beads.

However, Modern investigations discovered:

- Naqada II pottery - jars and bowls clustered near a settlement feature.
- other sherds from later periods in south-west corner of workshop.
- some Old Kingdom pottery brought to the site from Nile Valley.

2. Workshop 2

There were no quarries close to the workshop or any rock art, this may be due to the poor quality of greywacke here. Probably the source of greywacke was from the quarries near Workshop 1.¹

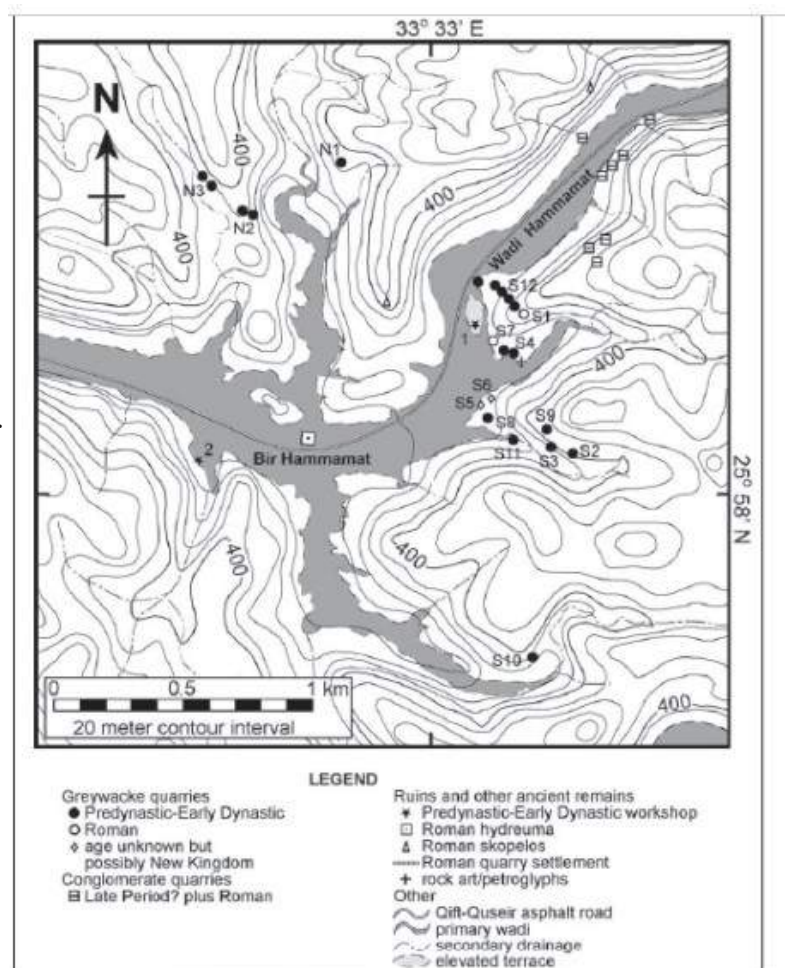
Fig. 177

Map of the quarries and
workshops of the pre-dynastic

Wadi Hammamat.

After, Bloxam, E. et al.

in Archeonil, 24, 2014, p.16, fig. 3.

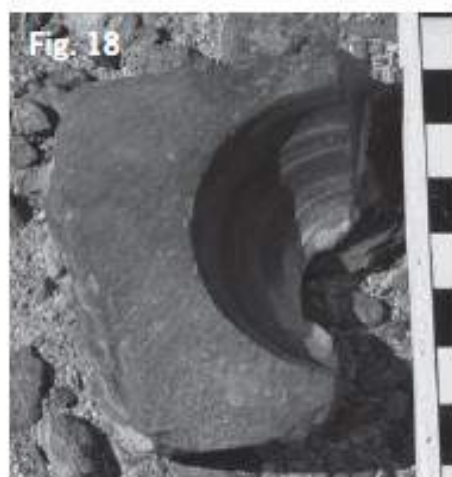


¹ Debono, F. 1951: 75-78 ; Bloxam, E. et al. 2014: 21.

This part of the study deals with the characteristic features of the pre-dynastic workshops and the four quarry complexes in wadi Hammamat and it is extracted from the results obtained by the excavations of the Cardiff University and published between 2014 - 2015.¹

Workshop 1	
Tools	Chert: Microliths, knives, crescent-shaped drills, small flake borers, bladelets, cores. Mainly camel-colored (yellowish brown), but some grey, tan (Light brown) and chocolate (dark brown) Silicified Sandstone: fragment of a borer Greywacke: rods and chisels Copper: needles
Fig. 178 Chert crescent-shaped drills, Workshop 1, Bir Hammamat. After, Bloxam, E. et al. 2014: fig. 17.	
Production	Bracelets: unworked discs, broken and partially worked Stone vessels: 2 circular forms (14 x 14 x 5.5 deep)

¹ Bloxam, E. et al. 2014: 21, table 1.



A



B

Fig. 179

A. Broken and partially hollowed out greywacke bracelet showing concentric rings from drilling.

B. Greywacke vessel rough-outs.

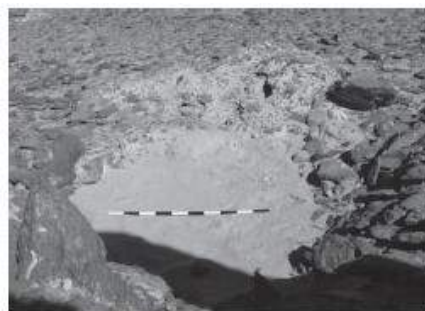
After, Bloxam, E. et al. 2014: 22, figs. 18 – 19.

Settlement	Settlement: at least one semi subterranean dwelling. Faunal and fl oral remains: ostrich egg shell, mother of pearl, carbonized wood, animal bones, fish vertebra.
Ceramic	Different examples that will be explained in the following pages and date back to different historical phases such as: Naqada II. 3rd-4th Dynasty. Middle Kingdom to Late Period. Roman Period.
Rock art	giraffe, ibex, dogs, ostrich – Pre-dynastic.
Workshop 2	
Tools	Chert: circular, cortical and retouched end scrapers, cores, flakes, blade lets. Mainly camel-colored (yellowish-brown). Silicified Sandstone: numerous and 3 types: (i) hand-held rubbing/ grinding tool with fl at surfaces from use.

	(ii) small tapered round ended tools. (iii) crescent-shaped borers.
	
Fig. 180 A. Pointed-ended small tools in silicified sandstone, B. Silicified sandstone crescent-shaped borer/drill showing wear marks, After, Bloxam, E. et al. 2014: 24, fig. 22 – 23.	
Production	Bracelets: unworked dishes, broken and partially worked. Palettes: 2 rough-outs.
	
Fig. 181 Unworked bracelet rough out next to slotted silicified Sandstone tool - rubber to smooth outer edges. After, Bloxam, E. et al. 2014: 24, fig. 24.	
Settlement	Settlement: shallow circular depression into terrace floor surrounded by a low highly weathered stone wall. Wells: 2 sand-filled depressions surrounded by weathered spoil close to the main workshop.



(A)



(B)

Fig. 182

A. a dwelling shelter at workshop 2.

B. sand filled depression, most likely a well.

After, Bloxam, E. et al. 2014: 25, Fig.25 – 26.

Ceramic

mainly Naqada II (rim sherds of bowls and jars, but some Naqada III).

Complexes of wadi Hammamat

Four quarry complexes have been identified. ¹

I. Small Block Complex

Date:	Prehistory early/mid third millennium BC.
Production:	Workshop 1: Bracelet rough-outs: Unworked and partially worked discs Stone vessels 2 circular forms (14x14x5.5cm deep) Tools (both local and non-local) chert borers, microliths and drills, greywacke chisels, rods, copper needles. Workshop 2: rough-outs bracelets palettes Tools They are all non-local and mainly silicified sandstone drills, finishing tools, some chert flakes.
Resources:	Greywacke type fine grained (mud rock), greyish-green, intensely fractured
Tools in quarries:	Local tools: greywacke chisels, rods. non-local tools: dolerite hammers, pounders; some granite.

¹ Bloxam, E. 2015: 792 – 793.



Fig. 183
Tools in quarries.
After, Bloxam et al. 2014: 18, figs. 9–11.



Fig. 184
Tools in quarries.
After, Bloxam, E. 2015: 798, fig. 6.

Social infrastructure:	Dwelling was mainly connected with the stone workshops. Workshop 1: The site contains at least one semi-subterranean dwelling with some faunal/floral and some domestic remains. ceramics: - examples that can be dated back to the mid fourth millennium BC–early/mid third millennium BC. - Some examples of the mid second millennium BC and the fourth century AD.

	Workshop 2: one dwelling shallow circular depression and two wells. ceramics - Examples that can be mainly dated back to the mid-late fourth millennium BC (Naqada II).

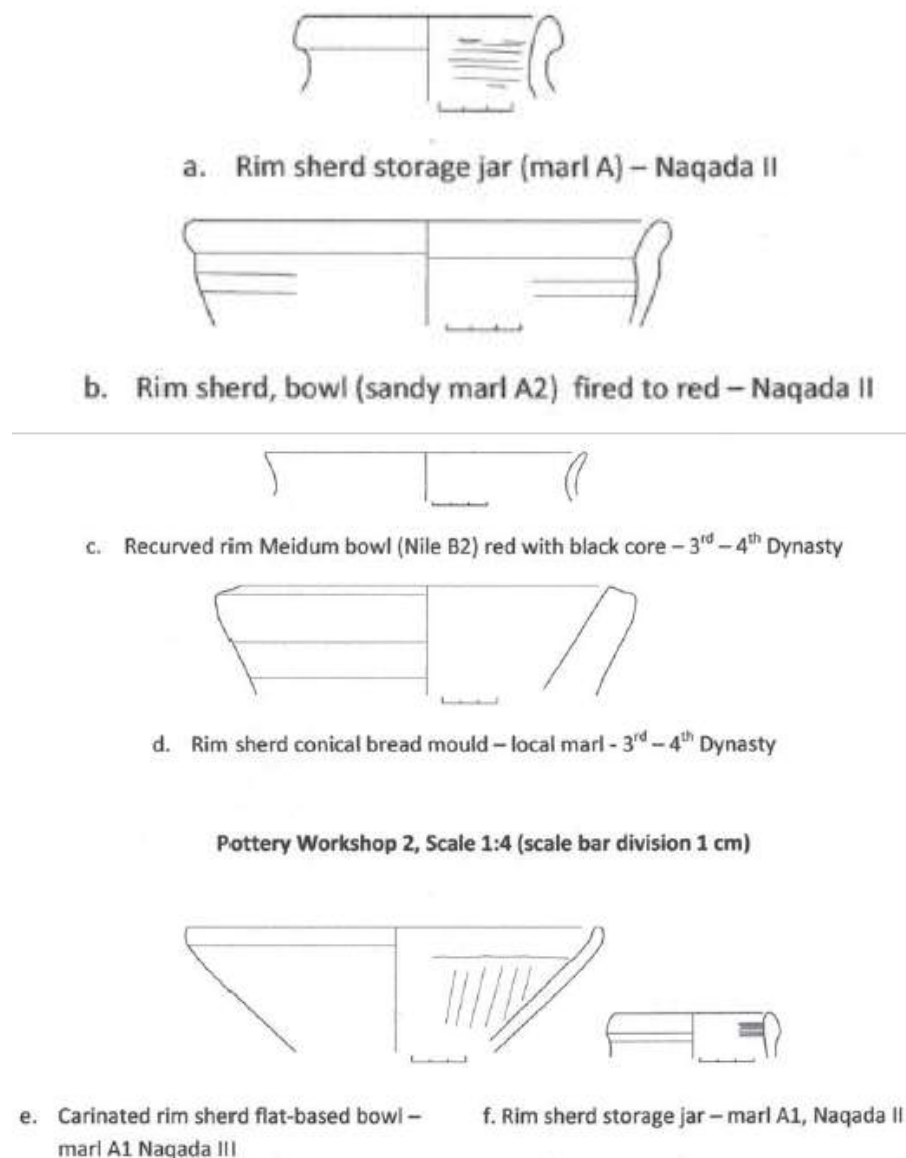


Fig. 185
 Ceramics of Bir Hammamat workshops.
 After, Bloxam, E. et al. 2014: 22, fig. 20.

Petroglyphs:	rock art - Giraffe, ibex, dogs, ostrich. - Few hieroglyphs/graffiti (early third millennium BC). - Name/titles across all zones and near quarries at Workshop 1.
Fig. 186 Rock cut inscription of '<i>K i-m-mdw</i>' 'overseer of stoneworkers', Wadi Faux (east side) at Bekhen Mountain. After, Bloxam et al. 2014: 27, fig. 27.	

II. Large Block Complex

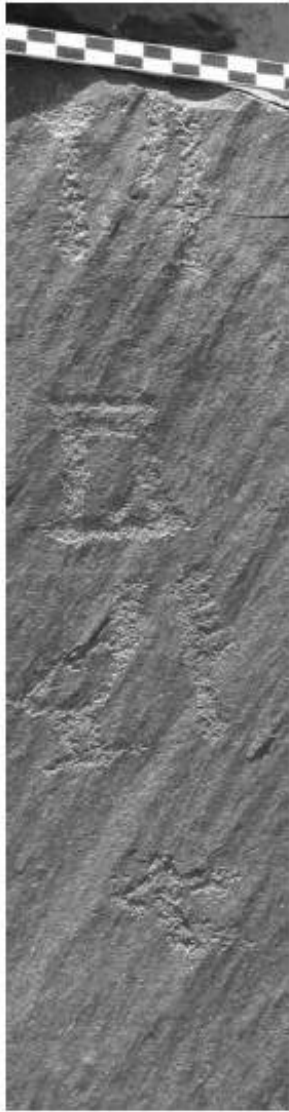
Date	Mid 3 rd millennium BC– 5 th century AD.
Production	sarcophagi, coffins, statues, naoi
Resources	Greywacke type: coarse-grained sandstone variety, massive, wide fractures; greyish, brownish, greenish hues.
Tools	local: greywacke wedges. non-local: dolerite pounders, hammers.
Social infrastructure:	Settlement No. 1. Two interconnecting roomed dwelling in Wadi Faux. No. 2. The well can be found between the two areas of settlement. No. 3. main settlement composed of more than (20) interconnecting rooms with parts of flood defence wall remaining, multi-occupation from Late Period into Roman Period (mid–late first millennium BC to the fifth century ad).



Fig. 187

The settlement in the greywacke quarry.
After, Bloxam, E. 2015: 802, fig. 10.

Ritual/cultic areas:	- Chapel of Nectanebo / Paneion - a shrine dedicated to Min' (a re-used quarry post-dates mid first millennium BC).
Fig. 188 - Area of inscriptions (circled left) and - The Chapel of Nectanebo (Shrine to Min, Paneion)- (circled right). - Arrow points to a major ramp ascending above inscription zone in large-block quarries, dating to between Late Period to Roman Period (mid-late 1st millennium BC to 5th century AD). After, Bloxam, E. 2015: fig. 8.	
Ceramics:	Pottery discovered in the large settlement can be dated to the period between the mid-1st millennium BC to 6th century AD. While, the pottery discovered in Bir Hammamat quarries is dated to: - mid second millennium BC. - mainly mid first millennium BC. - some into fifth century AD.

Petroglyphs:	rock art, graffiti, hieroglyphs, hieratic, Greek, Demotic, Aramaic, iconography in region of Bekhen-mountain.
Fig. 189 Name of an individual called “Giw” preceded by the title “controller/inspector”, the inscription dates to the Early Dynastic (early third millennium BC). After, Bloxam, E. 2015: 805, fig. 13; Goyon, G. 1957: 43, no 4. Pl. II.	
	
Modern Settlement:	Stone huts relating to the modern quarrying activities (1960s).
Watchtowers:	high elevations connected with the trade route and date back to the Roman Period. ¹

¹ Zitterkopf, R.E. and S.E. Sidebotham, S. E. 1989: 180 – 188.

The “small” and “large” block quarry complexes are chronologically distinctive because of their linkage to proven consumption patterns of specific objects over time.¹

III. Tool complex

The “Tool complex” has been broadly identified as contemporary with ‘small block’ quarrying because of their location in proximity to these quarries, as well as use for extracting and shaping objects.²

Date	Prehistory – early/mid third millennium BC.
Production	chisels, rods, wedges. stone tools (dolerite pounders) in quarries and workshops (Wadi Faux).
Resources	Greywacke type: fine-grained dark grey to greyish-green.
Tools	Non-local: dolerite pounders, hammers.
Petroglyphs 	
Fig. 190 Pre-dynastic rock art (dogs and ibex), Bir Hammamat. After, Bloxam et al. 2014: 23, fig. 21.	

¹ Aston, B., J. Harrell and Shaw, I. 2000: 57- 58; Aston, B. 1994.

² Bloxam, E. et al. 2014: 791.

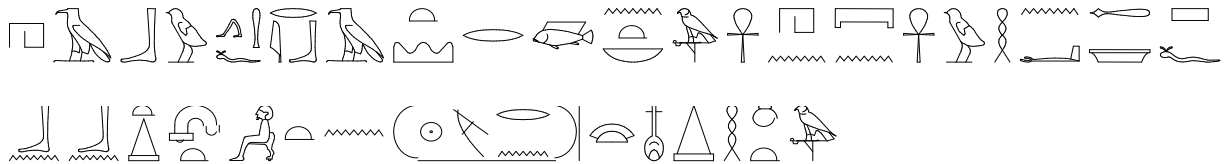
IV. Copper Mining Complex

Date	mid second, first millennium BC – Ottoman Period.
Resources	Copper silicate (chrysocolla).
Tools	local metaconglomerate (axes), greywacke (chisels), non-local granite, silicified sandstone and diorite pounders.
Settlement	- The settlement is only associated with south mines, - two small areas of interconnecting huts.
Ceramics	SOUTH MINES: - New Kingdom (18th–19th Dynasty; 1550–1186bc). - Persian Period (27th Dynasty; 525–359 bc). NORTH MINES: - Ottoman Period.

4.8.2. Early Dynastic Period and Old Kingdom

During the early dynastic period, greywacke was first employed for statuary and vessels. However, starting from the Old Kingdom, greywacke was employed for large objects such as statuary, stela, sarcophagi and Naos.¹

During the Old Kingdom, Wadi Hammamat Bekhen stone quarries was attested to be a quarry for bringing the needed stones to make royal sarcophagi as an evidence from the inscriptions of Weni states:



h3b w(i) hm .fr ibh3.t r int nb ʿnh hn n ʿnh (w) hn ʿ3 .f hn ʿbnbn (t) htm (t) šps(t) n(mr – n – r) h ʿnfr hnw. (ty)

Translation: his majesty sent me to “Ibhat” to bring back the sarcophagus “Chest of Life” and its lid, as well as a costly and noble pyramidion for the pyramid of merenre, my mistress.²

Analyzing this passage, Weni mentioned a toponym called “Ibhat” that most probably referred to a quarry source where the stone of the Royal sarcophagus, its lid and the pyramidion were extracted.³

This passage of Weni describes a double mission to “Ibhat” then to Elephantine and that no one had never worked before in these two sites, the starting point is uncertain but it can be assumed that he started sailing down the Nile, so it is theoretically possible that “Ibhat” is downstream from Elephantine. However, the textual evidence did not specify whether “Ibhat” is en route to elephantine or a certain detour was required. Moreover, the name “Ibhat” was used starting from the Middle kingdom onwards to refer to different types of stones and quarries.⁴ According to this passage together with the petrographic analysis of many Sixth Dynasty sarcophagi which confirmed that they are made of greywacke.⁵

Thus, analyzing the petrographic, geological and textual information on “Ibhat”, it can be suggested that, during the third millennium BC, this Toponym referred to a sector in the Wadi Hammamat, likely the south bank of the valley that explains why so many Old Kingdom inscriptions were discovered on the same side of the valley.⁶

¹ Aston, B. Harrel, J. A. and Shaw, I. 2000: 58; Emery, W. B. 1961: 45, fig. 4; Bloxam, E. 2015: 794, fig. 2; For more Pre-dynastic and Old Kingdom examples of statuary and minor arts of Bekhen stone, cf., the attached catalogue of greywacke objects in the museums.

² Wissa, M. 2011: 223

³ Zibelius, K. 1972.

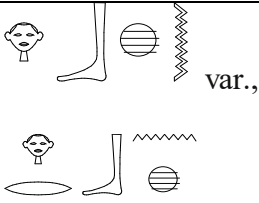
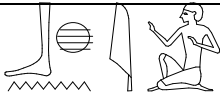
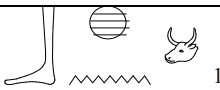
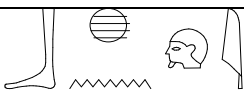
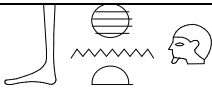
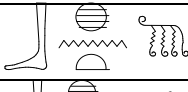
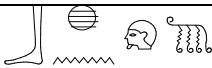
⁴ WB, I, p. 46, 1 – 6; Aufrere, S. 1991: 247, 284, 316, 548, 784, 819; Barguet, P. 1953: 25.

⁵ Wissa, M. 1994: 379 – 387.

⁶ Wissa, M. 2011: 227; Klemm, D. and Klemm, R. 2008: 301 – 302.

Bekhen in The Personal Names

The ancient Egyptian name of the greywacke appeared as well in some personal names dating onwards from the Old Kingdom.

	Name	Transliteration
1	 	<i>hr bhn</i>
2		<i>Bhnw</i>
3		<i>Bhni</i>
4		<i>Bhn</i>
5		<i>Bhni, bhn tpy</i>
6		<i>Bhnt</i>
7		<i>Bhnt</i>
8		<i>Bhnt</i>

During the Old Kingdom, Wadi Hammamat was a major quarrying area, active in greywacke production, where many expeditions took place. Several inscriptions there from the Pre-Dynastic Period onward, personal names and many of the Sixth Dynasty graffiti, attest these extraction activities.

¹ For Similar words, cf. ,  and , *bhnt* that means “gateway”, *Wb*, I, p. 471

4.8.3. Middle Kingdom

Inscriptions of the Middle Kingdom are important in determining the geographical location of *R3-hnw* (Wadi Hammamat) as before the Middle Kingdom, no text linked between the Wadi and the Red Sea coast.¹

During the Middle Kingdom, the officials sent to Wadi Hammamat used a number of epithets to describe themselves and their work in a context composed of the titles of the king after an introductory statement that began with (Now, his majesty commanded me to go to Ra – Henu “Wadi Hammamat” to bring back monuments).²

The link between Wadi Hammamat and the Red Sea was obvious in two inscriptions from the 11th Dynasty that mentioned *wAD wr* (the Red Sea).

- The first inscription dates to year 8 of Montuhotep III's reign, in which the administrator Henu was sent to bring incense from Punt through the port of Mersa Gawasis and in his way back he returned via Wadi Hammamat.³
- The second Inscription dates to year 2 of Montuhotep IV, in which Seankh went to Wadi Hammamat for an inspection mission in the desert from the valley to the *wAD wr* (the Red Sea) that was mentioned here as the limit of a territory. Therefore, Wadi Hammamat was a stopover en route in Seankh's way to the harbor most probably due to the bekhen stone quarries that were a destination for numerous expeditions during his reign.⁴

Besides, the 12th Dynasty is very much represented in Wadi Hammamat as well as Mersa Gawasis especially the period of Senusret 1st reign. The largest number of inscriptions was found in Mersa Gawasis mentioning the name of the 12th Dynasty Harbour “*SAWW*” (Most likely Mersa Gawasis).

The expedition of year 38 of Senusert I, clearly proves the links between the missions in Wadi Hammamat and the Harbour of Mersa Gawasis. An inscription describes a certain Ameny as leading a very important company composed of 200 oarsmen (*Hnw*) and 60 fishermen (*wHa*), that can be explained by the fact that the aim of the mission was to go towards the sea rather than staying in the middle of the desert.⁵

¹ Gasse, A. 2009: 134.

² For more about these epithets and their significance cf., Leprohon, R. J. 2001: 124 – 146.

³ The toponym (*R3 - hnw*) was mentioned in (Line 35), Couyat, J. and Montet, P. 1912: 81 ff., no. 114; For the complete translation cf., Leprohon, R. J. 2001: 128.

⁴ Farout, D. 2006: 229 – 247; Couyat, J. and Montet, P. 1912: 32, no. 1.

⁵ Goyon, G. 1957: 61.

Middle Kingdom inscriptions in Wadi Hammamat.

I - an inscription that dates to year 38 of Senusret II is superficially engraved in the rocks of Wadi Hammamat and excessively hard to read



Transliteration:

ii .n .i r h3st tn r ith inr n hm .f nsw – bity (h^c hpr R^c) s3 r^c (s n wsrt) ^cnh dt r nhh

m h^ct – sp 2 3bd (..) 3ht (sww 8)

h3 .n .i m htp m h^ct – sp (2) 3bd (1) prt (sww 4) m – s3 inr 200.

Translation:

I came to this desert to extract the stones for his majesty king of Upper and Lower Egypt (xa xpr Ra), son of Ra (Senusert) to be given life forever.

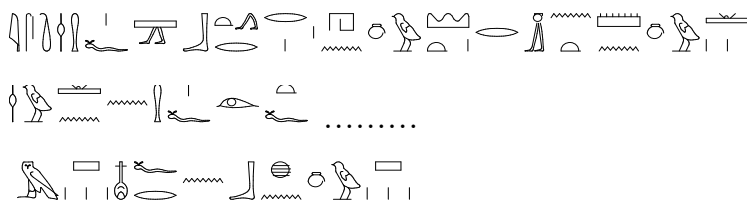
In the second year, second month of (Akhet) season, day (8).

And I returned back in peace in year (2), month (1), of (Prt) season, day (4) with 200 stones.

Comment

This inscription is one of the less frequent examples in hieratic written in columns which is most probably, a copy from a papyrus that closely follows inscription that dates back to the reign of Senusert I's reign however, with no reference to any relationship with the Red Sea.¹

II – Inscription of Senusert III (Line 2 - 5) ²



Ist wd hm .f sbt r R3 – hnw r int mnw wd .n hm .firt .f m inr nfr n bhnw.

His majesty has sent an expedition to (Ra - Hnw), Wadi Hammamat to bring the monument that he ordered to make of the good Bekhen stone. ³

¹ Couyat, J. and Montet, P. 1912: no. 87.

² Couyat, J. and Montet, P. 1912: no. 47; Seyfried, K. J. 1981: 253 – 254.

³ Translated by the researcher.

III – Inscription of Amenemhat III (Line 2 - 3) ¹



sbt hm .fr int n .fmnw m int R3 -hnw m inr nfr n bhnw r mn

His majesty has sent an expedition to bring a monument made of the good Bekhen stone for him from (Ra - Hnw), Wadi Hammamat ²

It is worth mentioning that the Middle Kingdom inscriptions engraved at Wadi Hammamat are all quite large and provide extremely detailed texts revealing that these expeditions enrolled sizeable companies which could count as many as 17.000 men. ³

Title “*wḥmwImny*” in the inscriptions of the (Herald Ameny)

The title (*wḥmw*) is one of the most prominent epithets mentioned and repeated in the Middle Kingdom inscriptions of Wadi Hammamat. Therefore, the researcher has chosen this epithet due to its importance as a part of the administrative pyramid of the expeditions sent to Wadi Hammamat during the Middle Kingdom.

Example: Inscription of the Herald Ameny (22 lines) that dates to the reign of Senwesret I, Year 38.

¹ Couyat, J. and Montet, P. 1912: no. 48.

² Translated by the researcher.

³ Goyon, G. 1957: 61.

The inscription is composed of:

- Royal Titulary.
- Titles of the official Ameny including the honorific title (Herald Ameny) that was repeated in some other inscriptions of which one is located in the port of Mersa Gawasis.
- Then the text ends with the horizontal lines that describe the autobiographical statement.¹

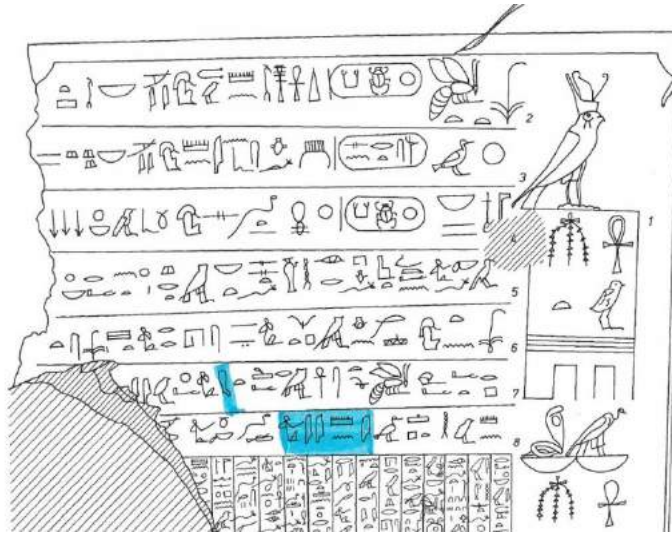


Fig. 191

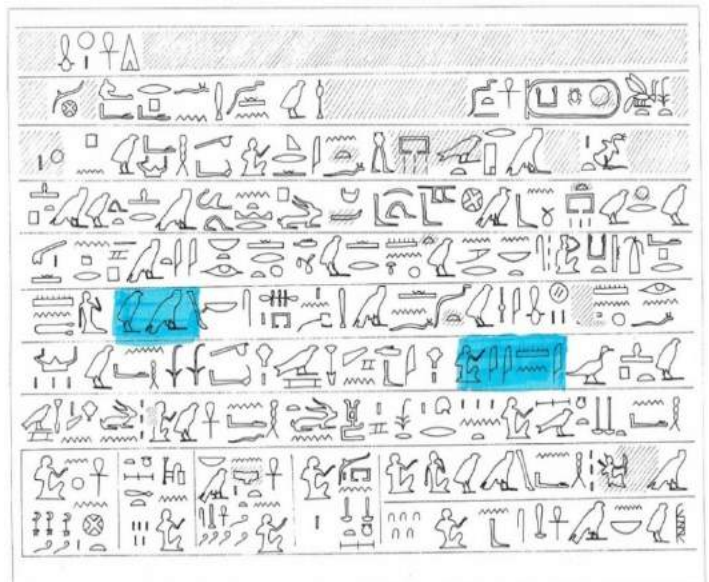
Inscription of the Herald Ameny.

After, Farout, D. 1994: Fig. 1.

Fig. 192

Stela of Wadi Gawasis.

After, Sayed, A. H. 1977: 170, pl. 16.



¹ Leprohon, R. J. 2001: 134; for the complete translation cf, Farout, D. 1994: 149 – 151.

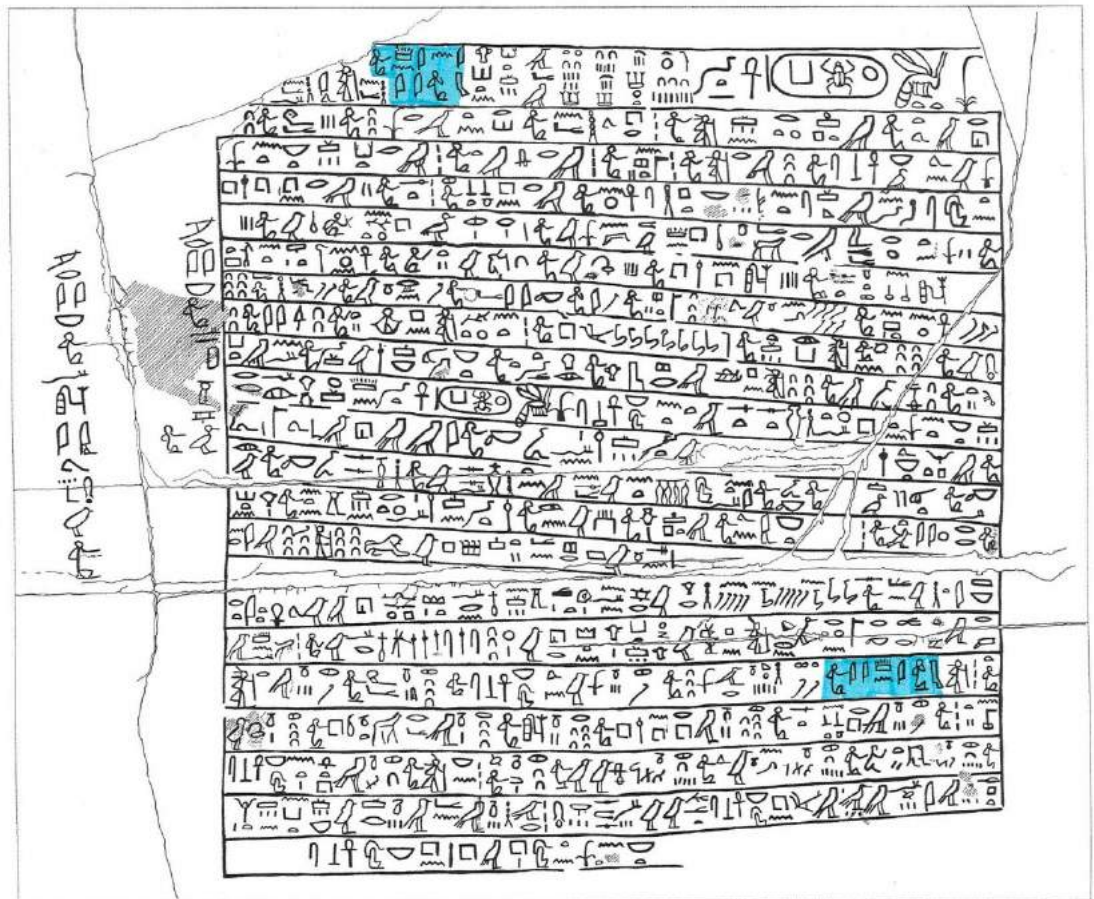


Fig. 193

Inscription of the Herald Ameny at Wadi Hammamat.

After, Farout, D. 1994: Fig. 2.

Concerning the title “*whmw*”, Ameny was the high officials that are positioned to form a head of judgment and to practice the juridical activities between the participants in the mission that can be understood through the epithet “*nty m sry .t hr wp .t t3 pn mi kd.f*” that means “the one who embodies the judiciary, in the whole country”. He held the title “*whmw*” in most of the inscriptions bearing his name which is not a rarity during the Middle Kingdom as the same title was repeated as well in:

- Inscription of the head of works *mry*: year 19 of Amenemhat III.
- Inscription of (*wri kr s3 wr*): year 11 of Senwesret II.
- Stela of an unknown: year 19 of Amenemhat III. ¹

The most frequent variant of the title was developed under the form “*whmw n rryt*” that means “deputy of the courtroom” who was a form of a judge in the quarrying site. The mission of the “*whmw*” can be concluded in supervising and judging the members of the expedition with an immediate direct execution of the sentences. ² Moreover, the term “*whmw*” can be translated as a “substitute” which is the meaning of “*whmw* of Ptah” or the Apis bull, the holder of such title was considered the substitute of the judge or who embodies the court in the quarrying site.³

Greywacke Quarrying activities during the Middle Kingdom

The following table summarize the inscriptions that mentioned the total number of members who participated in certain expeditions. ⁴

No	Date	Name / mission leader	Bibliography	Expedition members
1	Montuhotep III (8 th year)	<i>Imy – r pr .wy hd</i>	Couyat, J. and Montet, P. 1912: 114.	3.000
2	Montuhotep IV (2 nd year)	<i>Bty</i>	Couyat, J. and Montet, P. 1912: 1;40;55;105;110;113;191;192; 205;241. Goyon, G. 1957: 52;53;54;55;56;57;58;59;60;140.	10.000
3	Senusert I (16 th year)	<i>Imy – r^c mš^c</i>	Couyat, J. and Montet, P. 1912: 120;121;123;124. Goyon, G. 1957: 64.	5.000
4	Senusert I (38 th year)	<i>whmw</i>	Couyat, J. and Montet, P. 1912: 87. Goyon, G. 1957: 61;62;63.	17.000
5	Amenemhat III (19 th year)	<i>whmw n rryt</i>	Couyat, J. and Montet, P. 1912: 17;19;48;108.	2.000

¹ Couyat, J. and Montet, P. 1912: 41 – 42, no. 19: 72 – 73, No. 104: 76, No. 108.

² Ward, W. 1982: no. 744; The term “*whmw*” was translated as Judge in Berlev, O. 1971: 36.

³ Farout, D. 1994: 166 – 167.

⁴ Gonzalez – Tablas, J. 2014: 51; For more about the quarrymen inscriptions in Wadi Hammamat, cf., Sweeney, D. 2014: 275 – 291.

4.8.4. The Second Intermediate Period

The Second Intermediate Period is represented in Wadi Hammamat by a series of inscriptions that dates to the mining expeditions of Sekhemre Wadjkhaw Sobekemsaf I, who was a king of Egypt during the 17th Dynasty, one of these inscriptions is explicitly dated to his Year 7.¹



Fig. 194

Sobekemsaf's inscription in Wadi Hammamat greywacke quarries.

After, Photography of the researcher.

¹ For more about **Sekhemre Wadjkhaw Sobekemsaf I**, cf., Ryholt, K. S.B. 1997: 174; Dodson, A. and Hilton, D. 2004: 119; Gasse, A. 1987: 207 – 218.

4.8.5. New Kingdom

The New Kingdom is poorly represented at Wadi Hammamat, however royal statuary used commonly the greywacke (Bekhen stone) from the 18th Dynasty onwards. The reason why the New Kingdom is poorly represented in Wadi Hammamat is that the Egyptian rulers of the Old and the Middle Kingdoms had a more domestic approach. However, the New Kingdom kings had adopted an international sphere. Thus, the targeted regions for the procurement of Row materials during the New Kingdom can be divided into two groups:

- Expeditions along the Nile Valley and into the adjacent regions.
- Expeditions and contacts with the foreign countries.

The first category which is our main interest includes the stone quarries to obtain building materials, stone for statues and vessels and mines to procure gold, galena, silver, tin, copper and other precious materials. Therefore, Expeditions were directed to Wadi Hammamat during the New Kingdom to bring greywacke, silt stone and green breccia, the natural cleavage of Bekhen stone facilitated work using levers to separate the blocks by means of stone hammers, in addition to other raw materials such as steatite, serpentine and granite. The main area of mining the Bekhen stone was concentrated between Bir Hammamat and Bir Umm Fawakhir.

The textual evidences allow a much better insight into the organization and work of the expedition party. Such as the case of Wadi Hammamat where the archaeological record is supplemented by inscriptions. For the New Kingdom, there is evidence for 36 inscriptions, almost all were carved on the southern side of the Wadi while quarrying activity took place on the North Slope, thus leaving space for the inscriptions and preserving them from damage. ¹

These inscriptions are also evidences for marching along this route to the Red Sea coast and shipping from there to the Sinai Peninsula. The earliest New Kingdom inscription dates to the reign of Thutmosis III, by Sn – nfr, the overseer of the gold country of Amun, that should have been inspecting the gold mining activities rather than the stone mining according to his title.

The next evidence dates to the time of Amenhotep IV, when May, the high priest leaded an expedition composed of nearly 253 soldiers to Wadi Hammamat so as to obtain the greywacke for a statue of the king. Most probably, the quarrying activities stopped till the end of the 18th Dynasty as the next written evidence appears in the form of cartouches and depictions of Sety I (who reused an earlier inscription of Amenhotep IV) as well as his son Ramses II who is only represented with a rock – carved cartouche. However, 12 inscriptions attested the fifth-year expedition of Sety II, that was followed by a time gap of 40 years until Ramses IV had sent a mission to Wadi Hammamat. ²

¹ Hikade, T. 2006: 153 ff.

² Hikade, T. 2006: 156.



A



B

Fig. 195

A. Sety I offering in front of Min in Wadi Hammamat.

After, Photographed by the researcher.

B. Cartouches of Ramesses II in Wadi Hammamat.

After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 22, p. 42.

Fig. 196

Cartouches of Ramesses II in Wadi Hammmat.

After, photography of the researcher.



Expeditions of Ramesses IV

Ramesses IV had ordered four expeditions to Wadi Hammamat that date from the first to the third regnal year.¹

I. First expedition

The first mission was sent just seven months after Ramesses IV, that was composed of 408 men under the leadership of the god's father of Amun (*wsr - m3t - R^c - R^cw - nht*) to obtain the stone for the manufacturing of statues.

II. Second Expedition

The second expedition took place just four and a half months later, of which only the inscription of the overseer of the priests and high priest of Montu "*tw - R^c*" has survived.²

III. Third Expedition

This mission was sent out three months later, of which an inscription of a certain "*Imn - htp*" is considered an important note as it gives an idea about the size of the stone blocks quarried of which one block measured 1.9 m x 1.3 m x 1.1 m, a size which is similar to that of a block registered on the Turin papyrus.³

This means that the blocks were suitable for statues, slightly smaller than life - size, casing or smaller objects.

IV. Fourth Expedition

This mission was the most extensive under Ramses IV and it took place in the third year of his reign. The expedition was composed of 9000 men.⁴

Stela of Ramses IV at Wadi Hammamat

Once the fourth expedition arrived to Wadi Hammamat, a huge rock stela was begun taking the classical form of a round - topped stela with a small depiction at the top of the king accompanied by Min, Horus son of Isis and Isis while offering Maat to the Triade of Karnak (Amun - Mut - Khonsu).

The text is structured in several paragraphs as follow:

First, the date and the royal titles followed by the eulogy stating the divine legitimacy of the king, his enthronement and his power in securing Egypt's borders against the Asiatic. Thus, he guarantees order and prosperity for the whole Egyptian territory. Then, comes the section that describes the king's journey to "*3 - ntr*", where a precious mountain lies and where the stela should be carved. Finally, large parts are dedicated to the participants of the enterprise and this part seems to have been copied from an administrative document.

¹ Peden, A. J. 1994: 15.

² PM, I: 323 - 324.

³ Harrel, J. A. and Brown, V. M. 1992: 87.

⁴ Hikade, T. 2006: 158 - 159.

The leader of the expedition was (*R^cw – ms – sw – nḥt*) the high priest of Amun and overseer of all works, supported by a staff composed of five sub leaders. ¹

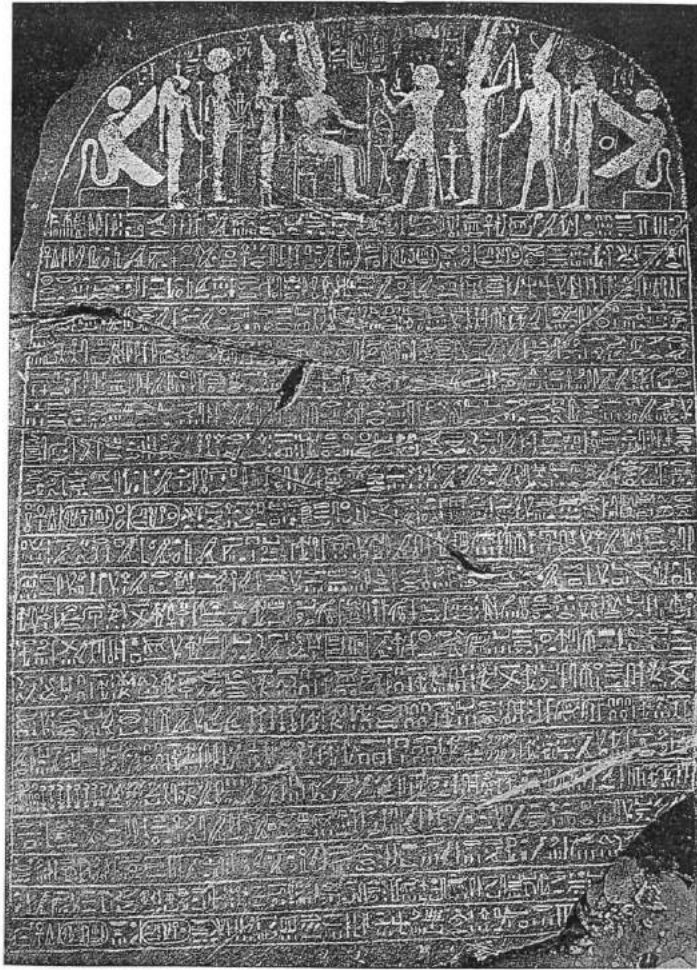


Fig. 197

Stela of Ramses IV at Wadi Hammamat.

After, Christophe, L. 1949: pl. 1.

¹ about (*R^cw – ms – sw – nḥt*) cf., Polz, D. 1998: 257 – 293.

Evolution of the hierarchy between the first and the fourth campaign of Ramses IV (1150 B.C.)

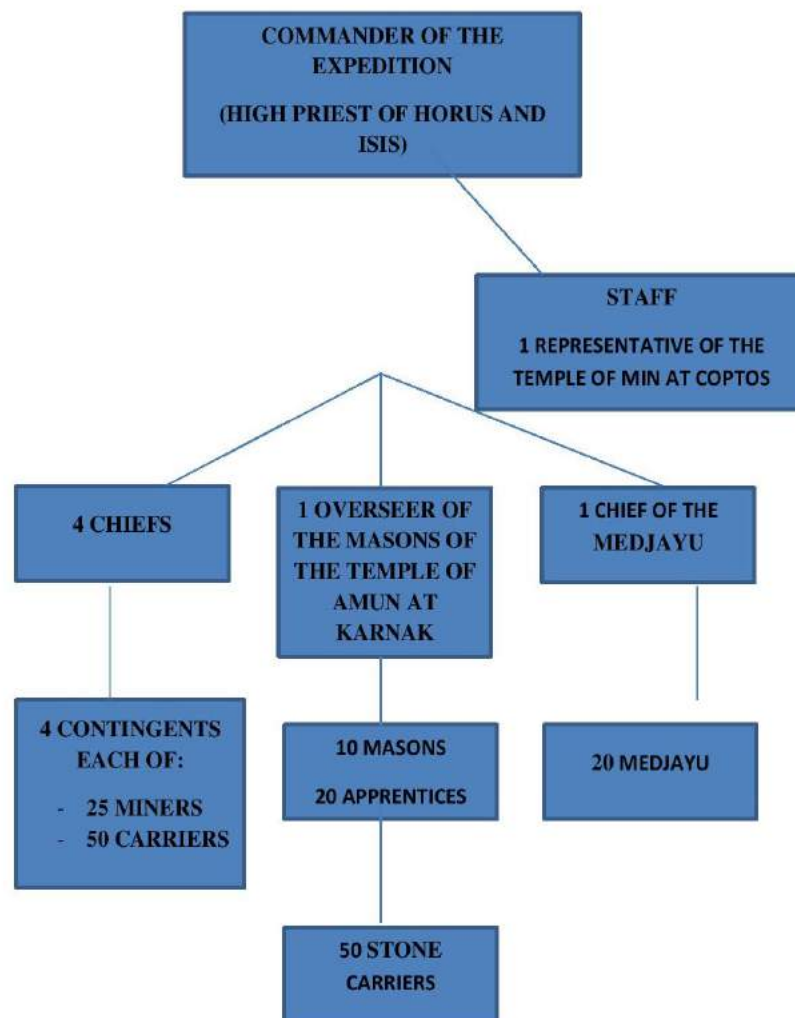


Fig. 198

Members of the first campaign of Ramses IV.

