

## THE ARCHAEOLOGICAL MISSION OF “L’ORIENTALE” IN THE CENTRAL-EASTERN DESERT OF EGYPT

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### *Premises*

This article deals with the results of the 2012 fieldwork in the Central-Eastern Desert of Egypt and the studies in progress on some of the major related subjects. Information on other subjects, still waiting for future analyses and studies (Site 2: a ancient - ? - square shaped well; Site 5-6: petroglyphs sites and Site 10: Umm el Howeitat el Bahri) can be found in Bragantini, Pirelli (2012). For a short report see also Bragantini, Pirelli (2013).

The Italian project in the Central-Eastern Desert - promoted by the Italian Embassy in Egypt and directed by Irene Bragantini - is a joint project of different Italian and Egyptian institutions (Università degli Studi di Napoli “L’Orientale”, University of Cairo, Faculty of Geology, and University of Helwan, Faculty of Archaeology), and is aimed at investigating the central area of the Eastern Desert<sup>1</sup>. The cooperation between archaeologists and geologists aims at conducting a geo-archaeological survey of the region, in order to investigate the natural resources, the exploitation in the different periods, and the economic and commercial potential of the area. The methodology we want to follow and the problems we will be confronted with, demand in fact the cooperation of different scientific fields in order to reconstruct a geo-economic landscape.

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<sup>1</sup> Members of the project are: Irene Bragantini, Rodolfo Fattovich, Rosanna Pirelli, Andrea Manzo, Marco Barbarino, Vincenzo Zoppi (UNO), Mohamed Hamdan e Yaser Abd el-Rahman (Cairo University); Sobhi Ashhour e Naha Akeel (Helwan University); Giulio Lucarini (PhD, “Sapienza” Università di Roma).

photographic records is provided by CISA (Centro Interdipartimentale di Servizi per l’Archeologia of the same university).

The area we want to investigate is that part of the Eastern Desert which extends just east of the Theban region (Fig. 1), an area extremely important in almost all periods of the Egyptian history, both for its strategic position because of the roads which bound the Nile Valley to the Red Sea (where they are closest to each other), and for the geological nature of the area, characterized by a large outcrop of pre-Cambrian basement, which brought to the location of numerous rock quarries (particularly igneous), used for Egyptian architecture and statuary, and mines of different metals such as gold, copper, lead, iron and talc (Fuchs, Hašek, Poichystal 1997, 33-35).

In Roman period, the imperial administration has put on and maintained a complex system, in order to control the exploitation of the natural resources and the commercial potential of the area: the activity plans to investigate this system, in order to “read” the landscape on the basis of its natural resources.

The northern limit of the grant of the Italian Archaeological Mission includes the Wadi Hamamah, while the southern passes to the north of Wadi Hammamat, a way that - because of its importance and of the very numerous inscriptions and rock carvings scattered along most of its course - has been much studied in the past as well as in more recent times.

Therefore we can regard our area as limited northwards and southwards by numerous archaeological projects of surveys and excavations conducted by Institutions of different countries; one may mention the investigations on *Mons Claudianus* and *Mons Porphyrites* to the North, and the whole area from Qoptos to Qusseir and Qusseir al Qadim to the South (Cuvigny 2003a; *eadem* 2011; Peacock, Maxfield 1997; Maxfield, Peacock 2001; *idem* 2007; 2011).

As discussed below, however, the area chosen for this project, although adjacent to major roads, crossed at all times by travelers and explorers, and - in recent years - investigated as part of wider survey projects, has not yet been subjected to a thorough specific investigation<sup>2</sup>.

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<sup>2</sup> A general survey was carried out for instance by D. Klemm and R. Klemm in different field campaigns between 1989 and 1993, in a wide area of the Eastern desert between the 28° and 22° parallel N (now published in 2013) but it was limited to gold mining sites.

The starting point of the survey was identified in the “Graeco-Roman Station” of Wadi Gasus (Sayed 1977), a wadi that flows only two kilometers north of the site of Wadi/Mersa Gawasis, whose investigation is under way since 2001 by another team of UNO, in collaboration with IsIAO and Boston University (Bard, Fattovich 2007).

The proximity to the port of *S3ww* makes the study of Wadi Gasus, its structures and its archaeological evidence particularly relevant, in that two Middle Kingdom stelae, successively considered by many scholars in connection with the site of Wadi/Mersa Gawasis, are attributed to a building of the “Station”<sup>3</sup>.

### Long Terms Aims and Objectives of the Early Stages (by I. Bragantini, R. Pirelli)

Due to the vastness of the area to investigate, the research project is divided into different levels, one aimed at a more extensive general purpose of historical reconstruction, the other with short-term aims focused on the investigation of specific sites.

The long-term aims can be summarized in two points:

- 1) reconstruction of data on population and exploitation of the region from prehistoric times to the late antiquity, in turn divided into two parallel paths:
  - a. identification of the network of roads, stations, quarries, mines and their models;
  - b. identification and analysis of the remains of material culture of the peoples of the Eastern Desert and their relationship with the Egyptians (Klemm, Klemm 2013, 7-8).
- 2) creating a GIS that contains all the possible information still available on the area (*infra*, 53-55);
- 3) that is (or was at least up to a year ago) threatened by the development of mass tourism - not easy to be controlled -, by new building programs with ports and hotels, as well as by illegal excavations (Klemm, Klemm, Murr 2001).

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<sup>3</sup> See below Site 1 and discussion.

The research activities of the first fieldworks will focus in particular on Wadi Gasus and its sites, and more specifically will provide:

- 1) Study of the "Graeco-Roman Station":
  - archaeological survey, surface collection and, if necessary, excavation of selected areas, in order to verify the occupational history of the site;
  - creation of a new topographic map, updating the information from previous explorations;
  - analysis of the conservation status of the structures in order to determine possible interventions of restoration and valorization.
- 2) Surrounding area:
  - geo-archaeological survey of the surrounding area to define the geological situation and the main local resources;
  - archaeological survey of the same area with the double aim of (re)finding sites already identified by explorers and travelers of the past, verifying their conditions and identifying sites never registered before.

The Geology of the Wadi Gasus Area (by M.A. Hamdan, Y. Abd el-Rahman)

The Eastern Desert of Egypt is covered mainly by Precambrian Igneous, sedimentary, and metamorphic rocks formed during Neoproterozoic time (~800-550 Ma). These rocks form northwest extension of the Red Sea Hills that extends parallel to the Red Sea coast (Fig. 2). The Red Sea Hills along with the mountains of the western side of the Arabian Peninsula form the Arabian-Nubian Shield. The uplifting of these mountain ranges was associated with the opening of the Red Sea that started in the Late Oligocene-Early Miocene (Bojar *et alii* 2002). The Red Sea is considered as an active continental system, which originated as a result of the separation of the African from the Arabian plate (Bosworth *et alii* 2005).

On the flanks of the Red Sea, the Precambrian rocks are unconformably overlain by a sequence of Cretaceous-Neogene strata (Fig. 3). The Phanerozoic sedimentation along the coast of the Red Sea can be differentiated into pre-rift stage and syn-rift stage (Said 1990; Khalil and McClay 2002). The lower part of the pre-rift sedimentary section consists of upper Cretaceous sandstone (Nubia Formation). This formation grades up to

interbedded shales, sandstones, and limestones with phosphate and oyster beds of Qusseir, Duwi, Dakhla and Esna Formations that have Upper Cretaceous to Paleocene age. This mixed section is overlain by Lower to Middle Eocene chalky and cherty limestone of Thebes Formation. The early syn-rift sediments are characterized by the predominance of conglomerate of Oligocene Nakheil and Abu Ghusun Formations and Early Miocene Formation. The conglomerates are overlain by Middle Miocene reefal limestone of Um Mahara Formation and evaporates (Gypsum and anhydrite) of Abu Dabbab Formation. Along the Red Sea, the Upper Miocene-Quaternary sediments are characterized by the dominance of marine sandstone and mudstone of Marsa Alam Formation, interbedded limestone and coarse sandstone of Shagara Formation. At the top of the sequence the Pleistocene conglomerates of Samadi Formation is overlain by recent alluvium.

The geomorphologic setting of Wadi Gasus, which drains its flooding water to the Red Sea, is connected to other major wadi systems in the central part of the Eastern Desert. Thus, Wadi Gasus was a good destination to several ancient roads connecting the Nile Valley and the Red Sea crossing the central Eastern Desert. Wadi Gasus and the surrounding areas are covered by both Precambrian and Phanerozoic rocks (Fig. 4). The Precambrian rocks are exposed in the upstream of Wadi Gasus and are represented by basaltic and andesitic rocks. They are fine-grained, aphyric, and are characterized by their dark colors ranging from dark green to black. They are associated with some volcanoclastic rocks. These rocks are intruded by granitic rocks (Fig. 5). They are pink in color due to the predominance of alkali feldspar along with quartz and minor biotite. The granitic rocks are highly fractured (Fig. 6) and in some areas they are exfoliated (Fig. 7) and friable due to intense weathering. The granitic rocks are dissected by quartz veins and enclosing xenoliths of the dark volcanic rocks (Fig. 8). All the Precambrian rocks are dissected by dikes of various colors, which reflect variation in composition.

The Precambrian rocks are nonconformably overlain by Phanerozoic rocks. Similar to the Phanerozoic rocks along the Red Sea. The Phanerozoic section in Wadi Gasus and the surrounding areas are represented by pre-rift and post-rift sequence (Khalil and McClay 2009). The pre-rift rocks are Nubia sandstone, Qusseir Shale, Duwi carbonate with phosphate, Dakhla and Esna shales, and Thebes limestone with chert. The post-Miocene rocks

are widespread and are represented by basal polymeric conglomerate of Ranga Formation (Fig. 9), which encloses large well-rounded fragments of the Precambrian rocks, especially the granitic rocks (Fig 10). Going downstream of Wadi Gasus to the Red Sea coast, the Ranga conglomerates are overlain by carbonate, evaporates, and clastics of middle and upper Miocene age. Pliocene and Quaternary sediments are represented mainly by marine deposits such as raised beaches. The terraces of raised beaches are exposed at the modern shore line of the Red Sea. Knapped quartz pebbles are also recognized in several parts of Wadi Gasus, probably indicating humid paleoclimatic condition during late Pleistocene and Holocene. Wetter conditions during late Pleistocene and Holocene were indicated also geologically by the existence of abundant lacustrine playa sediments (at the wider areas of Wadi Gasus), thick alluvial terraces and the banks of the wadi and outstanding tufa and spring deposits at Wadi Gowah (Fig. 11).

There are various ore deposits in the area surrounding Wadi Gasus. Duwi Formation of Cretaceous age, which is part of the pre-rift sequence, hosts phosphate layers. These phosphate layers are associated with black shale (Fig. 12) and carbonates in Umm El Howeitat area. Ruins of the old mining city in Umm El Howeitat are still standing as an evidence of the recent exploitation of phosphate during recent times (Fig. 13). The archaeological remains are associated with ancient lead ore (galena) mining activities. Galena is recognized as fine disseminations in sandy carbonates of Miocene age (Fig. 14). Lead deposits are recorded in different areas along the Red Sea coast, such as Um Gheig, Ranga, and Wizer deposits. French expedition discovered Middle Kingdom to New Kingdom Galena mining site at Gebel el Zeit, about 200 km to the north of Wadi Gasus (Castel and Soukiassian, 1989a; 1989b). Along the Red Sea coast, lead deposits are localized in Miocene carbonates; they were formed as a result of karstification process or hydrothermal solution. Other archaeological ruins are recorded within the Precambrian granitic rocks (*infra*, Site 7, 86-88). These ruins might be related to gold mining activities in antiquity. The site has abundant quartz fragments (Fig. 15) and fine-grained tailing in the middle of the site (Fig. 16). This site exhibits similar geological setting to other gold mining deposits, such as the Fawakhir gold mine. Scattered flint, probably dated back to late Pleistocene to Holocene was discovered in association of dry water courses (Fig. 17). The provenance of the scattered flint is most likely the Thebes Formation, which contains abundant flint

nodules (Fig. 18). For example at Site 2, a N-S side branch of Wadi Gasus leading to Marsa Gawasis, a lithic artifacts concentrations of Terminal Paleolithic and Neolithic are recorded associated with inverted wadi sediments and alluvial terraces.