After, Hikade, T. 2006: 157, fig. 2.

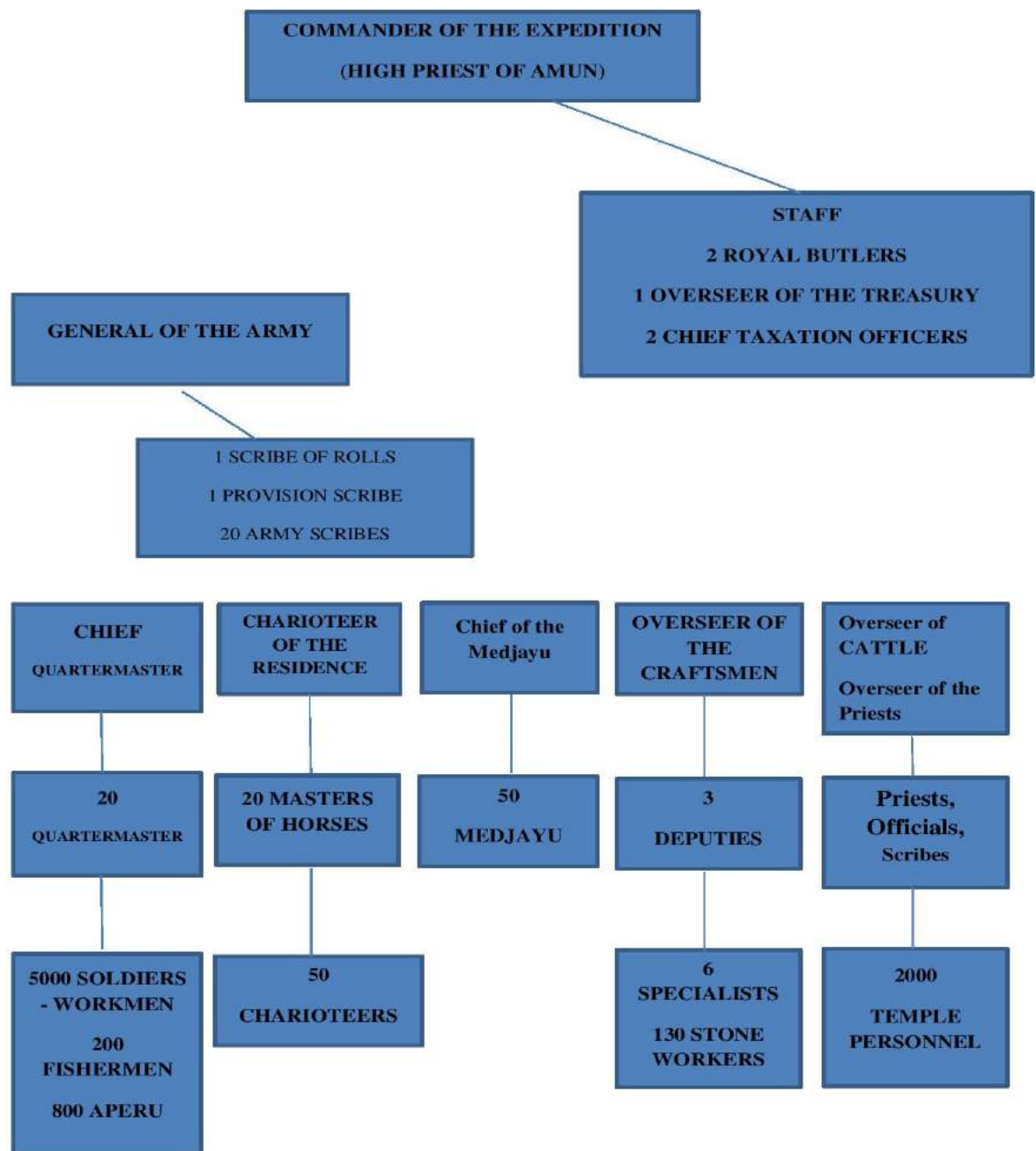


Fig.199
Members of the fourth campaign of Ramses IV.
After, Hikade, T. 2006: 160, fig. 3.

Bekhen Stone in Turin Papyrus

I. Bekhen Stone Quarry

The quarry is represented by the small embayment on the inside of the large curve in the wadi on the fragment that shows a close up of the Bekhen stone quarry represented as light – colored ovals at the inside edge of the curve and the adjacent tree in the wadi.¹

On the map fragments A and H, within the main valley represented by multi-coloured dots, there are three small drawings of trees, that can be identified as tamarisks. The tree on fragment H which is drawn upside – down is just opposite the Bekhen – stone quarry (the green oval at the base of the brownish black hill) and at the center of the sharp bend in the valley.

On the ancient map, this is the only major bend in Wadi Hammamat prior to its confluence with Wadi Attallah. However, Wadi Hammamat has many sharp bends as well as wide meanderings. Because the ancient map was drawn on a papyrus scroll therefore, most probably that the author did not have the freedom to show the true wandering course of Wadi Hammamat and so included only the most important bend, which is the one near the bekhen stone quarry.

Textual content of the map, written in hieratic script is of great importance to identify the features shown on the map of which our main interest in this part of the study is:

- Text 17 on fragment (E): the distance between the Bekhen stone quarry and the gold mines.
- Texts 20 on fragment (H): The Bekhen stone quarry.
- Texts 23 and 25 – 28 on fragments (M – P): the sizes of the quarried Bekhen stone blocks.
- Text 18 on fragment (F): the purpose of the map as it refers to a Bekhen stone quarrying expedition and the destination of the quarried blocks.²

¹ The text that refers to a place in which they work in the great business of Bekhen stone and which was established as a quarry, see Harrell, J. A. and Brown, V. M. 1992: 87; about the Bekhen stone quarry as one of the features shown on the map cf., Harrell, J. A. and Brown, V. M. 1992: 97.

² Harrel, J. A. 2016: 1294 – 1296.

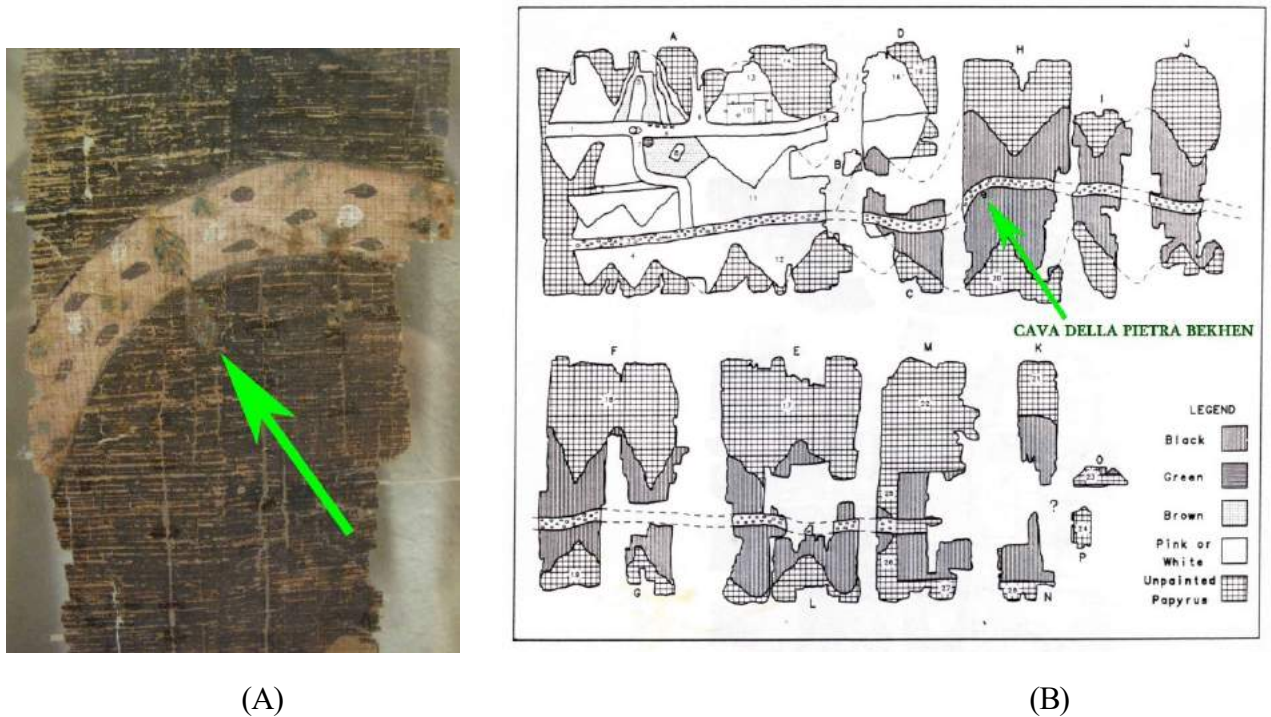


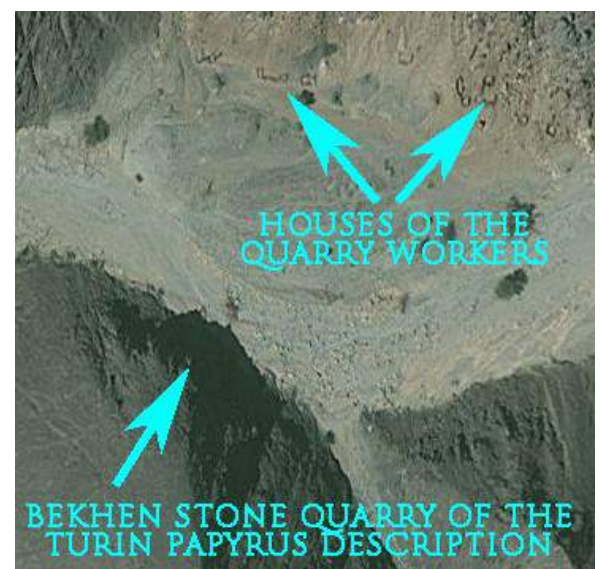
Fig. 200

(A) The Bekhen stone quarry in the Turin papyrus map. After, Harrel, J. A. and Brown, V. M. 1992: 98, fig. 5

(B) The ancient map of Wadi Hammamat. After, Harrel, J. A. and Brown, V. M. 1992: 84, fig. 3; <http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin>

Fig. 201

Site of the Bekhen stone quarry and the houses of quarry workers corresponding with the sites indicated on the Papyrus map



After,

<http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin>

Comments on the greywacke context of the map

- The interior of the embayment is colored greyish – green (the color of Bekhen stone “greywacke”).
- The embayment may be a depiction of the small tributary wadi in the Northwest corner of the quarry or perhaps. It is the quarrying site personally selected by Ramses IV as proclaimed in his year 2 stela, as the members of this expedition inscribed a fine rock stela and six lines of hieratic graffiti.¹
- The Bekhen stone quarry is shown on the papyrus map inside the sharpest bend in the wadi. This bend in Wadi Hammamat occurs at the eastern end of the quarry, exactly as drawn by the ancient scribe.
- The accuracy of the map is further attested through the placement of the boundary between the pink and the black hills as the geologic contact between the sedimentary rocks (black hills) and the igneous/metamorphic rocks (pink hills) is located in the same relative position between the quarry and Wadi Atalla on both the modern and the ancient maps.²

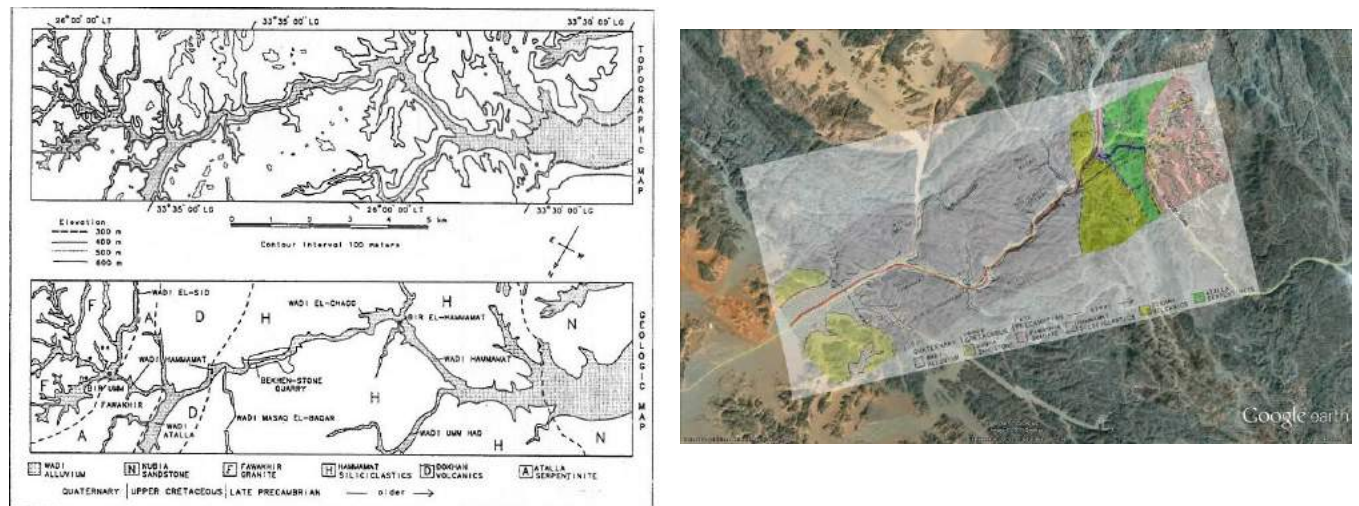


Fig. 202

(A) The modern map of Wadi Hammamat. After, Harrel, J. A. and Brown, V. M. 1992: 94, Fig. 4.

(B) Interpretation of the Turin mine Papyrus georeferenced on Google Earth® image, the colours correspond as reported in the Papyrus and result consistent with the main geological units. After, Coli, M. and Baldi, M. 2013: 11, fig. 2.

¹ According to the stela, the objective of this mission was Bekhen stone for a monument in the place of eternity (a region in the west Theban necropolis), one of the accompanying lines of graffiti text is of particular interest in that it may record the dimensions of this monument. Cf., Peden, A. J. 2001: 125; Couyat, J. and Montet, P. 1912: Nos. 231 – 236.

² Harrell, J. A. and Brown, V. M. 1992: 97.

II. Blocks of quarried Bekhen stone

The black rectilinear forms visible on the recto of fragments “M”, “N”, “O” and “P” (fig. 200 B) appear to be representations of blocks of quarried Bekhen stone. The associated texts are clearly giving the dimensions of cut blocks. Two other texts refer to the hauling of a block of stone or mention bekheny. There are three blocks illustrated. If they were drawn as rectangles, then it is quickly seen that fragment “N” cannot be fitted to either of the two blocks on “M”, and if the spacing between these two blocks is held constant, then fragment “O” cannot contain parts of these same two blocks. Thus, it seems that the papyrus map contains a pictorial list, complete with dimensions, of blocks of Bekhen stone that had either been quarried or were going to be quarried. It is interesting to note that the black areas of fragment “M” look as if they were intended to represent a region of dark rocks through which the wadi passes.

The wadi appears to be opening westward into a black box exactly as depicted on fragment “M” according to an observer on the ground looking eastward toward the narrow entrance to wadi Hammamat (at the contact between the Hammamat siliciclastics and Nubia sandstone), the source of the black color in the rocks is the purplish – black desert varnish (manganese oxide) on the outcrop surfaces of the Nubia sandstone. While there is no question that the black rectilinear forms on the papyrus map represent blocks of bekhen stone, it is still wondered if the scribe did not purposely compose a drawing that also illustrates the western approaches to wadi Hammamat.¹

Summing up the above-mentioned facts about the the Turin Papyrus map, it can be assumed that:

The Turin Papyrus was created as a topographical and geological map of Wadi Hammamat focusing on both the gold mines of Bir Fawakhir and the Bekhen stone quarry. The papyrus drawn during the reign of Ramesses IV (1151 – 1145 B.C.) was estimated to be an illustrated guide and record of the king’s third year quarrying expedition to Wadi Hammamat. The author was the scribe of the tomb, Amennakhte, son of Ipuy. Amennakhte was also the chief administrator officer of Deir El – Medina in the Theban necropolis where the builders of Ramesses IV’s tomb lived, perhaps the Bekhen stone monuments were planned for the tomb therefore, Amennakht and his workmen were involved in the expedition to Wadi Hammamat that was most likely the reason why he was drafted to create the map.

¹ Harrell, J. A. and Brown, V. M. 1992: 100.

Greywacke Quarrying activities during the New Kingdom can be summarized chronologically as follow: ¹

No	Date	Name / mission leader	Publication
1	Thutmosis III (18 th Dynasty)	<i>sn – nfr</i>	CM 203
2	Year 4, month 3, 3 ^{ht} day 10 of Amenhotep IV (18 th Dynasty)	<i>Mry</i>	G 90
3	Year 4, month 3, 3 ^{ht} day 10 of Amenhotep IV (18 th Dynasty)	<i>Mry</i>	G 91
4	Year 4 of Amenhotep IV (18 th Dynasty)	<i>ʿnhw mnw nht</i>	G 93
5	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	G 95
6	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	CM 46
7	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	CM 239
8	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	CM 246
9	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i> <i>p(3) n ʿnk.t</i>	G 99
10	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	CM 129
11	Year 5 of sety II (19 th Dynasty)	<i>p3 rʿw m hb</i>	CM 247 a
12	Year 5 of sety II (19 th Dynasty)	<i>Nfr htp</i> <i>p3 rʿw m hb</i> <i>p(3) n ʿnk.t (fʿther qf p3 rʿw m hb)</i>	G 96
13	Year 5 of sety II (19 th Dynasty)	<i>Nb mrwt.f</i> <i>P3 n ʿnk.t</i> <i>p3 rʿw m hb</i>	CM 221
14	Year 5 of sety II (19 th Dynasty)	<i>P3 n ʿnk.t</i>	G 97
15	Year 5 of sety II (19 th Dynasty)	<i>P3 n ʿnk.t</i>	CM 130
16	Year 5 of sety II (19 th Dynasty)	<i>hry</i>	CM 131

¹ CM. stands for, Couyat, J. and Montet, P. 1912; G. stands for, Goyon, G. 1957.

17	Year 1 of Ramses IV (19 th Dynasty)	<i>Wsr m3^ct r^cw nht</i>	G 89
18	Year 1 of Ramses IV (19 th Dynasty)	<i>t3 - R3</i>	CM 86 a
19	Year 2 of Ramses IV (19 th Dynasty)	No name preserved	CM 240
20	Year 2 of Ramses IV (19 th Dynasty)	No name	CM 231
21	Year 2, month 2 (Axt), day 2 of Ramses IV (19 th Dynasty)	<i>Imn htp</i> (scribe) <i>p3 snr</i> (scribe)	CM 234
22	Year 2, month 2 (Axt), day 2 of Ramses IV (19 th Dynasty)	<i>Imn htp</i> (scribe)	CM 235
23	Year 3, month 1 (Smw), day 26 of Ramses IV (19 th Dynasty)	<i>Pn iry r^cw ms sw</i> <i>Mry ddt</i> <i>r^cw ms sw nht</i>	CM 223
24	Year 3, month 3 (Smw), day 27 of Ramses IV (19 th Dynasty)	<i>R^cw ms – sw ^cs3 hb sd</i> <i>hry</i> <i>Wsr m3^ct R^cw nht</i> <i>R^cw ms sw nht</i> <i>Wsr m3^ct r^cw shpr</i> <i>Nht imn</i> <i>h^cy m try</i> <i>h^cy m try</i> <i>imn msw</i> <i>b3k n hnsu</i> <i>nht imn</i> <i>šnr</i> <i>R^cw ms sw nht</i> 20 men 20 men <i>h^cy m mnr</i> 20 men 50 men 50 men 5.000 men 200 men 800 men 2.000 men 1 man 50 men <i>Nht imn</i> 3 men 130 men 2 men 4 men	CM 12

25	Year 3, month 2 (Smw), of Ramses IV (19 th Dynasty)	No name	CM 222
26	Ramses IV (19 th Dynasty)	<i>Wsr m3^ct r^cw nht</i> <i>Wsr m3^ct r^cw snb</i>	CM 238
27	Ramses IV (19 th Dynasty)	<i>Nfr htp</i>	G 100
28	Ramses IV (19 th Dynasty)	<i>š3 iht</i> <i>r^cw</i>	G 101
29	Ramses IV (19 th Dynasty)	<i>hns w</i>	CM 220
30	Ramses IV (19 th Dynasty)	<i>hrw</i> <i>B3k n m3^ct</i>	CM 218
31	Ramses IV (19 th Dynasty)	<i>p3 r^cw m hb</i> <i>šk^c p3 šw it .f</i> <i>p3 r^cw m h3t</i> <i>imn msw</i>	G 98
32	Ramses IV (19 th Dynasty)	<i>Imn msw</i>	G 104
33	18 th – 20 th Dynasty	<i>Wsr h3t mnw</i>	G 92
34	18 th – 20 th Dynasty	<i>hwy</i>	G 94
35	18 th – 20 th Dynasty	<i>Nfr</i>	G 102
36	Non-determined	<i>šry nfr</i> <i>hrw ii</i>	G 105

The desire for larger greywacke products, such as life-sized statues and sarcophagi, increased by the mid third millennium BC. The rather sketchy consumption record shows an ebb and flow until a peak in the Late Period (mid first millennium, c. 664–380 BC). ¹

4.8.6. The Persian Period

Distribution of larger products expanded dramatically when Egypt was annexed into the Persian Empire. A greywacke statue of Persian king Darius found at Susa has been securely provenient from Wadi Hammamat. ²

Fig. 203

Greywacke statue of king Darius 1 at Susa,
discovered 1972 and preserved now in the
National museum of Tehran.

After, http://www.livius.org/sus/susa/susa_statue_darius.html;

Van De Mieroop, M. 2015: 322, fig. 15.4.



¹ Aston, B. et al. 2000: 58.

² Klemm, D. and Klemm, R. 2008: 302; Trichet, J. and Poupet, P. 1974: 57 – 59.

4.8.7. The Ptolemaic Period

Few number of statues distributed in the museums all proved the interest of the Ptolemies in the greywacke of Wadi Hammamat such as:

- A statue of a Ptolemaic Prince that dates back to the Late Ptolemaic Period around 50-30 B.C. preserved in the Ancient Near Eastern art collection of the Brooklyn museum.
- A Ptolemaic Feet from statue of Musician of Amun Tasheritkhonsu, that dates back to the Ptolemaic Period around 322 – 30 BC. Discovered in Assiut (Lykopolis) and preserved in the Metropolitan Museum of Art.
- A Greywacke head from a statue of a Ptolemaic queen that most probably dates back to the second century BC. preserved in the British Museum.



A



B



c

Fig. 204

Ptolemaic greywacke statuary.

A. A statue of a Ptolemaic Prince. After,
<https://www.brooklynmuseum.org/opencollection/objects/3603>.

B. A Ptolemaic Feet. After,
<http://www.metmuseum.org/art/collection/search/552002>.

C. A Greywacke head of a Ptolemaic queen. after,

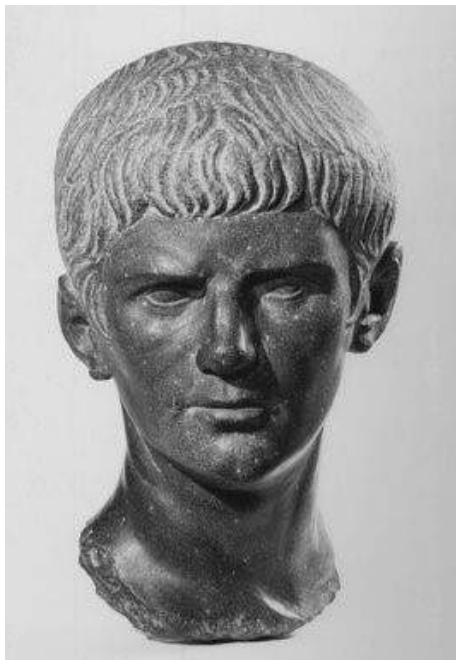
Arslan, E.A. (ed.) 1997: 96, no. III.2 (Isis); Ashton, S. A. 2001: Appendix 3.4 (Cleopatra I or II).

4.8.8. The Roman Period

Greywacke consumption declined and by the Roman Period, tastes had shifted to the green conglomerate, which until this point had only been minimally consumed. However, indications of the Roman presence in the area. On a high hill top to the north of and overlooking the western quarry, there is a Roman Skopelos or signalling tower, and 1.2 km southwest of the quarry, at Bir El – Hammamat, there is a Roman *hydreuma* or fortified watering station.¹

Greywacke sculpture continued either for the statuary or the minor art such as:

- greywacke Roman portrait head of a young man with part of shoulders near to neck, the bust dates to the period between 10 B.C. - 20. B.C. the statue comes from Rome and is preserved in the Ancient Near Eastern Art collection of the Brooklyn museum.
- Greywacke non-Inscribed scarab that dates to the Roman Period about 30 BC. preserved in the Metropolitan Museum of Art.



A



B

Fig. 205

Roman greywacke statuary.

A. Roman bust. After,
<https://www.brooklynmuseum.org/opencollection/objects/89629>.

B. greywacke scarab. After,
<http://www.metmuseum.org/art/collection/search/552319>.

¹ Zitterkopf, R. E. and Sidebotham, S. E. 1989: 155 – 189.

Traces from the Roman *hydreumata* refer to the use of Wadi Hammamat either for the greywacke extraction or as a fortified stop along the commercial way. However, little of this Roman *hydreuma* remains except the line of the badly damaged perimeter walls visible on the surface. In the center of the station there is a hexagonally shaped well with descending closed spiral staircase of a later period. Windows open from the stairway onto the well at intervals.

The eastern station wall contains the remains of a niche indicating that a church or mosque subsequently had been built there. The wall containing this niche was built in front of the old station wall and at a slightly different angle off the orientation of Mecca, if the niche is a “Muhrab”.¹ Moreover, several incomplete broken sarcophagi lay in the courtyard, in addition to a fragment at the well entrance bearing a number of names. Any resurgent interest in consuming either of these stones in modern times has been connected only with the export of the green conglomerate to Italy in the 1960s.²

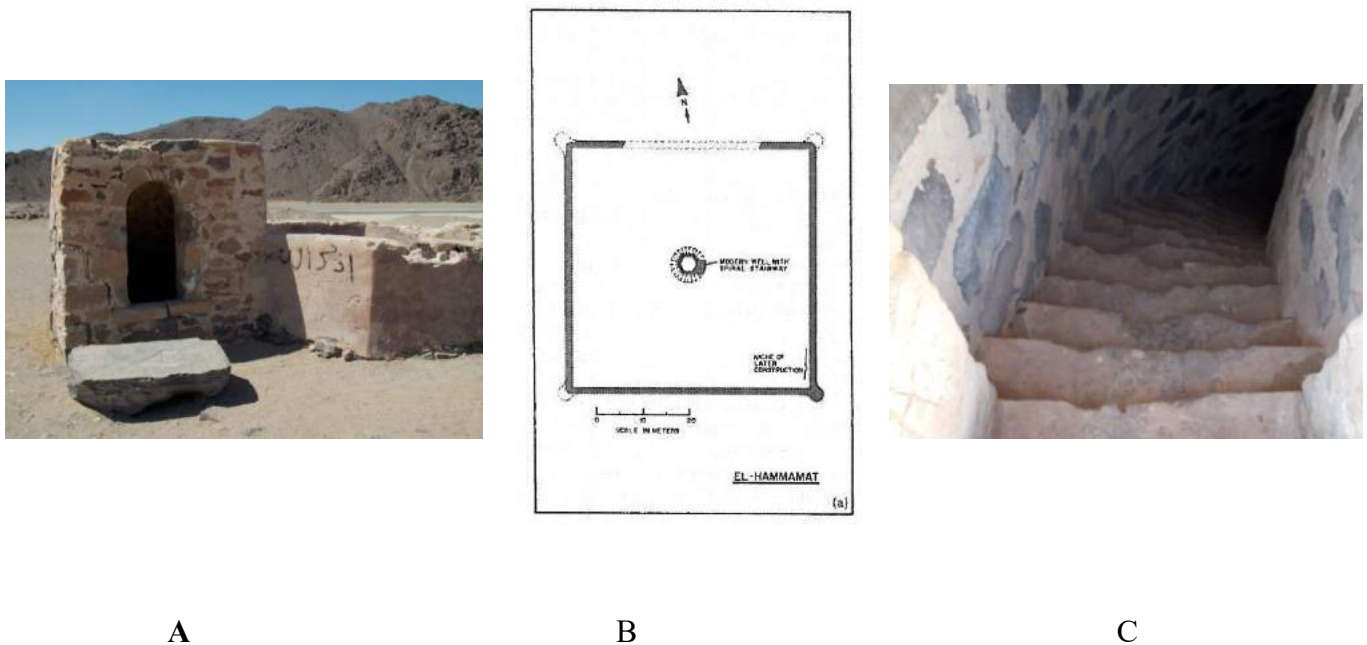


Fig. 206

Well of the Hammamat Roman *hydreuma*.

A, C. photography of the researcher

B. After, Zitterkopf, R. and Sidebotham, S. E. 1989: fig. 4a.

¹ Part of the mosque that indicates the orientation of Mecca.

² Klemm, D. and Klemm, R. 2008: 304.

4.9. Quarrying Phases

Through the analysis of some Middle and New Kingdom inscriptions, a clear idea is formulated about the various working steps and hierarchy of the working organization as follow:

4.9.1. Extraction

Once the expedition arrived to Wadi Hammamat, workers started the most important stage of the mission which is the extraction and transportation of the stone blocks. Extraction should have been done using the natural cracks in the stone, which made the process relatively easy. The first phase of work would have been carried out by the quarrymen (*lky.w*) and the stone masons (*hrtv.w ntr*). The number of these specialized workers is also unusually high, as is the overall size of the workforce. Once the suitable block was found, the quarrymen used hard-stone pounders or mauls to knock out rock masses following these natural cracks. The block used to be separated from the bedrock with the help of wooden levers and hard – stone hammers.¹

Studying the stone tools found in the small-block quarries and workshops, a consistent use of both local and regional materials for tools used to extract and finish greywacke products was elaborated. Locally, two greywacke tool quarries, with the work areas for the production of highly crafted chisels and wedges were identified, located in close proximity to the small-block quarries. However, dolerite, chert and silicified sandstone tools were produced from non – local materials, and therefore had to have been brought into the quarries from other (regional) sources. So far possible origins of the chert can be established in: one source located about 50 km east of the quarries at Gebel Duwi near the Red Sea coast, and another 75 km west, near Abydos.²

The imported stones came in as finished tools or as raw material that must be fully worked, although preliminary analysis suggests that some of the chert tools were worked from cobbles in the stone workshops. The crescent-shaped drills might well have been brought into the quarries as finished artefacts, as no corresponding debris for this size of object can be identified.³

¹ Arnold, P. 1991: 32 – 33.

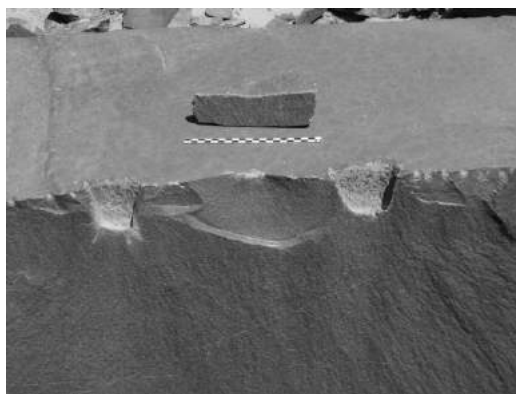
² Bloxam, E. *et al.* 2014: 20–24.

³ Bloxam, E. 2015: 796.

Existing techniques were simply enhanced, rather than being radically transformed. Production techniques deployed local greywacke tools (both as chisels and wedges) that left the long lived pointed pit tracks (from the chisels), but in the large-block quarries these begin to combine with the characteristic ‘u’ - shaped holes made for wedges as a necessary step towards controlling splitting for bigger objects. ¹

The recent discovery of wedges of greywacke therefore gives us a contrary perception to the long-held view that the “wedging technique” was a development in quarrying technology linked with the introduction of metal tools/wedges by the mid–late first millennium BC. Correspondingly, the suites of stone tools do not display the diversity in form or materials, but instead, there is a contraction to just local greywacke and non-local dolerite which was shaped into hammers and pounders. ²

The traditional view is that the wedging technique is usually connected with later phases of quarrying, around the mid to late first millennium BC, when metal (iron) technology is believed to have superseded the more “primitive” use of stone tools, reaching its zenith in the Roman Period. also, known as iron-wedge technology, metal wedges were supposedly inserted into ‘u’-shaped holes, then hammered until the rock split. This technique leaves behind the highly characteristic trapezoidal tool marks/tracks that are most commonly seen in the Roman Period, of which examples can also be seen at the Aswan granite quarries.³



A



B

Fig. 207

Different phases of stone splitting and extraction.

A. After, Bloxam, E. 2015: fig. 7.

B. photographed by the researcher during the 2015 survey in Wadi Hammamat.

¹ Bloxam, E. 2015: 799.

² Shaw, I. 2010: 109 – 124; Bloxam, E. and Storemyr, P. 2002: 29 - 31.

³ Harrell, J.A. and Storemyr, P. 2009: 29; Klemm, D. and Klemm, R. 2008: 247.

Crucially, few evidences of furnaces or other such installations relating to metallurgy at Wadi Hammamat were found. Despite, copper was mined in the area, particularly during the Persian Period (27th Dynasty), there is no clear connection with tool production. Rather than metal tools that represented the technological transformation to quarry large blocks, the use of fire-setting may have been crucial. Although no precise date for the introduction of fire-setting technology was determined, this long-lived, and highly skilled, technique was widely deployed to quarry hard stones such as granite (Aswan), gneisses (Gebel el-Asr) and silicified sandstone (Aswan) in Egypt from at least the mid third millennium BC.¹

The technique became much more visible during the transformation to large-scale procurement of resources by the early Old Kingdom, it was used to extract, exfoliate and split hard stones into large blocks and rough-outs, these processes left behind considerable ashy deposits containing charcoal. In Wadi Hammamat this waste can lie up against the rock faces and in some instances, it was used to create walls around deeper extractions. One of these walled quarries was re-used by the late First Millennium BC. as a secluded setting for the veneration of the local god Min and is variously known as the 'Chapel of Nectanebo', 'Shrine to Min' or 'Paneion'.

¹ Haldal, T. and Storemyr, P. 2015: 291 – 295.

4.9.2. Transportation

After the block was extracted, it was slid down the hill until it reached the wadi floor, an operation for which the construction of ramps was necessary to facilitate the descent of the blocks. The logistics of transporting large blocks out of the quarries meant that transport infrastructure appeared at the point when objects were no longer finished *in situ*. Ramps constructed from quarry waste, rather than paths, became a new aspect of the transformed landscape, these leading down from some quarries and working platforms where objects were semi-finished into rough outs.¹

The transport of the stone blocks consisted of three different stages:

1 - Descent of the blocks to the wadi level.

2 - Horizontal overland transport.

This phase was performed by using wooden sledges and some of these sledges have been well preserved.²

3 - River transport.

The main task of the unskilled workforce was undoubtedly:

1 - Transporting the stone blocks to the Nile Valley.

2 - Building structures such as ramps.

3 - Clearance of debris generated by the extraction works.

These functions were attested by inscription no. 87 in which the term (*Ith.w*) was used to describe the transportation of the stone blocks.



A



B

Fig. 208

A. Sledge from Lisht South, Complex of Senwosret I, north of pyramid 2, Deposit 4, MMA excavations, 1923–24. After,

<http://www.metmuseum.org/art/collection/search/545485>.

B. The term (*Ith.w*). After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 87: 64 ff., pl. XX.

¹ Bloxam, E. 2015: 799, fig. 9.

² An example can be found in the New York Metropolitan Museum of Art (MMA 24.1.84); Arnold, P. 1991: 276, fig. 6.36.

Once the Bekhen stone blocks were on the wadi floor, they had to be carried to the Nile valley through a desert route of about 83 km until the expedition reached the town of Coptos and from there, the blocks were embarked on ships and transported to their destination. The roads should be lubricated, therefore, some workers oversaw throwing water to the ground to lubricate it, while other workers had to carry the water jars, the ropes and other tools necessary to ensure the arrival of the blocks to their destination. In addition to, the transportation of quarrying tools, supplies and small pieces of greywacke that were most likely taken. This operation should consider the weight, the terrain slope, the climatic problems, the transport of supplies and the transport across non – lubricated surfaces which would have required more workers in addition to the use of animals which is well attested even if it is not mentioned in the inscriptions. ¹

4.9.3. Logistics of the Quarry Site

- The goods were perceived by the expedition members as a salary that could have represented a daily portion. These supplies were mostly provided by the royal granary (*šnwt*) except some meat pieces that would have been provided by the royal storerooms (*šnꜥ*).
- Other materials such as sandals, myrrh, and other necessities for the works came from the treasury.

I. The distribution of goods

The functionaries in charge of the distribution of all these goods during the works were the “scribes of the treasury” (*sš n pr - ḥd*) who appeared quite often in the inscriptions of the late Middle Kingdom. The fact that these officials were not so important in earlier times might be due to the process of centralization that the Egyptian administration experimented during the 12th Dynasty.

II. The water supply

These expeditions had to travel about 85 km through the desert. therefore, water was a crucial element of concern so, the most important hydrologic resource was the digging of wells along the way to Wadi Hammamat. The inscription of “Henu” during Montuhotep III’s reign is a good example of this activity when he stated “*ir .n (.i) ḥnmt 12*” (I made 12 wells). ²

¹ Arnold, P. 1991: 277; Barbotin, C. 2008: 223 – 226, doc. 22.

² Couyat, J. and Montet, P. 1912: 81 – 84 (114), line 13; Another evidence of digging the wells is attested in Goyon, G. 1957: 71 – 72, pl. 15; Gonzalez – Tablas, J. 2014:55.

4.9.4. The Use of Bekhen Stone

The uniqueness of Wadi Hammamat quarries is due to the relatively well preserved material traces of quarrying over a period lasting from the Pre-dynastic (fourth millennium BC) into the Roman Period (30 BC), complemented by a rich pictorial, iconographic and textual record engraved into the landscape over a corresponding time depth. Wadi Hammamat greywacke was one of the most highly prized stones in antiquity, because when cut and polished, it has a remarkably fine greenish-grey to brownish hue.¹

Trends in elite consumption can be broadly broken down into small objects (vessels, palettes, bracelets, beads), and larger objects (statues, coffins, sarcophagi, naoi) usually found in burial and votive contexts. It should also be noted that greywacke, like so many other hard stones, had an almost continuous utilitarian use as tools (e.g. chisels and wedges) primarily connected with the quarrying process.

Palettes, both cosmetic and ceremonial, were some of the first ornamental objects to be produced from greywacke, a trend that continued for thousand years since the mid–late sixth millennium BC. until the early– mid third millennium BC.²

By the mid-4th millennium BC the small object range increases to include bracelets and vessels, the latter becoming a more specific feature of early third-millennium BC. consumption.³

The use of Bekhen stone by the ancient Egyptians can be ascertained through:

I – An expert examination of the stone of certain ancient monuments, on which are inscriptions stating that they are made of Bekhen stone such as:

A. Stela preserved in Cairo Museum, general catalogue no. 70031

«I created this Bekhen stone naos for Horus, Isis, and Osiris on the great throne, the great god in his temple. ».

B. Small obelisk of Ramses II in Borély Museum, Marseille

«Horus; and he had made for himself [...] this obelisk in Bekhen stone and he placed it..»⁴

C. Small obelisk of Nectanebo II in the British Museum no. 523

«He built this obelisk in the Temple of Thoth in Bekhen stone and his pyramidion in black copper».⁵

¹ Bloxam, E. 2015: 794.

² Midant-Reynes, B. 2000: 192 – 194; Stevenson, A. 2009: 175–92.

³ Aston, B. 1994: 28 – 32; Debono, F. 1951: 77.

⁴ Varille, A. 1934: 96 – 98, no. 5.

⁵ <http://www.dariodelbufalo.it/i-have-located-the-bekhen-stone-quarries-in-relation-to-the-drovetti-papyrus-in-the-egyptian-museum-in-turin/?lang=en>

II - Sometimes, an example link between the above mentioned two ways, such as a scene of Nectanebo II, in wadi Hammamat showing Nectanebo II making an offering to these divinities (Min, Harpocrates and Isis) in a shrine.

A little to the lower right is another scene showing a naos containing the statue of Ptah with an obelisk behind him. This scene is not dated, but it is obviously associated with the adjacent scenes of Nectanebo I and Nectanebo II. ¹

This scene most probably represents an evidence for the material (greywacke) provenance of the two obelisks of Nectanebo II, preserved in the British Museum, no. 523 – 524, and mentioned in details in the following catalogue of greywacke objects in the British Museum.

Finally, before this study that is already based on previous separate studies, the meta-conglomerate was generally thought to be a strictly Roman stone and this is certainly when most of it is quarried. However, the evidence that the meta-conglomerate was most extensively quarried during the Roman period is somewhat indirect as Wadi Hammamat quarries were abandoned before the end of the 3rd century AD. so some greywacke objects are either reused Roman pieces or recut from them. Besides, most of the conglomerate quarried by the Romans was employed for columns that can be found in Paris, Cairo, Tunisia and Istanbul. ²

¹ Lucas, A. and Rowe, A. 1938: 140, Footnote, 1; Couyat, J. and Montet, P. 1912: 44, No. 29.

² Harrell, J. A. Brown, V. M. and Lazzarini, L. 2000: 214.

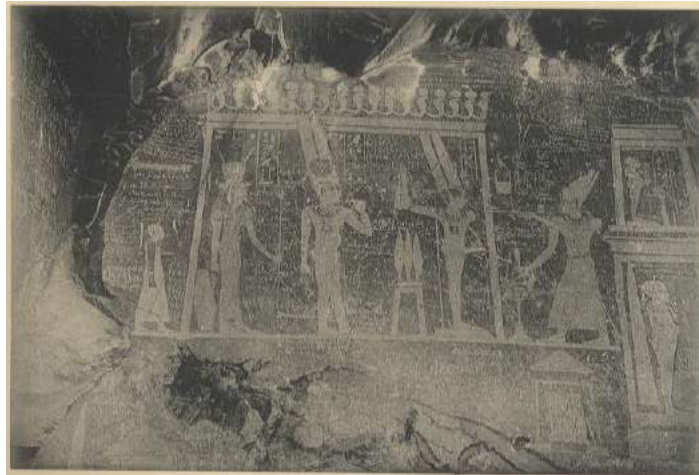


Fig. 209

A. Scene of Nectanebo II offering an obelisk in Wadi Hammamat.

After, Couyat, J. and Montet, p. 1912 – 1913: Inscription no. 29, pl. VIII.

B. Obelisk of Nectanebo II in the British Museum.

After, http://www.britishmuseum.org/research/collection_online

4.10. Chronological List of Greywacke Objects

The following list summarizes a catalogue of greywacke objects preserved in the museums around the world. This catalogue is prepared by the researcher as a part of the recent study to represent the variety of products sculpted from Wadi Hammamat greywacke and their chronological sequence such as:

Palettes: 35 pieces.

Minor arts (Amulets – scarabs – Jewelry - offering tables - Figurines – Ushabtis - Magical stelae): 21 pieces.

Statues: 88 pieces.

Utensils (Vases, tools, dishes, cups, trays, knives, vessels, bowls, Mace – heads): 24.

Sarcophagi: 10 pieces.

Obelisks, Naoi and architectural elements: 3 pieces.

Pre-dynastic and Early Dynastic Period		
No.	Object	Museum
1	Fragment of the Libyan Tribute Palette. Inv. no: (JE 27434 - CG 14238).	Egyptian Museum, Cairo, Egypt.
2	Narmer's Palette. Inv. no: (JE 32169 - CG 14716) Inv. no: (EA35714)	Egyptian Museum, Cairo, Egypt. British Museum.
3	Necklace from the Thinite age. Inv. no: (JE 87499).	Egyptian Museum, Cairo, Egypt.
4	Vase with names of Pharaohs. Inv. no: (JE 88345).	Egyptian Museum, Cairo, Egypt.
5	Basket-Shaped Tray. Inv. no: (JE 71298).	Egyptian Museum, Cairo, Egypt.
6	Statue of Khasekhem. Inv. no: (JE 32161).	Egyptian Museum, Cairo, Egypt.
7	Fish – Shaped Palette. Inv. no: (S.4956).	Egyptian Museum of Turin, Italy.
8	Geometric and Zoomorphic Cosmetic Palettes. Inv. no: (S. 604 - S. 605 - S. 606 - S. 618 - S. 619 S. 634 - S. 4955 - S. 4956 - S. 3959/3 S. 17504).	Egyptian Museum of Turin, Italy.
9	Rhomboidal Cosmetics Palette. Inv. no: (I.6)	National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.
10	Zoomorphic Cosmetic Palettes. Inv. no: (I.7)	National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.

11	Bird – Shaped Plaque. Inv. no: (I.8)	National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.
12	Rectangular Cosmetic Palette. Inv. no: (I.20)	National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.
13	Rectangular Cosmetic Palette. Inv. no: (I.40c)	National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.
14	Fish – Figured Greywacke Palettes. Inv. no: (E 22730 - E 22731 - E 24731 - E 32283 E 24728 - E 24724 - E 28061 - AF 6908).	Louvre Museum, Paris, France.
15	A Pre - dynastic Greywacke Palette. Inv. no: (E 27209 - E 14230 - E 17337 AF 6909 - E 10726).	Louvre Museum, Paris, France.
16	Pre – dynastic Greywacke Palettes. Inv. no: (E 24727 - E 24729).	Louvre Museum, Paris, France.
17	Model of a Piece of Meat. Inv. no: (E 17279).	Louvre Museum, Paris, France.
18	Base of a Palette. Inv. no: (E 11256).	Louvre Museum, Paris, France.
19	A Fragment of a Palette with an Ibex. (E 11648).	Louvre Museum, Paris, France.
20	The Hunter’s Palette. Inv. no: (E 11254).	Louvre Museum, Paris, France.
21	Greywacke Cup. Inv. no: (AF 9161).	Louvre Museum, Paris, France.
22	Palette Depicting a Pair of Mud Turtles. Inv. no: (10.176.78).	Metropolitan Museum of Art.
23	Greywacke Palette. Inv. no: (10.176.80).	Metropolitan Museum of Art.
24	Carved Ceremonial Palette. Inv. no: (28.9.8).	Metropolitan Museum of Art.
25	Fragment of a Ceremonial Palette. Inv. no: (33.159).	Metropolitan Museum of Art.
26	A Leaf – Shaped Dish. Inv. no: (19.2.17).	Metropolitan Museum of Art.
27	Libation Dish Depicting “Ka” Arms Presenting the Ankh-Sign. Inv. no: (19.2.16).	Metropolitan Museum of Art.
28	Inscribed Greywacke Dish. Inv. no: (68.15).	Metropolitan Museum of Art.
29	Fragment of Rectangular Palette. Inv. no: (05.261).	Boston Museum of Fine Arts.
30	Rhomboid Palette. Inv. no: (11.208).	Boston Museum of Fine Arts.

31	Double – Bird Palette. Inv. no: (11.226a-b - 11.228).	Boston Museum of Fine Arts.
32	Shield – Shaped Palette. Inv. no: (03.1488).	Boston Museum of Fine Arts.
33	Fish-Shaped Palette. Inv. no: (47.1639).	Boston Museum of Fine Arts.
34	Disc – Shaped Palette. Inv. no: (11.202).	Boston Museum of Fine Arts.
35	Sandal – Shaped Palette. Inv. no: (03.1484).	Boston Museum of Fine Arts.
36	Turtle - Shaped Palette. Inv. no: (47.1644).	Boston Museum of Fine Arts.
37	Rectangular Palette. Inv. no: (47.1637).	Boston Museum of Fine Arts.
38	Double Bird - Headed Palette. Inv. no: (47.1640).	Boston Museum of Fine Arts.
39	Rectangular Palette. Inv. no: (11.2496).	Boston Museum of Fine Arts.
40	Fragmented Knife. Inv. no: (UC35710).	Petrie Museum.
41	Group of Tools. Inv. no: (UC73456).	Petrie Museum.
42	Geological Sample. Inv. no: (UC26877).	Petrie Museum.
43	Palette. Inv. no: (UC25510).	Petrie Museum.
44	Palette. Inv. no: (UC26516).	Petrie Museum.
45	Vase. Inv. no: (UC41079).	Petrie Museum.
46	Fragmented Dish. Inv. no: (UC37034).	Petrie Museum.
47	Fragmented Vessel. Inv. no: (UC37042).	Petrie Museum.
48	Plant Leaf Model. Inv. no: (UC35653).	Petrie Museum.
49	Writing palette. Inv. no: (UC2475).	Petrie Museum.
50	Piece of a cup. Inv. no: (UC37048).	Petrie Museum.
Old Kingdom		
1	Two Unidentified Statues of king Chefren. Room 42.	Egyptian Museum, Cairo, Egypt.
2	Triads of Menkaure. Inv. no: (JE 40678 - JE 46499 - JE 40679).	Egyptian Museum, Cairo, Egypt.
3	Head of Userkaef. Inv. no: (JE 90220).	Egyptian Museum, Cairo, Egypt.

4	Bucket with a hole for suspension. Inv. no: (E 932).	Louvre Museum, Paris, France.
5	Kneeling Statuette of Pepy I. Inv. no: (39.121).	Brooklyn Museum, New York.
6	Model of the "Opening of the Mouth" ritual equipment. Inv. no: (07.228.117a–h).	Metropolitan Museum of Art.
7	King Menkaure and his queen. Inv. no: (11.1738).	Boston Museum of Fine Arts.
8	Bowl. Inv. no: (UC41083).	Petrie Museum.
9	Bowl. Inv. no: (UC17745).	Petrie Museum.
10	Mace-head. Inv. no: (UC19749).	Petrie Museum.
11	Palette. Inv. no: (UC18091).	Petrie Museum.
Middle Kingdom		
1	Head of a Sphinx of Sesostris III / Amenemhat III. Inv. no: (387).	National Archaeological Museum of Naples, Italy.
2	Statue of king Amenemhat III. Inv. no: (N 464).	Louvre Museum, Paris, France.
3	Head of a king. Inv. no: (E 10299).	Louvre Museum, Paris, France.
4	Head of a woman. Inv. no: (E 22756).	Louvre Museum, Paris, France.
5	Head of a man. Inv. no: (E 10757).	Louvre Museum, Paris, France.
6	Iay, Chief of the treasury. Inv. no: (N 870).	Louvre Museum, Paris, France.
7	Seated Statue of King Senwosret I. Inv. no: (25.6).	Metropolitan Museum of Art.
8	Offering table with statuette of "Se-hetep-ib". Inv. no: (22.1.107a, b).	Metropolitan Museum of Art.
9	Statuette of a striding man. Inv. no: (07.228.180).	Metropolitan Museum of Art.
10	Middle Kingdom reused statuette from Byblos. Inv. no: (68.101).	Metropolitan Museum of Art.
11	Middle Kingdom Head. Inv. no: (28.2.1).	Metropolitan Museum of Art.
12	Figurine. Inv. no: (UC14815).	Petrie Museum.
13	Dish. Inv. no: (UC41369).	Petrie Museum.

New Kingdom		
1	Standing Statue of Thutmosis III. Inv. no: (JE 38234 Bis – CG 42053).	Egyptian Museum, Cairo, Egypt.
2	Statue of Amenhotep II. Inv. no: (JE 36680 - CG 42077).	Egyptian Museum, Cairo, Egypt.
3	Statuette of the God Amun. Inv. no: (JE 38049).	Egyptian Museum, Cairo, Egypt.
4	Statue of Sety I as a Standard Bearer. Inv. no: (CG 751).	Egyptian Museum, Cairo, Egypt.
5	Statue of Thutmosis III. Inv. no: (JE. 36927 - CG. 42054 - J.2).	Luxor Museum.
6	Statue of Ramses III. Inv. no: (non - catalogued).	Luxor Museum.
7	Statue of a king with “Khat” headdress and Jubilee cloak. Inv. no: (1072).	National Archaeological Museum of Naples, Italy.
8	Scribe Paser and his wife resting on a bed. Inv. no: (E 925).	Louvre Museum, Paris, France.
9	May and Henut-nefer resting on a bed. Inv. no: (E 22144).	Louvre Museum, Paris, France.
10	Pseudo – palette of the vizier “Ptah-Mes”. Inv. no: (N 3026).	Louvre Museum, Paris, France.
11	Stela bearing the figures of the Gods of Thebes, Heliopolis and Memphis. Inv. no: (E 7717).	Louvre Museum, Paris, France.
12	Two Ushabtis of Ramses. Inv. no: (N 768 - N 743).	Louvre Museum, Paris, France.
13	Statue of Ramses IV. Inv. no: (EA1816).	British Museum.
14	Sarcophagus. Inv. no: (EA140).	British Museum.
15	Figurine. Inv. no: (UC14881).	Petrie Museum.
16	Sculpture Inlay. Inv. no: (UC46556).	Petrie Museum.
Third Intermediate Period - Late Period		
1	Cube statue of “Hor” son of “Ankh-khonsu”. Inv. no: (JE 37150).	Egyptian Museum, Cairo, Egypt.
2	Statue of Hathor and Psamtek. Inv. no: (CG 784).	Egyptian Museum, Cairo, Egypt.
3	Statue of Osiris. Inv. no: (CG 38358).	Egyptian Museum, Cairo, Egypt.
4	Statue of Isis. Inv. no: (CG 38884).	Egyptian Museum, Cairo, Egypt.
5	Statue of Taweret. Inv. no: (CG 39194).	Egyptian Museum, Cairo, Egypt.

6	Statue of the Vizier “Nespaqashuty”. Inv. no: (JE 36665).	Egyptian Museum, Cairo, Egypt.
7	Statue of “Ahmes” son of “Nespanebdjed”. Inv. no: (JE. 37075).	Egyptian Museum, Cairo, Egypt.
8	Head of Osiris. Inv. no: (J. 143).	Luxor Museum.
9	Bust of a High Official. Inv. no: (C. 3075).	Egyptian Museum of Turin, Italy.
10	Bust of a Male Statue. Inv. no: (C. 3078).	Egyptian Museum of Turin, Italy.
11	Bust of a Private Statue. Inv. no: (C. 1393).	Egyptian Museum of Turin, Italy.
12	Lid of the Sarcophagus of “Ibi”. Inv. no: (C. 2202).	Egyptian Museum of Turin, Italy.
13	Sarcophagus of the vizier “Gem-en-ef-her-bak”. Inv. no: (C. 2201/1-2).	Egyptian Museum of Turin, Italy.
14	Statue presenting a shrine (Naophore) of Royal Herald “Hor”. Inv. no: (C. 3026).	Egyptian Museum of Turin, Italy.
15	Inscribed Scarab. Inv. no: (C. 5993).	Egyptian Museum of Turin, Italy.
16	Statue of Osiris. Inv. no: (C. 30).	Egyptian Museum of Turin, Italy.
17	Head of a Royal Statue (Psmatik I). Inv. no: (S. 1225/2).	Egyptian Museum of Turin, Italy.
18	Head of a king wearing a “Nemes” headdress. Inv. no: (Unidentified).	National Archaeological Museum of Naples, Italy.
19	Portrait Head of an official. Inv. no: (388).	National Archaeological Museum of Naples, Italy.
20	Torso of an accountant scribe of the temple of Neith. Inv. no: (1067).	National Archaeological Museum of Naples, Italy.
21	A Fragment of a statue of “Shabaka”. Inv. no: (N 2541).	Louvre Museum, Paris, France.
22	Inscribed Fragment. Inv. no: (N 520).	Louvre Museum, Paris, France.
23	Statue of a man dedicated to Horus. Inv. no: (E 10709).	Louvre Museum, Paris, France.
24	Statue of a priest. Inv. no: (E 10777).	Louvre Museum, Paris, France.
25	Psamtik presents an image of Osiris. Inv. no: (E 9417).	Louvre Museum, Paris, France.
26	Selkis bearing Osiris. Inv. no: (E 20060).	Louvre Museum, Paris, France.
27	Two Statues of Osiris. Inv. no: (N 3952 - E 9418).	Louvre Museum, Paris, France.
28	Statuette of Isis breastfeeding Horus. Inv. no: (N 3991).	Louvre Museum, Paris, France.

29	Statue of “Ankh-ef-en-sekhmet”, Tutor of the king. Inv. no: (E 25459).	Louvre Museum, Paris, France.
30	Chief of the court “Iahmes - sa – Neith”. Inv. no: (E 25390 - E 25475).	Louvre Museum, Paris, France.
31	Statue of a man presenting an effigy of Osiris. Inv. no: (E 4299).	Louvre Museum, Paris, France.
32	Lid of the sarcophagus of “Djed – Hor”. Inv. no: (D 9).	Louvre Museum, Paris, France.
33	Statue of “Horoudja”. Inv. no: (N 2452).	Louvre Museum, Paris, France.
34	Statue of the steward “Hekat – ef – nakht” presenting Osiris. Inv. no: (E 25499).	Louvre Museum, Paris, France.
35	Head of Osiris. Inv. no: (E 10706).	Louvre Museum, Paris, France.
36	Block statue of the priest “Imnemptditipy”. Inv. no: (E 10366).	Louvre Museum, Paris, France.
37	Sarcophagus of “Tenet – Hapy”. Inv. no: (D 39).	Louvre Museum, Paris, France.
38	Head of a shaved man. Inv. no: (E 25577).	Louvre Museum, Paris, France.
39	Torso of king Nectanebo I. Inv. no: (E 25492).	Louvre Museum, Paris, France.
40	Statue of “Shepsesirdis”. Inv. no: (E 18967).	Louvre Museum, Paris, France.
41	Head of one of the believers of “Ptah”. Inv. no: (E 10710).	Louvre Museum, Paris, France.
42	Fragment of a votive monument. Inv. no: (E 32648).	Louvre Museum, Paris, France.
43	Heart Scarab. Inv. no: (08.480.168).	Brooklyn Museum, New York.
44	Fragment of the Feet and Base of a Statue. Inv. no: (79.31).	Brooklyn Museum, New York.
45	Head of King Amasis. Inv. no: (2007.81).	Metropolitan Museum of Art.
46	Naophorous Block Statue of a Governor of Sais, Psamtik (Seneb). Inv. no: (1982.318).	Metropolitan Museum of Art.
47	Sarcophagus of “Harkhebit”. Inv. no: (07.229.1a, b).	Metropolitan Museum of Art.
48	Statue of “Harbes” called “Psamtik-Nefer”, son of “Ptah-Hotep”. Inv. no: (19.2.2).	Metropolitan Museum of Art.
49	Kneeling statue of “Amen-em-opet-em-hat”. Inv. no: (24.2.2).	Metropolitan Museum of Art.
50	Antelope Head. Inv. no: (1992.55).	Metropolitan Museum of Art.

51	Man, holding a Shrine Containing an Image of Osiris. Inv. no: (25.2.10).	Metropolitan Museum of Art.
52	Head of a Male Priest. Inv. no: (49.101.2).	Metropolitan Museum of Art.
53	Bust of an anonymous scribe. Inv. no: (25.2.1).	Metropolitan Museum of Art.
54	Torso of a High General. Inv. no: (1996.91).	Metropolitan Museum of Art.
55	Magical Stela. Inv. no: (50.85).	Metropolitan Museum of Art.
56	God Horus Protecting King Nectanebo II. Inv. no: (34.2.1).	Metropolitan Museum of Art.
57	The Shabako Stone. Inv. no: (EA498).	British Museum.
58	Dish. Inv. no: (EA23831).	British Museum.
59	Vessel Model. Inv. no: (EA18559).	British Museum.
60	Plaque. (EA27571).	British Museum.
61	Broken Head of a Statue. Inv. no: (EA97).	British Museum.
62	Architectural Element of Nectanebo I. Inv. no: (EA22).	British Museum.
63	Bath-tub / Sarcophagus / Religious/ Ritual Vessel Inv. no: (EA10).	British Museum.
64	Greywacke Obelisks of Nectanebo II. Inv. no: (EA 523 - EA 524).	British Museum.
65	Statue of Osiris. Inv. no: (2000.973).	Boston Museum of Fine Arts.
66	Statue of Vizier "Bakenrenef". Inv. no: (1970.495).	Boston Museum of Fine Arts.
67	Head of "Ankh-khonsu". Inv. no: (04.1841).	Boston Museum of Fine Arts.
68	Head of a Priest (The Boston Green Head). Inv. no: (04.1749).	Boston Museum of Fine Arts.
69	Grain rubber, Polisher. Inv. no: (UC29898f).	Petrie Museum.
70	Scarab. Inv. no: (UC29867).	Petrie Museum.
71	Amulet. Inv. no: (UC2413).	Petrie Museum.
72	Broken bust of Statue. Inv. no: (UC14634).	Petrie Museum.
73	Amulet. Inv. no: (UC52074).	Petrie Museum.
74	Figurine. Inv. no: (UC42553).	Petrie Museum.

Ptolemaic Period		
1	Stela of Horus on crocodiles. Inv. no: (CG 9401).	Egyptian Museum, Cairo, Egypt.
2	Head of Ptolemy II. Inv. no: (C. 1399).	Egyptian Museum of Turin, Italy.
3	Theophorous Statue. Inv. no: (Unidentified).	National Archaeological Museum of Naples, Italy.
4	Sarcophagus of “Ank-hapy”, The priest of king Sneferu and the god Ptah. Inv. no: (D 13).	Louvre Museum, Paris, France.
5	Sarcophagus of the Priest “Ankh – mr – wr”. Inv. no: (D 7).	Louvre Museum, Paris, France.
6	A Ptolemaic king offering Maat to Amun – Ra, Mut and Khonsou. Inv. no: (C 121).	Louvre Museum, Paris, France.
7	Fragment of a Naos inscribed with a Royal decree. Inv. no: (N 274 - C 123).	Louvre Museum, Paris, France.
8	Sarcophagus of the Greek – Egyptian Tisicrates. Inv. no: (D 40).	Louvre Museum, Paris, France.
9	Statue of Imhotep dedicated by “Wah – Ib - Re”. Inv. no: (N 4541).	Louvre Museum, Paris, France.
10	Broken Statue of a Ptolemaic Prince. Inv. no: (54.117).	Brooklyn Museum, New York.
11	Feet from statue of Musician of Amun Tasheritkhonsu. Inv. no: (55.51).	Metropolitan Museum of Art.
12	Face attributed to Ptolemy II Philadelphos or a contemporary. Inv. no: (12.187.31).	Metropolitan Museum of Art.
13	Portrait Head. Inv. no: (1926,0415.15).	British Museum.
Roman Period		
1	Statue of Isis. Inv. no: (635).	National Archaeological Museum of Naples, Italy.
2	Portrait Head of Young Man. Inv. no: (66.65).	Brooklyn Museum, New York.
3	Uninscribed Scarab. Inv. no: (04.2.359).	Metropolitan Museum of Art.
4	Amulet. Inv. no: (UC52235).	Petrie Museum.

Chapter V

The Valorization of Quseir – Qift Road

5.1. Introduction

5.2. Protection of Cultural Heritage between the Past and the Present

5.3. Preservation of Cultural Heritage in the Egyptian Constitution

5.3.1. Art. 49: Monuments

5.3.2. Art. 50: Material and Moral Civilizational and Cultural Heritage

5.4. The Value of Landscape

5.5. Identifying Heritage Values

5.6. Modelling the Significance of Ancient Quarry Landscapes

5.7. Possible Path for Assessing Values of Ancient Stone Quarries

5.8. The Ancient Desert Road Archaeology

5.9. Heritage, Cultural and Religious Aspects of the Myos Hormos Road

5.9.1. Pharaonic and Greco-Roman Eastern Desert Roads

5.9.2. Eastern Desert Routes to the Gold Mines

5.9.3. Religious Aspects in the Bekhen Mountain

5.9.4. Religious Aspects in the Hydreumata of Myos Hormos

5.9.5. The Roman Army in the Eastern Desert

5.9.6. Communications Between the *praesidia*

5.9.7. Water and supplies on the Quseir – Qift Road

5.9.8. Ceramics of Coptos - Quseir Road

5.9.9. Architectural Elements of the Fawakhir Settlement Houses

5.9.10. The Inhabitants of Bir Fawakhir Settlement

5.9.11. Transportation and Movement along the Myos Hormos Road

5.10. Eastern Desert Petroglyphs

5.10.1. Rock Art in the Central Eastern Desert

5.10.2. Risk and Deterioration

5.10.3. Preservation of the Desert Rock Art

5.11. The valorization of Myos Hormos Road

5.11.1. The Archaeological Park

5.11.2. Proposed Developing Project for the Myos Hormos Road

5.11.3. Museology and the Case of “Myos Hormos” Road

5.12. Monitoring Values

5.1. Introduction

The cultural heritage of ancient Egypt is largely linked to its monumental structures. Although the quarries from which the raw materials to build many of these structures, such as pyramids, obelisks and temples have been described and documented, there has been the tendency to present them as static “archaeological sites” rather than as dynamic landscapes where social, technological and cultural interactions linked to stone procurement were played out over time. Recent studies target presenting fresh approaches to document, characterise and articulate the significance and value of ancient quarry landscapes.¹

The notion of the “quarry complex” provides a generic template for identifying collections of material culture (sites or subsites) within varying degrees of preservation and visibility, that may be related to each other in time, space and/or function.² Besides, adapting methods used in characterizing historic environments through time-depth as complexes of material in terms of investigating the transformation of the landscape over time, has been demonstrated as an effective way of temporally deconstructing quarry landscapes.³

Quarries (production sites) landscapes share, with different degrees of preservation, common characteristics that can be listed in four categories as follow:

- The Resource or actual stone deposit.
- Production remains such as quarries, tools, spoil and discarded products.
- The Social infrastructure, or the remains left by the people who worked in the quarry, such as settlements, inscriptions and ceramics.
- Logistics or infrastructure laid down to remove products from the quarry.⁴

These four categories of data can be extremely problematic to associate temporally in terms of chronological transformation of the landscape because quarrying episodes for a specific object may be scattered across a wide area. The Wadi Hammamat quarry landscape is essentially a mixture of these four categories of data, spread across 10 km² of steep rocky terrain spanning a time depth from at least the early fourth millennium BC. from the Early Bronze Age to The Roman Period (5th century AD).⁵ This chapter aims to convey the significance and value of the largely non-monumental and often invisible material culture that constitutes the archaeology of ancient quarry landscapes and to present an overview of how the concept of a “quarry landscape” as a dynamic “cultural landscape” is an applicable model to articulate the significance and value of ancient quarries that comprise a complex range of material culture across large areas. The study represents a brief overview of the diverse archaeology of the Hammamat quarries: greywacke quarries of Wadi Hammamat and the gold mine of Bir Umm Fawakhir and discuss models through which their significance can be articulated that can be applied as well in other quarrying sites in Egypt.⁶

¹ Two reports concerning the West Bank Aswan ancient quarry landscape were presented, cf. Bloxam, E. “The assessment of significance of ancient quarry landscapes – problems and possible solutions. The case of Aswan West Bank”, in World package 4, project QuarryScapes, cf., http://www.quarryscapes.no/egypt_aswa.php; Bloxam, E. 2005: 23 – 27.

² Bloxam, E. and Heldal, T. 2008: report. www.quarryscapes.no.

³ Fairclough, G. 2008: 408–424; Mason, R. 2008: 99–124; Cf., Abu-Jaber, N., et al. 2009.

⁴ Bloxam, E. 2015: 791.

⁵ Bloxam, E. 2015: 791.

⁶ Bloxam, E. 2007: 45.

5.2. Protection of Cultural Heritage between the Past and the Present

The protection of cultural heritage has not only social but political and economic consequences as well. Whereas the constitution of a national and personal identity is closely tied to received cultural heritage, this heritage, as far as material culture is concerned, requires financial support often beyond the means of the countries concerned. International support is rendered by organizations such as UNESCO with its World Heritage List, which includes World Cultural treasures as well as Natural Monuments. Museums of all kinds provide protection for many cultural objects and artifacts, as do libraries and archives involving both state and private initiatives. Socially, the United Nations has been instrumental in pursuing the cause of the Cultural Rights of peoples, with social and educational consequences for majorities and minorities in states throughout the world in terms of respect and tolerance for different religions, languages and cultural customs. Cultural heritage encompasses all aspects of cultural life including language, literature, food and customs. Politically, cultural heritage can be either a cohesive force or a divisive one when exploited for political purposes directed towards political hegemony. Economically, the cost of preserving cultural heritage can be a lucrative source of income as a result of the global promotion of cultural tourism.¹

In the ancient times, the Romans composed a list of the most excellent and imposing cultural monuments of the Ancient World and to limit their number to merely seven, such as the pyramid of Gizeh, the Hanging Gardens of Babylon, The Temple of Artemis in Ephesos, the Olympian statue of Zeus by Phidias, the Mausoleum of Harlikanassos, the Colossos of Rhodes and the Lighthouse on the island of Pharos near Alexandria, the intervening two thousand years have produced great objects, which are seen to be deserving of admiration and preservation by a variety of cultural groups all over the world.

However, In the modern age, World Cultural Treasures and Natural Monuments acknowledged by UNESCO appear on the World Heritage List. The meaning of the monument, its state of preservation and the presence of a convincing preservation plan are examined by UNESCO. These are prerequisites for financial support toward the preservation costs by UNESCO. By 1993, 275 cultural, 87 natural monuments and 18 in both categories had already been included in the World Heritage List. In addition to this List, there is the Red List for especially endangered World Heritage objects and sites. More recently monuments have also been included, for which the signatory states had not submitted an application for financial support.

The “Heritage Sites” is a wide – ranged term that vary from a building, a complex of buildings or an ancient road to a whole city. Moreover, Natural World Heritage sites include unique places of natural-historical value requiring protection and preservation.

Individual states have policies and institutions both private and public for the protection and restoration of historical buildings and monuments. In the case of Egypt, the heritage and archaeological sites are preserved by the collaboration between the ministry of culture, the supreme council of antiquities and the regional authorities (the governorates, Provinces and municipalities).

¹ Thorpe, K. 2009: 175 – 185.

5.3. Preservation of Cultural Heritage in the Egyptian Constitution

The preservation of cultural heritage was mentioned in the national constitution of the Arab republic of Egypt in Chapter II, Section Three that deals with the Cultural Components in two articles as follow:

5.3.1. Art. 49: Monuments

The state commits to protecting and preserving antiquities and their areas, and to maintaining them, renovating them, working to retrieve those that have been taken, and organizing and supervising excavations thereof.

It is prohibited to give away any of them as gifts or exchange them.

Attacks upon them and trafficking in them is a crime for which there is no statute of limitations.

5.3.2. Art. 50: Material and Moral Civilizational and Cultural Heritage

Egypt's material and moral civilizational and cultural heritage of all types and from the pharaonic, Coptic, Islamic, and modern periods are a national and human heritage that the state commits to protect and maintain. The same applies to the modern architectural, literary and artistic cultural stock. Any attack thereon is a crime punishable by law. The state gives special attention to maintain the components of cultural diversity.¹

The principal mission of the Ministry of State for Antiquities, previously known as the Supreme Council of Antiquities (SCA), is to protect and promote the cultural heritage of Egypt, both independently and in cooperation with national and international organizations. To achieve its goals, it formulates and implements all policies concerned with antiquities; issues guidelines and permits for the excavation, restoration, conservation, documentation, and study of sites and monuments; and manages a country-wide system of antiquities museums.²

¹ Egypt's constitution of 2014 on: www.constituteproject.org

² <http://www.sca-egypt.org/eng/main.htm>

5.4. The Value of Landscape

The values recognized by the criteria of the world heritage convention and national heritage schemes are traditional ones, generally historic, archaeological or scientific, artistic and aesthetic. Social values have started to be recognized in heritage field only lately and have been the subject of important recent research.¹

The expansion of the concept of what can constitute heritage has led to the recognition of the significance of landscapes. The natural values of the environment have been part of the natural conservation field since its inception. However, the concept that landscapes are also cultural heritage emerged in recent decades. Starting from an increased awareness of the need to protect the setting of the traditional “monument” it has expanded to include vast areas that encompass both natural resources and human creations. This extension of the scope of heritage is leading to recognition of social and economic values as “non-monumental”, and utilitarian areas are included in heritage resources.

This was the case of the various inscriptions of the greywacke quarry of Wadi Hammamat, the social life of the *hydreumata* through the correspondences and the archaeological findings in the settlement of Bir Umm Fawakhir and the ports of Coptos and Quseir, where once the site was recognized as reaching beyond the strict confines of the monument to include land, ports and cities, new social and economic considerations came into play. In the same time, landscapes are acquiring importance in and of themselves. Moreover, the setting of the cultural resources often extends beyond the official boundaries of the site, and changes in the use of those lands could affect the other values of the heritage site.²

In Egypt, Quarries in regions outside the Nile valley had a very strong survival record and thus have a time – depth that renders them essential places to study. However, nowadays, increasing losses of material from these landscapes, especially, the rock inscriptions at Wadi Hammamat, which in some instances appear to have been “cherry - picked” by collectors.³

Thus, apart from building on hypothesis raised in this study through more detailed survey of the previous excavations along the road, the researcher is proposing to put in place a site management plan for the quarries, mines, and inscriptions as a step towards protecting this global heritage in an increasingly fragile landscape that can be achieved through the idea of creating an archaeological site park.

¹ De Byrne et al. 2001.

² De la torre, M., Maclean, M. G. H., Manson, R. 2005: 223 – 224.

³ Bloxam, E. 2014: 27.

5.5. Identifying Heritage Values

Certain heritage values may only be applicable within certain domains of interest. For instance, economic, social and aesthetic values are usually assessed at local and national levels and involve stakeholders, managers and other decision makers such values being integrated into the final “statement of significance”. From the (geological and archaeological) perspective, the key values used to assess a cultural resource are historical and informational value.¹

I. Historical Value

The essence of physical cultural remains and their authenticity, even if re-used, that can transmit cultural information about the past. These are powerful symbols of the past that can also be bound up in “Communal value” in terms of collective memory for those who relate to it by proximity, but also in terms of society's needs for continuity through time.

II. Informational Value

This value emerges from formal “expert” research from multidisciplinary approaches and having to make “best projections” of what kind of resources/elements will be most useful for future study.²

III. Assigning Heritage Values to Cultural Remains

The physical remains of ancient quarrying, or the empirical data that is left across a landscape related to quarrying of a stone resource, can include roads, settlements, harbours, inscriptions and production remains such as spoil heaps and tools.

As discussed in the previous chapters, all these elements can range enormously in terms of their visibility and preservation. Moreover, ancient quarry landscapes are the product of resource exploitation that may have occurred over great time depths and so leave multiple traces over time. Hence, it is necessary to find ways to disentangle, identify and characterise these layers and different types of material remains as a baseline to assign values.

Given that all ancient quarry landscapes to a greater or lesser extent comprise one or these key elements, to do this, four main categories of characterisation were designed that are summarised as follows:

I. The Resource or actual stone deposit.

II. Production remains such as quarries, tools and discarded products.

III. Logistics or infrastructure laid down to remove the stone products from the quarry.

IV. The Social infrastructure, or the remains left by the people who worked in the quarry, such as settlements, inscriptions and ceramics.³

Although historical and informational value may be assigned to one or more of these key elements, cultural landscapes by their very nature are dynamic and so represent

¹ The definition was given by Lipe, W. D. 1984: 2 – 8.

² Bloxam, E. 2008: 168.

³ Bloxam, E. and Haldal, T. 2008: 21, table 3.

layering of ranges of material culture, sometimes not directly associated with quarrying, across time and space. The historical value of a building is not necessarily the sum of the building itself, but its relationship with other material remains and other landscape elements.¹

Moreover, delineating values to “complexes” of material remains or “sites” within a landscape allows for all the elements that make up a particular “historical complex” to be taken into account (in the planning process), no matter what their particular nature, visibility or preservation. Hence, identifying and assigning values is linked to how they are embodied in particular “complexes” of material remains. Deploying such a method to ancient quarry landscapes led to the development of the notion of the “**quarry complex**” as a way of identifying collections of quarry elements that may be related to each other in time, space or function.²

So, rather than viewing a quarry landscape as collections of four quarry elements (resource, production, logistics and social infrastructure) the “quarry complex” gives us the opportunity to group these elements in different ways and so allowing for historical and informational value to be assigned in a much more flexible way. In addition to the non-expert, a delineation of values can be seen to be embodied in two ways:

I. Onto individual material remains.

II. In a collective way as material complexes.

Hence, this can aid significantly in identifying where complexes of materials or “sites” that hold key values are located. This is particularly important when pressure from modern development requires “best projections” to be made, in terms of which sites or complexes of material remains in a landscape should be conserved over others.³

¹ Mason, R. 2008: 120.

² Bloxam, E. and Høidal, T. 2008: 118-133.

³ Bloxam, E. 2008: 169.

5.6. Modelling the Significance of Ancient Quarry Landscapes

The material culture that comprises a recognised ancient quarry as an “archaeological site” can comprise “Monumental” elements such as roads, large extraction sites, partially worked large objects still in-situ, such as sarcophagi, obelisks and statues. However, they can also comprise less visible non-monumental elements such as scatters of ceramics, ephemeral shelters, workshops of scattered stone chips, object blanks of utilitarian products, inscriptions, rock art and often a transport infrastructure such as loading ramps and cleared tracks rather than paved roads. Hence, ancient quarries can comprise a range of visible and less visible elements which to a greater or lesser extent transformed the landscape to create a cultural landscape or “quarry landscape” whereby resource procurement was key. Given that an ancient quarry and its associated material culture can cover large areas, one of the challenges has been to design composite models that can forward the totality of these sites in terms of their significance across a range of interests.

One approach to articulate the significance of a “quarry landscape” as making up a “cultural landscape” of often global significance has been to construct concepts in terms of the baseline criterion for World Heritage listing, that of “outstanding universal value”.¹

This criterion has been an important foundation to articulate the significance of quarry landscapes whereby all elements of its material culture are viewed in a more holistic manner and disposes of hierarchies of material culture. Therefore, the natural landscape has provided the arena whereby its transformation by man is directly related to acquisition of specific raw material resources exploited over time, or a nature-culture continuum.²

The nomination documents of “industrial” landscapes that have been inscribed as World Heritage Sites have provided valuable models to articulate the significance of quarry landscapes at a macro-level. In particular, they can be used to draw out the essence of the landscape transformed by raw material acquisition within a broader perspective of human endeavours through which achievements such as inventiveness and technological innovation were part of or led to, profound social transformations of global significance.³

Although such models are useful particularly in articulating significance to a larger audience and allow for less visible elements of a quarry landscape to become as important and significant as the monumental structures, such a model alone is not applicable in all cases. For instance, overcoming problems related to authenticity, another key criterion for World Heritage listing, given that quarry landscapes are dynamic and often multi-layered representing transformations over several thousands of millennia. Cross-cultural theoretical contributions from landscape archaeologies can provide useful frameworks for conceptualizing the authenticity of multi-layered cultural landscapes, which by their very nature are fragmented with multiple meanings across time.⁴

¹ Bloxam, E. 2007: 45.

² Cleere, H. 1996: 231; Titchen, S. M. 1996: 239.

³ Bloxam, E. 2007: 46.

⁴ Ingold, T. 1993: 152-3, 171-172; Barrett, J. C. 1999: 21 - 30; Thomas, J. 2001: 166, 181; Edmonds, M. 1999; Bradley, R. 2000.

Moreover, landscape archaeologies can aid in grappling with the problems of articulating the social construction of the landscape, particularly in the absence of written records. thus, “quarry landscapes” comprise invisible borders that are socially constructed and hence human interaction with the landscape related to quarrying may extend beyond the borders of a closed “archaeological site”, landscape archaeologies are thus important for grappling with such borderless sites. Such aspects crucially conic to the fore in matters of risks and conservation of these sites.

No model fits all, as ancient quarry landscapes comprise ranges of material culture, present in some, absent in others. Hence, the status of preservation is a key consideration when designing models of significance. Moreover, some quarry landscapes may be significant not because they have global significance or provide insights into the social context of quarrying, but present aesthetically pleasing landscapes. Although aesthetics are more subjective attributes, they are equally valid considerations in terms of conservation given that this human intervention has transformed the geological landscape into what remain today. ¹

5.7. Possible Path for Assessing Values of Ancient Stone Quarries

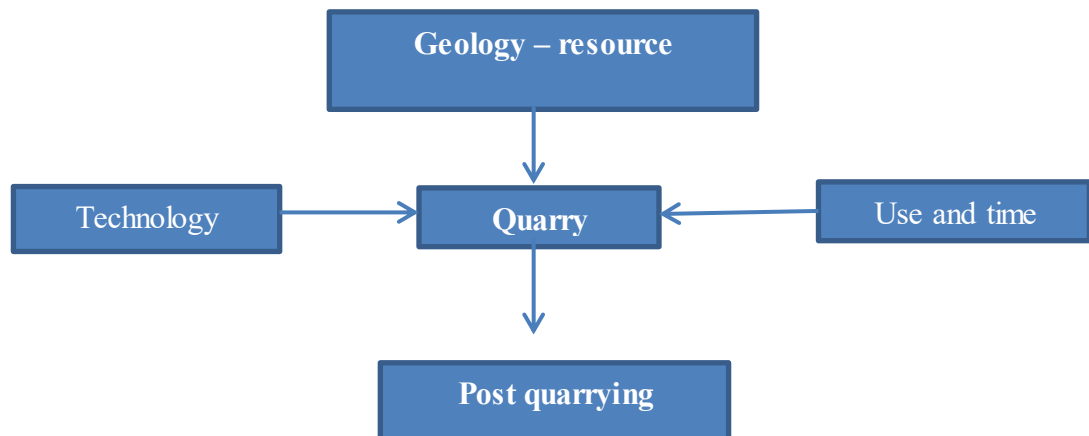


Fig. 210

Evaluating the Ancient stone quarries.

After, Tom. H. and Gurli, M. 2015.

¹ Bloxam, E. 2007: 47.

5.8. The Ancient Desert Road Archaeology

This study introduces the definition of Desert Road Archaeology as a new field of scientific research.¹

An interpretation that can be applied on the Myos Hormos (Quseir - Qift) road starting with the specific characters as an ancient road in a barren region, and considering the various methods for studying and analysing these characters. It is argued that the archaeology of desert roads should be established as a new, multifaceted field of research, it is implicit that such an approach has strong links to the archaeologies of mobility and nomadic people, yet it highlights a special kind of mobility, as well as the pronounced multi-disciplinary character. especially if most of these ancient roads leading, at least in part, through barren regions are a widely-neglected subject.²

The impressive road-building achievements of the Roman Empire of which an example can still be followed in the African continent, which is the well-known trans-Saharan caravan trade route that supplied sub-Saharan Africa with salt, cloth, weapons, etc., and eventually European traders with gold, slaves, ivory, aromatic substances, and other commodities.³

In all these famous cases, roads commonly appear in snippets of written history, exotic objects and materials and the distribution of languages, religions, technological knowledge and other cultural aspects. Moreover, archaeology has unearthed some remains that can be identified as trading centres, caravanserais, trading depots, or check points along the routes of major road systems. But the roads themselves, the old tracks the ancients used, the barren landscapes they crossed seem to have sunken into oblivion.⁴

These roads once connected the known trading centres and posts that formed the crossroads of the routes which are the fixed geographical markers in historical reconstruction, because they appear and often figure prominently in old travelogues and histories. Some of them still exist in the shape of old medinas, while others are ruined or sunken into earth. Very little, however, is known about the roads and paths themselves, how tracks wind their way through sandy or mountainous landscapes, how people managed to walk (or ride) from one place to another, and how organisational matters and provisions were arranged for a safe arrival at the final destinations. Yet it is obvious that, until recently, there was not much incentive in archaeology to investigate specific desert roads, or distinctive aspects of desert traffic also due to the difficult working conditions in barren regions, especially in terms of logistics, as well as bureaucratic restrictions that was one of the difficulties of this study. Despite these

¹ Riemer, H. and Förster, F. 2013: 19 – 58.

² Examples of these roads are:

- The Silk Road that connected Europe and the Near East with China over thousands of years, cf., Whitfield, S. 1999.
- The network of high mountain Inca roads, cf., Snead, J. E. et al. 2009. "Making human space: The Archaeology of trails, paths and roads", in Snead, J. E. et al. (eds.) 2009: 7.

³ Chevallier, R. 1997; Laurence, R. 1999; Connah, G. 2004: 107-111; Austen, R. A. 2010.

⁴ Riemer, H. and Förster, F. 2013: 19; for a recent study on Saharan trade networks in Roman times, cf., Wilson, A. 2012: 409 – 449.

facts, archaeological studies began to recognise the great potential ancient desert roads hold as a rich and unique archive. ¹

These studies were rewarded by a number of rather spectacular discoveries shedding new light on historical developments in ancient Egypt and the role played by the various desert routes, bypaths, and other Lines of communication. These scientific works considerably contributed to a change in scientific perception as Egypt is no longer considered a “gift of the Nile” but also the deserts. ²

it seems that the desert road archaeology is a rather new field of study aiming to evaluate either the cultural or the natural heritage of the barren roads, once trafficked for different reasons. However, the interest of studying the development of the Egyptian eastern desert routes and archaeological relics started quite early. ³

The study may therefore be regarded as a comprehensive and representative compendium on the Myos Hormos road due to the complexity of the subject as well as the broad research interest and the multiplicity of key issues.

The study can be considered a part of a more general framework in the study of desert roads that range from methodological approaches, such as:

- mapping by means of satellite imagery.
- innovative cross-disciplinary analogies, such as the ethnographic recording of modern caravan activities.
- studies of ancient navigation.

While, Other studies comprise overviews and general appraisals that go far beyond regional studies, both in time and space. They feature a rather historical view on roads and road networks, either summarising and defining what is currently known about desert travel and transportation in ancient Egypt, or opting for a historical (re)interpretation by amalgamating the various sources on the beginnings and the development of trans-Saharan travel and trade. Such as the recent study of the Quseir – Qift road as a part of the Eastern Desert of Egypt which is a mountainous area with relatively short distances between the Nile Valley and the Red Sea coast where roads were mainly established for quarrying activities or trading to and from the sea ports.

¹ For more studies about the ancient desert roads, cf., Darnell, J.C. 2002: 132 - 155; Darnell, D. 2002: 156 – 177.

² Friedman, R. 2002: xiii – xv.

³ Weigall, A. E. P. 1909: 169ff.; Couyat, J. et Montet, P. 1912.

Scheme of desert road archaeological study

The research study of the ancient desert road archaeology can be outlined in the following arguments:

- The Archaeology of Mobility and travel.
 - Traffic, infrastructure and distance.
 - Roads as embedded linear structures.
 - Changing climate and subsistence.
- Ancient desert roads: issues, challenges and benefits of interdisciplinary research.
 - Tracks and topography.
 - Establishing historical perspectives.
 - Analogies: Ethnographic and ethno-historic parallels.
 - Names and narratives.
 - Pottery for transport and depot – laying.
 - Epigraphic and pictorial evidence: Inscriptions, maps and petroglyphs.
 - Logistics.
 - Wayfinding and navigation.
 - Transportation.¹
- Motivations to establish desert roads.

The major reason to establish roads in the Egyptian Eastern Desert was to facilitate the process of quarrying and transporting precious stones to settlements in the Nile Valley, thus, connecting the Nile valley with quarries and mines. It is clear that one of the major differences between the Western and Eastern Deserts of Egypt is that exploiting stones and ores was a driving force to build roads east of the Nile, but not to the west, where almost no exploitable raw materials of interest existed (except for some regions close to the Nile Valley).

The roads in the Eastern Desert connected the Nile Valley, with Wadi Gawasis, Berenike and other Red Sea ports for shipping goods overseas, mainly to and from southern Arabia and the Horn of Africa. Exotic incense and aromatics are among the, most important commodities that had to be transported overland from the ports to the Nile Valley. This necessitated a road network that was outstanding in terms of traffic intensity and infrastructure when compared to the Western Desert roads. Here, it is not only the transport of goods, but also the maintenance of power and administration that led to regular postal traffic and policing of the roads in antiquity.²

¹ Riemer, H. and Förster, F. 2013: 19 – 58.

² Bard, K. A. 533 – 555; Shaw, I. 2013: 521 – 532.

- The fading of the roads and concepts for the future.

Although, the old caravan routes followed the “optimal path” defined in terms of distance and topography. These desert roads are in the risk of the construction plans of modern highways. Destruction of the ancient desert roads can hardly be stopped as long as uncontrolled land reclamation and modern road construction progress are considered to be means of the economic development. It is however, passing to draw attention to the idea that the ancient roads themselves hold much potentials for archaeology and that this archaeological source is highly endangered (also by the impact of the increasing desert tourism).

The study attempts to serve this purpose through certain plans that should be developed to protect some of the old roads that still exist and are most exposed to the danger of destruction as these roads need to be adequately surveyed and documented.

5.9. Heritage, Cultural and Religious Aspects of the Myos Hormos Road

5.9.1. Pharaonic and Greco-Roman Eastern Desert Roads

Journeying through the Eastern Desert before the introduction of the camel into Egypt in the first millennium BC. would not have been problematic, especially if travelling with guides or keeping to the main west-east direct routes along the Wadis Baramiya and Hammamat to the Red Sea. This accounts for the many inscriptions, even in the very dry conditions after the second aridification event around 2300 BC. With the introduction of the camel and marking out of the Roman road with windrows, together with way-stations, cisterns and wells along the route, travel through the heart of the area was made even easier. ¹

Inscriptions record traders in the Roman early imperial period and the Roman road through the desert to Berenice on the coast. There are several wells which still give water along this route. Game and forage would have been available, so carrying large amounts of rations should not have been necessary. With the probable absence of large carnivores, and with water available, the only dangers would have been from the heat and any hostile nomadic inhabitants. All this suggests that movement through and even life in the Central Eastern Desert has been possible for small groups of people for many thousands of years. ²

The evident importance of the Coptos - Quseir road strengthens the case for the identification of Quseir al-Qadim as Myos Hormos, because a port of such significance in the ancient literary sources would presumably have warranted a significant road. The road is indeed very well furnished with *hydreumata* and watchtowers, particularly in the more mountainous and remote eastern section of the route.

In contrast with the *hydreumata* on the Abu Sha'ar—Nile route, the forts on the Quseir—Nile road do not have any outside animal barracks, nor any wheel-ruts on the road itself which is a significant difference as the animal barracks and wheel-ruts along the Abu Sha'ar – Nile road are indicative of the use of heavy-wheeled transport, showing that quarrying was the main activity on the road in the early imperial period. ³ However, the Quseir—Nile road, animal barracks are absent and there is no evidence of wheeled transport ever being used on the road. Thus, this route seems to have been used by smaller caravans of pack-animals rather than the large draught teams which would have been required for the traffic from the stone quarries. ⁴

Given the presence of the Red Sea port of (Quseir al-Qadim) at the end of this route, which was in use in the early imperial period, it would seem likely that a major part of the traffic on this road was the conveyance of trade goods to and from the Red Sea. The cargoes of spices and silk were very valuable but relatively small, and it would have been a perfectly manageable arrangement to have brought the animals inside the forts when overnight stops were made.

¹ Lankester, F. D. 2012: 80.

² Judd, A. 2003. Online: http://archaeology-easterndesert.com/assets/applets/LYSA_Judd.pdf; Rothe, R. D. et al. 2008: 17.

³ Sidebotham, S. E. 1986: 63 – 64.

⁴ Zitterkopf, R. and Sidebotham, S. 1989: 168.

The most important of the trade routes across the Eastern Desert were the two that led to Coptos. The Berenice road provided the shortest sea-crossing but the longest journey overland — it is about 392 km from Berenice to Coptos; it is a further 270 km sailing to Quseir el-Qadim, but the resulting land-route from Quseir to Coptos is considerably less than half as far, just 174 km, the shortest of the desert-crossings south of Clysma (Suez). Quseir el-Qadim is probably to be identified with the ancient Myos Hormos due to the discovery of written evidence at El-Zerqa that supports the contention that the site at the end of the road was indeed Myos Hormos.¹

5.9.2. Eastern Desert Routes to the Gold Mines

Not only was the area attractive to hunters from the Pre-dynastic through the pharaonic era and later, the Eastern Desert was a major source of raw materials. Greywacke for palettes was sourced from the Wadi Hammamat in predynastic times and sarcophagi were carved in the Bekhen-stone quarries in that wadi to the east of the survey area. These quarries also provided stone for bowls, palettes, statues and columns, and lead, copper and galena were all derived from the Eastern Desert. Moreover, there were major gold mines at Bir Umm Fawakhir in Wadi Hammamat, in Wadi Baramiya, to the east around Bir Dagbag, but also in the desert south of Baramiya. These mines are all on the Pre-Cambrian basement rock to the east of the sandstone escarpment.²

These mines represent an important feature in the Central Eastern Desert. There are considerable numbers of pharaonic inscriptions in the wadis which would have been routes to these mines, including ones which contain the word “gold” and the names and titles of officials who would have had responsibility for gold and other mineral collecting expeditions. There are also boat petroglyphs dateable to the Old, Middle and New Kingdoms.

Wadi Hammamat, Baramiya, Mineh and Abu Mu Awad were well-used routes for gold-mining expeditions. There are significant amounts of pharaonic petroglyphs in all these wadis, especially boat images. It has been suggested that some of these may represent the cargo ships which would transport the ore once it reached the Nile. In addition, the Wadi Mineh Roman inscriptions show people engaged in trade with India moving through the desert to the coast, including the extremely valuable pepper trade. Moreover, African forest elephants were also brought up from Berenike.³

¹ Maxfield, V. A. 1993: 11, Footnote 2.