#### Theoretical Model of the Ancient Use of the Area (by A. Manzo)<sup>4</sup>

A preliminary territorial study of area between the Wadi Gasus and the Wadi Qena was elaborated in the framework of the present research project and of the archaeological expedition conducted since 2001 by the UNO and Boston University at the site of the Middle Kingdom harbour of Mersa/Wadi Gawasis (Bard and Fattovich eds. 2007). The first aim was to collect all the information available on the area between the Qena bend and the Red Sea coast and to provide a preliminary theoretical model of its ancient use (Manzo 2011). The adopted technological tool consisted of a GIS of the area under investigation. The cartographic base of the GIS was represented by the 1:250000 maps of the Egyptian Mapping Authority (Egyptian General Survey Authority 1996a; 1996b) on which open source satellite images were draped. Moreover, the GIS also included data bases collecting all the available information on the studied area, on the tracks and routes, on the wells and watering points, including the ones which are dry today, but which would have been active in the past, mines, and on the ancient sites (including rock inscriptions) which were recorded in the earlier publications or maps of the region.

In the preliminary phase of the present research project, the elaboration of the data in the GIS provided models and hypothesis to be tested in the field. A first application of the GIS consisted in the identification of the tracks which could have been used in ancient times on the basis of the distribution of wells and potential watering points and of the distance between them, as the needs in terms of availability of fresh water for the donkeys, the beast of burden used in Pharaonic times, may be considered as the main constraints in the selection of the overland routes which could be feasible in ancient times. In particular, the resulting model suggested that the upper sector of the Wadi Gasus could have been part of a

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<sup>4</sup> I am grateful to Mark Weir for revising my texts.

major route connecting the coastal area and the Nile valley, which was parallel and possibly alternative to the southern route of the Wadi Hammamat (Manzo 2011, 213-214). This track leading from the Qena bend to the Wadi Gasus followed part of the course of the Wadi Qena, Wadi Hamamah and Wadi Abu Gerida, crossed the plateau to the West of Gebel Maghrabyia, arrived at Bir Sirbakis and at Bir Semnah, passed through the hills around the Gebel Abu Aqarib and the plateau around the Gebel Abu Gowah, and finally arrived at the Wadi Gasus (Fig. 19). The fact that the Wadi Qena-Wadi Gasus route could have been effectively used in ancient times is supported by the distribution of the sites with rock inscriptions along it, going back to different chronological phases from the Old Kingdom to the Late Period, as well as of some major mining sites, some of them certainly exploited in ancient times (Fig. 19). Noteworthy, this route also crossed the richest gold-bearing area in the Egyptian Eastern Desert (Klemm and Klemm 2013, 84-119). Significantly, several ancient sites going back to Roman times (Fig. 20), when the camel substituted donkeys as beast of burden, are distributed along the tracks of the Wadi Qena-Wadi Gasus route, suggesting a certain degree of continuity in the itineraries which were followed in this specific sector of Eastern Desert from Pharaonic to Roman times. A corroboration of this suggestion arrived after the 2012 field season of the present project, when a closer study of the ceramic collection from the "Graeco-Roman" station in the lower Wadi Gasus definitely confirmed what was suggested at a first preliminary sight of the surface materials in 2010 (Manzo 2011, 221): the site was already used in Middle Kingdom times (*infra*, 63-67).

The GIS tool demonstrated to be useful also for a preliminary study of the more restricted area where the "Graeco-Roman" station in the lower Wadi Gasus is located, i.e. the easternmost sector of the region crossed by the Wadi Qena-Wadi Gasus route. The lower Wadi Gasus resulted to be characterized by the presence of possible watering points as well as by a very high concentration of mineral resources which may have been exploited in ancient times such as galenite, amethyst, lead, gold, and copper, all at a distance of less than 15 km from the "Graeco-Roman" station (Fig. 21). From this point of view, the results of the first field season confirm and also considerably enrich what was preliminary seen by means of the GIS by adding fresh and new data. Noteworthy, the richness in terms of natural resources of the hinterland, together, of course, with the very favourable

conformation of the bay at Mersa/Wadi Gawasis (Hein *et alii* 2011), may help to explain the reasons for the choice of this specific spot for the Middle Kingdom harbour. Moreover, because of its richness in terms of resources and of its location along a major route between the Nile valley and the Red Sea, it seems likely that the region of the Wadi Gasus was crucial also in other phases of history. Certainly, the continuation of the fieldwork will correct, enrich and detail these first insights in the ancient strategies of frequentation and exploitation of the region preliminarily provided by the GIS model.

### History of Exploration<sup>5</sup> (by R. Pirelli<sup>6</sup>)

As mentioned above, although the area chosen for our investigation belongs to a region which, due to its importance, has always been one of the focuses of Egyptological studies, the stretch of the Eastern Desert immediately north and south of Wadi Gasus has not been investigated recently. It will therefore be useful to briefly summarize the state of research, also in order to highlight yet unsolved issues and further clarify reasons for focusing on this specific area.

According to W.F. Hume, the first modern travellers to this part of the Eastern Desert were Caillard, Burton and Wilkinson<sup>7</sup>. The last two also providing significant information on its archaeological sites, published by Wilkinson in a series of monographs<sup>8</sup>.

After Wilkinson and Burton<sup>9</sup>, the major explorer of this region was Georg August Schweinfurth, a Baltic-German botanist and ethnologist who

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<sup>5</sup> For a more detailed treatment, Bragantini, Pirelli (2012, 79-89).

<sup>6</sup> I would like to express my warm and heartfelt thanks to Federico Poole and Robert Watson for revising all my English texts.

<sup>7</sup> Barron, Hume (1902, 90).

<sup>8</sup> Wilkinson (1835; 1837). Burton, instead, published only one volume of drawings of his early explorations. His notes and maps were presented to the British Museum after his death. Wilkinson's manuscripts, instead, are at the Bodleian Library in Oxford.

<sup>9</sup> Hume also mentions Lepsius's investigation of the region. Between 1842 and 1845, Lepsius crossed the desert between Qena and Gebel el-Zeit to visit the mining sites of Dokhan. He also visited the Wadi Hammamat and published the first important work on its inscriptions. Both of these areas, however, lie outside the scope of the present essay.

in 1885 devoted an extensive study to Wadi Gasus (Schweinfurth 1885). In it, Schweinfurth provides brief ethnographic and historical information on the wadi and a short description of its geomorphology accompanied by a detailed map (Fig. 1). He then describes a complex of buildings which he was the first to identify as a Graeco-Roman water-supplying station, a *hydreuma*, a definition by which it is still known today, despite significant differences compared to other known *hydreumata* (*ibidem*, 8).

During his survey of the wadi, Schweinfurth also visited a place where a rock wall surface measuring approximately 6 m<sup>2</sup> was occupied by texts and images from the time of Psammetichus I (Fig. 22), which Erman published in his "Bemerkungen" in the same essay (*ibidem*, 17-23) (*infra*, Site 4, 79-86).

Not far from this monumental scene, the explorer also describes some more *graffiti*: one depicting two men, certainly of a later period than the main scene, and others showing several rows of camels, all in a much rougher style.

Over the next few years, Barron and Hume (1902), Green (1909), Newberry and Cook (Cook 1904), and Mitchel and Floyer (Floyer 1893) also explored and/or studied the roads linking the Red Sea to the Nile Valley in the central part of the Eastern Desert. These explorers recorded very many inscriptions (although not comparable in quantity with the huge number of texts and depictions from Wadi Hammamat), not only in hieroglyphic writing, but also in Himyaritic, Nabatean, Kufic, Latin and Greek, which bear witness to frequent and prolonged human presence in this region<sup>10</sup>.

Some interesting observations on Wadi Gasus and Wadi Gawasis were made in 1910 by Raymond Weill, in his *Journal du désert*. In his opinion, the upper wadi (Gasus) had no comfortable landing on the seashore, while the lower wadi (Gawasis) offered very favorable access to the coast thanks to a break in the reef in front of it. Furthermore, according to Weill the two wadis are connected 3-4 km from the sea, where the mountain range is lower, allowing easy passage from one to another.

After an article by Murray (1925, 138-150), it was Meredith (1952; 1953) who brought back the Central Eastern Desert as a topic in academic

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<sup>10</sup> Because of the shortness of the time at hand during our first mission, we have not yet investigated the western area of the grant.

debate. This scholar recollected and published all previous documentation on the subject in a paper that we shall be referring to later.

In the years 1947, 1949 and 1951, Leo Arthur Tregenza again revived interest in the region. This British professor, who lived in Egypt from 1927 to 1952, published reports of his expeditions in two volumes, recently republished by the American University in Cairo Press<sup>11</sup>. During a summer trip in 1951, Tregenza proceeded from Wadi Semnah towards the coast, through Wadi Saqi and Wadi Wasif to Wadi Gasus and its immediate surroundings<sup>12</sup>. He saw the scene of the time of Psammetichus and then visited two lead mines (one older and one earlier). At the older of the two, he was shown a short inscription at the entrance of a tunnel and a small granite stela which recorded the expedition led by Padiusir to the mine (*infra*, Site 3, 75-79). Soon thereafter he saw the “Graeco-Roman Station”, which he identified with *Aenum*. In his report on the site, he also describes the two stelae of the Middle Kingdom found by Wilkinson and Burton, which the latter had brought to England (Tregenza *ibidem*). Tregenza also describes the structures further south along the coast, at the mouth of Wadi Gawasis, which he identifies with Philoterias.

After the middle of the last century, both the “Graeco-Roman station” of Wadi Gasus and the port of the Middle Kingdom of Wadi/Mersa Gawasis, as well as their Pharaonic inscriptions, were investigated again by the Archaeological Mission of the University of Alexandria directed by Abd el-Monem Sayed (recently departed) (Sayed 1977; 1978) and by the Italian-American Archaeological Mission directed by Rodolfo Fattovich and Kathryn Bard (2007).

Over the last decades, some broad surveys of the region as a whole have also been conducted to create geological and/or archaeological thematic maps. For instance, between 1989 and 1993 D. Klemm and R. Klemm, together with A. Murr, have drawn up comprehensive maps and historical distribution maps of gold mines in Egypt and Sudan, for a total of

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<sup>11</sup> Tregenza (1958). He also published the inscriptions - in collaboration with specialists in the different languages and scripts used in them - in a series of articles in the *Bulletin of the Faculty of Arts* between 1949 and 1952. The texts from the Pharaonic period, instead, were published by Vikentiev in the *Annales du Services des Antiquités* between 1952 and 1956.

<sup>12</sup> Tregenza (1958, 175-191). For the area surveyed by the Italian during its first campaign, see 180-182.

250 sites. In the area investigated by our project this year, they recorded one settlement and numerous small gold mining sites from the early Islamic period (26°30'15" N, 33°51' 05" E) (Klemm, Klemm 2013, 84-86). They list earlier sites - which we plan to visit during our next fieldworks - in Semnah and Bir Semnah, Wadi Gidami, Abu Gerida, and Hamamah (*ibidem* respectively: 86-88; 89-92; 101-107; 109-110; 110-115). They do not mention, instead, the site of Umm el Howeitat el Bahri, recorded by Tregenza and included in a survey conducted by Steve E. Sidebotham and Hans Barnard between 1996 and 2000 (Sidebotham, Barnard, Pyke 2002).

### *January 2012 Survey*<sup>13</sup>

During this first campaign the mission preliminary surveyed about 17 km (in straight line) from the entrance of the Wadi (26° 34' 16.31" N, 34° 1' 29.91" E) and moving west-south-west (Fig. 23).

Individual sites and structures were recorded using an independent numbering, and they were all included in a geo-referenced map (see the final list of sites). As planned, a part of the survey focused on the (re)discovery of sites already identified by explorers and scholars of the past, while the other was devoted to a preliminary analysis and topographic survey of the "Graeco-Roman station". During the survey we have also identified a mining site not previously recorded (*infra* Site 7, 86-88).