² Harrell, J. A. 2002: 232 – 243; Klemm, D., Klemm, R. and Muir, A. 2002: 215 – 231, Map. 3.7; See also, Morrow, M. and M. (eds.). 2002.

³ Tratsaert, B. 2012: 245 – 255; Casson, L. 1993: 247 – 260.

5.9.3. Religious Aspects in the Bekhen Mountain

The inscriptions of the shrine of Min Amun in Wadi Hammamat indicated the members of the pantheon protecting the greywacke quarries.

The pantheon of the Bekhen quarries

The ritual space for veneration of the local god 'Min' in Wadi Hammamat quarrying site contains a layered array of names, titles and other graffiti in hieroglyphs, hieratic, Greek and demotic, together with highly crafted iconography and reliefs dating from the late 1st millennium BC (Late Period) reign of Nectanebo II. The space represents a part from a re-used quarry that became a focal point for inscriptions through to the Roman Period. Moreover, European travellers/explorers of the nineteenth century also inscribed their names here.¹

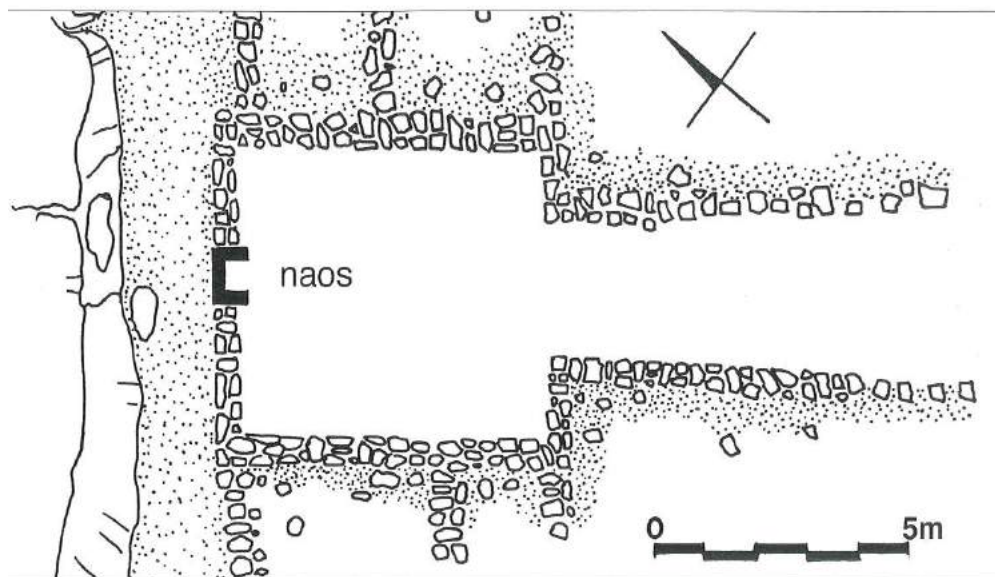


Fig. 211
Plan of the small chapel of Min – Amun in Wadi Hammamat
After, Aufrere, S. et al. 1994: 201.

¹ Lichtheim, M. 1973: 114–15, 202; Bernand, A. 1972; Cruz-Urbe, E. 2001: 26–54.

They group of divinities is distributed as follows: ¹

First group (9 divinities) Upper register - Right side	Second group (5 divinities) Upper register – left side	Third group (three divine figures) Lower register two naos – left side
1 – Amun – Re (King of the gods). 2 – Horus – Ra (The Great God). 3 – Min. 4 – Group composed of Ptah and Hapy. 5 – Osiris and Harpocrates. 6 – Geb. 7 – Horus. 8 – Harpocrates. 9 – Thot.	10 – Isis. 11 – Nephthys. 12 – Horus (great of powers). 13 – Montu. 14 – Min of Panopolis (Akhmim).	- First naos The naos contains a figure of a hippopotamus goddess accompanied by the sign (<i>s3</i>) and described as (<i>hwt ntrw</i>). - Second naos. Another hippopotamus goddess (an evil form). - The god Shed (the protector).

Fig. 212

Inscriptions of the shrine of Min in Wadi Hammamat greywacke quarries. After, Traunecker, C. 2002:379, fig. 1.



¹ Traunecker, C. 2002: 357 – 369.

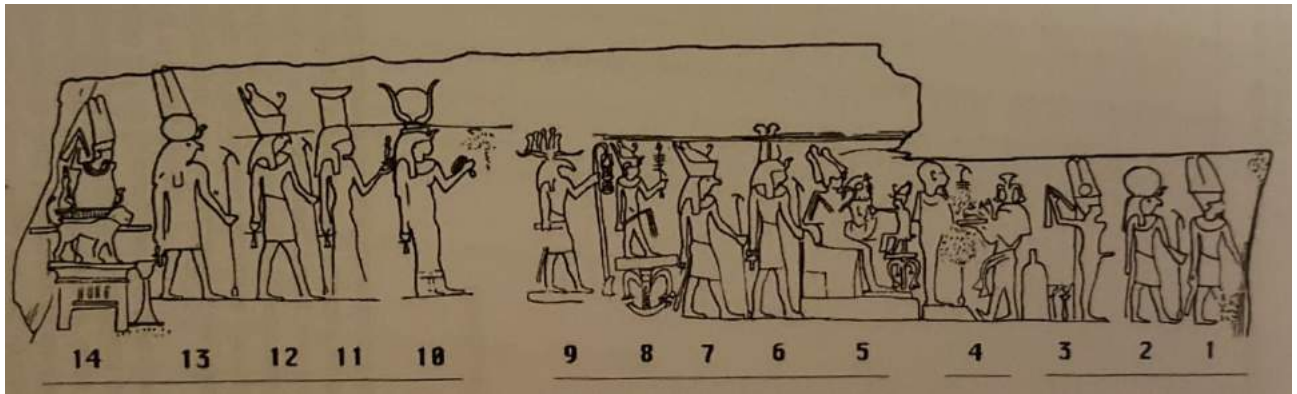


Fig. 213

Gods of the pantheon of Wadi Hammamat.

After, Traunecker, C. 2002: 380, fig. 2.

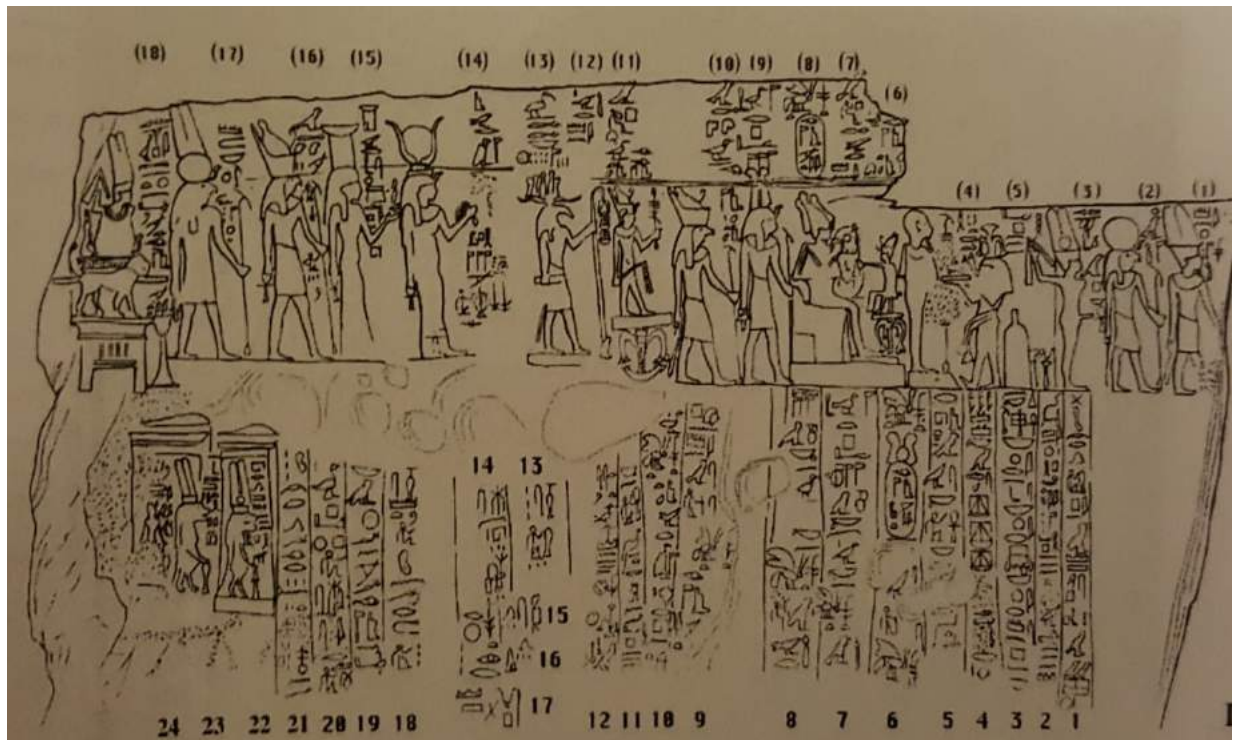


Fig. 214

Details of the inscriptions of the shrine of Min in Wadi Hammamat.

After, Traunecker, C. 2000: 381, fig. 3.

Min

The god Min was the god of the eastern foreign countries; he was worshipped in the eastern desert regions between the Nile and the Red Sea where the trading convoys passed so they had to worship Min for their safety on the way before leaving Coptos. Thus, he became a god of the eastern desert and a master of the foreign countries.¹ He was closely associated with the winter in the desert and refilling the wells consequently, the plant life and fertility of the desert lands. Therefore, he was considered as the god of mountains, wind, tempest and rain.²

The Cult Centers of Min

I. Akhmim (Ancient Egyptian _ “Ipu” Or “Khent-Min”, Greek _ “Khemmis” Or “Panopolis”)

Located to the north of Qena, Akhmin has a rock-cut chapel decorated for the pharaoh Ay (18th Dynasty) and Queen Teye by the High Priest of Min, Nakht-Min (a name signifies ‘Min is mighty’). The temple ruins to the west of the town date back to the Graeco-Roman period. The Greek equation of Min with the god Pan led to the later name of the site as “Panopolis”.³

II. Qift (Ancient Egyptian _ “Gebtu”, Greek _ “Coptos”)

Qift was the starting-point for gold and stone mining expeditions executed in the central eastern desert. Despite the Middle Kingdom and the New Kingdom reliefs, none of the extant temple ruins predate the Greco-Roman period.

The Main Temple of Coptos

The main temple of Coptos was already destroyed by the Time of Petrie’s excavations, therefore, Petrie had only recorded some important features of the Ptolemaic Roman Temple that indicated how the building was used as a double temple dedicated to both Min and Isis. From the temple of the New Kingdom, Petrie traced the outline while from the earlier temples, only single blocks and elements were found.⁴

Due to the continuous occupation and the strategic position, excavations have resulted a rich array of epigraphic, architectural and artistic remains. Early findings include three fragmentary colossal stone cult statues of Min, discovered by Petrie and dated to the Pre – dynastic Period. These statues would have stood 4.1 m high.⁵

These early dynastic objects besides some lion figures indicate the importance of the temple at that time. Fortunately, the university college of London has published a hypothetical computer reconstruction of this temple in 2003. This reconstruction is based on the previous descriptions and on contemporary parallels from other sites in Egypt.⁶

¹ Erman, A. 1907: 18.

² Badawai, A. 1959: 163 – 179.; Armour, R. A. 1986: 184 – 186.

³ Hart, G. 2005: 94.

⁴ For more details, cf., Petrie, W. M. F. 1896.

⁵ Bard, K. Shubert, S. 1999: 799.

⁶ <http://www.digitalegypt.ucl.ac.uk/koptos/index.html>

Description of The Temple of Min

The large temple of Min is about 235 x 260 m it had an enclosure wall of about 10 m thick with a gateway. Two pylons used to lead to a triple temple for Hathor-Isis, Min and Horus, built by Ptolemies II – IV. There are remains of some Hathor columns 10 m high. Enlargements dating from the Roman period provided three sets of parallel approach stairs, lying below these are some remains of the foundation of an earlier structure of Thutmosis III, measuring 27 x 36 m with granite pillars and reused parts of earlier buildings of the Old and Middle Kingdoms. ¹

To the south, there was a temple dedicated to Osiris that used to be entered by a large door, presumably built by the last Ptolemies and decorated by Caligula, because of its mud brick structure nothing seems to have survived. The south – west corner of the enclosure is taken up by the remains of a temple, possibly to Geb, with three consecutive gate structures of Caligula and Nectanebo II. ²



A



B



C



D

Fig. 215

Reconstructions of the ancient temples of Coptos:

A. Early Dynastic Period

B. Early Dynastic period

C. Second Intermediate Period (with reliefs in the main Sanctuary)

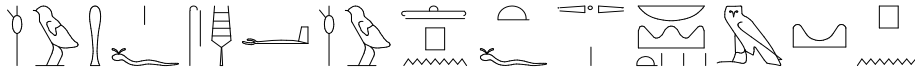
D. Second Intermediate Period (with reliefs in the separate chapels). After, <http://www.digitalegypt.ucl.ac.uk/3d/coptos/coptos2.html>

¹ Arnold, D. 2003: 132.

² Pantalacci, L. 2012: 7.

Min in the Inscriptions of Wadi Hammamat

In the inscriptions of wadi Hammamat, Min was described as (God of Qift, the desert and Master of the Bedouins). His role was proved through the evidences in Wadi Hammamat and the Red Sea ports. the Middle Kingdom texts stated that Wadi Hammamat is the region of Min in which he bore the title “Lord of the desert” that was indicated clearly in the inscription of the vizier (Imn im hAt) at Wadi Hammamat about king Montuhotep II:



wḏ ḥm .f sḥꜥ wḏ pn n it (.f) mnw nb ḥ3swt m ḏw pn

The king ordered the establishment of this stela for his father Min, Lord of the deserts in this mountain. ¹

Min was mentioned in the Middle Kingdom texts as the lord of the eastern desert. Besides, the quarries were described as the land of Min where his miracles occurred and the zone continued to be Min's cult center and under his protection till the Greco – Roman period.

In the previous inscription, it was also mentioned:



ḥ3swt nt it (.f) Mnw

The desert of his father Min ²

His relationship with the east was very well attested in the Thirteenth Dynasty litany inscribed on a funerary stela from Abydos preserved in Parma Museum in Italy as it tells:



inḏ ḥr .k Mnw – Imn nb shnt mi



Nꜥty .k (r) shwt .k ksbwt .k



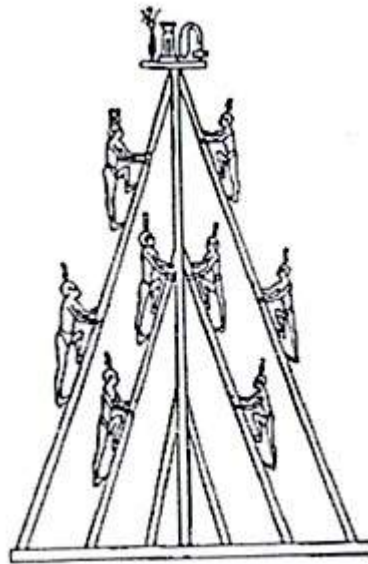
Nbwt mfkttf rrwst sn .k idwt šsmt

¹ Couyat, R. and Montet, P. 1912: no. 192 p. 98.

² Couyat, R. and Montet, P. 1912: 99; for another inscription of the 19th year of Amenemhat III (Middle Kingdom), cf, Couyat, R. and Montet, P. 1912: 40, no. 17, pl. V; for the late period Inscription of Darius I, 27th Dynasty, cf, Couyat, R. and Montet, P. 1912: 39, no. 14, (line 4 - 5).

Greetings to your face, O, Min – Imm, Lord of (sHnt) when you walk through your fields, your golden, blue and green fragranced trees and when you smell the fragrance of the east. ¹

The chapel of the god Min resembles the tent used by the desert Bedouins and the ceremony of raising the tent of the god appeared in the artistic works of the New Kingdom that proved his being a master of the eastern desert, sometimes he was entitled as being the one who raises his hands in the east, His cult was connected to the moon as a guide for the desert dwellers in their night movements in the desert. ²



(A)



(B)

Fig. 216

(A) The Tent of Min associated with the east.

After, Diab, A. M. F. 2005: 411, fig. 183.

(B) The Early Temple of God Min called (shnt)

After, Sayed, A. M. 1993: 39, fig. 10.

¹ Lange, H. O. 1927: 331 – 338; Jacobsohn, H. 1955: 18.

² Vernus, P. 1998: 178; Helck, W. 1980: col. 454 ff.

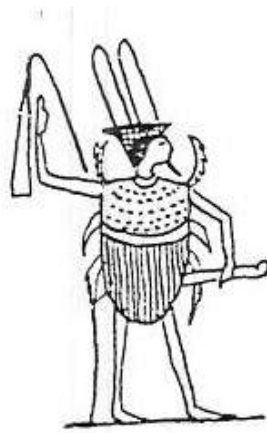
Bekhenew or “PA - Bekhenew”

The name of the god “Bekhenw” was mentioned in the book of the dead (Chapter CLXV – Chapter of arriving in port). The accompanying vignette describes an ithyphallic god with the body of a beetle, on his head are plumes, and his right hand and arm are raised. The figure of the god shall be painted blue with “Lapis - Lazuli” mixed with “qamai” water.¹

He was invoked as:

“O, Bekhenw, Bekhenw! O, Great one Great one! O Amun, Amun! O Lion of Yewkasa ²! O God, Great one of the gods of the eastern part of heaven!”

The god’s association with “Min” is obvious as each god is ithyphallic and each one has an uplifted arm. Thus, in the attributes of “Bekhenew”, there was a deity of the Valley of “Bekhen” Mountain.



A



B

Fig. 217

A. The god Bekhenew of the Bekhen quarries

After, Lucas, A. and Rowe, A. 1938: 151, fig. 14; photography of the researcher.

B. The occurrence of Bekhenew in the book of the dead of Iuefankh, Museum of Turin.

After, photography of the researcher.

¹ Budge, W. *The Book of the Dead*, Chicago, London, 1901, p.p. 542 – 543

² *Iky* means “Stone Hearer” in relationship with the “Bekhen” stone of the eastern desert quarry of Wadi Hammamat, cf. Wb, I, p. 139

5.9.4. Religious Aspects in the Hydreumata of Myos Hormos

Excavations along the Myos Hormos road revealed about 2400 ostraca, mostly inscribed in Greek language. Some of these sherds and letters did not represent any prosopography coincidences with the others. However, the 10 greek ostraca found in Bir Sayyala are inclusive as to prosopography, they are not in a good state of preservation and the names they mention are common such as (Didas, Valens, Maximus).¹

These ostraca illustrate the life and the connections between the six Roman stations, or at least places where people lived in Roman times, along the road. These find-places are recognized, except for Bir Hammamat and al-Hamra where practically no ostraca were found.

The writer very frequently declares that he performs the proskynema on behalf of the addressee in front of the tutelary deity of the place in which he finds himself.

The following gods are known from the letters:

Apollo	The god was mentioned once in a broken context that cannot be restored, although the reading itself is certain. Since the ostrakon was found at Krokodilo, it may be that it was never sent, and that Apollo was the tutelary deity of Krokodilo, who is not otherwise known. But the letter may just as well come from Phoinikon (al-Laqita) or Didymoi (Khashm al-Minayh). One cannot, of course, exclude that a proskynema to Apollo was made at Apollonos <i>hydreuma</i> much further south, on the road to Berenice, just like there seems to be a case for believing that Aphrodite was the tutelary deity at Aphrodite orous (the station of Afrodito).
Athena Athena in Persou	The goddess Athena was worshiped in Persou, which is the ancient name of the quarrying settlement in wadi al-Hammamat and the station at Bir Umm Fawakhir. The correspondence of the group of people around Philokles, Ischyra, and Sknips found in the "O.Faw" and in the "O.Krok" shows that the place where the "O.Faw." were found was where the letters from these people to Krokodilo came from, and many of these letters carry a proskynema to Athena. There is a problem concerning the exact situation of the station in wadi al-Fawakhir, since the station has not been found, but it must have been there and was perhaps demolished already when the Byzantine gold-mining village was built.
Dioskouroi	THE DIOSKOUROI (Dioscuri) were the star-crowned, twin gods of St. Elmo's fire--an electrical discharge which appears on the rigging of ships portending deliverance from a storm. They were also gods of horsemanship and protectors of guests and travellers. The Dioskouroi were also placed amongst the stars as the constellation Gemini (the Twins). The division of their time between heaven and the underworld might be a reference to the heavenly cycles for their constellation is visible in the sky for only six months of the year, The

¹ Bülow – Jacobsen, A. 2006 a: 51 ff.

	Dioskouroi were depicted as youthful horsemen with wide-brimmed traveller's hats. ¹ Dioskouroi are mentioned in only one letter, they may have been tutelary in Krokodilo, Didymoi or Phoinikon, perhaps with a preference to Didymoi by association. A letter has been found in Didymoi with a proskynema to Dioskouroi, but this letter may never have been sent. ²
Pan	Pan was rarely mentioned in letters compared to the frequency in graffiti. In fact, he was mentioned twice. during the 2nd century AD, Pan was superseded by the titular deities of Roman installations. However, it should be mentioned that the excavations in Didymoi brought five letters of Philokles written to his friend and associate Kapparis, and that, out of these five letters, three contained a proskynema to Pan.
Sarapis	The tutelary god of Maximianon, to whom so many letters (from different persons) with a proskynema were written in Maximianon and never sent.
Philotera	The deified sister of Ptolemy II, had a cult somewhere between Maximianon and the Red Sea, perhaps in Simiou, where she may have been installed alongside, perhaps even identified with, the Tyche of Simiou. Simiou was most probably, the place where Philotera was worshipped, this was attested by: - A letter from Krokodilo, of which the upper part is broken and so gives no information about sender or addressee, it tells that the well-known prostitute "Procla" has been hired out to Simiou. - Another letter written by "Procla" herself and carries a proskynema to Philotera that could be thought to come from Simiou while she was working there as "Procla" is known to have done a tour of duty at Maximianon.

¹ <http://www.theoi.com/Ouranios/Dioskouroi.html>

² Bülow – Jacobsen, A. 2006 a: 53

Tyche Simiou	The name was mentioned in one of the letters sent from Antonas to his brother Herminos. Ἀντωνᾶς Ἑρ- μείνω τῷ Ἀ- δελφῷ πολλὰ χαίρειν · τὸ πρὸς- {c}κύνημά σου ποιῶ παρὰ τῇ Τύχῃ Ci- μίου. κόμικαι πα- ρὰ Ἑρμείνου · γλαυ- κισκάριν νηρόν. ἔσχικα αὐτὸ καὶ πέπακα. ἔρχομαι τῇ δ · ἔχων ὀψάριν. εἰς Ciaro- οὺς γράψον μοι ἢ ἔκο- μίσου. ἀσπά- ζου ..[— — — The letter was translated by Bülow – Jacobsen as follows: “Antonas to his brother Herminos, many greetings. I do obeisance for you to the Tyche of Simiou. Receive from Herminos a fresh “glaukiskarion”. I have sliced it and I have cooked it. I come on the 4th bringing fish. Write to me in Siaroi, if you received it. Greetings to...”.¹ Comment: The text is important as it should have dealt with: - Fish exchange between the <i>hydreumata</i> along the Myos Hormos road that should be from the Red Sea or from the Nile. - The existence of a place called “Siaroi”.

¹ Bülow – Jacobsen, A. 2006 a: 57

5.9.5. The Roman Army in the Eastern Desert

The Roman army offers a range of evidence in the Egyptian Eastern Desert, unparalleled anywhere else in the empire starting from the epigraphic material which provide an unrivalled picture of the functioning of a provincial army till the archaeological evidences of the *hydreumata* that were probably army operated forts survived in a remarkable state of preservation with intact wall-tops and roofed buildings.

The Functions of a Roman Provincial Army

In most the frontier provinces of the Roman empire, the first known functions of the army's role were:

1. Securing the frontiers against external threats.
2. Maintaining the internal security within the core of the province — this includes the protection of the governor and the policing of the cities.
3. Supervising the imperial estates and monopolies — in Egypt's case this involves a major concentration of effort on the diverse quarry projects of which the main interest of this study is those sited in the Eastern Desert.
4. Ensuring security for travellers in the Eastern Desert where the major trade-routes run from the harbours on the Red Sea, notably Berenice and Myos Hormos to the Nile.

In Egypt, on the other hand, for largely topographical reasons, the external threat appears, at least until the late empire, to have been inconsiderable, while there is a wealth of well-preserved archaeological evidence, as well as a growing body of written evidences. Moreover, within the area of the Eastern Desert are currently known about 60 defended sites.

Underestimating the number originally present; for example, the east-west stretch of the Via Hadriana, running east from Antinoopolis to the shores of the Red Sea, is unrepresented archaeologically, though, an inscription of A.D. 137 commemorating its construction indicated that its route was provided with abundant cisterns, resting stations and garrisons.¹

¹ Sidebotham, S. E. and Zitterkopf, R. E. 1997: 221; Maxfield, V. A. 1993: P. 9.



Fig. 218

Map of the *hydreumata* and military bases in the Eastern Desert

After, Maxfield, V. A. 1993: 10, Fig.1.

Fifteen fort sites are known or suspected along this route, as well as intermediate wells (with no evidence of any associated defences nor any certainty of a Ptolemaic/Roman origin). The development of the facilities along this road appears to have been piecemeal: its first installations go back to the 2nd century B.C. Epigraphic evidence records work in the Augustan period at the terminus at Berenice as well as at two intermediate sites, Compasi and Apollonos *hydreuma* (identified as Wadi Daghabag and Wadi Gemal respectively), while Domitian is recorded on an inscription from Wadi Menih el-Heir (ancient Aphrodito), as extending the *hydreuma* and building a stronger fortification.

The considerably shorter distance from Quseir el-Qadim will have required a journey of between 5 and 7 days along a road where 9 defended sites and a couple of open settlements have been identified. Thus, a traveller using either of these roads could be safely housed.

The Qift – Quseir road is the only area within the Eastern Desert where it is possible to see a degree of overall consistency in site planning, of the 9 intermediate stations identified along this route, 5 share the same general design and are of very similar size to one another. They are small *quadriburgia*, roughly square, single-entranced enclosures with projecting external corner and gate towers and with the internal buildings concentrating around the exterior walls. This leaves the interior space open and in most cases, it accommodates a well.

The similarity of these sites hints at broad contemporaneity, and perhaps therefore at a single hand in their design and execution, something that could be proved only by excavation or the chance find of inscriptions. As with the Coptos - Berenice road, the installations along the Quseir route developed piecemeal; there is pictorial evidence for the central section which runs through Wadi Harnmamat, with its quarries, cisterns and other features, on the Turin papyrus map of the 12th century B.C.¹

There is an evidence of Roman military activity along the route from Augustan times onwards — there are inscriptions from El-Mweih (Krokodilo) and Wadi Fawakhir. accepting the identification of Quseir el-Qadim as Myos Hormos evidences the construction of an *hydreuma* at the eastern terminus at a similar date. Moreover, Excavations at Quseir el-Qadim produced remains dating back to the 1st century B.C.² in addition to some Ptolemaic material from the vicinity.³ However, Laqueita (ancient Phoenicon) has produced a Claudian inscription.⁴

¹ Harrel, J. A. and Brown, V. M. 1992: 81 – 105.

² For more cf., Whitcomb, D. S. and Johnson, J. H. 1979; Whitcomb, D. S. and Johnson, J. H. 1982.

³ Weigall, A. E. P. 1913, p. 81.

⁴ Bernard, A. 1972: no. 1

The date of the extant fortifications along the road line is another matter, typological dating of these sites is very hazardous in an area where there has been little modern investigation of Roman fortifications. Considerable interest must therefore attach to the first investigation to be carried out at one of these sites, that at El-Zarqa, begun in January 1994.¹

These sites are, overall, simple and “self - contained”, Travellers could be sheltered within their walls accompanied by their animals as the excavations revealed certain factors that supported a large animal traffic.²

control of traffic along this road was achieved through the watchtowers which are close-spaced on prominent sites along the road, for observation, control, and perhaps for the relay of signals. The Roman army was heavily involved in the maintenance of security at the desert sites and along the desert routes. It was involved in building at the forts and their associated structures: it functioned in a supervisory capacity at the quarries themselves, providing them also with a degree of protection, if such were needed, against desert raiders. Along the trade routes, the army can be perceived as manning the fortified watering stations, patrolling the roads, and providing escorts for the caravans themselves. It is, of course, impossible, on present evidence, to know how many of the Eastern Desert sites were in simultaneous occupation.

During the 2nd century A.D. when the quarry sites were in full production and trade was steady, most of the sites will have been needed at least some of the time. What is more questionable is whether occupation was continuous, and that is a query which can be raised in relation both to the sites involved in the exploitative industries and those involved in trade. It can be assumed that protection for travellers would be needed essentially when ships came in to port, to safeguard the conveyance of goods to and from the Red Sea.

Large numbers of merchants, camels, donkeys and their handlers cannot have been permanently based at Quseir as there was no suitable infrastructure to support them. It is probable that the army presence too was removed, or, at the very least, thinned down between sailings whether a more permanent presence was required to guard the watering-places and thus deny them to those who travelled the routes for nefarious purposes — raiders heading towards the wealth of the Nile Valley — depends on the perceived likelihood of such an eventuality (the existence of a threat is apparent from the later 3rd century A.D. but it is considerably less clear earlier on).³

In the case of the quarries, if it is assumed that these worked to order, producing stone as and when it was needed for specific building projects, a permanent presence will not have been required. Given the logistical problems of maintaining a large mixed civilian/military community in the middle of a desert where all food has to be conveyed from the Nile valley or the Red Sea coast, the reduction of these establishments to, at most, a basis of “care and maintenance” would seem logical. Once deployed in one of these desert bases, a soldier might stay on duty for a lengthy period. The subject-matter of the ostraca from the quarry site at Wadi Fawakhir on the Quseir - Qift road hints at more than a brief stay.⁴

¹ Excavations of the French institute in Cairo cf, Cuvigny, H. 2006.

² Zitterkopf, R. and Sidebotham, S. E. 1989: 160.

³ Sidebotham, S. 1991: 494 – 497.

⁴ Gueraud, O. 1942: 141 – 196.

The question of the duration and intensity of occupation in so many individual sites, is crucial to the problem of the number of soldiers needed to man these sites, supervise all the quarries, and police the desert roads, even supposing that just 50 of them coexisted at any one time. According to all epigraphic and papyrological evidence for army units in Egypt swells the overall number by no more than two or three. So, we are dealing at maximum with fewer than 20 auxiliary units all told, with relatively minor fluctuations in numbers over the first two centuries. moreover, it is apparent that some of these units contained dromedary camels as well as equites.

It may be estimated that there were, in the early 2nd century A.D., somewhere between 6000 and 7000 auxiliary soldiers responsible for duties based on a maximum of 70 military sites of all types throughout the province (in addition to policing and supervision assignments centred on non-military establishments). The clear majority of these tasks would have involved outpost duties, for the small pool of units available was operating out of a limited number of bases located in the "heartland" of the province, the Nile Valley, the Delta, and the Fayum, where they could be comfortably accommodated, fed, watered and generally provisioned. some units were based at nodal sites such as Coptos and Contra Apollonos, both points where roads that emerge from the desert into the Nile Valley. It may be strongly suspected that there was also a base at Qena, though specific evidence is lacking.

The nature and size of the military bases remain wholly conjectural. Evidence for their existence alone comes wholly from inscriptions and papyri. Most the sites have produced no evidence, so any generalisations must be regarded as tentative, However, it was very largely, though not exclusively.

The *ala Vocontiorum*, probably based at Coptos, sent men to the way-station of El-Muwayh (on the Coptos – Myos Hormos road) in the early 1st century A.D., to the quarries of the Gebel Tukh near Ptolemais Hermiu in the late 1st century A. D. and to Mons Porphyrites during the Trajanic period. It is notable that half of all the auxiliary units known to have been based at any time in Egypt appear on duty in quarries both in the desert and in the Nile Valley. ¹

The equation of fort size and garrison size, as well as attesting that the only personnel using the accommodation were military cannot be assured at the Eastern Desert sites where the number of persons whom a site is deemed able to accommodate must allow for a civilian element as well as the military. In the case of the forts along the trade routes, whose major role is taken to be the protection of commercial traffic, the walls may be assumed to have sheltered both the soldiers charged with supervising the traffic and those whom they supervised, this to include baggage camels and their handlers and not inconsiderable complement of their baggage. Besides, at the quarry-sites, some at least of the civilian quarry personnel should have lived within the forts. Therefore, the inhabitants were a mixture of civilian and military. An ostrakon from Mons Claudianus recorded water distribution to no less than 920 people present on the site on a given day, the number includes at least 60 (and possibly more) who were certainly soldiers. ²

¹ Maxfield, V. A. 1993: 18.

² Maxfield, V. A. 1993: 19; cf., Golvin, J. C. 1987: 5 – 64.

5.9.6. Communications between the *praesidia*

Two kinds of communication may be distinguished, although they were perhaps not so separate in practice as they should, in theory, have been.

I. Sending official letters and the official provisioning of the *praesidia*.

II. Private exchange of information, letters, money and other objects between the inhabitants of the *praesidia* along the road by the post-riders who used to take letters and not too heavy goods, for private individuals.¹

The post-riders seem to have re-turned to their base empty-handed, and this is surely when they could be persuaded, no doubt for payment, to take letters and whatever else they could carry, sometimes as much as 20 kg. moreover, no restrictions seem to have applied to the donkey-drivers.²

Post-riders

The most important job of the horsemen in the *praesidia* seems to have been relay-delivery of official letters. Our source for this is the day-book of the curator - *praesidii*, the non-commissioned officer in charge. He made his list on ostraca, day by day, noting the passing of official traffic and the arrival and dispatching of relay-riders. They would wait to see if something needed to be carried back to their home-station but this does not seem to be the case in the documented period. If a rider arriving at his destination coincided with one coming from the opposite direction, he may well have taken whatever was to be carried, but such a case does not seem to have arisen during the period covered by the documents from Krokodilo.

On the other hand, the carrying capacity of the riders on the return journey was not wasted. Apparently, the riders returned the same day, since there is a case where the same rider is sent forth from "Krokodilo" on two consecutive days. However, unpublished ostraca from the *praesidium* "Dios" add details to this and therefore, post-riders there sometimes met with their counterpart from a *praesidium* further away and took post back to their place of origin.³

The riders did not only transport letters. They used also to bring fish in a certain period of the year (example no. 3), sometimes specified as mullet and parrot-fish, from "Persou", coming from the Red Sea to Coptos. The fish must have been fresh and urgent therefore, a rider used to be setting out towards "Phoinikon" with fish that had arrived at "Krokodilo" in the first hour of the night. This fresh fish may have been destined for the table of the prefect of Egypt who would then have been holding *conventus* in Coptos during those days. The fish was supposed to be kept in a wet cloth, and that the distance between Myos Hormos and Coptos could be covered by the relay-riders in, perhaps considerably less than 24 hours. Apart from relaying mail, the riders also escorted important people or military transports as the roads were not always safe from gangs of Bedouins.⁴

Therefore, the work of a single horseman could do to protect a caravan of camels or donkeys against barbarian attacks. However, the post, sometimes, did not function as

¹ Kolb, A. 2000: 117-124

² Bulow-Jacobsen, A. 2003: 403ff.

³ Cuvigny, H. 2005: 19.

⁴ Cuvigny, H. 2005: 7 - 12ff.

well as it should and an inspector investigated the case of malfunction and made a report (example no. 4).

	Document	Notes
1	O. Krok.  17 α κλ(ῆρος) λ̄ · ἐπιστολαὶ [ῆ]νέκθ(ησαν) ἀπὸ Πέρσου διὰ Δομ(ιτίου) ἱππέ(ος) ἄραν (read: ὥρα) γ̄ ἡμ(έρας) · ἰς Φοι(νικῶνα) Καγιζα Fig. 219 Ostraca from Krokodilo. After, Bülow-Jacobsen, A. 2013: 562, fig. 6.	Translation: <i>1st tour (of duty), the 30th of (Mecheir). Letters were brought from Persou by Dimittius, the horseman at the 3rd hour of the day. Kaigiza (brought them) to Phoinikon.</i> The tour of duty is the number of the dispatch rider. There were three at Krokodilo: Kaigiza no. 1, Eial, no. 2, Aestivius, no. 3. This order decided which rider was to take the next trip whether to Persou or to Phoinikon. It becomes clear that the riders normally made trips only to the next <i>praesidium</i> and that they returned at once, “empty”.
2	O. Dios inv. 986 is a post-register where it is written: Κέλσος ἀπὸ πραισιδίου Κόμπασι ἐνήνοχεν ἐπι-στολὰς Ἐπιφ κθ ὥρα θ' ἡ νυκτός καὶ εὐθέως ἰ ἐβάσταξεν Δίσαλα . . ἰ ἀπὸ Ξηροῦ	Translation: <i>Celsus from the praesidium Kampasi brought letters on 25 Epiph at the 9th hour of the night and Disala from Xeron took them at once ...</i> Comment Celsus was coming from Kompasi north of “Dios” with letters, and Disala from Xeron south of “Dios” happened to be there and took them further south without involving any horseman from “Dios”.
3	O. Krok. 1 37 γ̄ κε ὥραν ᾱ νυκτός ἡνέκθη ὀψάρια [ἀπὸ Πέρσου] 38 διὰ . . ζ . υ. ? Διζα . . ζ? ἰς Φοινικῶνα Αἰστίς.	Translation: 3rd (tour of duty). 25th (Mecheir) in the 1st hour of the night fish was brought from Persou by (corrected into Diza). Aistivius (brought them) to Phoinikon.

4	O.Dios inv. 39 Ἐπεὶ φιλῶ ἐλθόντος διπλώματος τῆς ἐπιθέσεως καὶ ἐπιστολῶν ἡγεμονικῶν διὰ Νεπωτιανοῦ ἵππέως 5 {ηρα} ὥρα{ν} α τῆς νυκτὸς Ἡρακλῆς ἵππεὺς λαβὼν τὰς ἐπιστολάς ὥρα{ν} ι τῆς νυ- ηύρ() κτὸς ἐξῆλθε, ὃ καὶ δύνασαι ἐπιγνῶναι, μετὰ 10 γυναικὸς κοιμώμενος.	Translation: <i>Epeiph 19. As an order of conveyance and letters of the prefect arrived through Nepotianus, the horseman, at the first hour of the night (c. 7 pm), Herakles, the horseman, took the letters, but did not leave until the tenth hour of the night (c. 4 am), which you can verify, (in margin; “I found it”) because he was lying with a woman.</i> Comment The inspector is not yet identified, nor to whom he reported, Besides, the text shows: - The amusing insight in the private life of Herakles, the horseman. - The post was meant to travel by night as well, that would not present any problem if it was a moonlit night.

Watch Towers “*Skopeloi*”

Safeguarding the trade caravans, the gold mines and the quarries, required that the Romans built up a chain of 65 small solid watch towers on the lower slopes or hills of the mountains in visual contact with one another, distributed atop the mountains flanking the road. Each tower is in sight with one or two others. These towers were planned as square, solidly built with no interior space approximately 2 – 2 ½ m in height to allow strict control of the whole road, as the towers would have been visible one to another so that messages could be quickly transmitted by mirrors and flags; fire signals would rarely, if ever be used. Towers were built with stones collected in the neighbourhood, therefore, they were built in granites, schists, metabasites). Stones were carefully stacked without mortar and with the inner filled by debris; they were roughly squared about 3,0-3,5m a side and a few meters high.¹

The best preserved are some 3.5 m high, solid and with a platform on top. and they are placed on mountains or on the plain at varying distances (from 0.4 to 6 km), but always to be inter-visible forming an immediate thought of an optical telegraph. although they may be considerably younger than the *praesidia*, they cannot be functioned as beacons as there are no traces of fire at the top of any of them.²

The Romans did know about optical signalling with beams, perhaps something like the “Chappe” optical telegraph but such a system would presumably demand a structure or supporting and managing the beams that should still be visible in the better-preserved towers. They were built of the local field stones. Presumably soldiers sent out in rotation from the garrison of the *hydreumata* stood watch by these towers, ascending them only when a signal had to be sent.³

Scholars argued about the actual function of these watch towers:

- To signal nearby *hydreumata* of approaching caravans or marauding nomads so that they could prepare reception or defense.
- To signal Coptos with the merchant ships arriving at Quseir that could be suggested by the inter-visibility of the towers.
- For the existence of upper and lower watch towers, the explanation that fits well is that the guard or the soldier who is on the hill could see farther than a guard in the lower *Skopeloi* therefore, any banditry or marauding would be more visible hence, signals and transmits descended from the higher to the lower watch towers.⁴
- A plausible function may have been for an optical signalling during the Islamic middle ages, perhaps for the sake of the pilgrims to Mecca who took this road, and perhaps the system was never used, which would account for the absence of signs of humans spending time around them.⁵

¹ Sidebotham et al. 2008: 90 ff.

² Riemer, H. and Förster, F. 2013: fig- 15.

³ Bagnall, R. S. 1982: fasc. 113, p.p. 125 – 126.

⁴ Bernand, A. 1972: 125, n. 60, pl. 12, fig. 1.

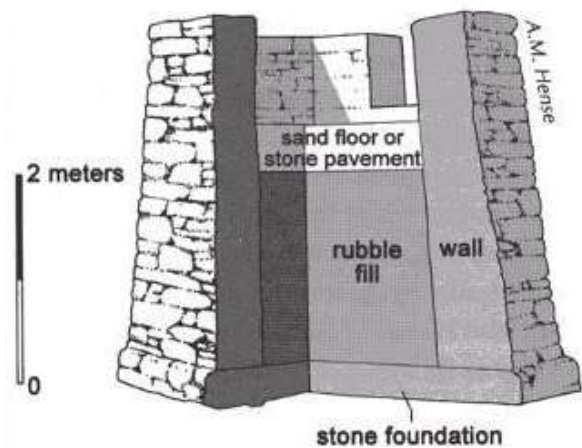
⁵ Bülow-Jacobsen, A. 2013: 568.

The original function of these towers is still unknown that can be attested through:

- They do not seem to have been manned regularly as none of them contains any ceramics and no paths leading up to them were surveyed.
- They did not function as a way - mark, quite a few of them are placed to be ambiguous and they are not always visible from the road. Moreover, if they were Look-out posts, they would have been manned and would have had visual contact with the *praesidia*, which is not often the case.
- If they were part of signalling-system, they were probably built at a time when the *praesidia* no longer functioned, since written communication along the road through the post-riders were quite fast and efficient.



(A)



(B)

Fig. 220

Watch towers along the Quseir – Qift Road.

A. photography of the researcher.

B. Afte, Sidebotham, S. E. 2008: 92, fig. 4.17, Pl. 4.18 – 4.19.

5.9.7. Water and Supplies on the Quseir – Qift Road

The primary need along the route was potable water that used to be secured by the *hydreumata* either from wells—often within the enclosures—or cisterns to which water could be carried. The Eastern Desert is a very arid region in which a typical rainfall, although infrequent, can be very intense causing a powerful flash flood (seil). The size of waterborne stones in wadi beds attests to the tremendous energy potential of these floods.

Examples of these damages can be attested after the 1979 flood that damaged and destroyed houses and caused loss of life in Quseir. Moreover, sections of road to Mons Claudianus were washed out and, in other sections, covered by stones weighing about 30 kg or by sand and gravel about one metre deep in 1986. Therefore, it should have been intense, infrequent rains such as these which supplied some of the water for the Eastern Desert *hydreumata*.

Natural catchment basins (qalts) in the mountains retain surface water, but these are unreliable due to the infrequent rains and few are conveniently located on the central desert route. Groundwater reserves are the most dependable source even though most groundwater is either very saline or brackish. During the Roman period, many water points were available. Digging through wadi sands in the Eastern Desert today one can usually find water at a relatively shallow depth.¹

Pharaonic inscriptions at Wadi Hammamat indicate that Egyptians dug numerous wells in the region.²

Most Roman wells are probably not evident today due to obliteration by flash floods. Each station probably had its own well and it is possible that numerous other temporary small wells existed along the route disassociated from any major population centres. At many *hydreumata* the well was large, in some cases as much as 30 m in diameter. The free water surface of the aquifer may have been at the bottom of the large diameter excavation or there could have been a smaller diameter well at the bottom of this tapping the aquifer.

The most abundant source of good water along the route is at el-Laqeita, only few metres below the surface of which the agricultural expansion evidence the quality of this source. The Romans knew of this source and made Laqeita a stop on both the Berenice and Myos Hormos roads although the water now comes from very deep wells.³

It is evident that water supplies had to be protected; any cisterns in the stations were surely covered. the amount of water required by travellers/residents in the Eastern Desert can approximate be:

- Drinking needed about 6 L/day per person.

¹ Zitterkopf, R. E. and Sidebotham, S. E. 1989: 163.

² Gardiner, A. 1972: 124.

³ The name of the road was mentioned as “Leukos Limen” by Zitterkopf, R. E. and Sidebotham, S. E. 1989: 164, as the article was published before the new discoveries proved that it is Myos Hormos road, cf., Peacock, D. P. S. 1993: 226 – 232.

- Cooking, bathing, cleaning, etc. may have raised the daily requirement up to about 20 L/day per person for the residents at the *hydreumata*.

As for the necessary water for those stationed in the *hydreumata*, it can be assumed that many travellers coming from the Nile carried their own water. However, those arriving from Myos Hormos were dependent on the Eastern Desert wells as water along the coast was not potable due to high salinity and the source must have been inland. There were several large mining communities on the route which had a constant demand for water and, ergo, a relatively abundant source of drinking water. Water was probably used sparingly for small gardens near some wells. ¹

More important than agricultural use was the requirement for animals which varied with the seasons and the amount of moisture available in the food. A working pack animal-donkey in hot weather requires 10 L/day and about 20 L/day for a pack-camel. However, the camel's better ability to go without water enabled it to journey from the Red Sea to the Nile without chinking. Furthermore, camels can also drink water too saline for human consumption and about five times the salinity tolerated by a donkey. Thus, the camel was probably the preferred pack animal. ²

Apart from the necessity of water, other alimentary supplies were recorded in the written material discovered along the Quseir – Qift road such as:

Two ostraca from Wadi Fawakhir record deliveries made by the waggoners to the garrison at this eastern desert location. In one, the waggoner is not identified as a soldier and has an Egyptian name, which suggest that he is a civilian. ³

The text of this ostraca dates to the 1st or 2nd century, and at this early date in the imperial period, it is unlikely that Egyptians would have served in the Roman army, even in auxiliary units, this gradually changed during the late second century when Egyptians were inserted in the Roman military posts.⁴

These facts proved that the *hydreumata* were resided by both the Roman soldiers who provided protection for caravans travelling from the Red Sea to the Nile valley, the workers in the quarries and mines of the region but, and the soldiers who were spent away from the Nile valley in the desert for a long period. Therefore, supplies brought by the civilians were essential. These civilians were involved in a substantial capacity throughout the empire, a phenomenon attested by the texts. These supplies entailed two different considerations:

- The transport of goods to the military posts.
- The production and sale of goods.

Regular supplies to the army garrisons in the eastern desert of Egypt were attested through the archive of Nicanor, which concerns the business of Nicanor and his family during the 1st century AD. ⁵

¹ Zitterkopf, R. E. and Sidebotham, S. E. 1989: 164.

² For the camel usage in the Roman north Africa, cf., Demougeot, E. 1960: 209 – 247.

³ Gueraud, O. 1942: 141 – 196.

⁴ Lewis, N. 1983: 20; Fink, R. O. 1971: nos. 78,1 and 78,36.

⁵ Adams, C. E. P. 1995: 120.

5.9.8. Ceramics of Coptos - Quseir Road

From the end of the 1st century AD till the middle of the 3rd century AD, the inhabitants of the *praesidia* along the Coptos – Red Sea roads used to drink local wine of Coptos that had a certain reputation to be so light and easy to be transported and digested without causing health problems. The wine of Coptos was the frequently mentioned subject in the correspondences till the end of the 6th century AD.

The amphorae that frequently transported this wine bore the name and address of the recipient but never designated by their content or date so it was obvious to the recipients, that the drink carried in these containers was the local wine of the year. The difficulty to keep the wine of Coptos was referred to in the ostraca and the papyrus such as the early 7th century AD letter in which Kallinikos asked Pisenthios to take measures to prevent the loss of wine by the fault of a steward who is slow to carry an amount of wine.

It is difficult to estimate the quantities consumed by the inhabitants of the *praesidia* because even in the context of the desert, archeology cannot find all the amphorae as an indeterminable share have been imported by the flood. Moreover, no one knows precisely how many people were living in the *hydreumata* (military, riders, civilians, shopkeepers and prostitutes).

The form of the amphorae discovered can be an indicator to calculate the annual amount consumed and the number of the inhabitants. In addition to the local wine, military drank imported wine transported from other parts of Egypt such as Aswan and Alexandria in Dressel 2/4. Aswan wine was an expensive wine, it was first sold in amphorae, then, starting from the second half of the second century, in gourds, whose capacities vary between 1.5 and 3.5 liters.

As for the consumption of foreign Wines, Amphorae attest the different types and chronology of usage of foreign wine such as:

- Italian and Rhodian wine: The end of the 1st century and early 2nd century AD.
- Cretan wine: Between the 1st and the 3rd century AD.
- Laodicean wine: The 2nd century AD.
- Gaulish and Ephesus' wine: The second half of the 2nd century to the early 3rd century AD.
- Aegean islands' wine and African wine: during the 3rd century AD.

Moreover, the size of amphora determined the different types of products used and imported inside the *praesidia* as certain products such as salted fish were bought in small quantities and certainly delivered in small containers. ¹

¹ Brun, J. P. 2007: 522 – 523; for more about amphorae in the Eastern Desert, cf., Fournet, J. L. 2000: 212, no. 182; Tchermia, A. 1986: 21 – 27; Tomber, R. 2002: 393 – 402.

5.9.9. Architectural Elements of the Fawakhir Settlement Houses

I. Wall-niches

The houses in Fawakhir settlement are provided with a widely-varied number of wall-niches for storage that showed no pattern of arrangement and need not to be on the same level in the same wall and in some cases, only half a niche is preserved.

All the niches are labeled even when the thin back walls have fallen away, the features now look like windows if compared with the modern houses of Bir Umm Fawakhir that tend to have small, shuttered or shaded windows, often high in the wall.

II. Benches

They are usually made of a row of slabs set upright and apparently filled with sand and stones. The benches are either back up against a wall or are built into a corner. Sometimes, boulders were used as benches and several buildings have outside benches too.

The bench is a characteristic feature of the Egyptian houses of all ages, and in such case, they were also used as water jars' holders.

III. Stoves

The stoves are not common in Fawakhir settlement despite the cold weather in winter, but some small benches may have functioned as stoves. No traces of ashes were kept because of the wind effect in blowing away most of the surface ash.

IV. Rubbish and sherd dumps

One of the astonishing features in Bir Fawakhir settlement, they were usually located beside or behind the buildings at the foot of the cliffs. The floor surfaces of the houses are relatively free of sherds and debris as most of the rubbish seems to have been dumped on piles outside.

The site was never rebuilt and rubbish heaps were not removed or redeposited as in the case of the long-lived sites. Therefore, the contents of the rubbish heaps are most probably derived from the adjacent house or houses.

V. Walls, Floors and door panels

No floors or remains of door panels or roofing material were discovered except for two or three possible windows. Doors, at least those opening onto the streets would have been made of wood of which one stone door socket is still visible. Door jambs are usually constructed of stones, often long and thin. Walls might have been plastered, however, water is a prime commodity in the desert to be used in plastering. Roofs are scarcely found in Bir Umm Fawakhir settlement as rooms were most probably roofed with palm logs, stringers and covered by roofing material. It had to be solid enough to stand the winds but not necessarily the rain and due to the great importance of wood in the desert, it was one of the first things stripped away.¹

¹ Meyer, C. 1995 a: 212.

5.9.10. The Inhabitants of Bir Fawakhir Settlement

The site of Bir Umm Fawakhie was occupied during the 5th and 6th c. and perhaps into the 7th century AD. The Oriental Institute team used two methods for estimating the size of the population which are:

- Persons per household

By counting the number of houses and multiplied by an average figure for number of inhabitants that resulted about (3.5 to 5.0) persons per house. This method allowed some uncertainty in counting damaged house units, therefore, a figure of 117 to 128 houses multiplied by 3.5 and 5.0 can result calculations ranging from 409.5 to 640 people. However, the unmapped half of the site gives us low and high figures of 819 to 1280 for ancient Bir Umm Fawakhir.

- Square meters of roofed houses

The second method of estimating the ancient populations is to take an average figure of so much roofed floor space per person in a house. This figure, 9 – 10 m square per person is consistent cross-culturally.

As the total figure for all houses mapped in Bir Umm Fawakhir settlement (During the Oriental Institute first two seasons) was 5422 m square, divided by 10, this yields 542.2 people then doubled to account for the other half of the site, that gives 1084.4 people in the main settlement. Therefore, more than 1000 people can be considered as an estimation for the population of Bir Umm Fawakhir (excluding the outlying clusters of ruins). ¹

5.9.11. Transportation and Movement along the Myos Hormos Road

Caravans must have passed from Myos Hormos to Coptos at least until the opening of Trajan's canal after 112 A.D. these caravans are absent in the written material found during the excavations inside the *praesidia*. Movement and transportation were referred to in the letters with the word "anyway" however, Nicanor archive refers to the use of Camels.

Wagons, conductors and camels seem to have been of military use and to have served to supply the stations and their garrisons in organized caravans. Donkeys did odd job and they were used to carry provisions in caravan or private means of transportation. Horses and horsemen served for transportation when they were persuaded to carry something but it was mandatory to carry the official letters and fresh fish to the prefect who resided in Coptos.

It can be concluded that donkeys, horses and wagons had a specific role in the transportation system, serving either commercial or military purposes and merchants, traders and peddlers who sold fish, vegetables and women around the stations had to hang on the fringes of this transport system using whatever free capacity was available from time to time. ²

¹ Meyer, C. 1995 a: 211 ff.

² Bülow-Jacobsen, A. 2006 b: 413.

5.10. Eastern Desert Petroglyphs

5.10.1. Rock art in the Central Eastern Desert

The geography of the Central Eastern Desert has clearly had a major effect on the presence of the petroglyphs as they usually occur on major routes through the wadi system. The images are mainly bounded by the Wadis Baramiya and Hammamat in south and north, and by the edge of the sandstone escarpment in the east. It is the sandstone surface which has attracted the bulk of the rock-art. In addition, there are notable concentrations on routes to the gold mines, quarries and the Red Sea.

It is also evident that ease of travel regarding conditions under foot and the convenience of entry in to the desert strongly governs the choice of wadis by the petroglyph creators regarding where to make images. These factors account for the scarcity of entry points opposite the central part of the survey area, and probably therefore the much lower number of petroglyphs proportionately in that area.

Although rainfall has never been extensive over the survey area, sufficient water resources have been available over the millennia to support a range of fauna due to the refilling of aquifers. Even today the water resources available in the Central Eastern Desert are sufficient to support travellers on foot, a nomadic population, ibex and gazelle. Despite most wells being located beyond the sandstone zone, and therefore, outside the survey area, modern reconstruction and the evidence from Bedouin travellers shows that desert travel is perfectly feasible to this day. So long as past travellers had either knowledge of routes or reliable guides.

Journeys would not have presented insurmountable problems, reconstruction of the prehistoric climate and comparison with the Western Desert indicates that a variety of fauna, except for large animals such as giraffe and elephant, could be hunted there over a very long period. This is reinforced by Old Kingdom tomb paintings.

Even as late as the New Kingdom and beyond, depictions of a range of desert animals indicate that during the pharaonic period considerable hunting activity could have continued.

progressive aridification meant that the area could not support large animals. Indeed, it is notable that there have always been sufficient water resources to travel across the "desert" and that this is true even today.

Hunters have slaughtered vast numbers of gazelles. Even so - herds of gazelles, antelopes, rams, goats, crocodiles, giraffes, and even ostriches come to life again in the scenes carved into the rock walls of the gorge. Such hunting scenes, scenes of war, of combat, of dancing, or of worship are drawn on the walls of cliffs all along Wadi Hammamat. Therefore, A photographic dossier is prepared to be used as an illustrative guide for the Ancient quarry site of Wadi Hammamat indicating the quarrying level in the wadi.

Hunting, which is the main subject of the petroglyphs, has continued into modern times and is seen all over the survey period from all eras, despite two climate crises and progressive aridification over the millennia. As long as a traveller had guides, or only had to follow the Roman road, travel would not have been difficult on foot, by mule or, especially by the use of camels. The exercise by which the whole length of

the route from the Nile to the Red Sea was traversed on foot with donkeys recently reinforces this conclusion.

An overwhelming number of the petroglyph sites are located on the sandstone ridge and once one leaves the central eastern desert, only a few pharaonic images and inscriptions can be identified with confidence. A large proportion of sites are at low level, and many sites either have boulders in front of a main face and/or are accessed by a sand ramp. This has had a strong influence over where the petroglyphs have been placed. The level of the wadi floors has almost certainly changed little over the millennia and the location of most of the petroglyphs can be accounted for by ease of accessibility (the availability of shade and a clustering around side wadi entrances). In the narrow wadis, there are more petroglyphs simply because of the ease of access to suitable surfaces to inscribe. There is also a clear relationship between the presence of petroglyphs and where vegetation is found even today. These are the locations where game animals would probably have gathered to feed, and thus attracted hunters active in the Central Eastern Desert, leading to concentrations of rock-art.¹

Inscriptions of Wadi Hammamat quarry site indicated how the missions were organized and conducted during the quarrying period. However, these inscriptions should have been inscribed by the quarrymen addressing those who will pass afterwards or the future visitors to the site, particularly the literate leaders of the Expedition to inform them to their predecessors' presence at the site and their achievements there. Socially, some members of the expeditions were mentioned in the inscriptions whereas others were excluded that might have been a reward for excellent work or special assistance during the expedition. These excluded participants left some personal inscriptions of their own, a configuration of commemorative expedition inscriptions and personal inscriptions that occurred especially in the Old Kingdom inscriptions.²

These inscriptions are clustered in this part of the Wadi as aspects of visibility and localization perhaps were considered prior to inscribing, once, this rock-face was viewed/approached from the main route through the wadi, it would have presented a highly visible arena-like aspect of widely fractured blocks of greywacke, rising in a series of steps up to a height of more than 20 m into the hills opposite the *bekhen*-mountain region of quarries.

Fig. 221

Cluster of inscriptions covering a time range from the Early Dynastic to the Late Period.

After, Bloxam, E. 2015: fig. 14.



¹ Lankester, F. D. 2012: 84 - 85.

² Sweeney, D. 2014: 289 – 290.

5.10.2. Risk and Deterioration

The importance of the study is due to the risk of deterioration that threatens the site of the greywacke quarries as the greywacke rock inscriptions have significantly deteriorated in the last decades. Several types of rock deterioration can be found, namely exfoliation, flakes, efflorescence, current detachment of stone material and deformation. The site is affected by a series of joints, faults, cracking, sliding movements, dislocation block and rock falls. It is worth mentioning that the fall down of the stone blocks, leads to the damage of many rock inscriptions carving on greywacke rocks.

Furthermore, two types of the failure might result from thermal weathering (insolation weathering), including exfoliation and disintegration of the stone. In addition to the role of rainwater, moisture and underground water in assisting the weathering of greywacke minerals, increasing the chemical weathering and leading to the formation of clay minerals.

The petrographic analysis executed in a study published in E-Conservation no. 21, 2011 revealed that:

all the greywacke rocks are mainly cementing by calcite, iron oxides, sericite, chlorite and clay minerals. The ferromagnesian (chlorite, chloritoid, magnesio chloritoid and forsterite), iron oxide, calcite and clay minerals were easily altered and removed by chemical weathering. With increasing grade of the chemical weathering by the dissolution of calcite and clay minerals the amount of microfractures and voids increases in the greywacke rocks and causing damage of the rock inscriptions.

The XRF analysis reveals that the greywackes have a high content of Fe_2O_3 due to the alteration processes and the high content of MgO due to the high amount of ferromagnesian minerals. Gypsum, anhydrite and halite were the common salts developing in the greywacke rock inscriptions. High gypsum content near the surface is a crucial factor for flaking, pitting and contour scaling, when the areas with high load of halite are characterised by a visibly darker weak surface. Gypsum and anhydrite formation cause damage of the Portland cement mortars and their adjoining rock inscriptions.

The reaction between the cement mortar and the greywackes will eventually lead to flake, crumble and deteriorate greywacke rocks. The chemical classification diagrams confirmed that the greywacke rock can be described as ferromagnesian rich quartz-intermediate with a high content of ferromagnesian minerals as detected through the petrographic studies, XRD and XRF analysis.

These minerals are easily altered and finally transformed into clay minerals and cause intensive disintegration of greywacke rock inscriptions. Moreover, the CIA values of the analysed greywacke samples indicated a moderate to less strong weathering. Consequently, the temperature change, moisture, rain, salts, and incorrect restoration representing the very important factors lead to the disintegration of greywacke rocks. Geochemically, the greywacke deterioration can be attributed to the dissolution of calcite, clay and iron oxides. Feldspar and ferromagnesian minerals by intensive alteration were easily removed, altered into iron oxides and clay minerals very rapidly and led to different deterioration features in the greywacke rock inscriptions.¹

¹ Kmalý, H. A. 2011: 66 – 79.

The rock-art of the Eastern Desert is not particularly well known and moreover is situated in a military area where permits are required to undertake visits. But it is still vulnerable to several threats.

Petroglyph sites in the heart of the Eastern Desert are also under threat from quarrying and the efforts of treasure seekers. Often, the result of these activities is the digging of pits, as in the Nile Valley, especially in front of an inscription which is presumably believed to indicate the presence of something valuable buried nearby.



Fig. 222

The treasure hunter's digging.

After, Lankester, F. fig. 11, online reference:

https://www.ucl.ac.uk/archaeology/research/directory/material_culture_wengrow/Francis_Lankester.pdf

The availability of modern equipment constitutes a greater threat than the efforts by hand. Illustrative of this is the development of sites consisting of boulders forming a cave (a rare feature in the Eastern Desert – such as the cave of Bir Umm Fawakhir) and is home to a considerable number of rock-art images ranging from pre-dynastic petroglyphs through to Roman era inscriptions.

Despite much of the rock-art is located in areas perceived to be remote, the deceit petroglyph sites are in reality still often as vulnerable as the valley locations are. Sites along the major Qift - Quseir and Edfu - Mersa Alam routes from the Nile to the Red Sea are especially open to graffiti, quarrying or deliberate vandalism. Off-road rock-art sites in the heart of the Central Eastern Desert are endangered by mining operations and treasure hunters, the latter (including the use of specialist equipment) having been an increasing problem. Indeed, it must be stressed that the petroglyphs have been endangered and damaged almost entirely before recent events in Egypt. Much rock-art is situated in shaded sites along Wadi Baramiya and Wadi Hammamat, both modern routes to the coast. Attractive as rest and refreshment stops from ancient times petroglyph panels have attracted modern graffiti. This is particularly the case in the

Wadi Baramiya where many sites are particularly close to the road, but has also occurred in Wadi Hammamat. The pharaonic inscriptions in the latter wadi have also suffered from the attention of attempts to copy some of them with the taking of impressions adversely affecting the patina of the rock, in addition to the removal of features which may have offended social and religious sensibilities. Although these actions have a long pedigree, most of them have occurred **in** the last decade.



Fig. 223

Inscriptions of Wadi Hammamat

Left. Recent graffiti over boat.

Right. Quarry graffiti vandalism.

Right down: changing in colour due to taking of impressions.

After, Lankester, F. figs. 5 – 8. Online resource:

https://www.ucl.ac.uk/archaeology/research/directory/material_culture_wengrow/Francis_Lankester.pdf

5.10.3. Preservation of the Desert Rock Art

It is not feasible for the authorities to protect more than a small proportion of Egyptian rock-art sites. There are far too many and a large number are desert sites. Those which are currently fenced and guarded are the high-profile Palaeolithic sites which are in the Nile Valley and amenable to being under close watch by the SCA. The extension of protection could be funded by a suitable visitor charging policy concerning these sites. The construction of facsimiles of some sites would then act as an educator and raise awareness and interest in the protected ones. One solution could be to remove some panels particularly under threat, as has been done in the case of examples from sites now under Lake Nasser and currently displayed in the Nubian Museum at Aswan. However, this destroys the context and should only take place where destruction is otherwise inevitable. All archaeological missions in Egypt should be encouraged to reconnoitre and record rock-art sites near their concession.

There is a need to establish a mission to complete the recording of the Eastern Desert petroglyphs, A digital database comprising all the rock-art recorded within Egypt would be an extremely valuable resource, but this requires funding and overall supervision by the national authorities to bring all the disparate past publications and future recording efforts together. Destruction of Egypt's rock-art has been taking place for a considerable period. But the acceleration in the threat from quarrying, mining, treasure-hunting, vandalism and the graffiti vandals means that the need for action is urgent.¹

¹https://www.ucl.ac.uk/archaeology/research/directory/material_culture_wengrow/Francis_Lankester.pdf

5.11. The valorization of Myos Hormos road

5.11.1. The Archaeological Park

Definition

A territory characterized by important archaeological evidences of historical, landscape or environmental value, equipped as open-air museum on the basis of a specific institutional legislation.¹

Zoning concept in the archaeological park

The zoning system in National Parks “...is an integrated approach by which land and water areas are classified according to ecosystem and cultural resource protection requirements, and their capability and suitability to provide opportunities for visitor experiences”.

Purpose of zoning concept used in archaeological park

- Delineate types of use.
- Develop economic potential for each zone.
- Maximize the site's potential as a revenue generator all while protecting the site values.
- Provide government officials responsible for site management with management tools and guidance to help them in planning and in the day-to-day management of the park.
- An effective option to protect archaeological resources within a national park or national marine conservation area.
- Separate conflicting recreational use of land.

Application of the five zoning categories, ranging from Special Preservation (Zone 1) to Park Services (Zone 5), is based on park objectives, analyses of the natural and cultural resources of the park, and visitor use patterns.

Zone 1: Area for protection for the immediate environment of the monument with no development allowed for except for landscaping.

Zone 2: Area for development of facilities for visitor use, park operation and archaeological conservation activities.

Zone 3: Area including the access road and smaller monuments within which land uses are strictly controlled to be compatible with the park concept.

Zone 4: Area for maintenance of the history scenery.

Zone 5: Area for undertaking archaeological surveys and protection of unexcavated archaeological sites.²

¹ The definition given in: supplimento ordinario n. 165 alla gazzetta ufficiale. (ex. Art. 101, comma. 2, lett. e, del codice), linee guida per la costituzione e la valorizzazione dei parchi archeologici. Cf., Bedin, E. 2013 – 2014: 19.

² Ministry of Canadian Heritage, 1994: 30; Swarbrooke, J. 1999.

Target of the Archaeological Site Park

The creation of this park aims to:

- Encourage tourists to visit and comprehend the ancient Myos Hormos road.
- Safe keeping and caring about the actual aspect which the sites maintained.

This research proposal aims to be developed gradually in time and strictly tied to the progress of the archaeology research and consequent reconstruction.¹

The Impact of Tourism Development

Due to location, climate, limited resources, size and cultural heritage, some places have no choice but to engage in tourism to grow, develop and improve their living standards. Therefore, strategies may include a focus on heritage development, theme parks, an image or event – based tourism (which is applicable in the case of Myos Hormos road).

However, to attract tourists, sites must:

- Respond to the travel basics of cost, convenience and timelines.
- Market not only their destination but also their specific attractions.
- Provide easy access to their attractions.

In addition to the effectiveness of media in creating the destination image that requires a congruence between advertising and the site itself as tourism marketing is much more than selling a place to potential visitors as it includes:

- The positioning of the product (the site).
- The relative cost of one place compared to another.
- The distribution or accessibility of the site to potential target markets and the variety of methods used to inform and attract visitors.
- Matching the product, price and place with potential visitors is at the core of tourism marketing.²

¹ For similar examples of archaeological site park, cf., Ramazzotti, M. 2008: 192 – 194.

² Martin, L. A. 2002: slides 13 – 23.

The archaeological research in urban contexts is based on one principle which states that the integration of archaeological and historical information, diversified in the space time dimension, can thus produce a high number of new data that positively lends itself to an analytical evaluation and to an experimental simulation.¹

This part of the study proposes a new model to control and corroborate the archaeological data, it could be an analytical approach able to cover dynamically all the spatial relationships during the site occupation. And finally, it would put forward a potential method to define the complex interrelation system between human and natural resources that the Myos Hormos road archaeology deeply encompassed until the present time. The study proceeds to sketch the effective structure of the analytical model proposing the practical application of different disciplinary sectors such as:

- The creation of a site museum.
- The restoration and conservation of the monuments.
- The acute geophysical and the topographical analysis.

This park aims to realize:

- The complete arrangement of the monuments previously excavated.
- The creation of visit routes of each *hydreuma* and of the entire site.
- The planning of an informatic support for an advanced management of the archaeological elements.
- A plan – segmentation of the archaeological features recognizable in each site.
- An analysis of the spatial relationships between each single archaeological site.

Proposed developing project for the Myos Hormos Road

Actions should be promoted to support the development of cultural heritage and landscape spread through the promotion of a project aiming to network and encourage the cultural heritage value of the Central Eastern Desert, culture and economy through the collaboration between all resources and actors on the territory.

¹ Ramazzotti, M. 2002: 651-752.

Major actors in a site marketing process

The major actors can be divided into groups as:

I. Local actors	- Public sector actors. - Governors and city mayors. - Urban planning department. - Business development department. - Tourist bureau. - Public information bureau. - Infrastructure managers. (Transportation).
II. Private sector actors	- Real estate developers and agents. - Financial institutions. - Infrastructure utilities. - Chambers of commerce. - Hospitality and retail industries. - Tour packers and travel agencies. - Transportation companies.
III. Regional actors	- Regional economic development agencies. - Regional tourist boards. - Government officials.
IV. National actors	- Head of the government. - Ministries. - National unions.
V. International actors	- Embassies and consulates. - International agencies.

The Target Markets

The target markets are divided in 4 groups:

Visitors	Business visitors. Tourists and travelers. (in the case of Myos Hormos road educational tourists and excavation teams are also considered as one of the targets).
Business and industry	Restauration. Hotel industry. Entrepreneurs.
Residents and workers	Professionals. Skilled workers. Individuals – school students. Investors. Personnel.
Export markets	Localities with domestic markets. International markets.

Approaches for the Site Development

Community development	This factor can be achieved through creating a quality environment for the people currently living and working in the community (in this case the Bedouins living in the region), good schools, increased public safety and adequate health facilities.
Urban design	Open space. Road layouts and traffic flow. Cleanliness and environmental quality.
Urban planning	Land use and zoning. Density concerns. Traffic control.
Economic development	The economic development of the site helps in enhancing its competitiveness. This economic development can be achieved through: - New industries (in this case tourism and restaurant industry). - More productive use of resources (quarries and mines).

5.11.2. Museology and the case of “Myos Hormos” road

The museum is a feature of urban culture dedicated for the conservation of a variety of objects of cultural interest. The museum has, particularly since the 18th century come to mean a building housing a public collection of artistic and scientific objects.

The 19th century can with Much justification be called the age of the museum. In the early 19th century objects such as the masterpieces of classical civilizations, particularly Egyptian, Greek and Roman were collected.

Whereas in the 19th century the function of the museum was perceived as bringing a new order into old collections and to accommodate these in a representative building, today museums are increasingly devoting attention to bringing the past alive by among other things, installing interactive exhibitions, often with an educative intention as a means of increasing the number of visitors by attracting school visits.

Thanks to modern means of transport, many collections from all over the world are sent on tour, and the cultural heritage of many nations and peoples can now be viewed and studied by those who would not themselves be able to visit the museums and galleries that house these items.

"Open Air" museums include not only the type of reconstructed theme park museum that has become popular in recent years, but also important sites that have survived in the open or have been excavated.

Archaeological sites such as the city of Pompeii, the Forum Romanum in Rome, the Acropolis in Athens, the city of Ephesos in Turkey, the Great Wall and the Terracotta Army of China are few examples of these important, cultural heritage sites which are protected and much visited by tourists.¹

The Myos Hormos road can also be considered one of these archaeological sites that survived in the open and recently have been excavated to confirm the chronology of the sites along the Qift – Quseir road from the Pre-dynastic period till at least the 3rd century AD with some later findings.

The Quseir – Qift Road offers the possibility of creating an open museum indicating the trip followed since the Pharaonic period through the Roman era on the road as the ancient trade route, then through the Arabic period as the Hajj (pilgrimage) road.

A similar Model: Avdat Desert on the Israeli-Jordanian borders

Avdat is one of the four Nabatean towns together with Haluza, Mamshit, and Shivta, along with associated fortresses in the Negev Desert in southern Israel. They stretch across a 100-km section of the desert, from Moa on the Jordanian border in the east to Haluza in the northwest. They are 10 sites, spread along routes linking them to the Mediterranean end of the incense and spice route. Together they reflect the hugely profitable trade in frankincense and myrrh from south Arabia to the Mediterranean, which flourished from the 3rd century BC until the 2nd century AD. With the vestiges of their sophisticated irrigation systems, urban constructions, forts and caravanserais, they bear witness to the way in which the harsh desert was settled for trade and agriculture.

¹ Thorpe, K. 2009: 177 – 178.

They were supported by extremely sophisticated systems of water and irrigation supplies that allowed life in the desert. The sites remained as a testimony of the economic power of a long desert supply- route from Arabia to the Mediterranean in Hellenistic-Roman times, which promoted the development of towns, forts and caravanserais to control and manage that route.¹



Fig. 224

The desert site of Avdat.

After,

<http://www.biblewalks.com/sites/Avdat.html>.

¹ <http://whc.unesco.org/en/list/1107>; For more about the valorization of the Avdat spice road fortresses cf., <http://www.biblewalks.com/sites/Avdat.html>.

The Egyptian Model: El Zarqa Hydreuma

El Zarqa (Maximianon) represents the most complete well – preserved *hydreuma* along the Myos Hormos - Coptos road. it contains relics that indicated the series of elements included in a desert road *hydreuma* (water stop shelter) which are:

The Fortress (*praesidium*).

Fortified walls, door and towers.

Water sewerage and pipe system.

The *Praetorium* (The Roman general's house or tent).

The spa (Thermal bath).

The kitchen.

The cemetery.

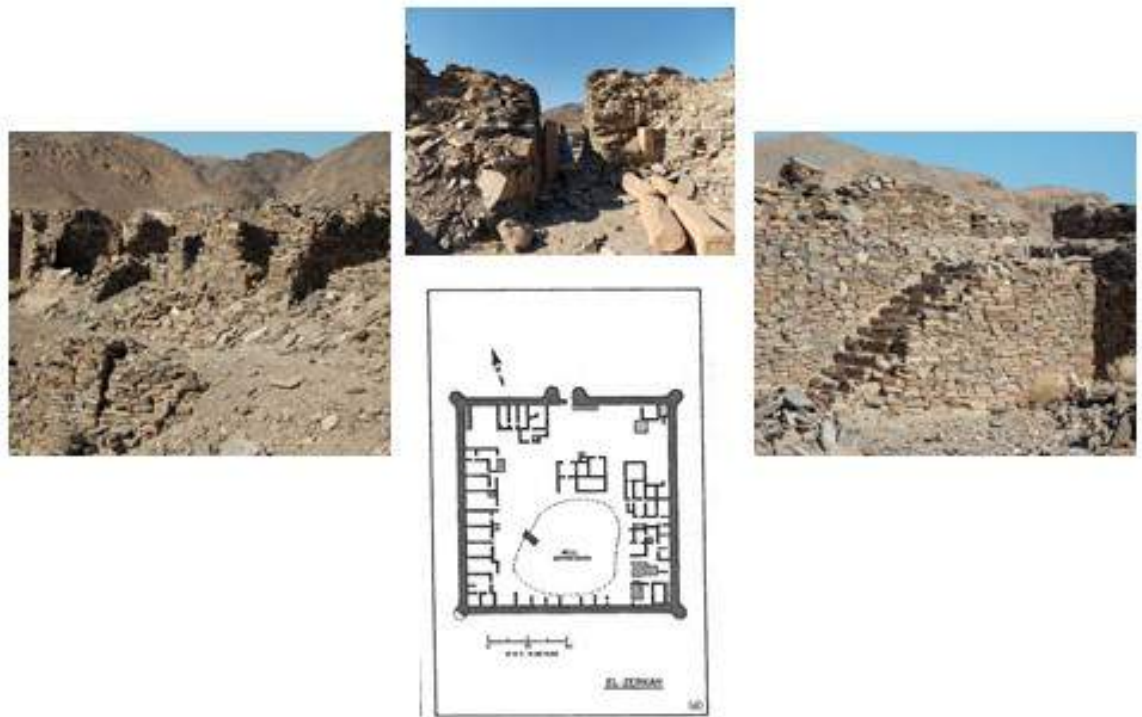


Fig. 225

The site of Al – Zarqa, Eastern Desert, Egypt.

After, Photography of the researcher.

The Virtual Museum

Virtual museums represent a remarkable opportunity for the diffusion of knowledge as a natural complement to the centres of knowledge represented by real museums but based on the attitude of conservation and restoration of the collection through dematerializing the object for the benefit of providing much more information to make possible a "remote visit". The technology for the creation of a virtual museum belongs more to the world of communications than to the world of computers or telecommunications.

The success of a virtual museum, which is measured by the number of visits to the site, is related to its functional dynamics (events and permanent enhancements, interaction with the public).

The virtual museum requires:

- Entrance with a Multilanguage service describing the ramifications of the services offered.
- Online catalogue.
- Search for a collection of objects using a retrieval request.
- Layout of the museum.
- Layout of the galleries, location of accesses, facilities and services.
- Opening schedule of the museum.
- Entrance fees, discounts, passes.
- Reservations.
- Access for the handicapped people.
- Personalized visits:

Special purpose visits (time or subject).

Thematic visits.

- Optimization of visits (time and spatial distribution of groups).
- Conferences (themes, schedules, rates, etc.).
- Management of the conference schedules.
- Online museum shop (catalogues, books, exhibition, related products, etc.).
- Space for comments and suggestions of visitors.
- Announcements (events and exhibitions).
- Communication (Discussion forum - E-learning)
- Sponsorship.
- Connections with other virtual museums.
- Membership (Example: excavation teams, university researchers in archaeology and tourist guiding - tour guiding syndicate members, schools). ¹

archaeological sites and historic monuments should be considered or even belong to the category of museums. It is indeed difficult to make a theoretical distinction between collections of archaeological portable objects, such as those exhibited in archaeological museums, and sets of archaeological immovable objects, such as archaeological sites, except for the fact that the latter preserve the original spatial distribution, while the former do not and are out of context, unless this is recreated by

¹ Djindjian, F. 2007: 9 – 14. Online: <http://soi.cnr.it/archcalc/images/VM.pdf> .

the exhibition and the related explanations. In the era of mass communication, mass tourism and multimedia, museums and archaeology need to address the mass, and not only the small world of scholars, which so often looks to be the only reference audience of heritage professionals. ¹

The virtual museum represents the opening to the public of a site that was previously opened only to archaeologists, and turning it into a source of direct or indirect revenue for the community. In addition to preserving the site by means of organized actions and favouring the access and the economic exploitation of the heritage resource. Moreover, "musealization" of an archaeological site establishes rules such as ("Don't touch the monuments" "Don't climb the walls"). It continuously risks turning an archaeological site into a theme park, with preservation and interpretation sometimes sliding into physical reconstruction and possibly falsification. ²

Several archaeological sites are reconstructed starting with the visible remains using the technology of Virtual Reality as the virtual information goes beyond the real object to respect all the requirements for a correct conservation or for a presentation which does not saturate the public. In extreme cases, where the object can no longer be visited, it is usually replaced by a facsimile. ³

The proposed virtual museum, consequently, can be visited at a distance offering the possibility to have virtually clustering museums that may be distant thousands of kilometres from each other, but connected by a common factor which is one of the objectives of this study dealing with the Beken stone objects as a common element. In addition to the possibility of seeing a part of the collections presented to the public; thus, it becomes a true commercial tool for the promotion and sale of the site-related products. Therefore, a catalogue that can be a step towards a digital database of greywacke masterpieces, sculpted from the Bekhen stone quarries of Wadi Hammamat, as a unique source of greywacke is prepared by the researcher for future valorization of the site through a virtual museum of the ancient Myos Hormos (Quseir - Qift) road.

The creation of a virtual museum implies:

- creating the infrastructure and explanation aids to facilitate visitors, as such paths, panels, visitor centres, guided tours.
- exploitation of the heritage resource of the site.
- Gallery of images Selected from the most representative objects in the museum.
- Virtual visit which is an unguided tour by Virtual Reality to discover the objects on display.
- Guided tours that can be chosen by theme and visualized in 3D.
- Detailed information which accompanies the objects or the exhibition galleries.
- communication and exhibition of archaeological relics to people through explanation ranging from beautiful masterpieces of art to the broken sherds and rusty tools.
- conveying appropriate information.

¹ Niccolucci, F. 2007:18.

² Niccolucci, F. 2007: 21.

³ Djindjian, F. 2007: 10.

- addressing the visitor in a natural and simple way.
- Cleaning the sites from extraneous stuff, like raw vegetation or excavation dumping.
- Facilitating access to the remains by creating paths and protections for dangerous passages.
- Putting unobtrusive explanation panels written in an easy-to-understand language — sometimes multi-lingual when visitors from abroad are expected.
- Adding tourist facilities like seats, toilets, and a tourist center with annexed book and souvenir shop and café and an outside parking for cars and buses.
- The setting of the site may additionally include some gardening, and the plantation and maintenance of the trees that offer some shade to the visitors.

Proposed Virtual exhibition along Myos Hormos road

Quarrying and mining as a social and economic act occurred in Wadi Hammamat since the pre-dynastic period till the modern age covering a vast time depth. Materials, tools, inscriptions and settlements are associated directly with the identity and heritage value of the site. These factors can feature an important collection, also digitally reconstructed of tools, vessels, social structure of the quarry society that was already defined through the various studies in addition to the excavated relics and the existing elements (Hydreumata, watch towers and pottery).

This reproduction, that can be achieved through 3D models, will help in exploring the importance of the road as a thoroughfare, hence the importance from the commercial point of view that reached its summit in the Roman Period and the various relationships with the ancient cultures in Arabia and India.

The exhibition can occur near the Bekhen mountain, nearly in the middle of the road close to the main tourist attractions and facilities on the Red Sea shore that will allow the visitors (tourists, researchers, university and school students) to create an overview about the life and the heritage of the central Eastern Desert in general and Wadi Hammamat (Myos Hormos road) in particular. This exhibition can be a center of culture and technology applied to cultural heritage and communications of the region that can host a unique and extraordinary museum that offers a virtual and interactive journey back in time till the pre-dynastic hunting period that turns back to life through the various inscriptions.

Through scenic reconstructions, visual interfaces and holograms, the visitor can be taken to a virtual dimension, where they can experience in a fun and interactive way the new opportunities that multimedia technology offers in using the archaeological heritage. This exhibition center can be an educational and cognitive place, where the real and the imaginary come together to give birth to new ways of learning and entertainment.¹ Among the links, the catalogue of objects sculpted from greywacke quarries end transported through the Myos hormos road to Coptos then to the Nile Valley and from there they found their way to the museums all over the world can be useful to illustrate the nature of life and work lived by the workers who used to stay

¹ For similar projects cf.,

The Classics and Archaeology Virtual Museum, The university of Melbourne:

<http://vm.arts.unimelb.edu.au/>;

The MAV, Virtual archaeological museum of Ercolano, <http://www.museomav.it/museo>.

The Theban mapping project, cf. <http://www.thebanmappingproject.com>

in this arid locality during their missions and the plans drawn to extract and measure the blocks of stone needed for the ordered masterpiece that varied in size between the sarcophagi, statues, minor art and jewelry.

The proposal contains the following suggestions:

- 1 – The aperture of the Quseir – Qift Road (Ancient Myos Hormos) with the completion of some reforms such as the dangerous slopes area that must be secured at 70 km from Quseir which is a dangerous curved area, these slopes caused a lot of accidents and continue in creating problems and it is the reason why the road is always referred to as the road of death.
- 2 – The entire road (starting from the check point of Quseir to Qift) is not covered by mobile phone networks, that should be enhanced as a step towards positioning the road on the tourism map of Egypt in general and among the Red Sea cultural tourism destinations.
- 3 - Increasing the tourist services provided along the road as there are only 2 Bedouin coffee shop (after the gold mining area of Bir Fawakhir – at 90 Km from Quseir) and they are not prepared to receive tourist groups.
4. Increasing the number of restaurants, cafeterias, outlets and Bazars to provide more tourist services (by drafting the application for Tourism business projects using the spaces available, such as Restaurants, cafeterias, tourist kiosks, etc) with more security points and ambulances. These projects will provide job opportunities for the fresh graduates as well as the sons of the nomadic tribes living in the region instead of going towards smuggling and the illicit search for gold.



Fig. 226

The current situation of services along the Coptos – Myos Hormos road.

After, photography by the researcher.

Inserting the Quseir - Qift Road within the tourist itinerary

Inserting the Quseir - Qift Road within the tourist itinerary of (Hurghada – Quseir – Safaga – Marsa Alam) that will create a new cultural tourism destination in the Red Sea region, as tours usually head to Cairo or Luxor, ignoring the existence of the Eastern desert heritage sites including the Myos Hormos road which is divided into two administrative halves, one of them under the Red Sea sector and the other half starting from Khashm Manieh (Krokodilo) and El Laqueita (Qusur al Banat) is under the Qena administrative sector.

Required equipment (preliminary vision)

- A Gate at the beginning of the road (for the arriving visits from Hurghada - Safaga - Quseir) and another gate at the entrance of Qift (for the traditional visit from (Qena - Abydos or Luxor and Aswan).
- Increasing the number of inspection security points along the road.
- Cleaning and restoring each *hydreuma* (especially El Zaraqa which is in a good condition of conservation) to be prepared for tourism (as a part of an archaeological park).
- Preparing a virtual sequence presentation of the inscriptions of Wadi Hammamat, as these inscriptions represent a witness to the evolution of quarrying activities throughout the ages starting from the Pre-dynastic period till the Greco-Roman time.
- The aperture of the gold mining zone of Fawakhir, especially with the lack of suitability for the work as a mine so it can be exploited for the tourist visit as it also witnesses the work of gold extraction since the Pharaonic era till the modern and contemporary times with the possibility of creating a site Museum for the tools used during the last exploitation of the mine during the first half of the 20th century. Moreover, the area contains the Tools and the ruins that explain how gold was extracted from the stones of Bir Fawakhir, in addition to the oldest settlement in the region.
- Creating an itinerary that includes Qusur El Banat, Wadi Manieh and El Laqueita, arriving to the archaeological area of the ancient port of Qift (the second part of the archaeological park under the Qena Governorate).
- Preparing the tourist explanation panels for the archaeological spots along the Quseir – Qift Road, which are missing due to the lack of interest towards this important road to determine the location of each *hydreuma* and the same in the case in Marsa Gawasis and the ancient port of Quseir el Qadim (Myos Hormos).
- Dedicating awareness and formation days for the school and university students (especially in the Red Sea governorate) to explain the cultural heritage and the role of the Eastern Desert roads and the ancient Red Sea ports in the formation of the ancient civilization of the region as a meeting point between different ancient cultures and nations who exchanged their trade and certainly their culture through these ports and roads.
- Seminars and conferences about the Eastern desert cultural and landscape heritage in the syndicate of tourist guides and the governorate of the Red Sea headquarters of Hurghada, a step that is already started by the researcher during the last survey visit in June 2015.

- Launching an application to help in exploring the historical and archaeological values of the desert sites between Qift and Quseir that can be easily downloaded. This application should:

I. Direct the visitor from his place to each site.

II. Send notifications related to the various seminars, lectures and conferences about the region.

III. Present information about each site, the discovered relics, chronology and artifacts exhibited inside and outside Egypt.

IV. Offer panoramic scenes of the sites and the supposed reconstructions using 3D technologies.

V. Facilitate the contact with the curators – tour guides to serve researchers and visitors everywhere.

5.12. Monitoring Values

The effort to identify and protect values would be incomplete if the condition of these values could not be monitored.

Monitoring is the final stage in many management planning processes, seems always to be left last when it comes to devoting time and resources to management. Good management is evident in healthy and sustainable values. Monitoring the physical resources is the most common method of monitoring sites. Although there are very sophisticated tools that can detect minute changes in the material. This does not guarantee that the values of the place are not being eroded. For example, a site might lose some values through intense (but well - managed) visitation, noise pollution or improper use of the place. Besides, monitoring intangible values is difficult and can only be done indirectly.

A framework to evaluate and report on the health and wholeness of national historic sites was developed in the 1990 in Canada. ¹

A part of the process of preparing the commemorative integrity statement includes an in-depth analysis of the relationship of the commemorative intent (The values and significance of the site) and the physical place. Moreover, the process includes the preparation of objectives related to each of the three elements of the statement. These objects should:

- Uphold “The desired state of the site, its resources and their historic values”.
- Describe the ideal field conditions sought through management.
- Provide a framework for management activities and performance indicators for measuring the state of a site’s commemorative integrity. ²

Therefore, methodologies to assess the natural and cultural resources should be developed as well as the stewardship capacity of the site.

¹ Parks Canada. 2002: section 1.1.1.

² Parks Canada. 2002: section 2.3.3.

Two forms of monitoring can be applied:

I. The typical monitoring of site – wide physical conditions which proceeds on a regular periodic schedule and is carried out by conservation team.

II. Monitoring the tangible values which is a far trickier task, it is addressed by some of the habits inculcated as part of what can be called “management culture” of PAHSMA in which:

- the staff are in constant, open communication about the state of the site and threats to values.
- Constant surveying of visitors and other stakeholders offers an indirect, thought meaningful, stream of information on how the values of the site are being transmitted and conserved.¹

Thus, monitoring is one of the foremost priorities in developing the management scheme, in the case of the Myos Hormos road, Monitoring should be more intensive due to the distant isolated geographical position of the road and its contents (*praesidia* – settlements – mines – quarries and inscriptions). This geographical position, together with the domination of Bedouin communities put the site in a risk of being lost in addition to being a modern asphalt road linking between the Red Sea and the Nile with no strict guarding rules that can protect the different sites left in the open air.

Finally, the study of the potentials of Myos Hormos (Qift - Quseir) road reveals the availability of meeting the needed criteria to be recognized as a world heritage site such as:

- The Myos Hormos road bear eloquent testimony to the economic, social and cultural importance of commerce in the Hellenistic-Roman world. The road also provided a means of passage not only for trade goods but also for people and ideas.
- The almost fossilized remains of *hydreumata*, quarries, mines and sophisticated water systems strung out along the Myos Hormos road in the Egyptian Eastern desert, display an outstanding response to a hostile desert environment and one that flourished for centuries.

Integrity of Myos Hormos road

The *hydreumata*, combined with the trade routes and their hinterland, provide a very complete picture of the Egyptian Eastern desert civilization strung along a trade route. Remains of all the elements that comprised the settlements - towns, forts, caravanserais, quarrying and mining landscapes are within the boundaries. Moreover, the development of the region can give the sites considerable protection.

¹ De la torre, M., Maclean, M. G. H., Manson, R. 2005: 225 – 226.

Authenticity of Myos Hormos road

The remains of the *praesidia*, caravanserais and landscapes mostly express well the outstanding universal value of the property as reflecting and exemplifying the prosperity of greywacke quarrying (Hammamat Bekhen mountain), gold mining (Bir Umm Fawakhir) in addition to the Roman eastern trade.

Protection and management requirements

- The nominated property is State owned, therefore, attention should be paid to secure protection by national legislation, with all the component parts as a designated national park.
- The Egyptian Antiquities Authorities manages the conservation and excavation activities on the designated structures.
- Finance can come from the responsible authorities (ministry of culture – ministry of state antiquities - supreme council of antiquities) budget, supported by site income, sales and government subsidy.
- In the beginning, funds and income can be spent only on maintenance, conservation and protection of the surveyed sites to be converted afterwards as a source of income.

Conclusion

The study of the cultural heritage potentials of the Coptos – Myos Hormos road including both the *hydreumata* and the ports that once serviced the central Eastern Desert trade route resulted the following remarks

- The Quseir – Qift road was the only practical route as it was the shortest and easiest road from the Nile Valley to the Red Sea, in addition to the richness of the Bekhen stone quarries and the gold mines. Therefore, it was the preferred road by the merchants, quarrymen and miners.
- Archaeological discoveries in Coptos attested a continuity in use of the city as a Nile port since the Pharaonic period till the Greco – Roman time that can be reflected as well on the use of the Myos Hormos road that link between Coptos and Quseir el Qadim.
- The datable ceramic findings in Coptos and Quseir revealed a period of use extending between the 3rd century B.C. and the 4rd century A.D. with an intensive caravan traffic during the 1st century A.D. and a noticeable decline in commerce that should have started since the 3rd century A.D. due to a general upheaval in the Roman empire, a situation that was reflected in the interruption of some of the surveyed sites along the Myos Hormos road such as Al - Zarqa.
- The urban identity of Myos Hormos settlement did not take root due to:
 - The hostility of the environment.
 - The origin diversity of its population as a port town, that brought a variety of settlement experience and expectations of urban environment.
- The discovery of the port of Mersa Gawasis supported the hypothesis that the Egyptians were navigating in the Red Sea and consequently using the Eastern Desert roads before the intensive commercial activities between Rome and the East, since the Old Kingdom until the early 18th Dynasty to Punt and Bia-Punt which most likely were located on the African side of the southern Red Sea. These expeditions were very complex enterprises which required a large number of workers as attested by the monument of Antifoker (Intef - Iker) for carrying the dismantled ships, trade goods and food across the Eastern Desert to the Red Sea and back to the Nile Valley. This commercial current was ceased by the abandonment of the port of Mersa Gawasis “*Saww*” in the 2nd millennium BC. When the lagoon was progressively filled with sediments and the recent coast line was formed.
- These trade expeditions represent the “globalization” in the early 2nd millennium BC as the discoveries in Red Sea ports represent a multinational combination of:
 - Cedar wood from Lebanon (used in ship building).
 - Large quantities of Canaanite and Middle Nubian wares.
 - Puntities from the Yemeni and African coastal regions

In addition to the heritage value of movement and passes of single individuals of different nationalities who carried their potsherds, domestic vessels and trade good to the melting pot of the ancient world concentrated in the Red Sea ports of Mersa Gawasis, Myos Hormos (Quseir) and Berenice.