### Site 1. The "Graeco-Roman Station" in Wadi Gasus

This definition, first used by Schweinfurth (1885, 8), is still conventionally used to indicate a site in Wadi Gasus, whose function and chronology are anyway far from certain. As we are going to illustrate in the following paragraphs, existing structures and findings point to a complex situation, which still needs to be analysed and interpreted.

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<sup>13</sup> Due to the general condition of the country, only a short season of fieldwork was carried out with a reduced number of participants: Irene Bragantini, Marco Barbarino, Rosanna Pirelli, Vincenzo Zoppi (UNO), Mohamed Hamdan e Yaser Abd el-Rahman (Cairo University). We wish to thank the Supreme Council of Antiquities represented by Dr. Amer Abd el-Karim Abu el-Hasan. We are moreover grateful to Ministry of State for Antiquities and the Military Authorities for their support.

### The Inscriptions of the Middle Kingdom (by R. Pirelli)

One of the most debated questions regards the alleged discovery of two Middle Kingdom stelae in this site by James Burton and Sir John Gardner Wilkinson. In Sotheby's catalogue for the auction of 25<sup>th</sup> July 1836, Burton describes the two documents as follows:

- a. "A tablet of basalt, found in a small temple in *Wadi-Jasoos*, on the shores of the Red Sea. The sculpture is in *Intaglio* and the "CARTOUCHE" gives the PRENOM of PHAROAH (sic) OSIRTESEN the SECOND" and then "This is an exceedingly interesting Tablet from the circumstances of having been found in the immediate vicinity of a station, and of some extensive mines, the high antiquity of the workings of which it tends to prove" (Fig. 24a);
- b. "ANOTHER ROYAL TABLET in BASALT; found in the same temple in which the sculpture is also in *Intaglio*. The "CARTOUCHE" here gives the PRENOM of the PHAROAH Amun-M-Gori? who lived about sixteen hundred and twenty years before Christ, immediately after the death of JOSEPH. The inscription on it gives the twenty-eighth year of his reign, and on it he is represented making offering to KHEM" and then "No other tablet or inscription having been found in this neighbourhood, it would appear that the station and mines were abandoned at no very remote period from this date" (Fig. 25)<sup>14</sup>.

The first "tablet" was the stela of Khnumhotep, which bears the date of the first year of the reign of Senuseret II (found by Wilkinson), and mentions *t3-ntr*; while the latter was that of Khentikhetyur, dated to the 28th regnal year of Amenemhat II, which mentions *S3ww* and Punt (found by Burton)<sup>15</sup>.

<sup>14</sup> I am extremely grateful to Patricia Usick (Dep. of Ancient Egypt and Sudan, The British Museum) for sending me a picture of these pages of the *Catalogue of the very interesting collection of Egyptian Antiquities, formed by James Burton, Jun. Esq. during his travels in Egypt* and also for providing me with precious information on this topic. My heartfelt thanks are also due to her colleague Neil Cooke for the helpful contribution to the discussion.

<sup>15</sup> The two *stelae* were studied and published for the first time by Samuel Birch (1880, 267-270, pls. III and IV), then published again by Adolf Erman (1882, 205), and Alessandra Nibbi (1976, 45-56), and referred to by Abdel Monem Sayed in his articles on the site of Wadi Gawasis (1977, 137-177).

More than 100 years later, Abd el-Monem Sayed visited the site of Wadi Gasus during a survey of this region, with the purpose of finding the "port" of *Saww* mentioned in the latter stela. After a season's work on the site, he stated that neither the archaeological evidence nor the architectural remains can be dated earlier than the Graeco-Roman era and for this reason the station could not be the original context of the two Middle Kingdom documents. So he proceeded southwards up the coast to the site of Mersa Gawasis already mentioned by Burton, Weill and Tregenza (British Library: Mss ADD. 25626, 66; Weill 1910; Tregenza 1958). Here the archaeological situation was completely different, as almost all the findings were found to date from the 12<sup>th</sup> dynasty. Sayed, thus, hypothesized that the stelae originated from here and that they were later re-employed at the "station". The mention of the port on one of them he regarded as confirmation that their original location was on the coast and not in a *wadi* (Sayed 1977). If we observe the plate (Fig. 26) that Sayed published in a detailed paper (in Arabic) (Sayed 1978), however, we will see that Wilkinson placed only one of the stelae on his map of the "station", while he provides no indication for the second "tablet". Burton nonetheless stated that he had found the second stela "in the same small temple at *Aenum*". He later took both stelae to Britain and put them on sale in the same auction at Sotheby's. How should we interpret this? We can either suppose that both were in the same place and that Wilkinson saw only one of them, or that the second stela was found in a different place, although not very far from the other. Moreover, in some notes in Burton's diary of 18<sup>th</sup> April 1831 we read:

*'Leave Aboo Gowah at 25 minutes before 1.*

*At the entrance of the wady Eastward it becomes wide .....We passed the Chapel of Osirtesen! again and proceeded onwards to the Sea winding around amongst the hills into another wady so as not to fall upon the Coast too far South and arrived at a little port with ancient alàms in 3h 25' - but we came out of our way and I believe we could have done it in 3 hours or (as we rode) = 15 miles. At the end of Wadi Djasoos must be the ancient town upon the coast I saw the first journey I made along here*

*This must be Philoteris*<sup>16</sup>.

He evidently calls “Chapel of Osirtesen” the place where Wilkinson had found the stela from the time of Senuseret II, but says nothing about the other stela. In this regard, in his paper Meredith (1953, 102) states that an allusion in one of the maps drawn by either Burton or Wilkinson seems to suggest that the stela of the 28<sup>th</sup> year of Amenemhat II was not found in the same “small temple at Aenum”, but in a different location closer to the sea<sup>17</sup>. It is also interesting to remark that when Burton proceeded eastward, he did not follow the main Wadi Gasus, but turned slightly southward and reached the coast and a site with ancient “alàms”<sup>18</sup>, evidently the site of Mersa Gawasis. This route fits well with the itinerary suggested by Weill to go from Wadi Gasus to Wadi Gawasis<sup>19</sup>. Could Burton have found “his” stela along this route? In this regard, it was interesting to observe more carefully the drawings by Burton. In his block-notes, two details of the stela of Khentykhetywr are particularly revealing (Fig. 25): the decoration does not occupy the whole polished surface, but it leaves a blank basis at the bottom; moreover, unlike the other stela, this one is represented from a  $\frac{3}{4}$  view, and this makes it possible to realize that its back was not finished: the stela in other words was not formed as a free-standing slab to be embedded in a structure or a wall (as the stelae from Mersa Gawasis, for instance Pirelli (2007), but it was directly carved on a rock wall and only afterwards roughly detached from it<sup>20</sup>. The same consideration can be drawn observing with greater attention the two pictures of the stelae published in 1976 by

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<sup>16</sup> Mss ADD. 25626, 66. I am grateful to the British Library for providing me with the digital copies of all Burton’s manuscripts quoted in this paper and included in the plates.

<sup>17</sup> Unfortunately, Meredith’s statement is somewhat ambiguous and he does not provide any archive reference number. I have therefore not been able to find this map so far among the copies of archive documents I received from the British Library. I hope to soon have an opportunity to visit the British Library and the Bodleian Library to check the whole collection of Burton’s and Wilkinson’s records.

<sup>18</sup> The Arabic term indicates a sign or marker.

<sup>19</sup> See *supra*, § History of exploration, 55-58 and Weill (1910), in Aufrère (2002).

<sup>20</sup> Unfortunately we cannot be sure if it was Burton who had it detached.

Nibbi<sup>21</sup>, where it seems that both the documents were not originally movable objects. Actually their present stela-shape appears to be the issue of a conservative intervention, following their detachment from the original rock wall (Fig. 24b)<sup>22</sup>. An interesting implication originates from this: the two documents were not originally erected in any kind of architectural structure and their primary collocation should be looked for in a different site, although probably not far from the "Station".

Their material (basalt<sup>23</sup>) might probably help us to suggest their origin: it could not be - as already proposed by Sayed - in the lower course of Wadi Gawasis, where a different rock type characterizes the terraces; their original location could preferably be looked for in the same Wadi Gasus with its basaltic rocks. These considerations let me suggest (but it should be further checked on the spot) that the above mentioned road (i.e. the small wadi connecting W. Gasus to W. Gawasis) could be consistent with this situation<sup>24</sup>.

This would not be just a detail, as it would confirm that Wadi Gasus was used - already in very ancient time - as a major road<sup>25</sup> to get to the coast and that the site of the "Graeco-Roman station"- being its eastern far end before turning towards Wadi Gawasis - might have had a much longer history than previously supposed, as the following observations on part of the pottery from the site strongly suggest.

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<sup>21</sup> Nibbi (1976), pls. IX-X. In Birch's catalogue (1880, 267-270) and pls. III-IV, only front drawings of the stelae are included, so that it is not possible to understand their overall shape.

<sup>22</sup> I am extremely grateful to Rachel Grocke, Deputy Curator of the Durham University Museums, who has just sent me the records of the two monuments and an extract of a recent conservation report - which confirm my hypothesis -, along with a picture taken during the conservative intervention on the stela found by Wilkinson (Fig. 24a).

<sup>23</sup> According to Birch and confirmed by the records of the Durham Museum (see previous note).

<sup>24</sup> Nowadays this is just a hypothesis. Actually the rock type of the stela is critical to identify its original location in the field and a thorough analysis should be carried out on the artefact. We hope to do it in the immediate future.

<sup>25</sup> On the alternative roads from the Nile Valley to the Red Sea (Bradbury 1988) and more recently Manzo (2011).

### Middle Kingdom Pottery (by A. Manzo)

The surface pottery recorded at the “Graeco-Roman Station” during the 2012 fieldwork showed that the site was frequented not only in Roman times but also earlier: this was already suggested after a one-day visit at the “Station” conducted in 2010 in the framework of the Italian-American project at Mersa/Wadi Gawasis. At that time some potsherds of Marl C and Marl A 3 mid-sized and large jars were collected and it was remarked that a large amount of Middle Kingdom pottery occurred on the surface at the site (Manzo 2011, 221). The 2012 survey allowed a more detailed assessment of the Middle Kingdom ceramic assemblage and considerably enriched the number of the recorded types.

The site seems to be mainly characterized by middle-sized and large jars. In particular, if both the 2010 and 2012 collections are considered, the site yielded sherds to be ascribed to the following classes:

- 1) fragments of bag shaped Marl C large jars with thickened rounded rim were recorded both in 2010 and 2012 (Fig. 27, a-c, Fig. 28, a). They can be ascribed to a widely distributed class of jars with flat base dating to the early and middle 12<sup>th</sup> Dynasty (Arnold 1979, Abb. 18, 5, 1988, fig. 55 b, fig. 59, fig. 62; Bader 2001, 155-163, Abb. 42 Typ 1-3, Abb. 44-45; Bagh 2002, Fig. 10, a-c; Bietak 1991, 36-37, Fig. 9, Wodzińska 2010, 174-175, Type Middle Kingdom 17-18)<sup>26</sup>. The nearest site where similar jars were recorded is of course Mersa/Wadi Gawasis (Bard and Fattovich eds. 2007, 111, 13, 113-114, 26);
- 2) fragments of bag shaped Marl C large and middle sized jars with everted rim and thickened rounded lip were recorded in 2012 (Fig. 29, a). They can be ascribed to a class dating to the mid to late 13<sup>th</sup> Dynasty class (Arnold 1988, fig. 74, 60; Bader 2001, 166, 172, Abb 52, b, Typ 57 e; Bagh 2002, fig. 10, d; Wodzińska 2010, 173, Type




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<sup>26</sup> Moreover, unpublished fragments of this type of jar occur in the collections from several Middle Kingdom sites at the British Museum (code BM EA) and in the Petrie Museum (code UC): UC 18670 from Harageh, UC 18560 from Diospolis Parva, BM EA 74395, BM EA 74421, BM EA 74435, BM EA 74443, BM EA 74589, BM EA 74633, BM EA 74635, BM EA 74663, BM EA 74392, BM EA 74395, and BM EA 74663 from el-Lahun.

Middle Kingdom 16)<sup>27</sup>. Also in this case comparisons can be found at the nearby site of Mersa/Wadi Gawasis<sup>28</sup>;

- 3) fragments of bag shaped Marl C large jars with thickened triangular rim were recorded in 2012 (Fig. 29, b). They can be ascribed to a class of jars dating from the very end of the 12<sup>th</sup> to the late 13<sup>th</sup> Dynasty (Arnold 1982, Abb. 8, 5; Bader 2001, 166-178, Abb. 42 Typ 5, Abb 49, b, Typ 57 e, Abb 50, a, Typ 57 e, Abb 52, d-e, Typ 57 e; Bietak 1991, 36-37, fig. 9; Kaiser *et alii* 1999, 217-219, Abb. 51; Stadelmann and Alexanian 1998, Abb. 8, 5)<sup>29</sup>. Similar jars were recorded also at Mersa/Wadi Gawasis (Bard and Fattovich ed. 2007, 114, 27);
- 4) fragments of bag shaped Marl C large jars with thickened rim, grooved on the internal part, and with pointed lip were recorded in 2010 (Fig. 27, c-d). They can be ascribed to a class of jars dating from the very end of the 12<sup>th</sup>/13<sup>th</sup> Dynasty to the Second Intermediate period (Bader 2001, 166-168, Abb. 48, b-c);
- 5) a single fragment of a Marl C jar with flaring and pointed rim was recorded in 2012 (Fig. 29, c). It can be ascribed to a class dating from the 12<sup>th</sup> to the mid 13<sup>th</sup> Dynasty (Bader (2001) 196 Abb. 65, Typ 60; Bourriau 1996, fig. 4, 10; Wodzińska 2010, 190, Type Middle Kingdom 61). Fragments of vessels of the same class were widely collected at Mersa/Wadi Gawasis<sup>30</sup>;
- 6) a single fragment of a mid-sized Marl C jar or bottle with everted neck and thickened triangular lip was recorded in 2012 (Fig. 29, d). It can be ascribed to a class dating to the late 13<sup>th</sup> Dynasty (Arnold 1982, Abb. 11, 6; Bader 2001, 124-125, Abb. 28, f, Typ 42; for the shape see also Bietak 1991, Fig. 7, first on the left, Holthoer 1977, 133, Pl. 29, BR 1 IIR/O/e-f). Bottles of similar shape were collected at Mersa/Wadi Gawasis in Second Intermediate Period/early New Kingdom assemblages (Bard and Fattovich ed. 2007, 115, fig. 52);
- 7) a single fragment of Marl A 3 bag shaped small jar or bottle with thickened rim was recorded in 2010 (Fig. 28, b). It can be ascribed to a class of mid-sized jars or bottles dating to the beginning of the 12<sup>th</sup> Dynasty (Arnold 1979, 36, Abb. 22 a, 3-4 a; Bourriau 2004, fig. 1. 5; Wodzińska 2010, 195, Middle Kingdom 75; see also Bietak 1991, 36-

<sup>27</sup> See also unpublished potsherd BM EA 74378 from el-Lahun.

<sup>28</sup> See e.g. the rim potsherds from WG 2 surf. coll. B4, WG 10 corr. 7, and WG 27 SU 1 A5.

<sup>29</sup> See also unpublished potsherds BM EA 50932, BM EA 74382, and BM EA 74399 from el-Lahun.

<sup>30</sup> See e.g. WG 8 SU 7, WG 16 tr. 1 Sq. 2-3 SU 1, WG 27 A5 SU 1, WG 27 A4-B4 SU 1, WG 28 SU 4 East.

37, fig. 9)<sup>31</sup>. Sherds to be ascribed to similar vessels were also recorded at Mersa/Wadi Gawasis<sup>32</sup>.

Thus, the Middle Kingdom use of the site is both confirmed and seems to have continued for the whole 12<sup>th</sup> Dynasty and extended to the mid, possibly to the late phase, of the 13<sup>th</sup> Dynasty. Therefore the Pharaonic frequentation of the site of the “Graeco-Roman Station” largely corresponds to the more intensive period of use of the harbour at Mersa/Wadi Gawasis (Bard and Fattovich eds. 2007, 110, 125).

The first excavator of the site of the “Graeco-Roman station”, Abdelmoneim Sayed, suggested that the two inscriptions dating to the reign of Amenemhat II and Senuseret II from the site in the Wadi Gasus were reused in later structures and were originally erected at Mersa/Wadi Gawasis (Abd el-Monem A.H. Sayed 1977, 146). Of course, the evidence of a significant Middle Kingdom phase of use of the site of the “Graeco-Roman Station” based on the surface ceramics may now suggest that these two inscriptions were originally erected not far from the place where they have been discovered.

Moreover, it should be remarked that the Middle Kingdom surface ceramics consist almost exclusively of big Marl C jars, the so-called *zir*, which, thanks to their morphological changes, were also considered a reliable chronological marker for several Middle Kingdom assemblages (Arnold 1982; 1988; Bader 2011, 155-158; Bietak 1991, fig. 9). Significantly, only a single rim potsherd is made of Marl A3.

Dealing with the regions of the Egyptian Nile valley where the Middle Kingdom vessels represented at the site of the “Graeco-Roman station” were manufactured, it was suggested that Marl C vessels were made in Lower Egypt, and Marl A3 ones in Upper Egypt (Bourriau 1996, 31; 2004, 12). Thus, it seems that all the types of large jars recorded at the “Graeco-Roman Station” were produced in Lower Egypt, in the Memphis-

<sup>31</sup> See also unpublished sherds UC 18670 from Harageh, UC 18560 from Diospolis Parva, and BM EA 74392 from el-Lahun.

<sup>32</sup> See e.g. the rim sherds from WG 8 SU 7, WG 8 SU 7 S of F1, WG 10 corr. 4, 5, 6, 7, WG 16 SU 1 E-W 2, WG 16 SU 1 E-W 3, WG 16 tr. 3 SU 20, WG 18 SU 8, WG 19 SU 4 A3, WG 19 SU 8 A3, WG 19 SU 17, WG 19 SU 30 A1, WG 19 SU 24 C2, WG 19 SU 35 A2, WG 24 SU 17, WG 24 SU 32 C1, WG 24 SU 40 C1/C2-D1/D2, WG 28 SU 1, and WG 28 SU 4 East.

Faiyum area, most likely not far from the royal residence of the 12<sup>th</sup> Dynasty (Bader 2001, 35-36). This might suggest that the provisions for the people frequenting the site of the "Graeco-Roman" station in the 12<sup>th</sup> and 13<sup>th</sup> Dynasty mostly consisted in commodities from Lower Egypt, as it was the case in the same phases for the expeditionary corps frequenting the site of the Middle Kingdom harbour at Mersa/Wadi Gawasis (Bard and Fattovich eds. 2007, 125). If the connection with ceramic workshops related to the region of the royal residence and, perhaps, to royal institutions is accepted, it may be also suggested that the expeditions in this part of the Eastern Desert were not only promoted but also effectively run by the central state authority. Therefore, the composition of the ceramic assemblage seems to confirm what was suggested by the only available administrative documents related to the expeditions to Punt and to the harbour of Mersa/Wadi Gawasis, i.e. the ostraka dating to the reign of Senuseret III and mentioning institutions and officials apparently related to the region of the capital city of the 12<sup>th</sup> Dynasty (Mahfouz El-Sayed 2010).

The use of big jars similar to the ones of the classes recorded at the site of the "Graeco-Roman station" as fixed storage facilities was already recorded at other sites (Shaw and Bloxam 1999, 17, Pl. 3; Shaw, Bloxam, Bunbury, Lee, Graham and Darnell 2001, 34, fig. 3), and this might suggest that these vessels had a long life and that the morphologically earlier vessels were progressively replaced by the later variants only when they were broken. A longer life for the large storage vessels than for the classes of pots may be assumed for the "Graeco-Roman station" in the Wadi Gasus as well as for Mersa/Wadi Gawasis and for the other sites far away from the Nile valley: actually, the larger vessels required a lot of energy both to be produced and to be moved to those distant sites from the production areas. The suggestion that the well of the "Graeco-Roman station" was already used in Middle Kingdom times, and, more specifically, that it may have provided at least part of the water supply needed at the site of the Middle Kingdom harbour at Mersa/Wadi Gawasis (Manzo 2011, 222) may be, in some way, strengthened by these remarks on the overwhelmingly dominant classes in the surface pottery from the site in the Wadi Gasus.

Further researches on the ceramic collections from the "Graeco-Roman station" in the Wadi Gasus will test these assumptions; giving further insights into the organization and management of the exploitation of this sector of the Eastern Desert in Middle Kingdom times and into the

probable connection between this site and the harbor of Mersa/Wadi Gawasis.

### The Architectural Remains (by I. Bragantini)

The “Graeco-Roman Station” occupies an elongated area of about  $280 \times 200$  m on a terrace 10 m above the wadi level, 7 km inwards (Fig. 48).

Work has been conducted here in the current conditions of the site: unfortunately, it appears heavily disturbed by modern activities, totally disregarding the archaeological nature of the site. Bulldozers tracks have cut all over through the ancient walls and “wells” were dug at various depths, apparently to recover antiquities: they are in fact always located near the ancient walls, whose state of conservation is put at serious risk. Therefore, the “Graeco-roman Station” appears now quite different from what can be gathered from Sayed publication (Sayed 1977); given the sketchy nature of his plan (Sayed 1977, fig. 1), it is not always an easy task to identify features with present remains (Figs. 30-31). Anyway, for the sake of clarity, and for lack of better identification, we are still using Sayed denominations in our work: Western building (temple); Southern building (bath); Middle building; Eastern building<sup>33</sup>.

Although some differences can be spotted between the different buildings, solid walls are quite regularly laid out, with double facings of big blocks of different nature and colours (granite, basaltic rock and some limestone), a binding of lime and small pebbles is often present (Figs. 32-34). Foundation layers have been exposed at various spots by illegal excavation (Fig. 35)<sup>34</sup>: in the “Eastern building”, they are made of three layers of big rock blocks, laid out in a big trench around 70 cm in depth.

The structures of the “Station” on the plateau are to be connected to an important feature on the wadi bottom, already recorded by

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<sup>33</sup> For a short description of the buildings (Bragantini, Pirelli 2012, 87-90).

<sup>34</sup> Sayed (1977) states to have excavated every building “to their very foundations”: this must also be noted, given that the *praesidia* are usually described as been laid out without foundations (Reddé 2003, 240).

Schweinfurth<sup>35</sup>: a precinct of pentagonal shape encloses in its north-eastern sector a well, whose opening can still be recognized by debris of conical shape marking it (Brun, Reddé 2003, 133, note 75). Stones in the precinct appear the same nature, size and shape of those used in the "Station" buildings, but no mortar is used here (Fig. 36). The southern wall, in better conditions, reaches around 70 cm height; the rest of the structure is badly preserved, but its shape can still clearly be inferred.

### The Roman Pottery (by I. Bragantini)

For lack of time, no systematic study of the surface pottery could be carried out. A chronology to the 1st-2nd c. AD can be proposed for a fragmentary lamp (Fig. 37) to be compared to similar items published by Sayed (Bailey 2001, 126, n. 11, tav. XVII; Sayed 1977, 146, tav. 10 c); a fragmentary cooking pot with grooved rim and tapering walls can be compared to late Hellenistic-early Roman vessels (Fig. 38) (Ballet, Południkiewicz 2012, 71, nn. 220-221, tav. 18).

The most substantial evidence of Roman pottery points to the likely identification of a production site: a huge quantity of pottery fragments having their internal walls coated by a vitreous, bluish "glaze" is scattered over the site; near the "Temple" (Fig. 39) they appear concentrated around an internal depression, whose round shape might signal a discarded oven.