Surveying the *hydreumata - praesidia* along the Myos Hormos road through the personal visits of the researcher and the results of the French excavation team was useful in determining the period of utilization, hence, the chronology of the road through the archaeological relics as follow:

Hydreuma - Praesidium	Chronology
Bir Nakhil	Late 1 st – early 2 nd century A.D.
Dawwi	2 nd century A.D.
Bir Sayyala	Probably from the Ptolemaic Period till the 2 nd – 3 rd century A.D.
Bir Al – Hamra	2 nd and early 3 rd century A.D.
Al – Zarqa (Maximianon)	1 st century BC. – 3 rd century A.D.
Bir Umm Fawakhir	4 th – 7 th century A.D.
Bir Hammamat	2 nd century A.D. The inscriptions and the archaeological findings indicated the quarrying activities in the site since the Pre-Dynastic Period.
AL-Muwayh (Krokodilo)	2 nd century A.D. (reign of Trajan - Hadrian).
Qusur al – Banat	End of the 2 nd and early 3 rd century A.D.

Therefore, the period of occupation of the road was between the 2nd and 3rd centuries A.D. except for Bir Umm Fawakhir due to the gold mining activity that attracted the investments till the first half of the 20th century.

These *hydreumata* appear to have fulfilled four separate but related functions which were not, in many cases, strictly military in character; rather their reason of being was an amalgam of the military and the civilian.

A. They served as *hydreumata*, which are protected watering-points and resting places for merchants journeying from and to the major Red Sea ports.

B. They provided the bases for soldiers charged with policing the access routes to the Nile and protecting those who travelled them.

C. They acted as the administrative and residential centres for quarrying or mining activity.

D. They provided logistic support for the transport of the products from these extractive industries.

These four functions are not mutually exclusive as a single site could perform more than one function, for example, Wadi Hammamat, is a way station on the Quseir - Qift trade route, that housed a military detachment, but was also an important quarrying centre and the nearest defended site to the Fawakhir gold mines. However, isolating the individual functions may help in understanding the differences between these sites.

The study of the gold mining site of Bir Umm Fawakhir and the development of mining techniques through the different historical phases in addition to the relics discovered in the Fawakhir settlement revealed that:

- Bir Umm Fawakhir settlement is the largest ancient town in the Eastern Desert that used to be inhabited by more than 1000 miners who were inserted in a general organization of mining activities. It implied a whole chain of organized staff: many slaves who were either prisoners of war or convicts (“*damnata ad metalla*”), but also paupers, often with their entire families (for the rough excavation and transport work and for milling and washing the ore), guardians, few skilled free workers to maintain control, choose the rock and melt the gold, officials, and at least a *probator* (geologist) for managing the mines and the gold transport. Therefore, the organization of the operations was apparently complex and shows a certain degree of professionalism.
- The description of Diodorus indicated the presence of foreign soldiers to guard the convicted criminals working at the mine that means:
 - A. The miners working on the site needed to be supervised.
 - B. The miners working were contract workers.
- Pottery of Bir Umm Fawakhir varied in the period of use and according to comparisons with materials from the sites, the bulk of the pottery from the settlement seems to date from the late 5th through the 6th century A.D.
- The textual evidences and relics found in the gold mining sites proved the type of labour force such as the Middle Kingdom remark of the provincial ruler, Ameni, in his tomb in Beni Hassan attesting that the miners, at least till this period, were most probably members of desert tribes and not Egyptians of the Nile valley. However, the introduction of the milling techniques used in the Nile Valley into the gold ore processing industry can be regarded as an indication that only from New Kingdom times onwards, most of miners were Egyptians from the Nile valley. This assumption is also confirmed by the predominant occurrence of typical New Kingdom pottery in the mining sites in the Egyptian Eastern Desert and partly in Nubia.
- The lack of any protective enclosing walls in the gold working sites during the Pharaonic period caused the loss of most of these sites but it indicates that the Myos Hormos road (consequently the central Eastern Desert) was peaceful and under the direct control of the central authorities.
- Bir Umm Fawakhir can be considered as one of the few proven gold sources for the Byzantine empire that seems to be exploited to fill part of the need for gold and to support such an example of the town located in an inhospitable region.
- Dating the Bir Umm Fawakhir settlement is a matter of debate for the last 20 years through the analysis of pottery and ceramic discovered during the different surveys carried out in the region. The sherds are attributed to a long period extending from the 4th through the 7th century A.D. and occasionally these parallels extend even into the early 8th century. However, the proposed dates for many of the most common forms at the site, seem to cluster in the period between the late 5th through the 6th century A.D.

The question of the water supply seems to have worked on a simple and a relatively equitable scheme, at least from the Old Kingdom until the Roman period. The water supply of the inhabitants was completely managed by the state, through the local

administration which was charged to bring the water from rural areas into towns and cities and to redistribute it to the inhabitants even when the settlements were far from a water source. The role played by the institutions in everyday water management is not very well known. Expeditions sent to the desert to reach mines and quarries had sometimes to walk up to several hundred kilometres in the desert, under the hot sun. The lack of water was thus a serious threat and the distribution of water-supply points on the road was essential. In these remote areas, the administration made the choice to use cisterns and wells, technically quite simple at the beginning, but increasingly elaborate with time. Along the Myos Hormos road, Potable water would have been more easily located farther from the Red Sea and this must have been a major reason for placement of the road.

During the pharaonic period, before the construction of the *hydreumata*, temporary wells should have been dug to fulfil the needs of the workers during their mission as attested in several inscriptions. This work might have included the repair of old infrastructures as well as the creation of new ones in addition to the exploitations of wells that could be dug along the way. It is likely that the expeditions carried water in animal skins and jars to the supply stations that could have existed along the way although there is no real evidence of these structures on the route between Coptos and Wadi Hammamat before the Roman Period.

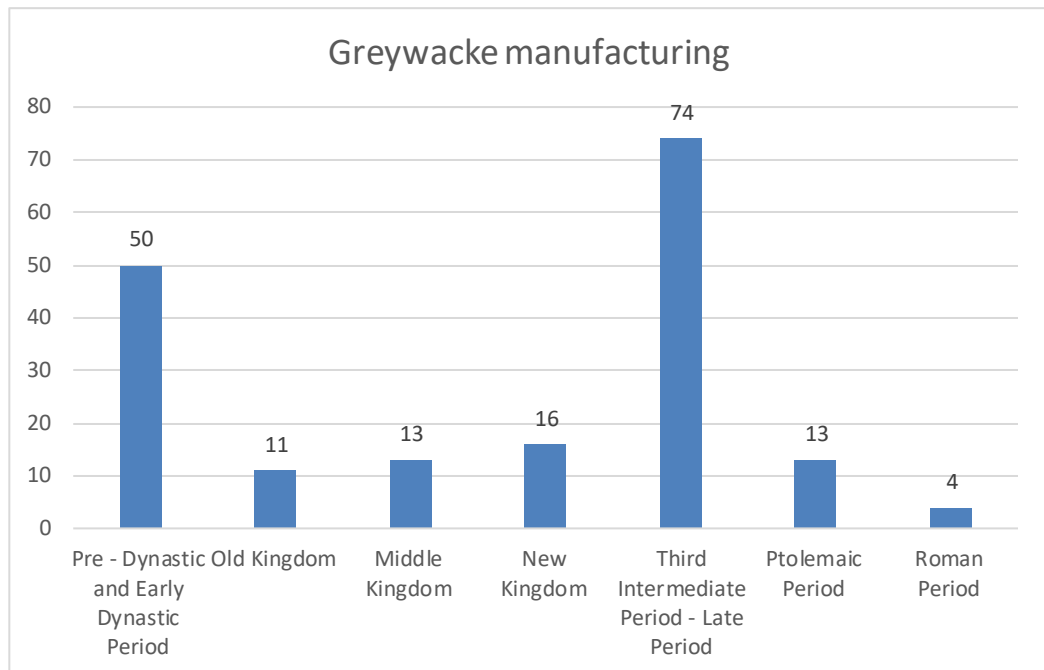
Water was used in the gold mining process to crack the quartz veins as once the rock had been heated, water may have been poured over it to cool it quickly, thereby, cracking it and breaking it up would have facilitated the mining process. Gold washing techniques should have been followed since the Middle Kingdom but due to the scarcity of water in this arid work environment, water was recovered after the washing process in stone boxes to be conducted in basins for future industrial reuse which is regarded as sustainable recycling of the natural resources that took place since the New Kingdom in a systematic way using instruments such as the primitive “Shaduf”.

By the Greco – Roman times, *hydreumata* were constructed along the desert roads containing water cisterns that should have been used to store a supply of water immediately available in case of rain or after an intensive fetching when large caravan passed during the seasonal drying up of wells.

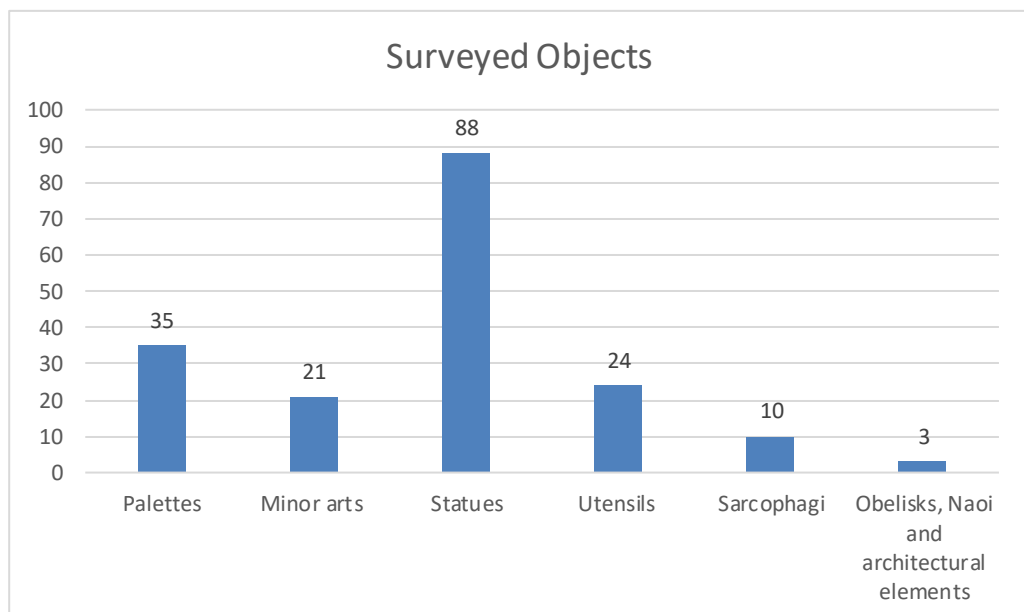
The Bekhen stone quarries of Wadi Hammamat forms an archaeological cluster of inscriptions, unfinished manufactures, settlements, workshops and remaining tools of which study revealed that:

- It seems clear that the state was responsible for the Bekhen stone exploitation, given the vast amount of resources that had to be invested in the organization of a quarrying expedition. Unlike the other marginal areas, the officials leading the missions to Wadi Hammamat show different affiliations in terms of administrative branches. This is probably because Bekhen stone procurement was not the responsibility of the treasury but these expeditions were entrusted to separate competent officials, graded in a specific hierarchy, forming well – organized missions with different workers for different duties and established wages and functionaries in charge of the administrative tasks.
- The greywacke quarries were not constantly or intensively exploited. The fact that the stone was used in private or royal statuary and not as a building stone could have caused its demand to be less than that of other materials such as granite, limestone or sandstone.
- Inscriptions indicated the time lapse between expeditions suggesting that this stone was only quarried when it was needed, which was not on a regular basis. However, the fact that the quarries were exploited over all the pharaonic periods makes it hard to determine the intensity of these activities, the inscriptions represent the base in creating a chronological sequence of Egyptian activities in the area.
- Although inscriptions are not always eloquent about these matters, it seems clear that the missions had to bring tools, supplies and other materials to the wadi and store them during the work.
- As for the administrative buildings where duties should have been carried out, they were found in other areas and the fact that the modern road follows the same route that the ancient one does, is not helping in terms of preservation of archaeological remains.
- Studying the ancient quarries of Wadi Hammamat helps in creating a theoretical approach to analyse the social life and resource procurement in the past as quarries were socially - constructed places that reflects as well some religious aspects attested in the pantheon of Wadi Hammamat, the ritual space for veneration of the local god Min, the god Bekhenu who was associated with Min and the Greco - Roman gods such as Apollo, Athena, Pan and Serapis mentioned in several private correspondences.

- The catalogue of greywacke objects preserved in several museums around the world prepared by the researcher resulted a total of 181 well-dated objects related to the quarrying and use of greywacke through the different historical phases.



- Bekhen stone represents a variety of uses such as:
 - Small objects (vessels, palettes, bracelets, beads).
 - Larger objects (statues, coffins, sarcophagi, naoi) usually found in burial and votive contexts.
 - Tools (chisels and wedges) primarily connected with the quarrying process.



This survey indicated that:

- The pre – dynastic and early dynastic period witnessed an intensive quarrying activities of greywacke reflected in a huge number of sculptures, mainly palettes. This should have been due to the primitive tools and quarrying techniques that helped in obtaining small dimensions of quarried stones in this early period.
- The mass quarrying activities occurred during the Late Period (Third Intermediate Period) of which the manufactured greywacke objects reached 74 pieces of mainly statuary (Standing statues – Cube statues – Heads – Busts and torsos), sarcophagi, magical stelae, obelisks, amulets and figurines.
- The low quarrying and consequently sculpture rate is applied on the Roman Period (4 pieces), most probably due to the fear of the “Blemmy’s” tribes mentioned in the Roman resources, the unsafe situation in the Eastern Desert during this period or the interest of extracting and sculpting other types of stones such as the *porphyrites* of Mons Claudianus.
- The period extending from the Old Kingdom till the New Kingdom then the Ptolemaic Period witnessed a stable medium rate of use and interest towards the greywacke.
- Wadi Hammamat quarries were inherently centres of social interaction, as well as places where technology could be transmitted and maintained across generations. The instances where rock engravings are associated with quarries can provide additional insights into the ways in which production landscapes were socialized overtime. As a social activity, engraving on rocks might not only define access and control of specific landscapes and resources, but also represents how visual “art” became an enduring medium of expression related to shared experience and group identity that linked the past with the present, as well as the future.

Finally, the cultural heritage aspects of the Myos Hormos road led to the idea of studying a possible method for enhancing the values of the surveyed sites through proposed actions towards the valorization as a heritage site due to:

- The notion of a “quarry landscape” has been forwarded as a concept that allows the inclusion of the diverse range of material culture that can comprise such sites — often spread across large areas. Moreover, it has been argued that a crucial construct can be achieved if the archaeological integrity of these sites is properly maintained.
- Significance of the notion of a “quarry landscape” needs to be accessible and relevant across a range of levels and interests if there is any hope in conserving and protecting these landscapes. Although conserving such large quarry landscapes needs to be balanced against modern development needs, it is important that the necessary theoretical tools can be employed to disseminate significance of an ancient quarry landscape.
- The surveyed areas present a diverse range of material culture in a range of archaeological contexts, necessitating the need to build flexible models of significance that are transportable across a range of other quarry landscapes in Egypt.
- Realizing a digital exhibition of the sites along the Myos Hormos road aims to:
 1. Improving the knowledge and accessibility of the sites for public and private subjects such as ministry of culture, the supreme council of antiquities, the ministry of tourism, the universities, students and researchers.
 2. Memorizing the different structures and materials located along the Myos Hormos road which is a subject of rain risk (Seil).
 3. Facilitating the exchange of the cultural heritage values of Wadi Hammamat and the Bekhen stone quarries between different museums around the world, allowing a shared awareness that can help in constructing a chronological history of the region.
 4. Descriptive – comparative analysis indicated different arguments related to the Myos Hormos road such as:

A. The religious aspects in the central Eastern Desert, and the relationship with the rituals executed in the ports flanking the two extremities of the Myos Hormos road.

B. Economical aspects related the commerce in Roman Egypt.

C. Logistics such as the administration system of mining and quarrying sites, the transportation and goods and food distribution in the most remote desert working environments.

D. The water system in the desert.

E. Architecture and house – building system in the desert settlements.

F. Inhabitants and transportation system.

It is acknowledged that the various *hydreumata* and ancient ports included within the boundaries of the surveyed area should be reconstructed and maintained according to scientific comparisons with contemporary examples. Therefore, there is a need for a

continuous comprehensive archaeological strategy for the whole property and for each of the major Eastern desert sites to cover archaeological research, non-destructive recording and approaches to stabilization and repair.

The study targets the illustration of the heritage values of the Qift – Quseir road that can lead to the location of the region on the Egyptian tourist map. Thus, creating a new cultural tourism destination due to the potentials as an example of the archaeologically explored ancient desert route in Egypt.

Appendix I

Site Sheets

This part is a summary sheet for each site including a synthetic description for the modern and ancient names, the geography and the archaeological material. In the following sheets the researcher has underlined the coordinates of only two sites (Wadi Hammamat and Bir Umm Fawakhir) which are the main focus of the study and the ports that delineated the Qift – Quseir road.

1.1. Bir Nakhil

Modern Name	Bir Nakhil.
Sector / area	Red Sea Governorate, 13 km from Quseir al-Qadim (Quseir – Qift road).
Typology	Hydreuma.
Chronology	Late 1 st – early 2 nd century A.D.
Description	Ruins of a fort including a well and a miner's village.
Archeological material	Ceramics and the Egyptian amphorae.

1.2. Dawwi

Modern Name	Dawwi.
Sector / area	Red Sea Governorate, 154 km away from Coptos and 27 km from Myos Hormos (Quseir - Qift road).
Typology	Hydreuma.
Chronology	2 nd century A.D.
Description	A square well – preserved tower and a horseshoe ruin which appears to correspond to an ancient shelter built with reused stones from the <i>praesidium</i> . The <i>praesidium</i> represents a very readable plan. In addition to the piles of rubble that represent the digging rubble of a well that once occupied an almost central place within the enclosure.
Archeological material	Few material, sandstone altar and ruins of the <i>hydreuma</i> .

1.3. Bir Sayyala

Modern Name	Bir Sayyala.
Ancient Greek Name	Possibly “Simiou”.
Sector / area	Red Sea Governorate, 41 km from Coptos and 40 km from Myos Hormos. (Quseir - Qift road).
Typology	Hydreuma.
Chronology	Probably from the Ptolemaic Period till the 2 nd – 3 rd century A.D.
Description	Despite the state of destruction, the plan of Bir Sayyala draws a rectangular fort that contains a rampart, barracks and three cisterns. A recently constructed well is still in situ.

Archeological material	Well, remains of a <i>hydreuma</i> .

1.4. Al Hamra

Modern Name	Al Hamra
Sector / area	Red Sea Governorate, 52 km to the west of Quseir, in wadi Abil Ziran. (Quseir – Qift road).
Typology	Hydreuma.
Chronology	2 nd and early 3 rd century A.D.
Description	A square fort constructed of red sandstone blocks, irregularly cut and delineated in the mud. The ruins contain a door and a small central building.
Archeological material	Ceramics and amphorae.

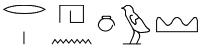
1.5. El Zarqa

Modern Name	El Zarqa – Bir El Zarqa.
Ancient Greek Name	Maximianon.
Sector / area	Red Sea Governorate, Wadi Abu Ziran, about 65 km from Quseir - Central Eastern Desert.
Typology	Hydreuma.
Chronology	Roman Period (1 st century BC. – 3 rd century A.D.).
Description	The best preserved <i>hydreuma</i> in the central desert route. Its purple stone provides its Arabic name. Many sections of walls are fully preserved; these walls are built of long thin roughly hewn stones laid without mortar. The free standing interior buildings at El Zarqa appear to be parts of fortress associated with the well. Moreover, a heap of ceramic is still in situ in front of the gate of the door.
Archeological material	Ceramic, Ancient Fortress, Well, <i>hydreuma</i> .

1.6. Bir Fawakhir

Modern Name	Bir Umm Fawakhir.
Ancient Greek Name	Persou I.
Sector / area	Red Sea Governorate, 90 km from Quseir (Quseir – Qift Road).
Coordinates	25°59' 03" N. 33° 36' 27" E.
Typology	Gold Mine, Granite quarry, Residential Settlement.
Chronology	Pharaonic – Roman (probably 1 st and 2 nd centuries AD.). Mining activities in the 19 th century.
Description	Ruins in El Fawakhir suggest that it was the most populated point along the route in antiquity. Ostraca and pottery sherds attest to activity there in the Roman and Byzantine periods. It was an area of extensive gold mining and granite quarrying there is no evidence of a fortress or <i>hydreuma</i> but protection would have been provided by the sizeable population.
Archeological material	Turin Papyrus, Ceramics, Dipinti, coins and Settlement.

1.7. Wadi Hammamat

Modern Name	Wadi Hammamat (Bir Hammamat)
Ancient Egyptian Name	 <i>r ḥnw,</i>  <i>Ibh3t, r'Ibh3t.</i>
Ancient Greek Name	Persou II.
Sector / area	Red Sea Governorate, 95 km from Quseir (Quseir – Qift Road).
Coordinates	Wadi Hammamat (25° 59'25'' N; 33° 34'05'' E) The eastern quarry (25° 59'40'' N; 33° 34'05'' E) The western quarry (25° 58'66'' N, 33° 33' 40'' E).
Typology	Greywacke quarrying site – Hydreuma.
Chronology	Pre – Dynastic period till the Roman Period.
Description	A stopover in the way linking Myos Hormos (Quseir) and Coptos (Qift), the site is figured out in two Bekhen stone (greywacke) quarries in addition to the Hammamat <i>hydreuma</i> , the wadi contains many carvings and inscriptions dating from before the earliest Egyptian Dynasties to the modern era, including the only painted petroglyph known from the Eastern Desert and drawings of Egyptian reed boats dated to 4000 B.C.
Archeological material	Turin Papyrus, quarrying site, Epigraphic material, Hydreuma, Meta-greywacke.

1.8. Al Muwayh

Modern Name	Al Muwayh
Ancient Greek Name	Krokodilo
Sector / area	Qena Governorate, at 65 km from Coptos and 116 km from Myos Hormos (Qift – Quseir road).
Typology	Hydreuma.
Chronology	2 nd century A.D. (reign of Trajan - Hadrian).
Description	A north-south rectangle, which in its current state, opens to the south by an axial door. In several places on the north, east and south, the rocky outcrop presents small cliffs containing Ptolemaic and Roman graffiti. The dump indicates a residential district containing a pig's lodge.
Archeological material	Ostraca, ceramics, ruins of an ancient settlement.

1.9. Qusur al Banat

Modern Name	Qusur al Banat
Sector / area	Qena governorate, 50 km from Qift (Qift – Quseir road).
Typology	Hydreuma.
Chronology	End of the 2 nd and early 3 rd century A.D.
Description	The fort is a rectangular construction with rounded corners. The walls were built of sandstone while the interior walls were built of grit, the stones are assembled using the dried soil mud of the Wadi. No corner towers are still visible, nor any internal parts, except for the north side, from both sides of the single door.
Archeological material	Ceramics (Jars – amphorae – vases - cups).

1.10. Qift – Coptos

Modern Name	Qift
Ancient name	Gebtu
Sector / area	Qift, Nile Valley, 30 miles north of modern Thebes.
Typology	Ancient Nile Port.
Coordinates	25°59'44"N 32°48'57"E.
Chronology	Pharaonic till Roman Period.
Description	A city on the Nile, the fifth Nome of Upper Egypt, and cult centre of the god Min, the modern town is situated mainly on the north – west of the ancient site.
Archeological material	ceramics, stele, coins, ruins of a town, harbour and a temple of the god Min.

1.11. Quseir - Myos Hormos

Modern Name	El Quseir.
Ancient name	Myos Hormos.
Sector / area	Red Sea Governorate, Madinet El Quseir.
Typology	Red Sea Port
Coordinates	26° 09'42"N / 34° 14' 54"E
Chronology	1 st century BC. – 2 nd century A.D. (Possibly 3 rd century A.D.)
Description	Myos Hormos was the main port for embarkation to the distant East by the time of Augustus. It was a business town and much of the population would have been temporary residents engaged in facilitating or conducting commercial operations.
Archeological material	coins, ceramics, documentary evidence and ruins of a harbour.

1.12. Mersa Gawasis

Modern Name	Mersa – Wadi Gawasis.
Ancient name	Saww.
Sector / area	Red Sea Governorate, 23 km south of Safaga and 55 km to the north of Quseir.
Typology	Red Sea Port.
Coordinates	26° 33' 26" N, 34° 02' 11" E.
Chronology	Pharaonic Period (12 th Dynasty) – 2 nd century A.D.
Description	The ancient harbour covers an area of about 650 m, it is delimited by the seashore to the east, the bed of Wadi Gasus to the south and a playa to the west. The site is composed of caves now containing the ancient ropes used in the navigation ships. The façade of these caves used to carry the stele left by the expeditions.
Archeological material	Ruins of a harbour, ceramics, stele, commemorative monuments, anchors and rope caves.

Appendix II

Catalogue of Greywacke

This catalogue was prepared by the researcher during the period of the PHD and it is based on a selection of different samples of greywacke manufactures preserved in different museums to be used as an identification instrument for both the chronology and use of greywacke (Bekhen stone) through the different historical periods. Some of these samples were scheduled without bibliography according to the labeled description in the proper museum.

- Greywacke in the Egyptian Museum, Cairo, Egypt
- Greywacke in the Luxor Museum, Egypt
- Greywacke in The Egyptian Museum of Turin, Italy
- Greywacke in the National Archaeological Museum of Naples, Italy
- Greywacke in Leiden (National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy)
- Greywacke in the Louvre Museum, Paris, France
- Greywacke objects in the Brooklyn Museum, New York
- Greywacke in the Metropolitan Museum
- Greywacke in The British Museum
- Greywacke in Boston, Museum of Fine Arts
- Greywacke objects in the Petrie Museum

- Greywacke in the Egyptian Museum, Cairo, Egypt

	Museum Room	Object – Collection – Classification	Description
1	Room 43 JE 27434 CG 14238	Fragment of the Libyan Tribute Tablet 	Date: End of the Pre – Dynastic Period (3000 BC) Dimensions: Height: 19 cm Width: 22 cm Provenance: Abydos Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 34 – 35; Tiradritti, F. 2000: 38 – 39.
2	Room 43 JE 32169 CG 14716	Narmer's palette 	Date: Dynasty 0 – Reign of Narmer (3000 BC) Dimensions: Height: 64 cm Width: 42 cm Provenance: Hierakonpolis, Excavations by J. Quibell, 1894. Bibliography: Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 28 – 29.

3	Room 43 JE 87499	Necklace from the Thinite age 	Date: 1 st Dynasty (2920 – 2770 BC). Dimensions: Length: 29 cm Provenance: Helwan, excavation by Z. Saad (1942). Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 32 – 33.
4	Room 43 JE 88345	Vase with names of Pharaohs 	Date: 1 st Dynasty (2920 – 2770 BC). Dimensions: Height: 12 cm Diameter: 23 cm Provenance: Saqqara Pyramid of Djoser, Excavations by the Egyptian Antiquities Service (1933). Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 38.
5	Room 43 JE 71298	Basket – Shaped Tray 	Date: 2 nd Dynasty (2770 – 2649 BC). Dimensions: Height: 4.8 cm Length: 22.7 cm Width: 13.8 cm Provenance: Saqqara, Excavations by W. B. Emery (1937 - 1938). Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 38.

6	Room 43 JE 32161	Statue of Khasekhem 	Date: 2nd Dynasty (2770 – 2649 BC). Dimensions: Height: 56 cm Provenance: Hierakonpolis, excavations by J. Quibell, 1898. Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 39.
7	Room 42	Two unidentified statues of king Chefre n 	Two smooth greywacke statues of Khafre (Chephren). The builder of the second pyramid at Giza sits on a throne. The statues are of Unspecified provenance.

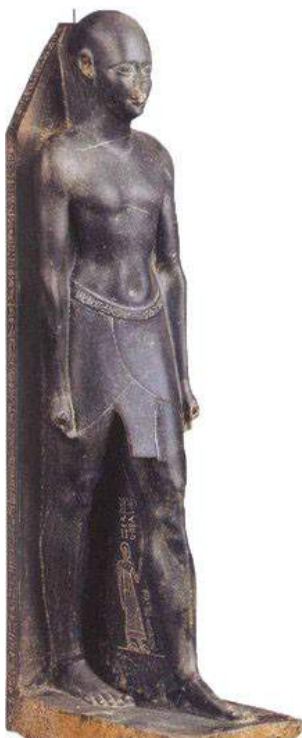
8	Room 47 JE 40678 JE 46499 JE 40679	Triads of Menkaure  	Date: 4 th Dynasty (Reign of Menkaure – 2494 – 2472 BC). Dimensions: Height: 93 cm – 95.5 cm – 92.5 cm Provenance: Giza, Valley Temple of Menkaure – Excavated by George Reisner 1908. Bibliography: M.S.C Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 52 – 53.
9	Room 47 JE 90220	Head of Userkaef 	Date: Old Kingdom – 5 th Dynasty reign of Userkaef (2465 – 2458 BC) Dimensions: Height: 45 cm Width: 25 cm Provenance: Abusir, Solar Temple of Userkaf – Joint excavations by the German and Swiss Institution in Cairo (1957). Bibliography: M.S.C. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 55.

10	Room 11 JE 38234 Bis – CG 42053	Standing Statue of Thutmosis III 	Date: New Kingdom, 18 th Dynasty – Reign of Thutmosis III (1479 – 1425 BC) Dimensions: Height: 200 cm Provenance: Karnak, Temple of Amun – Ra, court of the cachette; excavations by G. Legrain, 1904. Bibliography: Vandersleyen, C. et al. 1975: Fig 175.
11	Room 12 JE 36680 CG 42077	Statue of Amenhotep II 	Date: New Kingdom, 18 th Dynasty, Reign of Amenhotep II (1439 - 1414 BC) Dimensions: Height: 68 cm Provenance: Luxor, Courtyard of the Cachette (Karnak) Excavation: G. Legrain's Excavations of 1904. Bibliography: The statue was described as greywacke statue in the old guide of the Egyptian Museum and Schist statue in: Hawas, Z. A. 2010: 124, no. 64.

12	Room 12 JE 38049	Statuette of the god Amun 	Date: New Kingdom, end of the 18 th Dynasty, about 1320 BC Dimensions Height: 58 cm Width: 14.5 cm Thickness: 26 cm Provenance: Luxor, Karnak, court of the cachette, excavated by Legrain in 1905. Bibliography: Saleh, M. and Sourouzzian, H. 1987: no. 199.
13	Room 25 CG 751	Statue of Sety I as a Standard Bearer 	Date: New Kingdom, 19 th Dynasty – reign of Sety I (1289 – 1279 BC) Dimensions: Height: 22 cm Provenance: Abydos (Temple of Sety I) Bibliography: M.T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 209.

14	Room 25 JE 37150	Cube statue of Hor son of Ankh-khonsu 	Date: 25 th Dynasty (775 – 653 BC) Dimensions: Height: 51 cm Provenance: Luxor, Karnak Temple of Amun – Ra, court of the cachette; excavations by G. Legrain, 1904. Bibliography: For more about the block statues cf, Riefstahl, E. 1960; Schulz, R. (eds.), 2011; Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 211.
15	Room 24 CG 784	Statue of Hathor and Psamtek 	Date: End of the 26 th Dynasty (first half of the 6 th century BC) Dimensions: Height: 96 cm Width: 29 cm Provenance: Saqqara, Tomb of Psamtek, the chief scribe, superintendent of the seals of the governor of the palace at Saqqara. Excavations of A. Mariette (1863). Bibliography: M.T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 222 – 223.

16	Room 24 CG 38358	Statue of Osiris 	Date: End of the 26th Dynasty (First half of the 6th century BC). Dimensions: Height: 89.5 cm Width: 28 cm Provenance: Saqqara, Tomb of Psamtek, the chief scribe, superintendent of the seals of the governor of the palace at Saqqara. Excavations of A. Mariette (1863). Bibliography: M.T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 222 – 223.
17	Room 24 CG 38884	Statue of Isis 	Date: End of the 26th Dynasty (first half of the 6th century BC) Dimensions: Height: 90 cm Width: 20 cm Provenance: Saqqara, Tomb of Psamtek, the chief scribe, superintendent of the seals of the governor of the palace at Saqqara. Excavations of A. Mariette (1863). Bibliography: M.T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 222 – 223.
18	Room 24 CG 39194	Statue of Taweret 	Date: The Third Intermediate Period and The Late Period - Dynasty: 26th Dimensions: Height: 96 cm Width: 38 cm Provenance: Karnak, Northern section of the Temple of Amun- ra (1874) – by A. Mariette.

			Bibliography: M. T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 228 – 229.
19	Room 24 JE 36665	Statue of the Vizier Nespaqashuty 	Date: Late Period (The Third Intermediate Period) Reign of Apries – Dynasty 26 th Dimensions: Height: 78 cm. Provenance: Karnak, Temple of Amun-ra, Court of the Cachette (1904) – discovered by G. LEGRAIN. Bibliography: M. T. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 226 – 227.
20	Room 24 JE. 37075	Statue of Ahmes son of Nespanebdjed 	Date: The Third Intermediate Period and The Late Period End of the 30 th Dynasty – Start of the Ptolemaic Period (Second half of the 4 th century BC) Dimensions: Height: 95 cm Provenance: Karnak, Temple of Amun-ra Court of the Cachette, Excavation by G. Legrain in 1904. Bibliography: Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 227.

21	Room 19 JE 46393	Gilded sphinx 	Date: Uncertain Dimensions: Length: 43 cm. Width: 13 cm. Provenance: Dendera. Bibliography: A. A. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 540 – 541.
22	Room 19 (CG 9401)	Stela of Horus on crocodiles 	Date: Ptolemaic Period Dimensions: Height: 44 cm Width: 26 cm. Thickness: 11 cm. Provenance: Alexandria (1880) Bibliography: A.A. Bongioanni, A., Sole Croce, M. and De Luca, A. 2001: 547.

- Greywacke in the Luxor Museum, Egypt

	Museum Room	Object – Collection – Classification	Description
1	Cairo JE. 36927 CG. 42054 Luxor J.2	Statue of Thutmosis III 	Date: New Kingdom, 18th Dynasty, reign of Thutmosis III (1490 – 1436 BC) Dimensions: Height: 90.5 cm Width: 36.5 cm Dimension: 28.5 cm. Provenance: Karnak, Amun Temple, discovered in the cachette, north of Pylon VII, on May 8, 1904 by Legrain. Bibliography: The Luxor Museum of Ancient Egyptian Art: Catalogue, American Research Center in Egypt, 1979; PM II, 1972, p. 13.
2	Luxor, J. 143	Head of Osiris 	Date: Late Period, 25th Dynasty to early XXVI (about 710 – 610 BC) Dimensions: Height: 11.4 cm Width: 7.5 cm Provenance: Luxor Temple; Found During the excavations of the sphinx avenue north of the First Pylon in August, 1966. Bibliography: The Luxor Museum of Ancient Egyptian Art: Catalogue, American Research Center in Egypt, 1979: 266, fig. 142 – 143.

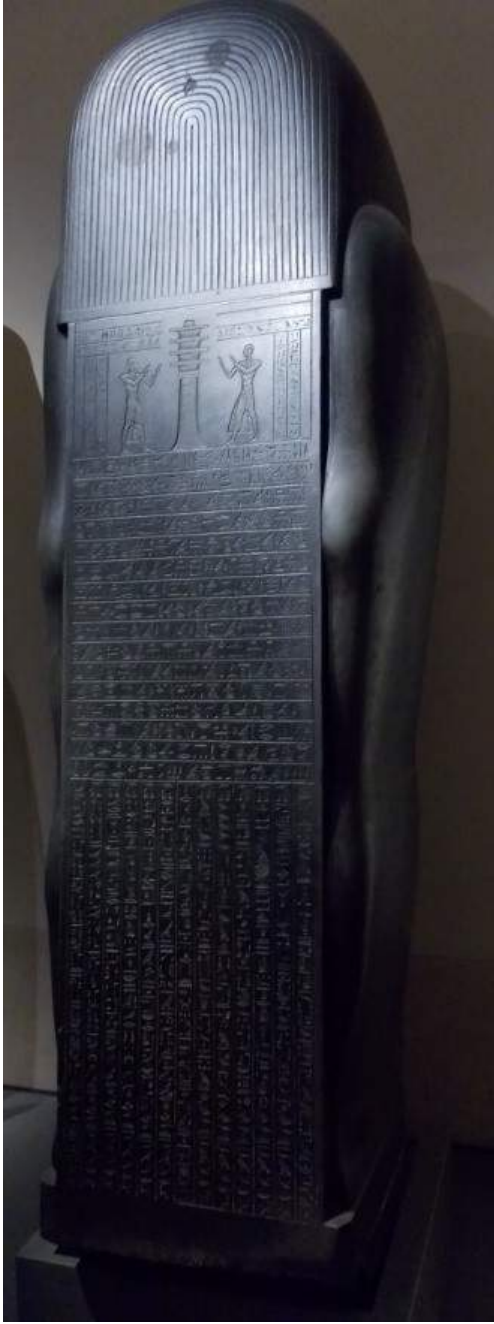
3	Un-identified	Statue of Ramses III 	Date: New Kingdom, 20th Dynasty - reign of Ramses III (1198 – 1166 BC). Provenance: Luxor, Karnak Temple. Bibliography: Luxor Museum: The Glory of Ancient Thebes. 1979.

• Greywacke in The Egyptian Museum of Turin, Italy

	Museum Room	Object	Description
1	S.4956	Fish – Shaped Palette 	Chronology: Pre-dynastic period (Naqada II 3700 – 3300 B.C.) Provenance: Hammamiya Bibliography: Museo Egizio. 2015: 41, fig. 17.
2	S. 604 S. 605 S. 606 S. 618 S. 619 S. 634 S. 4955 S. 4956 S. 3959/3 S. 17504	Geometric and zoomorphic cosmetic palettes 	Chronology: Pre-dynastic period (Naqada II 3900 – 3000 B.C.) Provenance: - Purchased by Schiaparelli (1900 - 1901). - Excavated by Schiaparelli in 1905. - Farina excavations (1935).
3	C. 3075	Bust of a high official 	The statue represents a high official wearing a collar with a pendant figure of the goddess Maat which distinguish him as a judge. The choice of greywacke which is a very hard stone to work, quarried in the Wadi Hammamat in the eastern desert, for such a large statue witnesses the importance of this official. The very polished surface is typical for the Late period sculpture. Chronology: Late Period, 26 th Dynasty (664 – 525 B.C.). Dimensions: H. 37.7 cm. Bibliography: Museo Egizio: 183, fig. 229.

4	C. 3078	Bust of a Male Statue 	Chronology: Late Period (722 – 332 BC.). Provenance: Old Fund (1824 - 1888).
5	C. 1393	Bust of a private statue 	The statue is inscribed with the cartouche of Psamtek, carved on the shoulder. The characteristic features of the sculpture during the Late Period are clear in: - Polished surface. - High – placed sharp eyes. - Horizontal eye – liner (Khol). Chronology: Late Period, 26th Dynasty, reign of Psamtek I, II, III (664 – 525 BC.). Provenance: Old Fund 1824 – 1888.

6	C. 2202	lid of the Sarcophagus of Ibi 	Ibi was the overseer of the south, overseer of the priests of Thebes and chief steward of Nitocris, divine adoratrice of Amun. Chronology: Late Period, 26th Dynasty, reign of Psamtek I (664 – 610 BC). Provenance: Thebes, Assasif, Theban Tomb 36. (Drovetti Collection). Dimensions: H. 195 cm. Bibliography: Museo Egizio: 192 – 193, fig.s 246 – 248. 

7	C. 2201/1-2	Sarcophagus of the vizier Gem-en-ef-her-bak. 	Gem-en-ef-her-bak was a vizier, he was the responsible for justice, a function symbolized by the pendant figure of the goddess Maat on his collar. Despite the size of the object and the hardness of the stone, the sculptors express all their virtuosity in the polish of surfaces and in a sophistication of detail which is typical for the 26th Dynasty. Chronology: Late Period, 26th Dynasty (664 – 525 BC). Provenance: Sais (Drovetti Collection). 

8	C. 3026	Statue presenting a shrine (Naophore) of Royal Herald Hor 	The statue represents the royal herald “Hor” holding a shrine (naos) containing a statue of the god Osiris. The top of the naos is surmounted by a ram’s head with a sun disk and a cobra (Uraeus), a symbol of the god Amun – Ra. This type of statues became common starting from the New kingdom to the Late Period. The inscriptions of this statue were hammered out that makes them difficult to read. Chronology: Late period 26th Dynasty reign of Apries (589 – 570 BC.). Provenance: Tell El-Balamun. Old Fund 1824 – 1888.
9	C. 5993	Inscribed Scarab 	The base of the scarab is inscribed with chapter 30 of the book of the dead. Chronology: Third Intermediate Period (1076 – 722 B.C.). Provenance: Dimensions: H. 6.8 cm. Bibliography: Museo Egizio: 244 – 245, fig. 311

10	C. 30	Statue of Osiris 	The statue represents Osiris standing on a pedestal with two wedjat – eyes and the nefer hieroglyph. On the back pillar is a well – wishing formula. Chronology: Late Period (722 – 332 BC.). Provenance: Drovetti collection (1824)
11	S. 1225/2	Head of a Royal Statue (Psmatik I) 	Chronology: Late Period (26th Dynasty). Provenance: purchased by Schiaparelli.

12	C. 1399	Head of Ptolemy II 	Chronology: Ptolemaic Period (284 - 246 BC.). Provenance: Old Fund (1824 – 1888 BC.). Bibliography: Museo Egizio: 195, fig. 250.
13	Unidentified greywacke object  		

- Greywacke in the National Archaeological Museum of Naples, Italy

	Inventory Number	Description	
1	387	Head of a sphinx of Sesostris III / Amenemhat III 	Material: Greywacke. Chronology: second half of the 12 th Dynasty (1870 – 1786 BC). Provenance: Borgia collection.
2	1072	Statue of a king with “Khat” headdress and Jubilee cloak. 	Material: Greywacke. Chronology: 18 th Dynasty, reign of Thutmosis III or Hatshepsut (1479 – 1458 BC.). Provenance: Borgia collection.

3	n. n.	Head of a king wearing a “Nemes” headdress. 	Material: Greywacke. Chronology: Late Period, possibly 26th Dynasty (664 – 525 B.C.). Provenance: Borgia Collection.
4	388	Portrait head of an official. 	Material: Greywacke. Chronology: 27th Dynasty (525 – 404 BC). Provenance: Borgia collection.

5	1067	Torso of an accountant scribe of the temple of Neith. 	Material: Greywacke. Chronology: 30 th Dynasty. Provenance: Borgia collection.
6	n.n.	Theophorous Statue 	Material: Greywacke. Chronology: Ptolemaic Period. Provenance: Napoli.
7	635	Statue of Isis 	Material: Greywacke. Chronology: Roman Period (30 BC – 395 AD). Provenance: Borgia collection.

- Greywacke in Leiden.

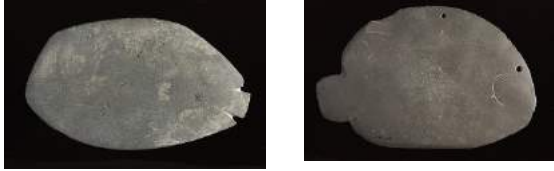
National museum of Antiquities, Leiden, Holland - Exhibition in Bologna, Italy.

	No. Catalogue	Greywacke object	Description
1	I.6.	Rhomboidal cosmetics palette 	Material: Greywacke Dimensions: 52.2 x 9.4 x 2.4 cm Chronology: Naqada I – II A Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/10.21 Bibliography: Giovetti, P. and Picchi, D. 2015: 61.
2	I.7.	Zoomorphic cosmetic palettes. 	A. Turtle – shaped palette. Material: Greywacke Dimensions: 7.9 x 8 x 0.4 cm Chronology: Naqada IC - II Collection: J. H. Insinger collection (1901) RMO – Leiden F 1901/9.58 B. Fish – shaped palette. Material: Greywacke Dimensions: 9.1 x 26 x 1.3 cm Chronology: Naqada II Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/10.30 C. Antelope shaped palette. Material: Greywacke Dimensions: 8.2 x 14.5 x 0.5 cm Chronology: Naqada II A - B Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/10.26 D. Bird – shaped palette. Material: Greywacke Dimensions: 13 x 15.7 x 0.9 cm Chronology: Naqada II

			Provenance: Gebelein, J. H. Insinger collection (1901) RMO – Leiden F 1901/9.57 E. Shield – shaped palette with bird heads Material: Greywacke Dimensions: 31 x 11.4 x 1 cm Chronology: Naqada IIC - D Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/10.22 Bibliography: Giovetti, P. and Picchi, D. 2015: 62.
3	I.8.	Bird – shaped plaque 	Material: Greywacke Dimensions: 3.8 x 2.1 x 0.2 cm Chronology: Naqada IC - IID Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/10.2 Bibliography: Giovetti, P. and Picchi, D. 2015: 63.
4	I.20.	Rectangular cosmetic palette 	Material: Greywacke Dimensions: 10.3 x 9.2 x 1 cm Chronology: Naqada IIIA-C Collection: F. W. Von Bissing (1938) RMO – Leiden, F 1938/1.10 Bibliography: Giovetti, P. and Picchi, D. 2015: 69.

5	I.40c	Rectangular cosmetic palette 	Material: Greywacke Dimensions: 15 x 4.7 x 1 cm Chronology: Naqada III B - D Provenance: Abu Rawash, Necropolis 400, Tomb 402. Gift from Egypt in 1959. RMO – Leiden, F 1960/12.475 Bibliography: Giovetti, P. and Picchi, D. 2015: 82.

- Greywacke in the Louvre Museum, Paris, France.