The fragments pertain to large vessels with flat bottom (d. c. 40), walls c. 10 cm high and plain rims; the external walls might bear finger marks (Fig. 40); the fabric is light cream, sometimes fired to brown (Fig. 41). A distinctive remark are traces of a loosely woven textile (a kind of gauze) sometimes appearing between the internal wall and the vitrified glaze (Fig. 42). Objects with the same characteristics have been published by Nicholson and identified as pertaining to the production of Egyptian blue or faience objects (saggar) (Nicholson 2009; *idem* 2011; Nenna 2000). The textiles marks are due to the production process of these handmade vessels: they must have been formed on a (pottery?) cylinder coated by textiles in order to ease their detachment (Nicholson 2011). According to the written

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<sup>35</sup> Schweinfurth (1885), tentatively identifying the structure as a *hydreuma*. V. Zoppi identified on the site the existing remains.

sources, Egyptian blue was also produced in Campanian *Puteoli* around the middle 1st c. BC<sup>36</sup>. Recent finds from the Phlegrean Fields have given new evidence to the written evidence; their meaning is also enhanced in that the Campanian fragments, who look very similar to the ones we have identified, have come to light in controlled excavations, giving a 1st c. AD chronology<sup>37</sup>. We hope to be able soon to analyse remains of light blue (raw?) stones also visible on the site, in order to validate our interpretation (Fig. 43).

### Concluding Remarks (by I. Bragantini)

Construction techniques of the existing remains, the possible *hydreuma* on the wadi bottom as well as pottery fragments point to a Roman imperial chronology. Comparisons for construction techniques are to be found among the Roman (1st-2nd century) *praesidia* in the Eastern Desert recently analysed by the IFAO missions (Brun, Reddé 2003; Zitterkopf 1998). Basing on building techniques, a Late Roman chronology seems less likely: in the near Late Roman site of Umm el Howeitat, for example, walls are described as “built of locally available boulders and cobbles that appear not to have been worked before being laid without mortar” (Sidebotham *et alii* 2002, 189): in fact, stones of different size and shape are often dry-piled, and structures have irregular plans.

Among the Roman structures of similar function (precincts enclosing wells) in the Eastern Desert recently analysed by the IFAO missions - mostly recording walled (defensive) structures enclosing a well - no comparisons have been found for the simple plan of the *hydreuma* on the wadi bottom (Brun, Reddé 2003). This might point to an earlier chronology

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<sup>36</sup> On the production of “Egyptian blue” in *Puteoli*, and information to be gathered from Vitruvius’ text (Davidovits 2004).

<sup>37</sup> Cavassa *et alii* (2010) (with bibliography); Bragantini, Pirelli (2012); De Romanis (1996) publishes a graffito datable to 21-22 AD recording a Titos Vestorios Ialysos, of the same *gens* who had imported to *Puteoli* the production of Egyptian blue. I’d like to thank Lorenzo Lazzarini, currently working with Marco Verità on fragments from Litternum, who kindly gave his advice on this issue.

of the structure<sup>38</sup>; the lack of any defensive device might also speak in favour of an early Imperial chronology, still within the 1st c. AD, as proposed by Cuvigny: "*Des hydreumata aux praesidia*" (Cuvigny 2003b, esp. 353-357)

It should also be recalled that in his 1977 report, Sayed mentions only Roman pottery (Sayed 1977), although - being driven by his hope of finding Pharaonic materials - his search was certainly very accurate, as is still to be recognized on the spot (Fig. 44).

Nevertheless, as stated by Manzo (*supra*), Middle Kingdom pottery fragments are abundant on the site, posing the problem of such a high percentage of residuals scattered over the surface of a Roman site. A possible connection between the site where the "Graeco-Roman Station" was built and the port on Mersa Gawasis has also been proposed by Manzo above. Moreover, "Limestone anchors similar to the ones discovered at Mersa Gawasis" are also recorded on the site<sup>39</sup>, but this evidence has not been observed during the 2012 fieldwork, when we only noticed a fragment of a stone anchor datable to the Roman period (Fig. 45). The anchor was reused within a circle of stones not far from the "Station" (Zoppi *infra*). The hypothesis has been put forward above (Pirelli, Manzo *supra*) that the circles on the site could represent small "ex-voto" altars as the ones from Marsa Gawasis (Pirelli 2010): if this hypothesis should be proved correct, the anchor (Fig. 44) could have been part of one of such installations, attesting the continuous use of anchor dedications on part of people after a safe return.

Summing up, archaeological evidence commented above (Pirelli and Manzo *supra*) clearly indicates that the "Station" was built on a site, part of a complex net dating back to the Pharaonic period, put on in order to exploit the rich mineral resources of the area<sup>40</sup>. Hypothesis and interpretations above proposed by Pirelli and Manzo well exemplify the methodology we wanted to follow starting this new project, planning to revise and survey

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<sup>38</sup> As proposed by Reddé (2003, 238), stating that al-Kana'is "avec ses redans, ses parties courbes, son absence de tours, présente d'incontestables caractéristiques hellénistiques".

<sup>39</sup> Bard, Fattovich *et alii* (2001, 4) already propose that the evidence gathered at the time "suggests that the site of the Graeco-Roman "station" was frequented in pharaonic times".

<sup>40</sup> See *supra*, Hamdan, el-Rahman, 50-53; Manzo, 53-55; Pirelli, 75-79.

sites known from “early” bibliography, and needing to be submitted to new researches and investigated with new methods. Significant new proposals have been born out of in depth and accurate revision of previous publications and archive documents; collecting existing information and locating them with the aid of a GIS gives new evidence to the way this complex net might have been worked and allows to formulate hypothesis in term of distance to be covered between sites and water availability, proposing new challenges to the researcher.

In trying to interpret the existing evidence, we can hypothesize a *statio* being built in Roman period on a spot well known since centuries for its privileged location, not too distant from the coast, on one of the roads from the Nile valley, with available water resources, whose high level was probably recognizable in some landscape features<sup>41</sup>.

Two important features of the complex must anyway be noted: first of all, the lack of any enclosure for the different buildings<sup>42</sup>, quite “loosely” located on the plateau. A second, noteworthy feature of the “Station” is its location on a terrace: indeed, the vast majority of installations are built on the wadi surface, taking advantage of the availability of water and the wadi connecting system, to the point of running the risk of severe damage in case of flood or heavy rainfall<sup>43</sup>.

The “traditional”<sup>44</sup> interpretation of the complex as a “*station*”<sup>45</sup> would well suite some of the buildings of the “Station”: so, the “Eastern

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<sup>41</sup> Schweinfurth (1885) still indicates here acacia trees. Dentzer (1994, 74), on Syrian arid zones, notes that “Dans la région, la maîtrise d’une source ou d’un puits peut justifier à elle seule l’installation d’un poste fortifié”.

<sup>42</sup> For the possible chronological implication of this feature see *supra*, note 17: Cuvigny (2003b, 353-359).

<sup>43</sup> Prickett (1979, 257) describes the wadi as “the most intensively used of the topographic features”.

<sup>44</sup> Following ancient sources, since XIX c. authors who have visited the site (see *supra*, Pirelli) define the complex as a station, and as such it is consistently identified in XX c. bibliography. Dentzer (1994, 79) rightly underlines “l’ambigüité” of the term “road station”.

building" (Fig. 46), with a surface of around 240 sq m<sup>46</sup> and featuring a group of rooms<sup>47</sup> entered *via* an (open) internal court<sup>48</sup>, with a staircase in its south-eastern corner and remains of a kitchen (?) in one of the southern room<sup>49</sup> (Fig. 47), could well be part of such a complex.

On the contrary, we have found no evidence for Sayed identification of the "Southern building" as "bath", a kind of "facility" which might be found in this kind of installations: anyway, as he states having found walls furnished with brick *tubuli* and remains of a big container, probably a furnace, his tentative identification should be accepted (Sayed 1978).

The alleged finding of Middle Kingdom stelae in the "Temple" or "Chapel"<sup>50</sup> remains to be considered: as it is well known, examples of intentional reuse of Pharaonic fragments in Roman contexts in Egypt are not without parallels<sup>51</sup>, although mostly related to monumental architecture. The *stela* with inscriptions might then have been intentionally reused and

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<sup>45</sup> On station on Eastern Desert roads, especially the one connecting Berenike and the Nile (Sidebotham *et alii* 2008, 329-343). Interesting parallels on road stations can be found in Dentzer (1994, 71-79), quoted by Reddé (2003, 244-247).

<sup>46</sup> Among the structures listed in Dentzer (1994), table at fig. 9, only the small dimension of no. 515, featuring around 256 sq m, can be compared. The dimension of the Eastern building could well be of origin, as the North-West and the South-East corner are made of three big limestone blocks, in regular connection with the contiguous walls.

<sup>47</sup> Ten, according to Schweinfurth and Sayed.

<sup>48</sup> A deep, illegal trench (Fig. 32) has been cut following the major axis of the building, destroying the possibility of understanding its plan on a more secure basis.

<sup>49</sup> Pottery fragments, especially of the type at Fig. 39, orderly arranged in a round shape (Fig. 47 and the circle marked in blue in Fig. 46), might well be part of the same equipment. Sayed (1977, 146) describes the frequent finding on the site of "big jars which we found full of ashes. They measure from 40 to 50 cm in height and some of them have a side hole at the base" (*ibidem*, tav. 10 d): the possibility of a different function for the installation should then not be ruled out, especially because, as noted by Cavassa *et alii* (2010, 237), plant ashes can act as melters in the production of Egyptian blue.

<sup>50</sup> Pirelli *supra*.

<sup>51</sup> This is well exemplified by the spectacular findings of Pharaonic period from underwater excavations in Alexandria; see also Savvopoulos 2011.

put on display in the Roman structures, because at least the value of the figure of deities was very likely still understood<sup>52</sup>.

#### Site Mapping (Fig. 48) (by M. Barbarino)

The main aim of the topographical survey at Site 1 and Site 1b, covering an area of about 80 sq. km., was to report a new map of location and of the status of the ancient structures directly visible on the ground. Moreover a number of modern features has been surveyed in order to report the general conservation status of the sites.

The survey, conducted in two days, was carried out by a total station Trimble M3 and a handheld GPS device Trimble Juno SB.

Considering the magnetic north direction as azimuth direction, a closed traverse was run at Site 1 with four control points, set into the ground by iron sticks and cement, in order to perform calculation and adjustment for closure error (+/- 3mm).

It has been considered for the survey and kept in the output maps a relative reference height of 100 m while coordinates, based on UTM 37N projection, were taken by a handheld GPS device Trimble Juno SB (an error of +/-10 m has to be considered) and adopted as the coordinates of the main control point (V0) of the traverse.

An amount of 343 points were taken and classified as following:

1. "Ancient structures": outlines, elevation of foundations and top surface of the walls were possible;
2. "Modern structures": outlines and elevations points of the modern structures and features;
3. "Elevation points": elevation points of the area;
4. "Traverse": traverse control points.

Data were processed by Autodesk Autocad 2010 and Esri ArcInfo 10.

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<sup>52</sup> Sayed (1977, 145-146, figs. 9 d-e), dates to "Graeco-Roman period" a fragmentary statuette "shaped in a special hermaphrodite form with the body of a woman and the hand gesture of the ithyphallic god Min".

### Survey of the Surrounding Area (Fig. 49) (by V. Zoppi)

A survey of the surroundings was carried out and some features were identified.

South of the street running along the site, the remains of a possible structure were found (26°32.718400'N; 33°57.446200'E). The present conditions do not allow to define its function and relation to the other buildings. Actually, only a portion of wall is visible (Fig. 50), while the rest is disturbed by a recently excavated trench.

In the area north-east of the Eastern Building two possible *tumuli*, heavily damaged are still visible (Fig. 51). In the south-eastern sector of the plateau two more structures are preserved for about 70/80 cm in height (26°32.6571'N; 33°57.7278'E (Fig. 52). Unfortunately, no associated ceramic or diagnostic elements were recorded and for this reason it is not possible to clarify their functions or relation with the Graeco-Roman Station.

In the western sector of the Station there are some stone circles, possibly remains of *tumuli* (Fig. 53), and in one of them a basaltic block in the shape of an anchor fluke, characterized by a groove, was observed<sup>53</sup>.

The top of the hill on the north side of the "Station", was also surveyed, but no structures were identified.

The survey also reached the northern side of Wadi Gasus.

In this area two groups of structures were identified (26°32.861'N; 33°57.836'E). The first one is located in the bed of the wadi while the other is on the slope along the river (Fig. 54). Modern ceramic and objects were recorded in association with these structures (Fig. 55).

Nearby three piles, mounds of dry, unworked local stones, were recorded. These piles were visible from the plateau of the Graeco-Roman Station, where two more mounds of ~~were~~ were observed 200 m from each other (26°32.67'N; 33°57.95'E; 26°32.70'N; 33°58.82'E).

The first mound ~~of stones~~, not far from the structures in the bed of the wadi (26°32.905700'N; 33°57.828000'E), has a quadrangular shape. The second one (26°31.906400'N; 33°57.730700'E) has a conical shape. A third pile (26°33.003600'N; 33°57.566600'E), square shaped, is located on an higher position compared to the others.

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<sup>53</sup> See *supra*, Bragantini, 70.

All these piles could have been track markers, or *alamat*, considering their general features and the distance occurring between them. Similar structures were used as track markers on the *via Nova Hadriana*, as pointed out by Sidebotham (Sidebotham *et alii* 2008, 45). However the area needs more accurate investigations and survey along the actual track to the Station in order to clarify their actual function.

### Site 3. Min Biaty Lead Mine in Wadi Roussas (by R. Pirelli)

With the help of a local guide, we reached the lead mine<sup>54</sup> identified by Tregenza in 1951. It opens in the upper course of a large wadi, which starts in a north-south direction, swerves east-westward, and finally flows into Wadi Gasus, about 1.5 km east of the “Graeco-Roman Station” .

About halfway up the steep western wall of the wadi are three circular shafts dug with great precision. They are protected by small walls of large stones and open more or less at the same level along what appears to be a fairly regular path (Fig. 56). At a first quick exploration, the incline of the wells, which is almost vertical for the first few meters, then becomes less steep and expands into a sort of chamber, from which tunnels branch out.

At the entrance of one of these chambers (Fig. 57) we located the hieroglyphic inscription copied by Tregenza and mentioned in his publication (Tregenza 1958). Although he seems to misinterpret the identity of Min Biaty, taking him to be an official of Thebes instead of a god, he gave correct information about the general content of this short inscription and of two longer texts engraved on a “small stela” - actually little more than an oblong block of granite, barely bevelled -, which had been previously found close to the entrance<sup>55</sup> by the Bedouins who had accompanied him (Tregenza 1958, 181).

In his accurate study, Vikentiev found the short text (Inscription C) to be a cryptic label recording the name of the mine, its nature, and the name of the god who created it: it is a lead mine, created by the god Min of the Mines: “[t3 bi3yt] ms Mn-bi3ty dh̄ty” (Vikentiev 1956). Unfortunately, as can

<sup>54</sup> For the coordinates, see § *List of Sites with Coordinates*.

<sup>55</sup> Tregenza, (1958, 181). Vikentiev, instead, affirms that it was M. Simpson who found the stela and informed Tregenza about it.

be seen from two photographs taken 60 years apart (Figs. 58-59), it has undergone major damage, so that today only 2/3 of the inscription are still visible (Figs. 3-4). 

Vikentiev also studied the two texts on the *stela*<sup>56</sup> (inscription A and B (*ibidem*)) where the name of the mine is repeated twice, but written more in full (Fig. 60). The text on the *recto* states that in Year 14 (?) of Psammetichus I, the mine "created by the god Min-biaty" was placed in the charge of Padiusir at the behest of Montuemhat, Fourth Priest of Amon. Padiusir's task was to find a "good way" to get there. The shorter text on one of the sides concludes that, having found the path, the expedition, led by Messhesy (probably a local guide), reached the mine in the "Land of the Living" and an offering was presented to the god Min (?)<sup>57</sup>.

Neither Tregenza nor Vikentiev give any information about the destination of the stela when it was removed by "M. Simpson [the local director of the Anglo-Egyptian Phosphate Co., A/N] ....(qui) mis très aimablement à notre disposition la pierre en nous l'expédiant dans un emballage spécial, excluant toute possibilité d'endommagement pendant son transfert sur les pistes cahoteuses du désert oriental" (Vikentiev 1956, 181, note 1).

I am currently preparing a new study of the texts (Pirelli forthcoming), but I think that, on a preliminary basis, it may be useful to dwell on some of the interesting insights they provide, which call for more thorough investigation in future missions. A first point to focus on is the enigmatic nature of the short inscription. According to Vikentiev, "cet ingénieux camouflage nous fait penser que, pour une raison ou pour une autre, on a jugé nécessaire de tenir secret le contenu de la mine de plomb de Wadi Roussas" (*ibidem*) during the whole period during which the mine was exploited. The texts of the small "stela" should be, in his opinion, later than the short label (inscription C); more precisely, they should date back to the end of the extraction period, when it was no longer necessary to conceal the nature of the site.

The content of the two texts, however, does not seem to fully back Vikentiev's interpretation. The search for a "good way" to get to the mine and the offerings dedicated to a god at the end  of an expedition crowned

<sup>56</sup> 49 cm tall, 19 wide and 19 thick.

<sup>57</sup> For the text and its dating, see Vikentiev (1956).

with success seem more consistent with the first steps of an enterprise rather than the final stages of an activity.

For this reason, I agree with Vikentiev that text C was written at the time of the discovery of the mine by the team of scouts, probably lead by Messhesy, but I think that texts A and B were written earlier than he supposes: not at the end of the exploitation of the mine, but at the time of arrival of the workers and the soldiers charged with protecting both the workers and the site. In other words, the texts celebrate the official start of extraction activities.

The high value the Egyptians attributed to the mine is also confirmed by a large scene (*infra*, 79-86) almost entirely dedicated to this same god, Min Biaty, the eponymous deity of the mine. King Psammethicus I had this scene engraved - certainly as a signal - on the rock wall of the main *wadi* just opposite the outflow of Wadi Abu Gowah, which was active back then and probably is still not dried up today.

This brings up the question of the reasons for such an interest in a lead mine, given that this mineral was rather common in this region of the Eastern Desert (Meredith 1953; Sayed 1977; Tregenza 1958; Fuchs, Hašek, Poichstal 2006)<sup>58</sup>. In this regard, we must remember that lead is rarely found in nature as a primary ore: the ore from which it is most frequently extracted is galena (lead sulphide, PbS), but it can also be obtained from cerussite (lead carbonate, PbCO<sub>3</sub>), or from anglesite (lead sulphate, PbSO<sub>4</sub>). One could suppose that - as in the case of the deposits of Gebel el Zeit (Castel, Soukiassan 1989a; 1989b) - what the Egyptians actually sought here was galena, from which they produced the well-known eye cosmetic, which also had medicinal properties<sup>59</sup>. However the importance of the site, proved by the content of the inscriptions and the scene of Psammethicus I, can hardly be explained with the simple extraction of *qohl*, since at Gebel el Zeit the

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<sup>58</sup> For another galena mine near which are remains indicating recent use (plastic, cigarette butts, etc.) as well as ancient pottery sherds, see below, 90, Site 9. Ogden, citing Garland, Bannister and Lucas, reminds us that, while the main galena mine region in Pharaonic times was Gebel Rossas (in Arabic, the “Lead Mountain”), south of Quseir, there are many other sites in the southern part of the East Desert where the mineral is abundant (Ogden 2009, 168-169, with further literature). Interestingly, Vikentiev himself calls the wadi where the Min Biaty mine lies “Wadi Roussas,” evidently on the basis of a local toponomastic tradition (Vikentiev, *ibidem*).

<sup>59</sup> Ogden 2009, 168, with further literature.

product is referred to by the specific term of *msdm.t*, while in our case the word employed is *dhṯy*, commonly translated by Egyptologists as "lead"<sup>60</sup>.

As is well known, due to its chemical and physical properties, this metal was mainly used in the past in different alloys. In Egypt, however, from the New Kingdom onward, and even more during the Third Intermediate Period, its proportion in copper alloys increased significantly, from 1-5% to 20-25%<sup>61</sup>. This must have caused an increase in the demand for the metal - at least 5 times higher than before - which might well explain the emphasis placed by Psammetichus I on the discovery of this new deposit<sup>62</sup>.

A further hypothesis, however, should be considered. Lead ores are usually associated with zinc and silver minerals. For this reason, in the past lead was often regarded as a by-product of the extraction of silver.

In Egypt, similarly to what happens for lead, we witness - from the Third Intermediate Period onward - a considerable growth in the use of silver, used to fashion precious artifacts wholly made of the metal (e.g., the sarcophagi of Tanis) or combining it with other materials (e.g., statue of the Metropolitan Museum, MMA 30.8.93), or for damascening<sup>63</sup>.

However, there is no consensus among scholars on the origin of the silver employed in Egypt, although most agree that it was imported (Stos-Gale 1996), differently from what was believed at the beginning of the last century. According to data published by Alford in 1901, the percentage of silver in galena from Gebel Gasus was about 85 g per ton<sup>64</sup>. This quantity may have been enough, considering advancements in extraction technology, to warrant an attempt to produce silver from galena, or from one of the associated minerals, especially cerussite. This would have led to a renewed interest in galena and encouraged explorations to identify new deposits. On

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<sup>60</sup> *Wb* V, 606, 4; Lesko 2002, 274

<sup>61</sup> Ogden 2009, 154-155; 168-169; 170-171, with further literature.

<sup>62</sup> It is a common opinion that Egyptian lead was imported. However, despite the significant increase in analyses based on lead isotopes to determine its origin (Gale 1996; Stos-Gale 1996), the results achieved are still far from satisfactory.

<sup>63</sup> *Ibidem*. On this subject, however, see also Jurman (forthcoming).

<sup>64</sup> Actually even higher values have been detected in Egypt, in the "Black Vein" east of Umm Samiuki, where allegedly quantities as high as 200g per ton were recorded (Kovačik, cited in Gale, Stos-Gale 1981).

the basis of more recent analyses, however, Stos-Gale and Gale (1981) have challenged the percentages indicated by Alford, arguing that the content of silver in galena ores from the Eastern Desert is much lower and ruling out that silver could have been extracted locally in Pharaonic times.

At the current state of our investigation, we cannot support our hypothesis with any other data than those briefly presented here. More detailed mineralogical investigations of the mine of Min Biaty are needed. The original lead ore should be analyzed for silver content and carefully inspected for traces of cupellation, such as litharge (the oxidized lead residue left by silver extraction), or for lead-bearing slag fragments at the station or near the mining sites<sup>65</sup>.

### The Great Scene of Nitocris and Psammethicus I (by R. Pirelli)

According to early explorers (Schweinfurth 1885; Tregenza 1958) and others who visited the area during the last few decades (Klemm, Klemm 2013), on the northern side of the main valley of Wadi Gasus a great scene devoted to Amon-Ra and Min was engraved in the time of Psammethicus I. Unfortunately we could not find it, and I have just received incontrovertible evidence that it was removed some decades ago, as a local guide had already informed us during our first short survey in 2012. A photo taken by Josef Quack between 1992 and 1994 (Fig. 61)<sup>66</sup> clearly indicates that the rock surface to the left (of the viewer) of the cartouches of Amenirdis and Shepenupet was removed by cutting along the rock veins and that only a small part of it might be still in its spot. Already before learning about this, we had decided to designate as Site 4 the spot where old descriptions and modern maps place this scene (*infra*, List of Coordinates), just opposite the mouth of Wadi Abu Gowah, which ends in the wide round basin of Bir Abu Gowah (*infra*, 89-90).

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<sup>65</sup> I am grateful to Yasser Abd el-Rahman for this piece of technical advice.