	Invento ry no.	Object	Description
1	E 22730 E 22731 E 24731 E 32283 E 24728 E 24724 E 28061 AF 6908	Fish – figured Greywacke Palettes.    	Chronology: 3600 – 3200 BC. Provenance: Donation L. I and A. Curtis. donation Weil.
2	E 27209 E 14230 E 17337 AF 6909 E 10726	A Pre - dynastic Greywacke Palette. 	Chronology: Naqada II, III (3500 – 3100 BC.). Provenance: unspecified.

3	E 24727 E 24729	Pre – dynastic Greywacke Palettes.	Human – headed palette Bird – headed palette Chronology: 3600 – 3200 BC. Provenance: donation Weil. Duck – headed palette: from the natural history museum of Lyon.
4	E 17279	Model of a Piece of Meat.	Chronology: 2200 BC. Provenance: Excavations of Dara.
5	E 11256	Base of a Palette.	Eyeshadow palette decorated with male figures Chronology: Naqada III (3200 – 3100 BC). Provenance: unspecified.
6	E 11648	A Fragment of a Palette with an Ibex.	Chronology: Naqada III (3200 – 3100 BC) Provenance: unspecified.

7	E 11254	The Hunters Palette or Lion Hunt Palette.  Reconstruction 	The palette is broken as another fragment of the palette is preserved in the British Museum.  The Hunters Palette shows a complex iconography of lion hunting as well as the hunt of other animals such as birds, desert hares, and gazelle types; one gazelle is being contained by a rope. The weapons used in the twenty-man hunt are the bow and arrow, mace, throwing sticks, and spears. Chronology: Naqada, Late Pre – Dynastic Period (circa 3100 BC.). Provenance: Abydos. Bibliography: Spencer, A. J. 1993: 57 – 58, fig. 37.
8	AF 9161	Greywacke Cup. 	Chronology: 1st Dynasty (3100 – 2900 BC). Provenance: Excavations of Abu Rawash.
9	E 932	Bucket with a hole for suspension. 	Chronology: Old Kingdom (2700 – 2200 BC). Provenance: unspecified.

10	N 464	Statue of king Amenemhat III. 	Chronology: 12 th Dynasty (1843 – 1798 BC.). Provenance: unspecified.
11	E 10299	head of a king. 	The head was sculpted in greywacke while the eyes were inlaid with limestone. Chronology: end of the 11 th Dynasty – beginning of the 12 th Dynasty (2000 – 1900 BC.). Provenance: unspecified
12	E 22756	Head of a woman. 	Chronology: Middle Kingdom, about 1850 BC. Provenance: Fayum.

13	E 10757	Head of a man. 	Chronology: 12 th Dynasty (1850 BC.) Provenance: Donation E. Andre
14	N 870	Iay, Chief of the treasury. 	Chronology: New Kingdom (1900 – 1850 BC.). Provenance: unspecified
15	E 925	The scribe Paser and his wife resting on a bed. 	Chronology: circa 1400 – 1300 BC. Provenance: unspecified

16	E 22144	May and Henutnefer resting on a bed. 	Chronology: circa 1400 – 1300 BC. Provenance: unspecified
17	N 3026	Pseudo – palette of the vizier “Ptah-Mes”. 	Inscriptions represent the titles of Ptah-mes. Chronology: New Kingdom, reign of Thutmosis III (1479 – 1425 BC). Provenance: unspecified.

18	E 7717	Stela bearing the figures of the Gods of Thebes, Heliopolis and Memphis. 	A stela dedicated by the treasurer of a temple of Ramses II. The decoration of the stela represents the gods Amun – Ra, Ra – Horakhty and Ptah. Chronology: New Kingdom, reign of Ramses II. Provenance: unspecified.
19	N 768 N 743	Two Ushabti statues of Ramses. 	Two Ushabti statues of Ramses, son of the king and chief general. Chronology: New Kingdom, Reign of Ramses II (1279 – 1213 BC.). Provenance: Donation of Egypt in 1852.

20	N 2541	A Fragment of a statue of Shabaka. 	Chronology: 25 th Dynasty (716 – 702 BC) Provenance: found in the “Serapeum” of Saqqara.
21	N 520	Inscribed fragment 	Fragment bearing the cartouche of (WaH Ib ra). Chronology: 26 th Dynasty (664 – 525 BC.) Provenance: Serapeum Saqqara
22	E 10709	Statue of a man dedicated to Horus 	Chronology: 26 th Dynasty Reign of Nekao II (610 – 595 BC). Provenance: donation of E. Andre, 1897.

23	E 10777	Statue of a priest 	Statue of a priest of Bastet covered with magical formulae. Chronology: IV century BC. Provenance: unspecified. It was dedicated by a family of priests of Bastet and most probably it was placed in public as the effect of running water on the magical stela of Horus is still visible.
24	E 9417	Psamtik presents an image of Osiris 	Chronology: 26th Dynasty (664 – 525 BC). Provenance: unspecified.

25	E 20060	Selkis bearing Osiris 	Chronology: Late Period (664 – 332 BC.) Provenance: Transferred from the Guimet museum collection in 1948.
26	N 3952 E 9418	Two Statues of Osiris 	Two statues of Osiris wearing the white crown of Upper Egypt and holding the scepter (HKA) and the flail (nxx), insignia usually held by the kings. Chronology: 26th Dynasty (650 – 600 BC.) Provenance: unspecified.

27	N 3991	Statuette of Isis breastfeeding Horus 	Chronology: The dedication in the name of Amenirdis, the divine consort of Amun dated the statuette to the 26th Dynasty, (circa. 755 – 655 BC). Provenance: Durand collection (Purchased, 1824).
28	E 25459	Statue of Ankh-ef-en-sekhmet Tutor of the king 	The pectoral bears a scene representing the king offering the “nw” jar to the lioness goddess Sekhmet, goddess of Memphis.  Chronology: End of the 26th Dynasty (664 – 525 BC.). Provenance: perhaps Memphis.

29	E 25390 E 25475	Chief of the court Iahmes - sa - Neith 	Chronology: end of 26 th – beginning of 27 th Dynasty (circa 525 BC.). Provenance: Sais The lower part was donated by the Brooklyn Museum. Levy de Benzion collection (Before 1974).
30	E 4299	Statue of a man presenting an effigy of Osiris 	This monument was wrongly described as a “schist statue” however, it is sculpted of the greywacke of Wadi Hammamat. Chronology: 26 th Dynasty (664 – 525 BC.). Provenance: unspecified.

31	D9	Lid of the sarcophagus of Djed – Hor 	The lid is decorated with the BA of the deceased and two chapters of the book of the dead. The internal part is decorated with the figure of the goddess Nut, god of the sky who will receive the deceased. Chronology: IV century BC. Provenance: acquired in Egypt by Champollion.
32	N 2452	Statue of Horoudja 	Horoudja was the priest of Ra in Heliopolis, he had a prominent position in the court. He is well – known due to a dedication of a chapel in Karnak and a number of statues. Chronology: reign of Psamtik I, 26th Dynasty (664 – 610 BC). Provenance: perhaps the temple of Bubastis (Delta).

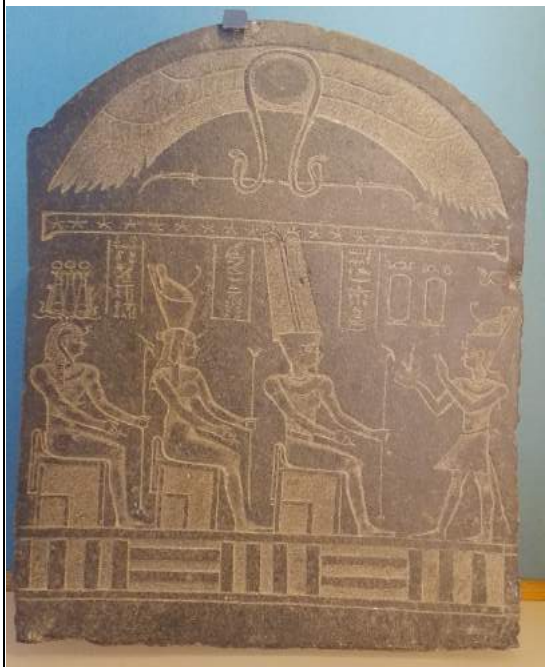
33	E 25499	Statue of the steward Hekat – ef – nakht presenting Osiris. 	Chronology: 26 th Dynasty (550 BC). Provenance: unspecified.
34	E 10706	Head of Osiris 	Chronology: beginning of the 26 th Dynasty (about 650 – 600 BC.). Provenance: Donation E. Andre

35	E 10366	Block – statue of the priest Imnemptitipy. 	He was an official in an Osirian sanctuary. Chronology: 26th Dynasty, Reign of Psmatik I (664 – 610 BC). Provenance: private collection
36	D 39	Sarcophagus of (tenet – hapy) 	- The internal part of the sarcophagus is decorated by the figure of the goddess <i>Imntt</i>, goddess of the west. - The back of the sarcophagus bears a figure of Anubis accompanying the mummified dressed body. Chronology: 30 Dynasty – Beginning of the Ptolemaic Period (400 – 300 BC.). Provenance: unspecified.
37	E 25577	A head of a shaved man 	Chronology: 30 Dynasty (378 – 341 BC). Provenance: donation.

38	E 25492	Torso of king Nectanebo I 	Chronology: 30th Dynasty (378 – 361 BC). Provenance: found in Samanoud during the expedition of Bonaparte in Egypt.
39	E 18967	Statue of Shepsesirdis 	Shepsesirdis was the governor of the province and the Wab priest. The statue represents Shepsesirdis while presenting the naos of the goddess “Nehemet - Tawy” in the temple of El Ashmunein. Chronology: 30th Dynasty, reign of Nectanebo I (380 – 362 BC.). Provenance: Hermopolis Magna (El Ashmunein - Middle Egypt). The statue was acquired during the transfer of the collection of “Guimet” museum in 1948.

40	E 10710	A head of one of the believers of Ptah 	Chronology: 30th Dynasty – Ptolemaic period (reign of Ptolemy II “Philadelphus”, IV century BC.) Provenance: Donation of E. Andre in 1897.
41	E 32648	Fragment of a votive monument 	The inscriptions bear the names of the daughters of an administrator of the temples. Chronology: IV century BC (end of the 30th Dynasty – beginning of the Ptolemaic Period). Provenance: inscriptions indicate that it could have been from the Serapeum of Saqqara. Donation from the society (Amis du Louvre), 2001.

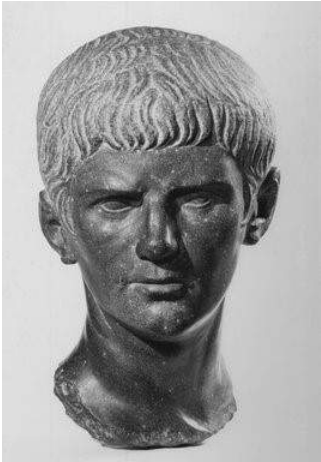
42	D 13	Sarcophagus of Ankhapy, The priest of king Sneferu and the god Ptah. 	Chronology: about 300 BC. (the beginning of the Ptolemaic Period). Provenance: unspecified.
43	D 7	Sarcophagus of the Priest (Ankh – mr – wr) 	Chronology: III – II century BC. (Ptolemaic Period). Provenance: collection of the steward “Fouquet”.
44	C 121	A Ptolemaic king offering Maat to Amun – Ra, Mut and Khonsou.	Chronology: Ptolemaic Period.

			Provenance: Xoïs province (Delta).
45	N 274 C 123	Fragment of a Naos inscribed with a Royal decree. 	Chronology: year 20 of Ptolemy II (262 BC.). Provenance: originally from the temple of Sais but it was discovered in the garden of Villa Borghese in Rome then it was bought by the Louvre museum in 1808.
46	D 40	Sarcophagus of the Greek – Egyptian Tisicrates.	The Greek Tisicrates was buried according to the Ancient Egyptian

			traditions in an anthropoid greywacke sarcophagus decorated with a number of titles and texts from the book of the dead. Chronology: 2nd century BC. (Ptolemaic Period). Provenance: unspecified.
47	N 4541	Statue of Imhotep dedicated by a certain “WaH – ib - ra”. 	Imhotep was the architect of king Djoser (3rd Dynasty, 2650 BC.). he is the architect who designed the first pyramid in Saqqara. During the Late Periods, Imhotep obtained some divine attributes. Chronology: Ptolemaic Period (332 – 30 BC) Provenance: unspecified
48	E 4698	Greywacke statue of a crocodile 	Chronology: unspecified Provenance: unspecified

- Greywacke objects in the Brooklyn Museum, New York.

	Accession Number	Object	Description
1	39.121	Kneeling Statuette of Pepy I 	Chronology: Old Kingdom (6th Dynasty, ca. 2338-2298 B.C.). Dimensions: 6 x 1 13/16 x 3 9/16 in. (15.2 x 4.6 x 9 cm). Collection: Egyptian, Classical, Ancient Near Eastern Art. Provenance: Upper Egypt. Bibliography: https://www.brooklynmuseum.org/opencollection/objects/3448
2	08.480.168	Heart Scarab 	Uninscribed large dark green stone heart scarab. Chronology: Late Period, XXVI Dynasty (664-525 B.C.). Dimensions: 1 1/4 x 1 3/4 x 2 3/4 in. (3.2 x 4.4 x 7 cm). Collection: Egyptian, Classical, Ancient Near Eastern Art. Provenance: Egypt. Bibliography: https://www.brooklynmuseum.org/opencollection/objects/19229
3	79.31	Fragment of the Feet and Base of a Statue 	Chronology: Late Period, early 26th Dynasty (664-332 B.C.). Dimensions: 4 5/8 x 4 11/16 x 4 13/16 in. (11.7 x 11.9 x 12.2 cm). Collection: Egyptian, Classical, Ancient Near Eastern Art. Provenance: Hermopolis, Egypt. Bibliography:

			https://www.brooklynmuseum.org/opencollection/objects/105043
4	54.117	Broken Statue of a Ptolemaic Prince. 	Chronology: Late Ptolemaic Period (50-30 B.C.). Dimensions: 12 1/2 x 5 5/16 x 3 3/8 in. (31.8 x 13.5 x 8.5 cm). Collection: Egyptian, Classical, Ancient Near Eastern Art. Provenance: Egypt. Bibliography https://www.brooklynmuseum.org/opencollection/objects/3603
5	66.65	Portrait Head of Young Man 	Chronology: Roman Period (10 B.C. - 20. AD.). Dimensions: 13 13/16 x 8 1/8 x 8 7/16 in. (35.1 x 20.6 x 21.5 cm) Collection: Egyptian, Classical, Ancient Near Eastern Art. Provenance: Rome (vicinity), Italy. Bibliography https://www.brooklynmuseum.org/opencollection/objects/89629

- Greywacke in the Metropolitan Museum of Art

	Accession Number	Object	Description
1	10.176.78	Palette Depicting a Pair of Mud Turtles 	Chronology: Pre-dynastic, Early Naqada II (ca. 3650–3500 B.C.). Dimensions: H. 15.3 x W. 16 x Th. 0.6 cm (6 x 6 5/16 x 1/4 in.). Provenance: Egypt - Purchased by the Museum from Mohammed Mohassib, Luxor, 1910. Bibliography Fischer, H. 1968: 24, no. 17; Hayes, W.C. 1978: 24, fig. 17; http://www.metmuseum.org/art/collection/search/544044
2	10.176.80	Greywacke Palette 	Greywacke Palette with two birds attached at their tails. Chronology: Pre-dynastic, Naqada II (ca. 3650–3500 B.C.). Dimensions: H: 7.4 cm (2 15/16 in.); W: 9 cm (3 9/16 in.). Department: Egyptian art. Provenance: Egypt; Purchased by the Museum from Mohammed Mohassib, Luxor, 1910. Bibliography http://www.metmuseum.org/art/collection/search/547368
3	28.9.8	Carved ceremonial palette 	Chronology: Pre-dynastic, Late Naqada III. (ca. 3200–3100 B.C.). Dimensions: H: 9 cm (3 9/16 in); W: 5.5 cm (2 3/16 in.). Provenance: Egypt, Gift of Edward S. Harkness, 1928. Bibliography Hayes, W. C. 1978: 28 – 29, Fig. 22; http://www.metmuseum.org/art/collection/search/547390

4	33.159	Fragment of a ceremonial palette 	Greywacke fragment of a ceremonial palette illustrating a man and a type of staff. Chronology: Pre-dynastic, Late Naqada III (ca. 3200–3100 B.C.). Dimensions: H: 5.2 cm (2 1/16 in.); w: 4.7 cm (1 7/8 in.). Department: Egyptian Art. Provenance: Given by Maurice Nahman to H.E. Winlock in 1920. Bibliography Hayes, W. C. 1978: 29, fig. 23; http://www.metmuseum.org/art/collection/search/547391
5	19.2.17	A Leaf – shaped dish 	Chronology: Early Dynastic Period Dynasty: 1st Dynasty (ca. 3100–2900 B.C.). Provenance: Egypt, Rogers Fund, 1919 – purchased together with the libation dish (19.2.16). Bibliography: Fischer, H. G. 1972: 15 - 16, figs. 21 – 23; http://www.metmuseum.org/art/collection/search/544045
6	19.2.16	Libation Dish Depicting Ka-Arms Presenting an Ankh-Sign 	Chronology: Early Dynastic Period (Dynasty 1, ca. 3100–2900 B.C.). Dimensions: w. 14.5 x h. (depth) 3.5 x l. 17.6 cm (5 11/16 x 1 3/8 x 6 15/16 in.) Provenance: Egypt - Purchased in Cairo from Maurice Nahman, 1919. Bibliography Fischer, H. G. 1972: 7, fig. 2 – 5; http://www.metmuseum.org/art/collection/search/543866

7	68.15	Inscribed greywacke dish 	Dish with an inscription recording a ritual event. Chronology: Pre-dynastic, Naqada III–Early Dynastic Period (ca. 3100–2650 B.C.). Dimensions: Diam. 39 cm (15 3/8 in.) Provenance: Egypt - Purchased from Ernst E. Kofler, Lucerne, 1968. Previously purchased by him from Maguide Samed, Cairo, 1966. Bibliography http://www.metmuseum.org/art/collection/search/547406
8	07.228.117 a–h	Model of the "Opening of the Mouth" ritual equipment 	Chronology: Old Kingdom (5th – 6th Dynasty, ca. 2465–2150 B.C.). Dimensions: Tray: L. 22 cm (8 11/16 in); w. 12 cm (4. 3/4 in); h. 3.2 cm (1 1/4 in). Department: Egyptian Art. Provenance: Egypt, Purchased by the Museum from Mohammed Mohassib in Luxor, 1907. Bibliography http://www.metmuseum.org/collection/the-collection-online ; Hayes, W. C. 1978: 118, fig. 70.
9	25.6	Seated Statue of King Senwosret I 	Chronology: Middle Kingdom (12th Dynasty, reign of Senwosret I, ca. 1961–1917 B.C.). Provenance: Egypt - Purchased in Cairo from Panayotis Kitycas by Jules S. Bache about 1909. Donated to the Museum by Bache, 1925. Probably from Fayum, Medinet el-Fayum (Krokodilopolis-Arsinoe), Krokodilopolis temple. Bibliography: Hayes, W. C. 1978: 179 – 180, fig. 110; http://www.metmuseum.org/art/collection/search/544185

10	22.1.107a, b	Offering table with statuette of Sehetepib 	Chronology: Middle Kingdom (12th Dynasty, Early 13th Dynasty, ca. 1850–1775 B.C.). Dimensions: a) H. 9 cm (3 9/16 in.); W. 5.3 cm (2 1/16 in.); D. 5.7 cm (2 1/4 in.). b) H. 1.7 cm (11/16 in.); W. 16.4 cm (6 7/16 in.); D. 13 cm (5 1/8 in.) Combined: H. 10.2 cm (4 in.). Provenance: From Egypt, Memphite Region, Lisht, cemetery south of the pyramid of Lisht, Pit 883, MMA 1920–1921. Excavated by the Egyptian Expedition of the Metropolitan Museum of Art. Acquired by the Museum in the division of finds. Rogers Fund and Edward S. Harkness Gift, 1922. Bibliography http://www.metmuseum.org/art/collection/search/546805
11	07.228.180	Statuette of a striding man 	Chronology: Middle Kingdom (mid 12th Dynasty, ca. 1900–1850 B.C.). Dimensions: H. 32.2 cm (12 11/16 in.); W. 9.2 cm (3 5/8 in.); D. 15.6 cm (6 1/8 in.). Provenance: Egypt (unknown provenience). Bibliography Hayes, W. C. 1978: 210 – 211, fig. 128; http://www.metmuseum.org/art/collection/search/544173

12	68.101	Middle Kingdom reused statuette from Byblos	Chronology: Middle Kingdom–Early New Kingdom, 12th – 18th Dynasty, (ca. 1981–1550 B.C.). Dimensions: H. 15.65 cm Provenance: Byblos Bibliography Fischer, H. 1974: 14 – 18, Fig. 14 – 16; http://www.metmuseum.org/art/collection/search/552927
13	28.2.1	Middle Kingdom Head	Greywacke head of a male statue. Chronology: Middle Kingdom–Early New Kingdom, 12th – 18th Dynasty (ca. 1981–1550 B.C.). Dimensions: H. 11 cm (4 5/16 in.). Provenance: Egypt, Purchased in Cairo from Khaouam Brothers, 1927. Bibliography http://www.metmuseum.org/art/collection/search/556553

14	2007.81	Head of King Amasis 	Greywacke head of King Amasis, reworked for a non-royal individual. Chronology: Late Period, Saite, (26th Dynasty, reign of Amasis, 570–526 B.C.). Dimensions: H. 6 cm (2 3/8 in). Provenance: Egypt, Ex-coll. Jack Josephson, New York, purchased by him in 1986 from L'Ibis Gallery, New York. Purchased by the museum from Safani Gallery, New York, 2007. Bibliography http://www.metmuseum.org/art/collection/search/553275
15	1982.318	Naophorous Block Statue of a Governor of Sais, Psamtik (seneb) 	Chronology: Late Period, Saite (26th Dynasty, 664–525 B.C.). Dimensions: H. 30.5 cm (12 in) Provenance: Italy, Southern Europe, Tivoli, Hadrian's Villa, Barberini Collection, 16th century-1930s; Tozzi Collection, New York, before 1950; [Phyllis A. Goldman Fine Arts, New York]. Bibliography De Montebello, P. 1982–1983: 6 – 7; http://www.metmuseum.org/art/collection/search/550755

16	07.229.1a, b	Sarcophagus of Harkhebit 	Chronology: Late Period, Saite (26th Dynasty, reign of Psamtik I–Amasis, 664–525 B.C.). Dimensions: H. 256.5 (101 in); W. 127 (50 in) at shoulders; thickness (of lid and base together) 132.1 cm (52 in). Provenance: From Egypt, Memphite Region, Saqqara; includes the Serapeum, Tomb of Harkhebit. Excavated at Saqqara by the Service des Antiquités de l'Egypte, 1902. Purchased from the Egyptian Government, 1907. Bibliography Arnold, D. 1997: 31 – 33, 40 – 43, figs. 1 – 5; http://www.metmuseum.org/art/collection/search/548211
17	19.2.2	Statue of Harbes called Psamtiknefer, son of Ptahhotep 	Chronology: Late Period, Saite, 26th Dynasty, reign of Psamtik II (595–589 B.C.). Dimensions: H. 0.615m Provenance: From Egypt, Upper Egypt; Thebes, Karnak, Temple of Amun, Cachette. Excavated by Georges Legrain in the Karnak Cachette, 1904. Sold by Gaston Maspero, director of the Egyptian Museum, Cairo, to Lady William Cecil, 1905. Sold by Lord Cecil to the museum, 1919. Included in the online database of the Karnak Cachette. Bibliography: http://www.metmuseum.org/art/collection/search/546748

18	24.2.2	Kneeling statue of Amenemopetemhat 	Chronology: Late Period, Saite, 26th Dynasty, reign of Psamtik I (664–610 B.C.). Dimensions: H. including base 64 cm (25 3/16 in). Provenance: From Egypt, Memphite Region, Memphis (Mit Rahina), Temple of Ptah. Bibliography Russmann, E. R. 1973: 33 – 35, figs. 1 – 3; http://www.metmuseum.org/art/collection/search/548362
19	1992.55	Antelope Head 	Chronology: Late Period Dynasty: Dynasty 27 Date: 525–404 B.C. Dimensions: h. 9 cm (3 9/16 in); w. 15 cm (5 7/8 in) Provenance: Egypt, Memphite Region, Memphis (Mit Rahina). Purchase, Rogers and Fletcher Funds and Joseph Pulitzer Bequest, 1992. Purchased from Peter Sharrer, Ancient Art Inc, New Jersey, 1992. Before that Charles Ede Limited, London, and before that Mieke Zilverberg Kunsthandel, Amsterdam who acquired the piece from a German private collection. Bibliography Arnold, D. 1995: 13, no. 5; http://www.metmuseum.org/art/collection/search/544070

20	25.2.10	Man, holding a Shrine Containing an Image of Osiris 	Chronology: Late Period, 5th–4th century B.C. Dimensions: h. 46.6 cm (18 3/8 in); w. 11 cm (4 5/16 in); d. 16.9 cm (6 5/8 in.). Provenance: Egypt - Purchased from Maurice Nahman, Cairo 1925, Egypt. Bibliography http://www.metmuseum.org/art/collection/search/551807
21	49.101.2	Head of a male priest 	Chronology: First Persian Period–Late Period, 27th – 30th Dynasty (525–332 B.C.). Provenance: Egypt - Donated to the Museum by the Brummer Gallery, New York, 1949. Bibliography: http://www.metmuseum.org/art/collection/search/552855
22	25.2.1	Bust of an anonymous scribe 	Chronology: Late Period, 30th Dynasty (380–342 B.C.). Dimensions: H. 38.1 cm (15 in.); W. 30.1 cm (11 7/8 in.); D. 17.3 cm (6 13/16 in.). Provenance: Egypt, Memphite Region, Memphis (Mit Rahina), Ptah Temple. Purchased by the Museum from Khaouam Brothers, Cairo, 1925. Bibliography Howard, K.1994: 106, no. 49;

			http://www.metmuseum.org/art/collection/search/546751
23	1996.91	Torso of a High General 	Chronology: Late period, 30th Dynasty, reign of Nectanebo I (380 – 362 BC.). Dimensions: H. 69.9 cm (24 1/2 in), W. 32.8 cm (12 15/16 in), D. 27.0 cm (10 5/8 in) Provenance: Purchase, Lila Acheson Wallace Gift, Gift of Henry Walters, by exchange, Asher B. Edelman Gift, Judith and Russell Carson Gift, Ernest L. Folk III Bequest, Ludlow Bull Fund, and funds from various donors, 1996 Bibliography The Metropolitan museum of Art Bulletin. 1996: 8 – 9; http://www.metmuseum.org/art/collection/search/548360
24	50.85	Magical stela 	Chronology: Late Period, 30th Dynasty, reign of Nectanebo II (360–343 B.C.). Dimensions: Overall H. 83.5 cm (32 7/8 in); W. of stela 33.5 cm (13 3/16 in); D. 7.2 cm (2 13/16 in) H. of base 14.4 cm (5 11/16 in); 33.5 cm (13 3/16 in); D. 14.4 cm (5 11/16 in). Provenance: From Egypt, Alexandria Region, Alexandria, 1950. Bibliography The Metropolitan Museum of Art Bulletin, vol. 41, no. 3, New York, winter 1983/1984, p. 50, no. 51; http://www.metmuseum.org/art/collection/search/546037

25	34.2.1	God Horus Protecting King Nectanebo II 	Chronology: Late Period, 30th Dynasty, reign of Nectanebo II. (360–343 B.C.). Dimensions: h. 72 cm (28 3/8 in); w. 20 cm (7 7/8 in); d. 46.5 cm (18 5/16 in); Weight 55.3 kg (122 lb.). Provenance: Said to be from Heliopolis (Ain Shams), tomb of a Mnevis bull. Rogers Fund, 1934. Purchased from Eustache de Lorey, Paris, 1934; continuously exhibited and frequently published since that time; included in international exhibition <i>Cleopatra's Egypt</i>, Brooklyn and Munich, 1988, and <i>La Gloire d'Alexandrie</i>, Paris 1998. Bibliography The <i>Metropolitan Museum of Art Bulletin</i>. 1995: 45, no. 50; http://www.metmuseum.org/art/collection/search/544887
26	55.51	Feet from statue of Musician of Amun Tasheritkhonsu 	Chronology: Macedonian-Ptolemaic Period (332–30 B.C.). Dimensions: W. 14.7 × L. 20.5 × Th. 6.3 cm (5 13/16 × 8 1/16 × 2 1/2 in.) Provenance: Middle Egypt, Asyut (Assiut, Siut; Lykopolis). Donated to the museum by Mrs. Constantine Johnston Beach, 1955. The base had been noted and its inscription copied by Ahmed Bey Kamal at Assyut, published in 1910. Bibliography http://www.metmuseum.org/art/collection/search/552002

27	12.187.31	Face attributed to Ptolemy II Philadelphos or a contemporary 	Chronology: Ptolemaic Period, reign of Ptolemy II Philadelphos (285–246 B.C.). Dimensions: H. 16.2 cm (6 3/8 in.); W. 10.8 cm (4 1/4 in.); D. 6 cm (2 3/8 in.) Provenance: From Egypt, Memphite Region, Heliopolis (Iunu; On), Near the obelisk, BSAE excavations 1912 Excavated by Petrie at Heliopolis with the sponsorship of the Egyptian Research Account and the British School of Archaeology in Egypt. Acquired in the division of finds. Given by the ERA and the BSAE to the Museum for its contribution to the excavations, 1912. Bibliography Josephson, J. A. 1995: 5 – 7, fig.s. 1 – 2. http://www.metmuseum.org/art/collection/search/548230
28	04.2.359	Uninscribed scarab 	Chronology: Roman Period (30 B.C.–A.D.). Dimensions: W: 2.1 x Th. 1.2 x L. 2.8 cm (13/16 x 1/2 x 1 1/8 in.). Provenance: Egypt Collection of Judge Elbert E. Farman, formed when he was U.S. consul general in Egypt 1876–84. Donated to the museum by Darius Ogden Mills, New York, in 1904. Bibliography http://www.metmuseum.org/art/collection/search/552319

- Greywacke in The British Museum

	Museum number	Object – Collection – Classification	Artwork
1	EA35714	Palette of Narmer  	Department: Ancient Egypt and Sudan Chronology: Dynasty (0) – 1st Dynasty Dimensions: Height: 64 cm (max) Width: 42 cm (max) Thickness: 2.5 cm (max) Provenance: Kom el-Ahmar (Hierakonpolis) – Egypt. Bibliography: Roveri, A. and Tiradritte, F. (eds.), 1998: 224-225; Pasini, P. (ed.), 1998: 15.

2	EA1816	Statue of Ramses IV 	Department: Ancient Egypt and Sudan Chronology: 20th Dynasty Dimensions: Height: 128.5 cm Width: 50 cm Depth: 32 cm Weight: 70 kg. Provenance: Egypt Bibliography: The British Museum. 1960: 75-77.
3	EA140	Sarcophagus 	Department: Ancient Egypt and Sudan Chronology: 20th Dynasty (circa 1150 B.C.). Dimensions Height: 83.8 cm (max) Provenance: Egypt, Upper Egypt, Valley of the Kings - Thebes, Tomb of Ramses VI. Bibliography Strudwick, N. 2006: 228-229; Nicholson, P. and Shaw, I. 2000: 58.

4	EA498	The Shabako Stone 	Chronology: 25 th Dynasty (710 B.C.). Dimension: Height: 66 cm (max) Width: 137 cm (max) Provenance: Egypt, Memphis. Bibliography Altenmüller, H. 1975: cols 1065-1069; Strudwick, N. <i>Masterpieces of Ancient Egypt</i> , London 2006, pp. 260-1; Nicholson, P. and Shaw, I. 2000: 58.
5	EA2383 1	Dish 	Department: Ancient Egypt and Sudan Chronology: Late Period Dimensions: Length: 22.7 cm (max) Width: 11.55 cm (max) Thickness: 2.51 cm Diameter: 29.5 cm (reconstructed) Provenance: Tell Dafana, Egypt, Lower Egypt, Nile Delta, Tell Defana. Excavated at May 1886. Donated to the British Museum by Egypt Exploration Fund in 1887. Bibliography: Leclère, F. and Spencer, J. (eds.) 2014: 51.
6	EA1855 9	Vessel Model 	Department: Ancient Egypt and Sudan Chronology: Late Period Dimensions: Diameter: 1.9 cm (max) Provenance: Lower Egypt, Tell Dafana Excavated in May 1886, Donated by Egypt Exploration Fund in 1887. Bibliography: Leclère, F. and Spencer, J. (eds.) 2014: 42, 51, 173.

7	EA2757 1	Plaque 	Department: Ancient Egypt and Sudan Chronology: Late Period Dimensions Length: 1.7 cm Width: 1.4 cm Thickness: 0.65 cm Provenance: Lower Egypt, Nile Delta, Naukratis. Donated by Egypt Exploration Fund in 1885. Bibliography: Petrie, W.M.F. 1927: 110, pl. XII.
8	EA97	Broken head of a statue 	Department: Ancient Egypt and Sudan Chronology: 30th Dynasty Dimensions Height: 39 cm (max) Height: 47 cm (with base) Width: 30 cm Depth: 31 cm Labelled as schist. Provenance: Egypt, it was brought from Egypt by the late Duc de Chaulnes' in 1814. Bibliography: Porter, B. and Moss, R. 1999: 159; Myśliwiec, K. 1988: 50, 64, 71; Josephson, J. A. 1997: 23-24, n. 165; pl. 8a; James, T. G. H. and Davies, W. V. 1983: 60, fig. 67.

9	EA22	Architectural element of Nectanebo I 	Department: Ancient Egypt and Sudan Chronology: 370BC - 30 th Dynasty Dimensions Height: 122.6 cm (max) Width: 95.5 cm (max) Depth: 38 cm Provenance: Egypt, Lower Egypt, Nile Delta, El-Rashid (Rosetta), Alexandria. Donated to the British Museum in 1766. Bibliography: Strudwick, N. 2006: 282 – 283; Porter and Moss 1934: 2, 5- wrongly as BM “998”; Nicolas G. 1992: 378, pl. 24.
10	EA10	bath-tub / sarcophagus / religious/ritual vessel 	Department: Ancient Egypt and Sudan Chronology: 30 th Dynasty (345 B.C.) Dimensions Height: 118.5 cm (max) Length: 313.5 cm (max) Width: 162 cm (max) Provenance: Egypt, Alexandria, Attarin Mosque. This object was incorrectly believed to be associated with Alexander the Great when it entered the collection in 1803. Labelled as green breccia. Bibliography Pinch, G. 1994: 41, pl. 49.

11	EA 523, EA 524	Greywacke obelisks of Nectanebo II 	Department: Great Court Chronology: Late Period, 30th Dynasty (350 BC). Dimensions: Height: 2.740 m (EA 523). Height: 2.740 m (EA 523). Provenance: They were found in Cairo but were originally located in the ancient city of Hermopolis (modern Al-Ashmunayn), central Egypt. The fragmentary monoliths were recovered by French scholars as part of Napoleon's 1798 expedition to Egypt but, after the capitulation of French forces, they were confiscated by the British, along with a number of antiquities including the Rosetta Stone, and transported to England. They can now be seen in the Great Court of the British Museum as a gift of H.M. King George III. Bibliography: http://www.britishmuseum.org/research/collection_online

12	1926,04 15.15	Portrait Head 	Department: Greek and Roman Antiquities Chronology: Second Century BC. Dimensions: Height: 17.5 cm. Provenance: Egypt. Bibliography: Arslan, E. A. (ed.), 1997: 96, no. III.2 (Isis); Ashton, S-A. 2001: Appendix 3.4 (Cleopatra I or II).

- Greywacke in Boston Museum of Fine Arts

	Accession Number	Object – Collection – Classification	Description
1	05.261	Fragment of rectangular palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: 3650–2960 B.C. Dimensions Height x width x thickness: 9.9 x 9 x 1 cm (3 7/8 x 3 9/16 x 3/8 in.). Provenance: From Ihnasya el-Medina (Herakleopolis Magna) - Naqada II–III. 1903-1904: excavated by William Matthew Flinders Petrie for the Egypt Exploration Fund, assigned to the EEF by the Egyptian government; 1905, presented to the MFA by the EEF. (Accession Date: January 1, 1905). Bibliography http://www.mfa.org/collections/object/fragment-ofrectangular-palette-132566
2	11.208	Rhomboid Palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: Naqada I, 3850–3650 B.C. Dimensions Overall: 9 x 24.2 cm (3 9/16 x 9 1/2 in.) Provenance: From Mesaid [Mesa'eed] tomb 39, no. 3 [M/39/3]. 1910: Excavated by the Harvard University–Museum of Fine Arts Expedition; assigned to the MFA by the government of Egypt. Bibliography http://www.mfa.org/collections/object/rhomboidpalette-138694
3	11.226a-b	Double – Bird Palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: Naqada I–II, 3850–3300 B.C. Dimensions Height x width x thickness: 6.3 x 10 x 0.4 cm (2 1/2 x 3 15/16 x 3/16 in.) Provenance: From Mesaid [Mesa'eed] tomb 197, no. 3 [M/197/3]. 1910: excavated by the Harvard University–Museum of Fine Arts Expedition; 1911: assigned to the MFA by the Egyptian government. (Accession Date: March 2, 1911). Bibliography

			http://www.mfa.org/collections/object/double-birdpalette-136943
4	11.228	Double – Bird Palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: Naqada I–II, 3850–3300 B.C. Dimensions Height x width x thickness: 10 x 6.5 x 0.4 cm (3 15/16 x 2 9/16 x 3/16 in.) Provenance: From Mesaid, tomb 197, no. 2 [M/197/2]. 1910: excavated by the Harvard University–Museum of Fine Arts Expedition; assigned to the MFA in the division of finds by the government of Egypt. (Accession Date: March 2, 1911). Bibliography http://www.mfa.org/collections/object/double-birdpalette-136943
5	03.1488	Shield – Shaped Palette 	Collection: The Ancient World. Classification: Tools and equipment. Chronology: Naqada II–III, 3650–2960 B.C. Provenance: Said to be from Naqada. 1903: purchased for the MFA from Mohamed Mohassib, Luxor, Egypt by Albert M. Lythgoe as part of a group (03.1474-03.1490) for £4. Acquired with funds from the Emily Esther Sears Fund. (Accession Date: January 1, 1903). Bibliography http://www.mfa.org/collections/object/shield-shaped-palette-131739
6	47.1639	Fish-shaped palette 	Collection: The Ancient World Classification: Tools and equipment, Cosmetic and Medical. Chronology: Naqada II–III, 3650–2960 B.C. Dimensions: Overall: 8.3 x 15 x 0.4 cm (3 1/4 x 5 7/8 x 3/16 in.). Provenance: From Shurafa (north of Quff), (Lythgoe's excavations; December, 1900.) Exp. Ph. O.S. B 1037. Brought from Harvard camp 1947: Excavated by the Harvard University–Museum of Fine Arts Expedition; assigned to the MFA by the government of Egypt. Bibliography: http://www.mfa.org/collections/object/fish-shaped-palette-148340
7	11.202	Disc – Shaped Palette	Collection: The Ancient World.

			Classification: Tools and equipment, Cosmetic and Medical. Chronology: Naqada III, 3300–2960 B.C. Provenance: From Mesaid (Mesa'eed) tomb 6, object 1 [M/6/1]. 1910: Excavated by the Harvard University–Museum of Fine Arts Expedition; assigned to the MFA by the government of Egypt. (Accession Date: March 2, 1911). Bibliography http://www.mfa.org/collections/object/disc-shaped-palette-138696
8	03.1484	Sandal – Shaped Palette 	Collection: Africa and Oceania, The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: Said to be from Naqada. Dimensions Overall: 20 x 11.5 x 0.9 cm (7 7/8 x 4 1/2 x 3/8 in.). Provenance: Said to be from Naqada. 1903: purchased for the MFA from Mohamed Mohassib, Luxor, Egypt by Albert M. Lythgoe as part of a group (03.1474-03.1490) for £4. Acquired with funds from the Emily Esther Sears Fund. (Accession Date: January 1, 1903). Bibliography: http://www.mfa.org/collections/object/sandal-shaped-palette-131735
9	47.1644	Turtle - Shaped Palette 	Collection: The Ancient World. Classification: Tools and equipment. Chronology: Naqada I–III, 3850–2960 B.C. Dimensions Legacy dimension: Length: .105 m. W. .076 m. TH. .011 m. Provenance: Findspot Information: From Tukh. Exp.Ph. O.S. B 9887 / B 9892 Purchased by Albert M. Lythgoe; January, 1901. Brought from Harvard Camp in 1947. Bibliography: http://www.mfa.org/collections/object/turtle-shaped-palette-148345

10	47.1637	Rectangular Palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: 2960–2770 B.C. Dimensions Length x width x thickness: 11 x 7.1 x 0.9 cm (4 5/16 x 2 13/16 x 3/8 in.). Provenance: From Deir el-Ballas, Tomb no. B 148. 1900-1901: excavated by George A. Reisner for the Hearst Egyptian Expedition of the University of California (which became the Harvard University-Museum of Fine Arts Expedition in 1905); by 1947: at Harvard Camp, Giza; 1947: shipped to the MFA from Harvard Camp. (Accession Date: January 1, 1947). Bibliography: http://www.mfa.org/collections/object/rectangular-palette-148338
11	47.1640	Double bird head palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: 2960–2770 B.C. Dimensions: Height x width x thickness: 27.7 x 11 x 0.9 cm (10 7/8 x 4 5/16 x 3/8 in.) Provenance: Sheikh Ali (Abadiya) - Egypt. Exp.Ph. O.S. C 1822 Purchased by Albert M. Lythgoe in Egypt, 1900-1901 for the MFA. Brought from Harvard Camp in 1947. Bibliography: http://www.mfa.org/collections/object/double-bird-head-palette-148341
12	11.2496	Rectangular palette 	Collection: The Ancient World. Classification: Tools and equipment, Cosmetic and Medical. Chronology: 2750–2649 B.C. Dimensions: Height x width x thickness: 8.7 x 5.1 x 0.7 cm (3 7/16 x 2 x 1/4 in.). Provenance: From Zawiyet el-Aryan, Tomb 118 (Z/118/6). 1911: excavated by the Harvard University–Boston Museum of Fine Arts Expedition; assigned to the MFA in the division of finds by the government of Egypt. (Accession Date: October 19, 1911). Bibliography: http://www.mfa.org/collections/object/rectangular-palette-139505

13	11.1738	King Menkaure and his queen 	Collection: The Ancient World. Classification: Sculpture. Chronology: 2490–2472 B.C. – 4th Dynasty. Dimensions: Overall: 142.2 x 57.1 x 55.2 cm, 676.8 kg (56 x 22 1/2 x 21 3/4 in., 1492.1 lb.) Block (Wooden skirts and two top): 53.3 x 180 x 179.7 cm (21 x 70 7/8 x 70 3/4 in.). Provenance: From Giza, Menkaura Valley Temple. 1909: excavated by the Harvard University-Museum of Fine Arts Expedition; 1911: assigned to the MFA by the Egyptian government. (Accession Date: March 2, 1911). Bibliography: http://www.mfa.org/collections/object/kingmenkaura-mycerinus-and-queen-230
14	2000.973	Statue of Osiris 	Collection: The Ancient World. Classification: Sculpture. Chronology: 664–525 B.C. Dimensions: Height x width x depth: 20 x 15.5 x 29 cm (7 7/8 x 6 1/8 x 11 7/16 in.) - Lower Part Height: .55cm (21 5/8 in) - upper part. Provenance: From Giza. 1798: found at Giza during Napoleon Bonaparte's Egyptian campaign by General Jean Lannes, Duc de Montebello; taken to Paris following the French capitulation to the English; passed down in the owner's family until 2000; 2000: purchased by the MFA from owner. (Accession date: October 25, 2000.). Bibliography: http://www.mfa.org/collections/object/statue-of-osiris-feet-and-base-313976

15	1970.49 5	Statue of Vizier Bakenrenef 	Collection: The Ancient World. Classification: Sculpture. Chronology: 664–610 B.C. Dimension: Height x width x length: 50 x 22 x 10.5 cm (19 11/16 x 8 11/16 x 4 1/8 in.). Provenance: - Before 1894: Greau Collection. - 1894: H. Hoffmann Collection. - 1952, Paris private collection; sold in Paris at Hotel Drouot sale no. 6 May 9, 1952. - 1953 with Ascher (Paris); by 1970, with Michael Kennedy (New York), then purchased by the MFA from Michael Kennedy November 10, 1970. Bibliography: Legrain, G. 1894: 16, no. 41, pl. 9; http://www.mfa.org/collections/object/statue-of-vizier-bakenrenef-164261
16	04.1841	Head of Ankhkhonsu 	Collection: The Ancient World. Classification: Sculpture. Chronology: 664–525 B.C. Dimensions: Height x width x depth: 19.5 x 18.5 x 15 cm (7 11/16 x 7 5/16 x 5 7/8 in.) Provenance: Probably from Karnak. 1903: purchased in Luxor by Albert M. Lythgoe for the MFA. The body (Cairo JE 37997) was discovered in 1905 in the Karnak Cachette. (Accession Date: January 1, 1904). Bibliography: Bothmer, B. V. 1981: 75 – 83, pl. 7 – 11; http://www.mfa.org/collections/object/head-of-ankhkhonsu-130938

17	04.1749	Head of a priest (The Boston Green Head)  	Collection: The Ancient World. Classification: Gallery: Egyptian Late Period Gallery (Gallery 216). Chronology: 380–332 B.C. Dimensions: Height x width x depth: 10.5 x 8.5 x 11.3 cm (4 1/8 x 3 3/8 x 4 7/16 in.) Provenance: Said to have been found at the Serapeum, Saqqara. 1858: given by Muhammed Said Pasha to Prince Napoleon Joseph Charles Paul Bonaparte; by 1904: with Edward Perry Warren; 1904: purchased by the MFA from Edward Perry Warren. (Accession Date: January 19, 1904). Bibliography http://www.mfa.org/collections/object/head-of-a-priest-the-boston-green-head-131018

- Greywacke objects in the Petrie Museum.