<sup>66</sup> I am greatly indebted to J.F. Quack for authorizing me to publish this picture and to Claus Jurman who provided me with a good copy of it. I have just received a further confirmation and one more picture by R. Klemm and D. Klemm: when they made their last survey in 1990 they also saw only the two cartouches of Amenirdis and Shepenupet (kind personal communication).

The scene was first seen and drawn by Burton<sup>67</sup>, then drawn again by Wagner for Schweinfurth and published by the latter in his long article on Wadi Gasus in 1885, which was accompanied by an appendix by Erman with some notes on the scene and its inscriptions (Schweinfurth 1885). It was eventually photographed by Tregenza (1951) and again by Leclant (1953), and published by Vikentiev, who had several graphic and photographic reproductions to work from<sup>68</sup>. In recent years, part of its inscriptions have been the object of new studies by scholars dealing with the chronology of the final phase of the Third Intermediate Period and the beginning of the 26<sup>th</sup> Dynasty<sup>69</sup>.

Despite the remarkable interest it has aroused since its discovery, the "grand composition rupestre de Wadi Gasus", as Vikentiev calls it, has not yet been described in all its details.

Most publications focus either on a limited part of the composition (the "main scene", *infra*) or on specific passages of the inscriptions. Vikentiev himself employed Wagner's drawings and part of Burton's, the latter having been sent to him by Meredith, who had copied only the central part of the scene, the same photographed by Tregenza and then by Leclant (Vikentiev 1952).

In recent times the image was published in full only once (Dodson, Hilton 2004, 242), and on the basis of Schweinfurth's publication, whose drawing however is not very accurate. We therefore present here all the three versions of the drawing (Burton, Wagner, Vikentiev) (Figs. 62-64) along with Tregenza and Leclant's photographs (Figs. 65-66).

As Vikentiev has already remarked, in comparing Burton's drawing with Wagner's, one finds that several details were differently reproduced<sup>70</sup>. Burton's drawing is overall more accurate. Thus, in order to provide a

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<sup>67</sup> Burton, Mss ADD 25629, 48, mentioned in Vikentiev (1952).

<sup>68</sup> Vikentiev (1952). In his paper he specifies that Schweinfurth in turn was informed of it by Golénischeff.

<sup>69</sup> Kitchen (1996), 175-183; Jurman (2006) and Bibliography.

<sup>70</sup> Wagner represented all the human figures - both in the main scene and in the smaller groups - in the same style, although they are quite different. Among the most evident imprecisions in the main scene, he: a) drew an uraeus on the head of the god Amon and forgot it from the head of the priestesses g; b) represented Nitocris in a different attitude; c) misinterpreted the inscription in front of the god Min. On this subject, cf. Vikentiev (1952).

comprehensive description of the scene we need to take in consideration all the three versions (including Vikentiev's drawing based on a photograph by Tregenza) (Vikentiev 1952).

As to its dimensions, we can only hypothesize that the scene was about 3-3.5 m wide and 1.5-2 m high, on the basis of the approximate size given by Schweinfurth (1885), i.e., 6 sq m, and its height to width ratio, calculated on Wagner's drawing (Fig. 63).

The main scene (Figs. 62, 66) shows three royal figures on the left facing two gods on the right (of the viewer). According to our hypothetical reconstruction, the height of the figures does not exceed 85 cm. They are standing on a long line representing the horizontal surface of the perch of the god Min. Psammethicus I is depicted in the middle in the act of offering two globular vases to Amon-Ra and Min Biaty<sup>71</sup>. The king - whose name is inscribed in a cartouche above his headdress - wears the white crown with the uraeus, the *wsht* collar, and the *shendyt*. Interestingly, as Vikentiev already remarked, the image lacks its own caption, the king being mentioned only in the caption for his daughter Nitocris, who stands behind him: "Daughter of King Psamtik, Divine Adoratrice Nitocris". Amon Ra - whose name is inscribed above him with the epithet *nb nswt t3wy*<sup>72</sup> (Amon-Ra of Karnak) - wears a double-plume headdress with a sun disk, and holds the *w3s* sceptre in his right hand and the *anx* sign in his left hand. Behind him is the ithyphallic god Min wearing the same headdress. The inscription referring to him reads "Min of the Mines<sup>73</sup>, Horus, Isis, the Coptites". The epithet of the god is the same as that inscribed at the entrance of the lead mine of Site 3. His image is only shorter (almost imperceptibly) than Amon Ra's.

On the other side, behind Psammethicus, are two female figures, both of them slightly taller than the king. It is the king's daughter and Divine Adoratrice, Nitocris, followed by her adoptive mother Shepenupet II, defined as "her mother, God's Wife, Shepenupet, *m3c(t) hrw*, daughter of king Pye, *m3c hrw*". Both priestesses wear the double-plume headdress, the *uraeus*, and the *wsht* collar, and hold in their right hand an *nh* sign, the only

<sup>71</sup> For the epithet of this god *supra* 75-76).

<sup>72</sup> The last sign is amended by Vikentiev as *n[b ntrw]*, but it is probably a mistake of the engraver.

<sup>73</sup> According to Vikentiev (1952), and not Min of Koptos as stated by Schweinfurth.

difference being in their coiffure (Nitocris wears a short bag wig, Shepenupet long tripartite hair). While Nitocris is actively participating in the offering, as indicated by the gesture of adoration of her left arm, Shepenupet is merely assisting her daughter, with her left hand on her shoulder. All the inscriptions (even those referring to the gods) face right, including two private names, those of Wenamun and Paynekheth, respectively to left and below the scene. The position, sizes and attitudes of the figures and the texts referring to them indicate that the central figure is the Divine Adoratrice Nitocris, not Psammethicus I (Vikentiev 1952).

Around the main scene, seven smaller groups of figures and texts are engraved, five depicting the ityphallic god Min facing right, one showing the god Amon-Ra facing left, and the last containing two short vertical inscriptions. These groups, however, are only reproduced in Burton's original drawing<sup>74</sup> and in Schweinfurth's (1885).

As for the main scene, we remark that several details are differently rendered in the two versions: the sizes of the figures, their position in respect to the figures of the main scene, their texts and even the accuracy of the engraving. Moreover while Wagner's drawing reproduces the whole scene as organized on the rock wall, Burton's drawing (which is even in this case more accurate) is reproduced on two pages of his block-notes, but the two parts are not on the same scale (Fig. 67). However, while Wagner reproduced only a few hieroglyphic signs, Burton's drawings allow us to realize that the texts - all but one dedicated to the god Min - perfectly match the typology of dedication texts to Min, as found in Wadi Hammamat.

The following description is given comparing the two versions, one (Wagner's = W) after the other (Burton's = B).

Group 1:

B (Fig. 68 a  The god Min - whose size is about 2/3 of that of the human figures in the main scene - faces two vertical text columns, very irregularly carved. Both the god and the inscription are engraved with a very light line. The reverse text contains the name of the triad Min, Horus and

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<sup>74</sup> Not in the copy on which Vikentiev could work.

Isis, followed by the name of the devotees, “*P3-di-Mnw, P3-di-Mnw-Imn*”<sup>75</sup>, *p3///*”<sup>76</sup>.

W (Fig. 63, 1): The god Min - whose size is about 2/3 of that of the human figures in the main scene - faces two vertical text columns; they appear completely illegible in this copy.

Group 2:

B (Fig. 68 b): The god Min - whose size is less than half that of the human figures of the main scene - faces one vertical column of text and a small human figure, which stands with upraised hands in a gesture of adoration. The text contains the name of the god Min of Coptos, and that of the devotee “*P3-di-ϥnh///*”<sup>77</sup> *s3///*”

W (Fig. 63, 2): The god Min - whose size is about 2/3 of that of the human figures in the main scene - faces one vertical column of text (copied by Burton, but already illegible in Schweinfurth’s time) and a very small royal figure (sitting wearing the white crown (sic), which stands in front of him with upraised arms in a gesture of adoration).

Group 3:

B (Fig. 68 c): The god Min - whose size is less than half that of the human figures of the main scene - faces one vertical column of text containing the name of Min of Coptos and that of the devotee “*M3ϥt-R*”<sup>78</sup> *s3 P3-di-Mnw*”<sup>79</sup>.

W (Fig. 63, 3): The god Min - whose size is about 2/3 of that of the human figures in the main scene - faces one vertical column of text, where only few signs appear to be still recognizable.

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 these two names are together also in Goyon (1957), 118, and pl. XXXVII, while the latter is mentioned alone also in Goyon (1957) 114, 115 and 119 (this last as son of *P3-di-ntr*). Only the former is present in Ranke *PN*, 123, 18.

<sup>76</sup> The reading of the texts given in the next lines are all the more hypothetical, as they are based only on Burton’s copy.

<sup>77</sup> *P3-di-ϥnh-imn* (?) as in Goyon (1957, 120).

<sup>78</sup> Although the signs are almost clear in Burton’s copy, I can only very cautiously suggest this name (Ranke *PN* 145,5), as following the formula “*di ϥnh w3s*”

<sup>79</sup> Ranke *PN*, 123, 18. This name is also present in our Group 1 (see *supra*) and in Wadi Hammamat (Goyon 1957, 118, pl. XXXVII).

## Group 4:

B (Fig. 68 d): The god Min - whose size is less than half that of the human figures of the main scene - faces a non-royal figure kneeling with raised arms. Between the two is a vertical column of text partially erased, with the name of Min of Coptos and that of the devotees "P3-di-ϥnh, P3-di///".

W (Fig. 63, 4): The god Min - whose size is less than half that of the human figures of the main scene - faces a non-royal figure kneeling with raised arms. The vertical column of text appear to be illegible.

## Group 5:

B (Fig. 68 e): The god Min - whose size is less than half that of the human figures in the main scene - faces a non-royal figure, bowed forward with upraised arms. No text was reproduced by Burton for this group.

W (Fig. 63, 5): The god Min - whose size is less than half that of the human figures in the main scene - faces a non-royal figure, bowed forward with upraised arms. Above the man a few signs were inscribed, but they appear illegible.

Group 6 (Fig. 69)<sup>80</sup>:

The two versions here correspond, with only two small differences (see *infra*). Two columns of texts with the names of two god's wives and divine adoratrices, Amenirdis and Shepenupet, preceded, respectively by "12<sup>th</sup> Regnal Year"<sup>81</sup> and "19<sup>th</sup> Regnal year" and followed by the expression ϥnh.ti (living). In Burton's version, a human figure is also represented on the right (of the viewer) beside the cartouches, bowed forward and presenting a rectangular object (Fig. 70). The interpretation of the dates and the identification of the two priestesses has been much debated. According to previous studies they should be identified as Amenirdis I and Shepenupet I (Kitchen TIP<sup>2</sup> 175-183), while in a recent study Jurman suggested that they are Amenirdis I and Shepenupet II<sup>82</sup>. Even if the latter is true, the cartouches

<sup>80</sup> I wish to thank Rosemarie Klemm for providing me this picture.

<sup>81</sup> Wagner's version gives "Regnal Year 13th".

<sup>82</sup> Jurman (2006) suggests - also on paleographic bases - that the two cartouches were not engraved at the same moment and that the regnal years do not indicate a double date referring to two contemporaneous kings, but to different historical moments and kings, and

were engraved earlier than the great scene, as Shepenupet II is here defined as “living”, while in the great scene she is “deceased”. As to the other groups, I would propose a later date, as they seem to have been “inserted” in the empty spaces between the larger figures.

Group 7 (Fig. 71):

This is present only in Burton’s original drawing and shows the god Amon-Ra (half the size as in the main scene) facing left and receiving an offering from a king. Between them are two (?) short text columns. Both the figures and the inscription are very poorly visible.

According to Schweinfurth’s description, beyond the Pharaonic engravings were some petroglyphs, surely of a later date. Unfortunately his draughtsman did not reproduce them. Some signs are however still visible in Quack’s picture (Fig 61).