	Accession number	Object	Art work
1	UC35710	Fragmented knife 	Chronology: Pre-dynastic Period. Dimensions: Height: 4.4 cm. Length: 5.6 cm. Provenance: Abydos, Egypt Bibliography: http://petriecat.museums.ucl.ac.uk
2	UC73456	Group of Tools 	Chronology: Pre-dynastic Period. Dimensions: 1 height: 9.8 cm 1 width: 1.9 cm 2 height: 8.9 cm 2 width: 1.8 cm 3 height: 8.2 cm 3 width: 1.9 cm Provenance: Tarkhan, Egypt. Bibliography http://petriecat.museums.ucl.ac.uk
3	UC26877	Geological sample 	Chronology: Pre-dynastic Period. Dimensions: length: 2.8 cm. width: 1.7 cm. Provenance: Badari, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk

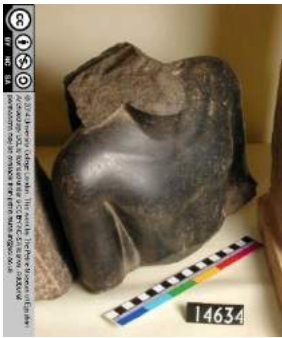
4	UC25510	Palette 	Chronology: Naqada II Dimensions: length: 15.0 cm width: 10.4 cm Provenance: non-specified. Bibliography: Brunton, G. 1937: 71; http://petriecat.museums.ucl.ac.uk
5	UC26516	Palette 	Chronology: Pre-dynastic Period Dimensions: Length: 27.2 cm Width: 9.0 cm Provenance: Badari, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk
6	UC41079	Vase 	Chronology: Early Dynastic Period Dimensions: height: 3.1 cm length: 5.5 cm Provenance: non – specified. Bibliography: http://petriecat.museums.ucl.ac.uk

7	UC37034	Fragmented Dish 	Chronology: 1 st Dynasty. Dimensions: length: 8.6 cm width: 7.8 cm height: 2.1 cm Provenance: Abydos, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk
8	UC37042	Fragmented Vessel 	Chronology: 1 st Dynasty. Dimensions: length: 3.5 cm width: 4.0 cm height: 2.8 cm Provenance: Abydos, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk
9	UC35653	Plant leaf model 	Chronology: 1 st Dynasty. Provenance: Abydos, Egypt. Bibliography Bourriau, J. D. 1990: 157 – 159; Teasley-Trope, B. 2005: 57; Stevenson, A. 2015: 65; http://petriecat.museums.ucl.ac.uk

10	UC2475	Writing palette 	Chronology: 1 st Dynasty. Dimensions: length: 18.5 cm width: 8.9 cm thickness: 0.8 cm Provenance: non – specified. Bibliography Petrie, W. M. F. 1927: 63, pl. LVI.1; http://petriecat.museums.ucl.ac.uk
11	UC37048	Piece of a cup 	Chronology: 1 st Dynasty. Dimensions: length: 4.5 cm width: 4.1 cm height: 1.5 cm Provenance: Abydos, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk
12	UC41083	Bowl 	Chronology: 3 rd Dynasty. Dimensions: height: 11.7 cm length: 12.7 cm Provenance: non – specified. Bibliography http://petriecat.museums.ucl.ac.uk
13	UC17745	Bowl 	Chronology: 6 th Dynasty. Dimensions: diameter: 9 cm Provenance: Qau, Egypt. Bibliography

			Brunton, Guy. Qau and Badari I. pl. XXVI. 6. + pl. XLV.401; http://petriecat.museums.ucl.ac.uk
14	UC19749	Mace-head 	Chronology: Old Kingdom Provenance: Buhen, Sudan. Bibliography: http://petriecat.museums.ucl.ac.uk
15	UC18091	Palette 	Chronology: 7 th Dynasty. Dimensions: length: 9.0 cm Provenance: Qau, Egypt. Bibliography http://petriecat.museums.ucl.ac.uk
16	UC14815	Figurine 	Chronology: Middle Kingdom Dimensions: height: 9.7 cm Provenance: Bibliography: Page, A. 1976: 34, cat.no. 37. http://petriecat.museums.ucl.ac.uk

17	UC41369	Dish 	Chronology: 12 th Dynasty. Dimensions: width: 5.7 cm length: 8.9 cm Provenance: non – specified. Bibliography Petrie, W. 1937: 9, 21; pl. XXVII, No. 537; http://petriecat.museums.ucl.ac.uk
18	UC14881	Figurine 	Chronology: 18 th Dynasty. Dimensions: height: 10.4 cm thickness: 5 cm width: 8.6 cm Provenance: Hierakonpolis, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk
19	UC46556	Sculpture inlay 	Chronology: Late 18 th Dynasty. Dimensions: length: 3.05 cm width: 1.1 cm thickness: 0.3 cm Provenance: Amarna – Egypt. Bibliography http://petriecat.museums.ucl.ac.uk
20	UC29898f	Grain rubber, Polisher 	Chronology: 22 nd Dynasty. Dimensions: height: 6.8 cm Provenance: non – specified Bibliography http://petriecat.museums.ucl.ac.uk

21	UC29867	Scarab 	Chronology: 22nd Dynasty. Dimensions: height: 6.9 cm length: 4.6 cm Provenance: non – specified Bibliography http://petriecat.museums.ucl.ac.uk
22	UC2413	Amulet 	Chronology: 26th Dynasty. Dimensions: length: 7.0 cm width: 2.4 cm Provenance: Bibliography: http://petriecat.museums.ucl.ac.uk
23	UC14634	Broken bust of Statue 	Chronology: 26th Dynasty. Dimensions: Height: 22.5 cm Provenance: Memphis, Egypt. Bibliography: http://petriecat.museums.ucl.ac.uk Note: The statue is sculpted of basalt but here, there should be a link between the positions mentioned in the inscriptions as the overseer of the frontier regions and the responsible of creating monuments of greywacke.

24	UC52074	Amulet 	Chronology: Late Period Dimensions: height: 3.0 cm width: 2.2 cm Provenance: non – specified. Bibliography: http://petriecat.museums.ucl.ac.uk
25	UC42553	Figurine 	Chronology: probably Late period, reign of Psamtek. Provenance: non-specified. Bibliography: http://petriecat.museums.ucl.ac.uk
26	UC52235	Amulet 	Chronology: Roman Period. Provenance: non – specified. Bibliography: Petrie, W. 1914: 32, pl. XXII, 136 g. http://petriecat.museums.ucl.ac.uk

			
27	UC17154	Beads 	Chronology: non-specified. Provenance: Tarkhan, Egypt. Bibliography http://petriecat.museums.ucl.ac.uk

Appendix III

Site Explanation panels

- Due to the actual condition of the Myos Hormos road, the missing state of indications, directions and explaining panels is noticeable.
- Therefore, the valorization of the site needed the preparation of preliminary explaining panels to each *hydreuma* along the Quseir – Qift Road.

1. Bir Nakhil

بير النخيل
التاريخ: أواخر القرن الأول وأوائل القرن الثاني الميلادي.
الموقع: يقع بير النخيل على بعد ١٣ كيلومترا من القصر القديم.
الوصف الأثرى: يختلف بير النخيل عن الحصون الأخرى على طول طريق القصر - قنط حيث يقتل البئر وسط الحصن نظرا لإقتراب مستوى المياه الجوفية و هو ما يقصر وجوه أشجار النخيل و الأثل.
يحتوي موقع حصن بير النخيل على القلعة و بعض جدران الثكنات القديمة بالإضافة إلى قرية عمال المناجم .



Bir Nakhil
Date: late first century and early second century AD.
Location: Bir el-Nakhil is located at 13 km from Quseir al-Qadim
Description: Bir Nakhil is different than the other strongholds on the road as the well in the middle does not exist given the proximity of water level that explains the existence of some groves of palm trees and tamarisk.
Bir Nakhil site contains the fort with some walls of the ancient barracks and the Miners' village.



2. Dawwi (Al Bayda)

بئر البيضاء
التاريخ: حوالي القرن الثاني الميلادي
الموقع: يقع بئر البيضاء على مسافة ١٥٤ كم من قنط و ٢٧ كم من القصر القديم على طول طريق القصر - قنط، حيث يبعد حوالي ١٤ كيلومترا من بئر السيلة الذي يليه و ٢١ كم من بئر التخليل الذي يسبقه الوصف الأثري:
بئر البيضاء هي أولى المحطات على طريق القصر - قنط، وهي عبارة عن مساحة مربعة ٥٥ × ٥٩,٢٥ م تحتوي البقايا الأثرية على برجين ذو درج داخلي يحيطان بالمسفلح و يوصيان إلى القناء الذي يضم حوالي 8 سلالم و بئر غير منتظمة الشكل يبلغ قطرها 20 مترا و يعمق 3 متر، كما تضم أنقاض البيضا منيحا و طاولة لعب و مقود يقع أمام القنفة.



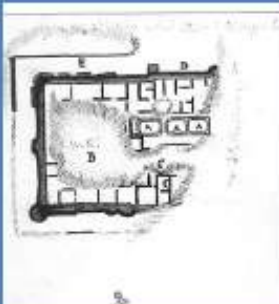

Dawwi
Date: around the 2nd Century AD.
Location: Dawwi is located at 154 Km away from Koptos and 27km from Myos Hormos, at about 14 km from the following Bir Sayyala and 21 km from the previous Bir Nakhil.
Description:
Dawwi, Bayda or Iteima is the first hydreme on the Quseir – Qift road, a squared space of 50 m walls.
The ruins include two towers with an interior staircase flanking the entrance and leading to the courtyard that contains about 8 staircases and an irregularly shaped well with 20 m in diameter and 3 m deep. Among the ruins of Dawwi, an altar, a game table and a feed trough in front of the barracks were discovered.






3. Bir Sayyala

بئر السيلة
التاريخ: القرن الثاني - الثالث قبل الميلاد.
الموقع: يقع بئر سيلة حوالي 140 كم من قنط و 40 كم من ميناء ميوس هورموس القديم (القصر حليا).
الوصف الأثري:
يرجع المبنى الحالي إلى فترة التواجد الإنجليزي بمصر 1832 و قد تم بناءه على بقايا مباني أثرية أخرى ترجع إلى العصر الروماني.
يضم موقع بئر السيلة الأثرى البئر و السلم و القاعدة العسكرية و خزان المياه.

Bir Sayyala
Date: between the 2nd and the 3rd Century AD.
Location: the Bir is located at 141 km from Coptos, 40 km from Myos Hormos.
Description: The existing well was built in 1832 by the British; it seems to have been constructed above ancient Roman structures. The site contains the well, the fort, the rampart, the barracks and the cistern.





4. Bir Al Hamra

بير الحمرا
التاريخ: الفترة بين القرن الثاني و أوائل القرن الثالث الميلادي.
الموقع: يقع الحصن على بعد 52 كم إلى الغرب من القصير، في وادي أبو زيران، بجانب الطريق الأسفلتي.
الوصف الأثرى: يحتفظ الحصن ببقايا غير متساوية الشكل من البناء الأصلي، في الجانبين الشمال الغربي والشمال الشرقي، يصل ارتفاع الجدار إلى ارتفاع الممشى، ويبلغ حوالي 2 متر فوق مستوى الوادي الحالي، ويلاحظ احتفاء الركن الجنوبي والظمي في الجدار الجنوبي الشرقي. تم تشييد القلعة من كتل من الحجر الرملي الأحمر غير منتظمة الشكل. على شكل مربع تبلغ مساحته 59 × 57 م، ذو باب واحد، في منتصف الجدار الشمالي الغربي. تبلغ مساحة الممر حوالي 0.79 مترا، والتي لا تزال واضحة من الزاوية الشرقية للحصن.




AL - HAMRA
Date: 2nd and early 3rd century AD.
Location: The praesidium is located at 52 km to the west of Quseir, in wadi Abil Ziran, immediately beside the modern road.
Description: The praesidium is unequally preserved: to the northwest and northeast sides, the curtain wall preserved to the height of the walkway, measures about 2 m above the present level of the wadi (valley), however, the southern corner is destroyed and silt into the southeastern curtain. The fort is constructed of red sandstone blocks, irregularly cut and delineated in the mud. It forms a square of almost 59 x 57 m, with a single entrance, in the middle of the North-Western Curtain. The 0.79 m wide walkway, which is still visible by the eastern angle of the fort.





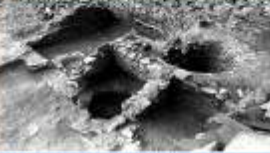
5. Al Zarqa (Maximianon)

الزرقا (ماكسيميانون)
التاريخ: الفترة بين القرن الأول قبل الميلاد و القرن الثالث الميلادي .
الموقع: وادي أبو زيران على بعد حوالي 65 كيلومترا من القصير.
الوصف الأثرى: تعتبر المنطقة الأثرية في حالة ممتازة، و هي عبارة عن محيط مربع الشكل، يحيط به سور يحده أبراج نصف دائرية في كل زاوية، و للحصن باب واحد يفتح في الجانب الشمالي ويحيط به برجان نصف دائريان. يتبع بناء الحصن الجهات الأربعة بشكل محدد. مساحة الحصن من الخارج 56.37 مترا من الشمال إلى الجنوب دون أبراج بارزة و 85.55 م من الشرق إلى الغرب. و من الداخل، فهو عبارة عن 51.22 م. من الشمال إلى الجنوب و 51.80 م. من الشرق إلى الغرب.




El-Zarqa (Maximianon)
Date: 1st century BC. – 3rd century AD.
Location: Wadi Abu Ziran, about 65 km from Quseir.
Description: The hydreauma is in an excellent state of conservation, a regular squared construction, confined with a semi-circular tower at each corner, the fort possesses a unique door opened to the north side and flanked by two semicircular towers. The construction is precisely cardinal oriented, the hydreauma measures 56.37 m long from the north to the south without the protruding towers and 55.85 m. from the east to the west. Internally, it measures 51.22 m. from the north to the south and 51.80 m. from the east to the west.



6. Bir Umm Fawakhir

بير أم فواخير
التاريخ: الفترة بين القرن الرابع و القرن السابع الميلادي.
الموقع: يقع بير فواخير حوالي 88 كم غرب القصير وما يقرب من 85 كم شرق فقط على جنب الطريق الأسفلتي.
الوصف الأثري: تشير أطلال ينر أم فواخير إلى أنها كانت النقطة الأكثر سكتا على طول الطريق في العصور القديمة. كما يشهد الشقاف واللخار على أنشطة مكثفة خلال العصرين الروماني والبيزنطي حيث كانت المنطقة من أهم مراكز تعدين الذهب بالإضافة إلى محاجر الجرانيت.



Bir Umm Fawakhir

Date: 4th – 7th century AD.

Location: It occurs about 88 km west of Quseir and nearly 85 km East of Qift on the asphaltic road.

Description: Ruins of Bir Umm Fawakhir suggest that it was the most populated point along the route in antiquity. Ostraca and pottery sherds attest to the intensive activities during the Roman and Byzantine periods. It was an area of extensive gold mining and granite quarrying.



7. Bir Hammamat

بير الحمامات
التاريخ: القرن الثاني الميلادي.
المكان: يقع حصن بير الحمامات على بعد حوالي 81 كم من قفط و 95 كم من القصير. و يسيطر الحصن على مفترق طرق من الوديان بين الشمال والجنوب والشرق والغرب.
الوصف الأثري: حصن بير الحمامات هو مساحة مستطيلة الشكل تحيط ببلار و يقع في الزاوية الجنوبية الشرقية بقايا مسجد. يبلغ طول السور حوالي 53.5 متر، ويحيط به أربعة أبراج دائرية في الزوايا.



Bir Hammamat

Date: 2nd century AD.

Location: The Fort Bir al-Hammamat, is located about 81 km from Coptos and 95 km from Myos Hormos. The praesidia controls a crossroads of valleys: a north-south crosses the east-west oriented wadi Hammamat.

Description: The fort of Bir Hammamat is a rectangular form of which the center was occupied by the well and in the southeast corner are the remains of the mosque. The enclosure, measuring 53.5 meters by side, defended by four rounded towers at the corners.



8. Al Muwayh (Krokodilo)

خشم منيح – المويح (كروكوديلو)
التاريخ: القرن الثاني الميلادي (عهد تراجان - هادريان).
الموقع: يقع الموقع على بعد 65 كيلومترا من قفط و 116 كم من القصير.
الوصف الأثري: بناء مستطيل بين الشمال والجنوب، يقع الباب المحوري جهة الجنوب. يحتفظ الحصن بشكل البناء الأصلي تسييا لكن مغطى بالكامل بالرمال إلى الجنوب الغربي من الباب، بموازية الجدار. تم بناء الحصن على مساحة حوالي 250 متر من الحجر الرملي، وعلى ارتفاع حوالي ثلاثين متر، والتي استمد الحصن اسمه من شكلها الخارجي و الذي يشبه التمساح.



Khashm Manih - AL-Muwayh (Krokodilo)

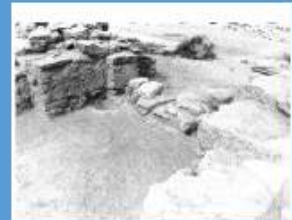
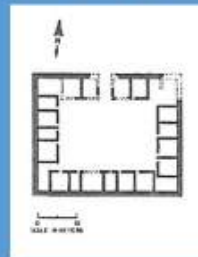
Date: 2nd century AD. (reign of Trajan - Hadrian).

Location: The site is located at 65 km from Coptos and 116 km from Myos Hormos.

Description: a north-south rectangle, which in its current state, opens to the south by an axial door. A dump relatively well preserved but completely covered with sand stretches to the southwest of the door, parallel to the curtain. The fort was built in the middle of a flat area created by wād'i al-Hammamat, about 250 m from an outcrop of sandstone, up to thirty meters, whose form has given its name to the praesidium.

9. Qusur al Banat

قصور البنات
التاريخ: نهاية القرن الثاني و أوائل القرن الثالث الميلادي.
الموقع: يقع الحصن على بعد 50 كم من قفط و يبعد حوالي 150 متر إلى الجنوب من الطريق الأسفلتي بدالغ الوادي، مقابل صخرة معزولة كبيرة تحمل العديد من النقوش.
الوصف الأثري: الحصن عبارة عن بناء مستطيل ذو زوايا دائرية الشكل (حوالي 38.60 x 31.20 م). وقد تم بناء الجدران من الحجر الرملي في حين بنيت الجدران الداخلية من الحصى، و تم تجميع الحجارة باستخدام الطين المجفف. لا توجد أي آثار للأبراج أو الأجزاء الداخلية، فيما عدا الجانب الشمالي للباب. ويمكن الوصول إلى هذا الجدار من قبل أربعة درجات سلم متعامدة على الجدار. يحتفظ الحصن بشكل البناء الأصلي، فيما عدا الركن الشمالي الشرقي يرتفع يصل إلى حد أقصى حوالي 1.80 - 1.90 مترا، وهي ليست كافية للحفاظ على العمر و تغطي الرمال الأجزاء الداخلية للحصن.



Qusur al – Banat

Date: End of the 2nd and early 3rd century AD.

Location: The site is located at 50 km from Qift, about 150 meters south of the modern road in the bed of the wadi, opposite to a large isolated rock on which various inscriptions were identified.

Description: The fort is a rectangular construction (about 38.60 x 31.20 m), with rounded corners. The walls were built of sandstone while the interior walls were built of grit, the stones are assembled using the dried soil mud of the Wadi. No corner towers are still visible, nor any internal parts, except for the north side, from either side of the single door. This curtain can be reached by four stairs, perpendicular to the wall. Two of them frame the door. The fort is completely preserved, except for its north-eastern corner, which is ruined. The monument is kept on a maximum height of 1.80 - 1.90 m, which is not sufficient to preserve the walkway. The interior is somewhat covered by sand.

Appendix IV

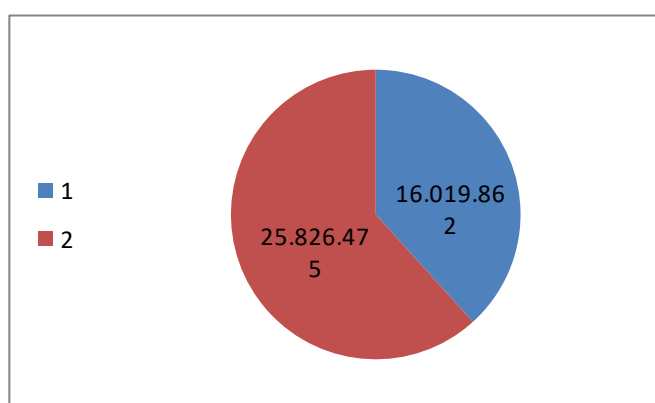
The Recent Status of Tourism in the Red Sea Region, Egypt

1. Red Sea Governorate Statistics for 2014

The year statistics of 2014 recorded several values in the tourism sector; these values show a decreasing level of tourism which is becoming a characteristic aspect after the events of 2011.¹

1.1. The Total Capacity and Occupied Rooms

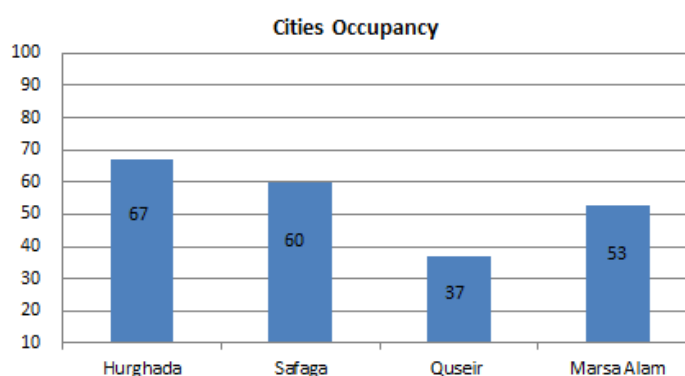
The total effective number of rooms covering the Red Sea Governorate (the main four Tourist cities Hurghada – Safaga – Quseir – Marsa Alam) is 25.826.475 of which the occupied number of rooms during 2014 was 16.019.862 with a percentage of 38% of the total capacity.



1.2. The Cities Occupancy Ratio

The graphic indicates the internal room/accommodation occupancy of each one of the main four tourist cities of the Red Sea Governorate of which Hurghada has recorded 67% obtaining the highest occupancy ratio during the year however, Quseir has recorded 37% having the lowest occupancy rate, as for the rest of the major tourist cities of the Red Sea Governorate, percentages varied between Safaga with 60% and Marsa Alam with 53%.

Cities Occupancy Ratio Red Sea (2014)



¹ The source of the next pages is the Red Sea governorate statistics for 2014, obtained from the statistics office in the municipality of the Red Sea, Hurghada. Egypt in 2015.

1.3. Arrivals and Occupied Accommodation Nights

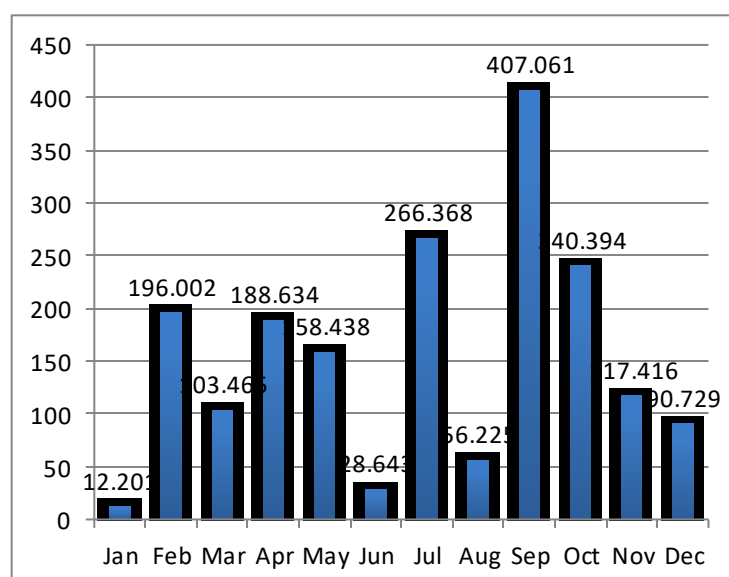
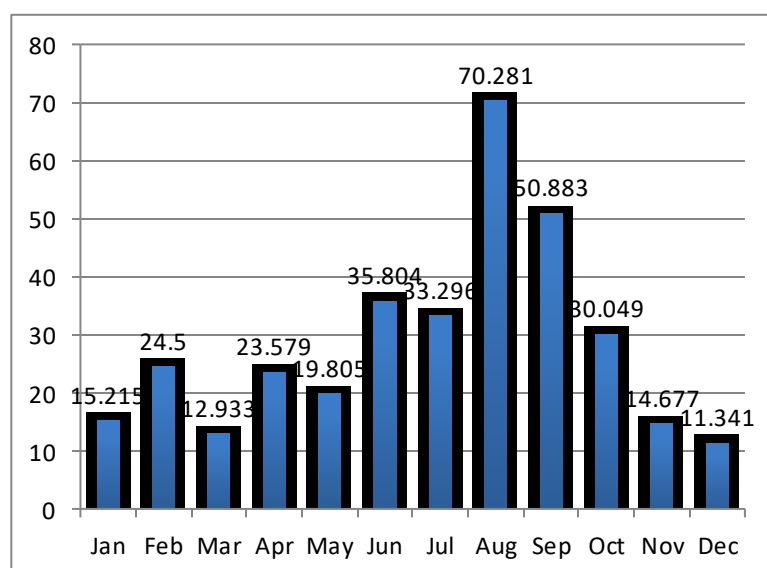
The Red Sea governorate statistic office divides the arrivals in three main categories (Egyptians – Arabs - Foreigners), so the statistics represent three main figures either for the arrivals or for the night occupancy as follows.

- The Egyptian Tourism (Internal Tourism – Egyptians abroad).
- The Arab Tourism.
- The Foreign Tourism.

1.3.1. The local Tourism (Internal Tourism – Egyptians abroad)

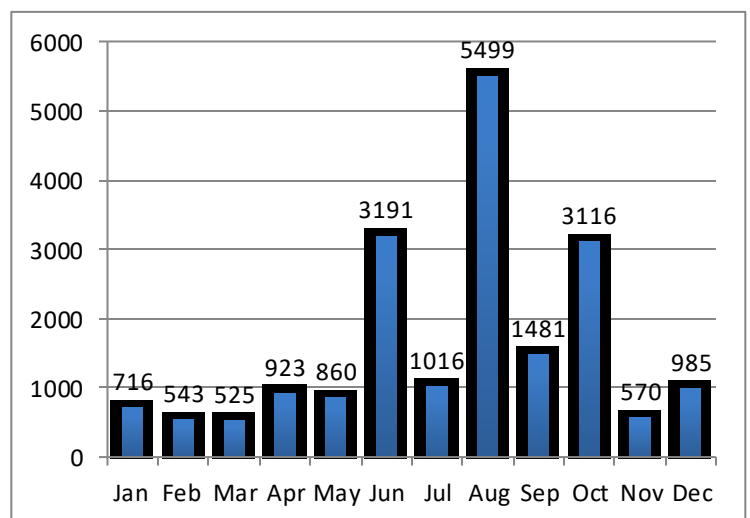
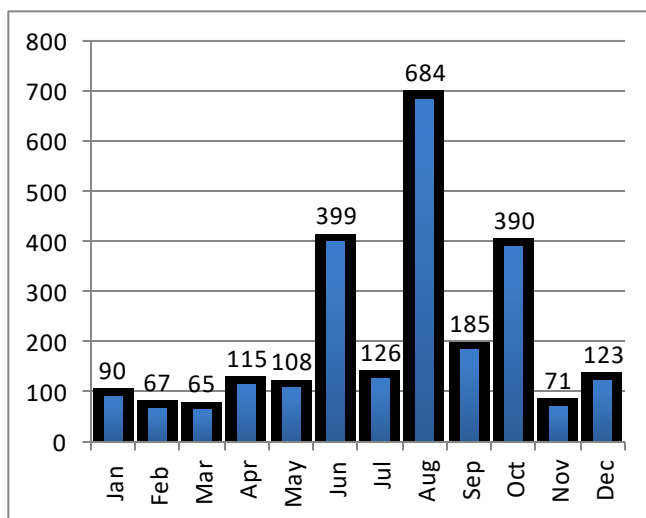
These graphics explain the values and numbers of the Egyptian tourism to the Red Sea governorate, as the highest rate was registered during August that simultaneously witnessed one of the lowest night occupancy rates (representing most probably an internal tourism with parents living in the Red Sea Governorate); however, September recorded the highest level of night occupancy on the Egyptian tourism scale with an average of 8 nights (most probably Egyptian living abroad).

Month	Egyptian Guests	Night occupancy	Average
Jan	15251	122.010	8.00
Feb	24500	196.002	8.00
Mar	12933	103.465	8.00
Apr	23579	188.634	8.00
May	19805	158.438	7.99
Jun	35804	286.430	7.99
Jul	33296	266.368	8.00
Aug	70281	562.250	8.00
Sep	50883	407.061	7.99
Oct	30049	240.394	8.00
Nov	14677	117.416	8.00
Dec	11341	90.729	8.00
Total	342400	2.739.197	7.99



1.3.2. The Arab Tourism

Month	Arab Guests	Night occupancy	Average
Jan	90	716	7.95
Feb	67	543	8.10
Mar	65	525	8.07
Apr	115	923	8.02
May	108	860	7.96
Jun	399	3191	7.99
Jul	126	1016	8.06
Aug	684	5499	8.03
Sep	185	1481	8.00
Oct	390	3116	7.98
Nov	71	570	8.02
Dec	123	985	8.00
Tot.	2.426	19.425	8.00

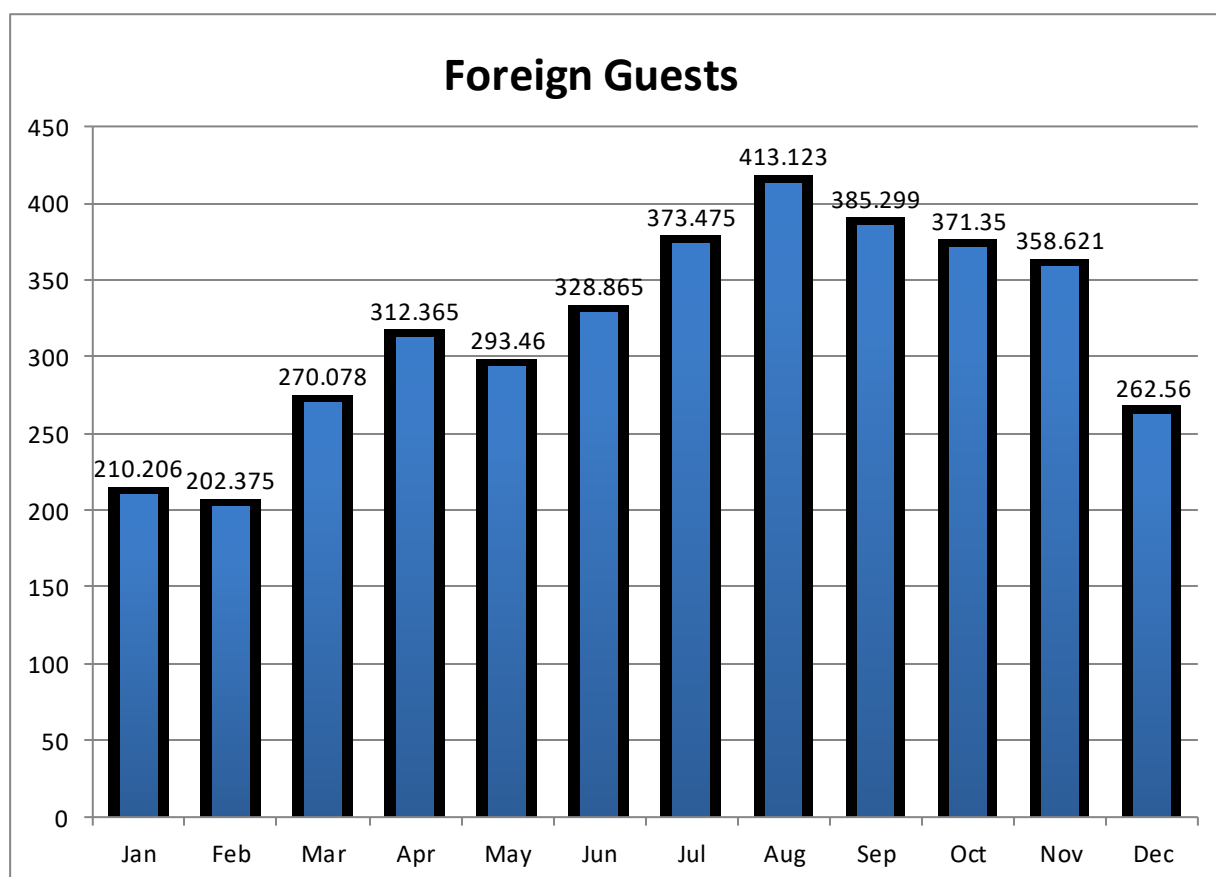


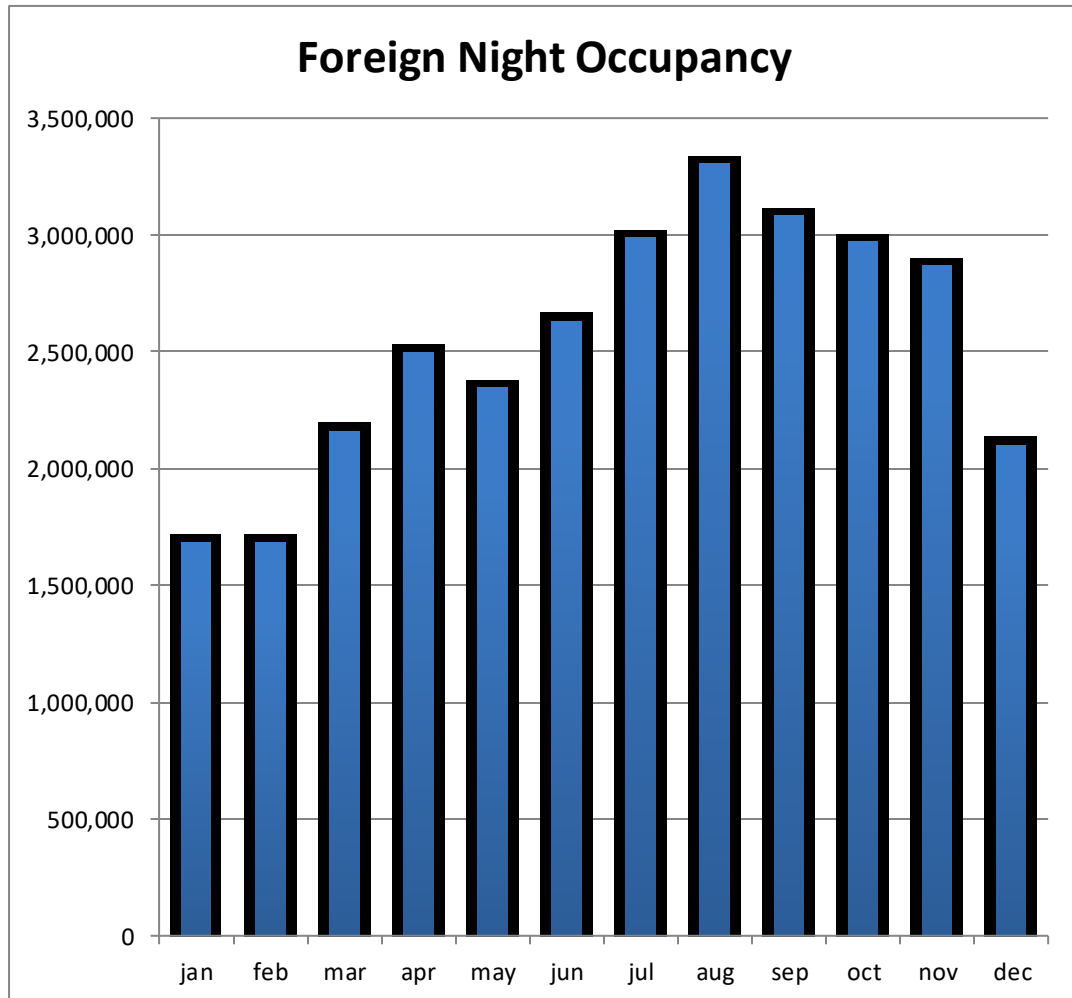
The graphic shows the percentage of Arab tourists arriving to the Red Sea with elevated records during June (399 visitors), August (684) and October (390) of which the peak was during August.

This Arabic tourism registered a percentage of booked night occupancy indicated in the second graphic with higher rates during June (3191 nights), August (5499 nights) and October (3116 nights), of which the peak was during August with an average of 8 nights (the tourist package).

1.3.3. International Tourism (Europeans – Russians - Others)

Month	Guests	Night Occupancy	Night average
Jan	210.206	1.681.644	7.99
Feb	202.375	1.618.997	7.99
Mar	270.078	2.160.622	7.99
Apr	312.365	2.498.921	8.00
May	293.460	2.347.679	7.99
Jun	328.865	2.630.916	7.99
Jul	373.475	2.987.798	7.99
Aug	413.123	3.304.987	8.00
Sep	385.299	3.082.389	7.99
Oct	371.350	2.970.796	7.99
Nov	358.621	2.868.970	8.00
Dec	262.560	2.100.479	7.99





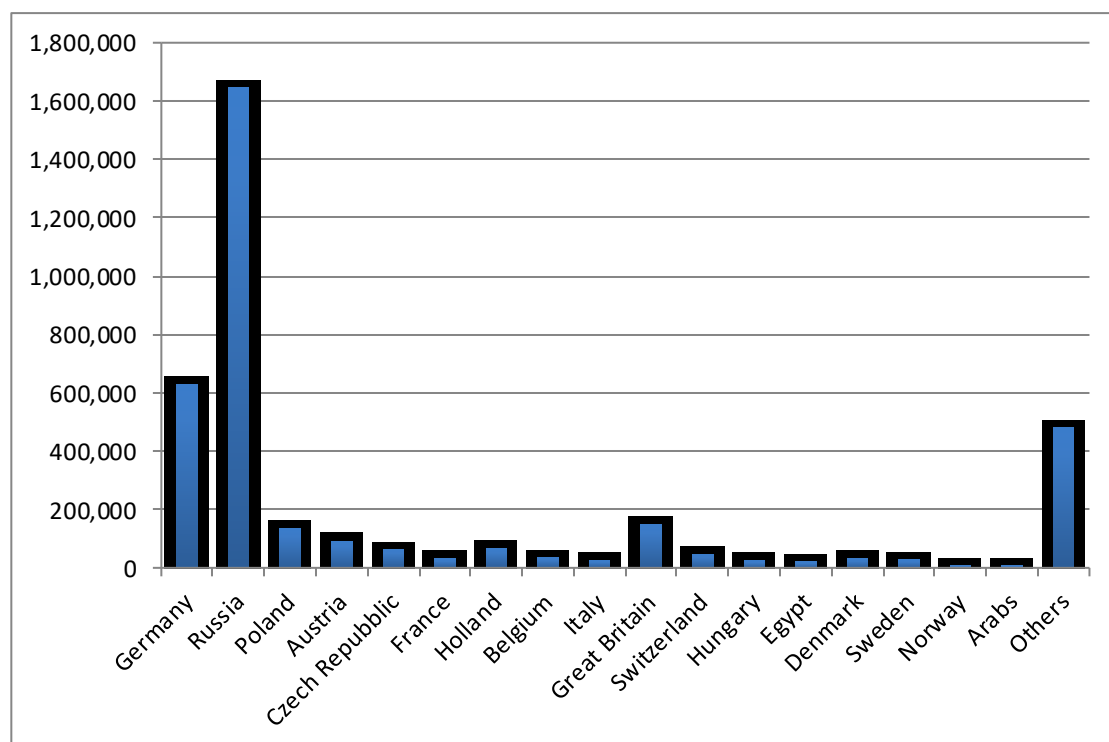
The graphics state the number of foreign tourism arrivals and the night's occupancy (reservations) during 2014 registering the most elevated numbers during July (373.475 visitors), September (385.299 visitors) and the peak during August (413.123 visitors) respectively the night occupancy while the lowest numbers and the lowest occupancy rates were registered during January (210.206 visitors) and February (202.375 visitors) with the average of 8 nights that represents the package included in the tourist circuit.

1.4. Arrivals Categorized by Nationalities (Airport Records)

Tourists arriving to the Red Sea during 2014 can be figured out through the airport registers either from Hurghada international airport or Marsa Alam International airport as follows:

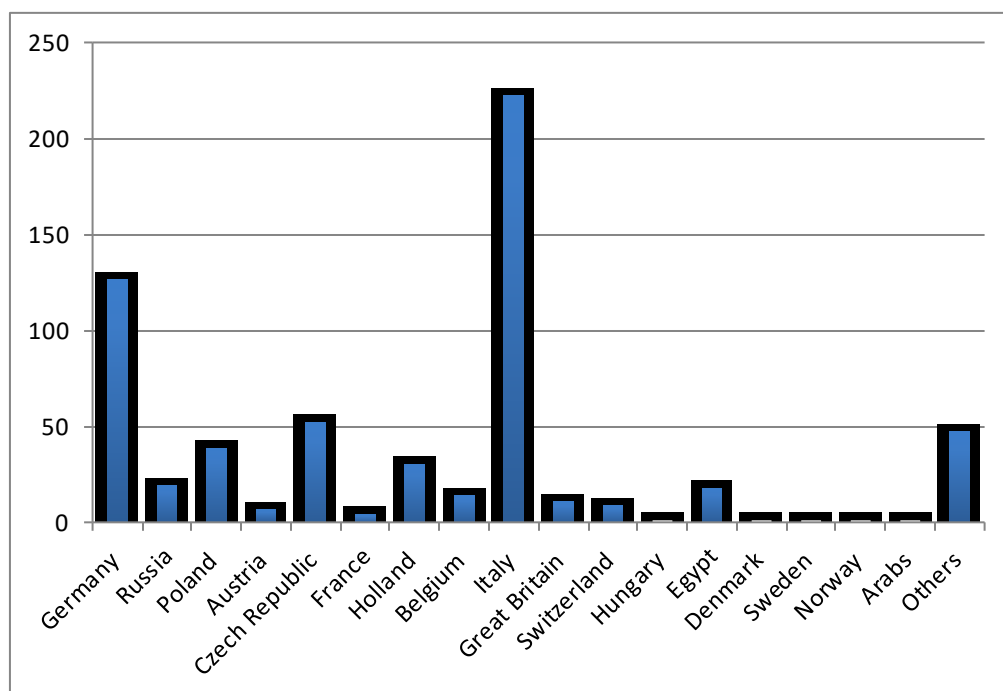
1.4.1. Arrivals / Nationalities to Hurghada International Airport 2014

Nationality	Number of Arrivals
Germany	628.904
Russia	1.646.521
Poland	135.089
Austria	91.958
Czech Republic	63.570
France	30.378
Holland	66.191
Belgium	35.431
Italy	25.579
Great Britain	149.169
Switzerland	46.052
Hungary	23.880
Egypt	21.566
Denmark	30.427
Sweden	26.991
Norway	8.287
Arabs	7.356
Others	491.380
Total	3.528.729



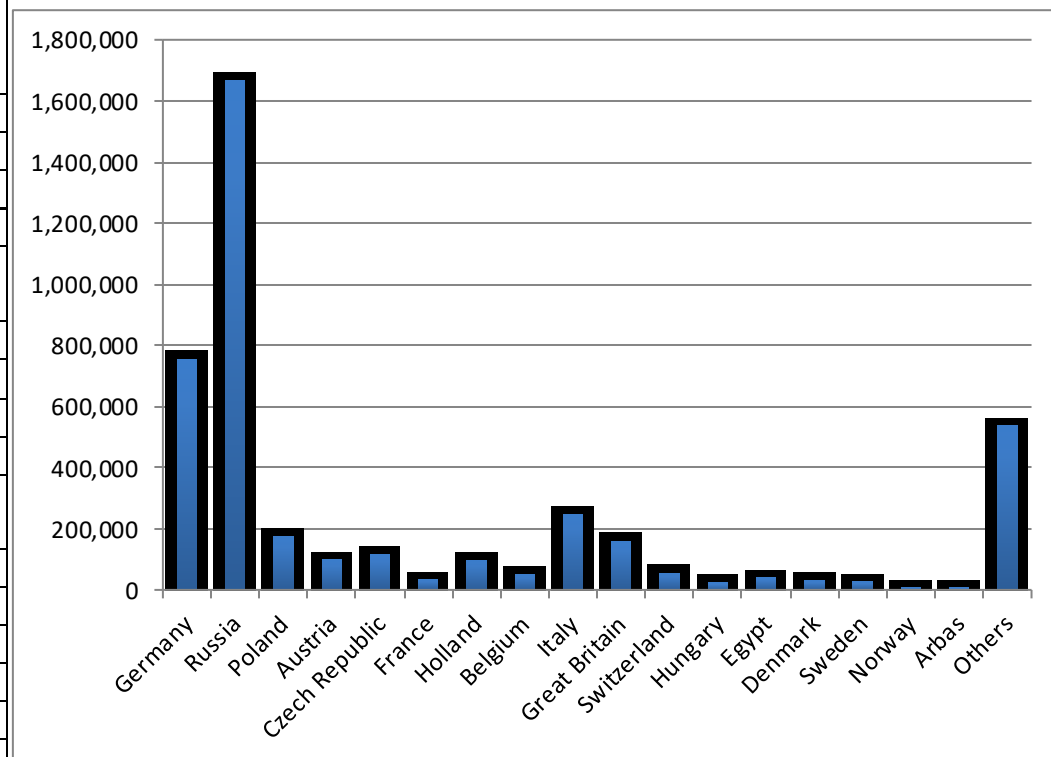
1.4.2. Arrivals / Nationalities to Marsa Alam International Airport

Nationality	Number of Arrivals
Germany	126.607
Russia	19.240
Poland	38.564
Austria	6.644
Czech Republic	51.835
France	4.221
Holland	30.183
Belgium	13.739
Italy	222.188
Great Britain	10.759
Switzerland	8.928
Hungary	0
Egypt	17.814
Denmark	0
Sweden	0
Norway	0
Arabs	0
Others	47.149
Total	597.871



1.4.3. Total Arrivals Categorized by Nationalities

Nationality	Total number of arrivals
Germany	755.511
Russia	1.665.761
Poland	173.653
Austria	98.602
Czech Republic	115.405
France	34.599
Holland	96.374
Belgium	49.170
Italy	247.767
Great Britain	159.928
Switzerland	54.980
Hungary	23.880
Egypt	39.380
Denmark	30.427
Sweden	26.991
Norway	8.287
Arabs	7.356
Others	538.529
Total	4.126.600



These graphics indicate that, according to the registers of the **Hurghada International airport**, Russians represent the majority of arrivals with **(1.646.521 visitors)**, then Germans with **(628.904 visitors)**.

However, **Marsa Alam International airport** records indicate that the major number of visitors were Italians with **(222.188 visitors)** then the Germans with **(126.607 visitors)**.

Therefore, the graphics aim to provide meaningful knowledge about the best prospect markets namely the Russians, the Germans and the Italians that will help in determining the tourism developing project of the site (case study) through a detailed marketing strategy for this destination that will be directed towards the interested markets (target).

Integrating the site development (cultural tourism product) within the marketing itinerary of the Red Sea Governorate (composed mainly of recreational tourism packages) will lead to the desired long-term result (valorization of the site) after positioning and articulating the site (destination) identity.

In this case, the marketing strategy will focus on the **heritage development** and the creation of **an archaeological park** along (Quseir – Qift) road.

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