As we mentioned above while describing Site 3, the position of this scene at the outflow of a *wadi* leading to a water source is no coincidence. There must be a connection with the exploitation of the area. The cartouches of Amenirdis and Shepenupet clearly prove that inscriptions were engraved on the rock wall to signal the way to the water source even before the 26<sup>th</sup> dynasty. The monumental size of the “main scene”, however, indicates that in the 26<sup>th</sup> dynasty the Egyptian institutions (both the king and the Office of the Divines Adoratrices, the “*pr-dw3t-ntr*”) had a strong interest in the exploitation of the lead mine of Wadi Roussas. In this regard, it is also interesting to note that, although the central god in this scene is Amon Ra (certainly linked to the presence of the Divine Adoratrices), he is depicted only two times, while the other engravings are all dedicated to the god Min. On the base of Burton’s copy, it seems that Min’s epithet was “Biaty” (“of the mines”) only in the main scene, but it is anyway remarkable that it is the same epithet found in the three inscriptions of Wadi Roussas<sup>83</sup>.

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specifically: 12<sup>th</sup> regnal year of Shabaka and 19<sup>th</sup> regnal year of Taharqa. I have still some doubts on this question, but the discussion on this subject and on its implication in the debate on the chronology and identification of the two priestesses lies outside the subject of this paper.

<sup>83</sup> The three texts of the 26th dynasty of Wadi Gasus will be dealt with by the writer in a specific study forthcoming.

### Site 7. Mining site (by I. Bragantini)

One of the most interesting accomplishment of the first, short season of fieldwork was the identification of a new mining site, probably to be related to gold<sup>84</sup>. The site is located on the bottom of a secondary arm of the Wadi Gasus, whose structures occupy at lower altitudes also the sides of the hills that surround and close the bottom of the valley (Fig. 78).

The valley is densely occupied by circular buildings ("huts"), which are also in part scattered along the walls of the surrounding heights. In the present conditions of the site, huts appear extremely simple (Fig. 72): round, single-roomed, they have tapering walls made of unworked, dry rounded boulders<sup>85</sup>. Walls are preserved only for a few courses, but for structural reasons they could not be much higher in ancient times. No traces of roofs are preserved, which if present had to be in perishable material (palm branches?). Neither aggregations of multiple "unities", nor other modifications were recognized in the structures, which appear remarkably uniform. Openings have no lintels or thresholds; no other architectural features, such as niches or benches, are to be observed. The only, noteworthy exceptions are two structures built of slabs, rectangular in plan with niches (or blocked windows) and large doors. The first one lies on the wadi bottom as the major part of the site; the other is located higher and quite apart, so that a controlling function might be envisaged (Fig. 73) (Prickett 1979). The identification of the site as a (gold?) mining sites derives from three large tailings of fine-grained pink powder (quartz) amassed on the site in big dumping: four of them were recorded and measured, their volume being about 450 m<sup>3</sup> (Fig. 74).

On the sides of the slight slope that limits the site towards West, at a certain distance from the "huts", two washing-tables, partly rock-cut and partly built (Fig. 75), offer more firm evidence for reconstructing the

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<sup>84</sup> See *supra*, Hamdan, Abd El-Rahman. The description and the coordinates (26°30'15''N; 33°51'05''E) of the site 5.2.6 (Klemm, Klemm 2013, 84-86, figs. 5.28 and 5.29) indicate that this is a different site in Wady Gasus. I would like to thank Rosemarie and Dieter Klemm for kindly having supplied information before their (2013) publication.

<sup>85</sup> A good comparison is offered by Prickett (1979, 297-299), describing Bi'r Nakhil huts as follows: "none of the structures have enough associated rubble or collapse for the walls to have provided much headroom; nor is there any indication of the nature of the roof supports or the method of covering".

activities which might have taken place here. The east side of the first table is formed by three large granite boulders probably *in situ*, while the other sides are made by large cobblestones of various granites: some being more compact, some others more crumbly. On the northern side, an irregular breach with drainage function opens in the masonry, corresponding on the outer side to a rough basin, limited by stones. Here, under a superficial layer of sand and small pebbles, a further subtle layer of brown micaceous sand could be observed. Throughout the area several elements of round millstones are scattered (several of them in silicified sandstone and dolerite), which are a peculiar feature of sites where mining activities were carried out (Fig. 76).

Pottery fragments which we were able to record point to a (late) Roman chronology: among them, fragments of walls and handles of Egyptian amphorae (“Late Roman 7”) and the diagnostic ring handle of a “Late Roman 6” amphora<sup>86</sup>.

Rims and bottoms of amphorae are virtually absent; moreover, many fragmentary amphorae have been intentionally cut<sup>87</sup>. Poor living on the site can be inferred by the lack of rubbish dumps<sup>88</sup>.

Two fragmentary rims of Egyptian sigillata, imitating 6th c. African Red Slip forms as well as the wall of a shallow bowl with painted decoration, suggest the site have been frequented up to Byzantine period (Fig. 77) (Hayes 1972, 389, fig. 85e). Nevertheless, at least one fragment of a rim datable to the late Pharaonic Period (XXV/XXVI dynasty)<sup>89</sup> was recorded along with two stone elements which might also date back to a period prior to the Roman era. A rather circular boulder (30 × 35 cm circa), with an almost flat upper surface, only slightly hollowed in the middle as a result of a regular rubbing with another hard surface; ~~this~~ could be easily compared with a New Kingdom grinding mill (Klemm, Klemm 2013, 9).

<sup>86</sup> Cfr. Majcherek (2004). A low base, rounded with a low knob, might pertain to the same amphora.

<sup>87</sup> Intentionally cut amphorae are also to be found in Brun, Reddé (2003, 116-117, fig. 139).

<sup>88</sup> The identification of a fragmentary iron pick in the mountains surrounding the site, where opencast mining was likely carried out, must be singled out (on the rarity of metal tools at ancient mining sites see Meyer *et alii* 2003, 38).

<sup>89</sup> Manzo, personal communication.

Another large concave stone element was also recorded, rectangular in shape, clearly recalling concave shaped Ptolemaic gold mill, which were used with a two handled grinding stones (Klemm, Klemm, El Hawari 1996; Klemm, Klemm, Murr 2001; Klemm, Klemm 2013). Although these elements are not enough to testify a wide exploitation of the mine in pre-Roman period, we cannot exclude it at all<sup>90</sup>.

Given the interest of this new site, which we could record only on a two-days visit, we plan to work here more at length in the next seasons of fieldwork, in order to record more accurately existing structures and features.

### Site 7. Mapping (by M. Barbarino) (Figs. 78-79)

The main aim of the topographical survey at the Site 7, covering an area of about 50 sq km, has been to report the location of some the ancient structures and features.

The survey, conducted in two days, was carried out by a total station Trimble M3 and a handheld GPS device Trimble Juno SB.

Considering the magnetic north direction as azimuth direction, an open traverse was run with five temporary control points set by nails into the ground.

The coordinates (UTM 37N) and the elevation (WGS84 m.s.l) of the first control point (V0) of the traverse were obtained by a handheld GPS device Trimble Juno SB (an error of +/-10 m has to be considered).

An amount of 549 points were taken and classified as following:

1. "Ancient structures": outlines, elevation of foundations and top surface of the walls were possible;
2. "Ancient features": outlines and elevation points of not architectonic features;
3. "Elevation points": elevation points of the area;
4. "Traverse": traverse control points.

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<sup>90</sup> On the continuity of gold mines exploitation from Pharaonic to Roman and Byzantine period, cfr. Klemm, Klemm (1994, 211); Sidebotham *et alii* (2008, 215). Furthermore several epigraphic evidence in Wadi Gasus bear witness to long lasting exploitation of the region already in early Pharaonic time (*supra*, 55-58).

The data were processed by Autodesk Autocad 2010 and Esri ArcGis (ArcInfo) 10.

Moreover data about some soil depositional mound classified as “Ancient features” have been processed by Esri ArcScene module in order to obtain TIN (*Triangular Irregular Network*) model and exported as 3-dimensional Multipatch file format.

Multipatch 3D model have been imported into Geomagic Studio 12 in order to obtain the volume of the features.

#### Site 8. Wadi Abu Gowah Spring (by M. Hamdan, Y. Abd el-Rahman)

Heavy monsoonal rains during Quaternary were able to recharge large quantities of water to the underground aquifers which raise the water table. Ground water was discharged to the surface by natural springs through the fractures of the stone, which were active since Pharaonic time, e.g. Bir Abu Gowah, or by shallow water well drilled by ancient people, e.g. Bir Wasif well, probably dating to Roman Era. Shallow water table probably support heavy vegetation cover which flourished in fertile soil due to the richness of the ground water by phosphatic materials leached from surrounding bedrock. The availability of fresh water and heavy vegetation cover represent an optimum condition for Neolithic pastoral groups to visit Wadi Gasus region. Several rock art sites similar to those found at Wadi Hammam were discovered with several human and animal figures (e.g., Sites 4 & 5).

Bir Abu Gowah is located within a small canyon surrounded by Neoproterozoic basalt (Fig. 80). Tufa is recorded in Wadi Abu Gowah as small crust in the basaltic cliff. Tufa is a type of freshwater limestone that deposited at spring sites, waterfalls and in fast-flowing streams (Perri et al., 2012). It extends as a delineation of ancient waterfall on such cliff (Fig. 81). Tufa is composed of calcium carbonates (calcite) and exhibits colloform texture (Fig. 82), which may indicate the derivation from calcification of microbial biofilms. Two  $^{14}\text{C}$  dated samples (for both the organic and inorganic carbonates) of the tufa of Wadi Gowah yield  $18948 \pm 48$  and  $7447 \pm 28$  BP (Hamdan and Brooks, in press).

### Site 9. An ancient (?) Galena Mine (by V. Zoppi)

The site is characterized by several house units, quadrangular in shape (Fig. 83). In two cases, wooden beams still *in situ* were remarked. The occurrence of modern objects clearly indicates a continuous utilization of the area. Opposite to these buildings there are two more quadrangular structures with no wooden beams (Fig. 84).

Behind those, on the other side of the hill, some circular huts were recorded (Fig. 85). In the bigger one (Fig. 86) ceramics and shells occur (Figs. 87-88). Moreover some lithic tools and cores have been observed on the same spot.

On the rocky side of the hill, two pits were located. According to the geologists one of them is modern, while the other could be an ancient well.

In the area between the coast of the Red Sea and the Qena bend were recorded several galena mines (Castel *et alii* 1989), however this site is not present in the list of the identified mine sites although it is located less than 5 km north of the site Umm el Howeitat (site 13 in the list) (Castel *et alii* 1989, 10-13).

### Coordinates of the Sites and Features

Wadi mouth	26°34'16.31"N	34°1'29.91"E
Modern Dam on Wadi Gasus	26°33'56.93"N	34°0'20.46"E
Site 1a: "Graeco-Roman station"	26°32'47.24"N	33°57'33.56"E
Site 1b: <i>Hydreuma</i>	26°32'49.00"N	33°57'43.80"E
Site 2: Square Well	26°32'39.55"N	33°57'58.31"E
Site 3: Min-Biaty Lead Mine	26°31'35.28"N	33°57'51.35"E
Site 4: Great Scene of Psammethicus I	26°30'9.39" N	33°53'43.85"E
Site 5: Petroglyphs with ships (?)	26°30'11.52" N	33°53'18.84"E
Site 6: Petroglyphs with camels and human figures	26°30'9.60" N	33°53'43.80"E
Site 7: Mining Site	26°30'10.21" N	33°52'41.52"E
Site 8: Bir Abu Gowah	26°29'11.08"N	33°53'2.28"E
Site 9: Ancient (?) Galena Mine	26°33'49.90" N	33°56'10.32"E
Site 10: Umm el Howeitat el Bahri	26°33'15.51" N	33°54'29.90"E

Feature 1: Cairn	26°32'40.68" N	33°57'49.32"E
Feature 2: Granite Slab	26°30'26.40" N	33°53'57.60"E

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الكشف عن موقع ميناء الأسرة الثانية عشرة الفرعونية في منطقة وادي جسوس على ساحل البحر الأحمر  
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## FIGURES

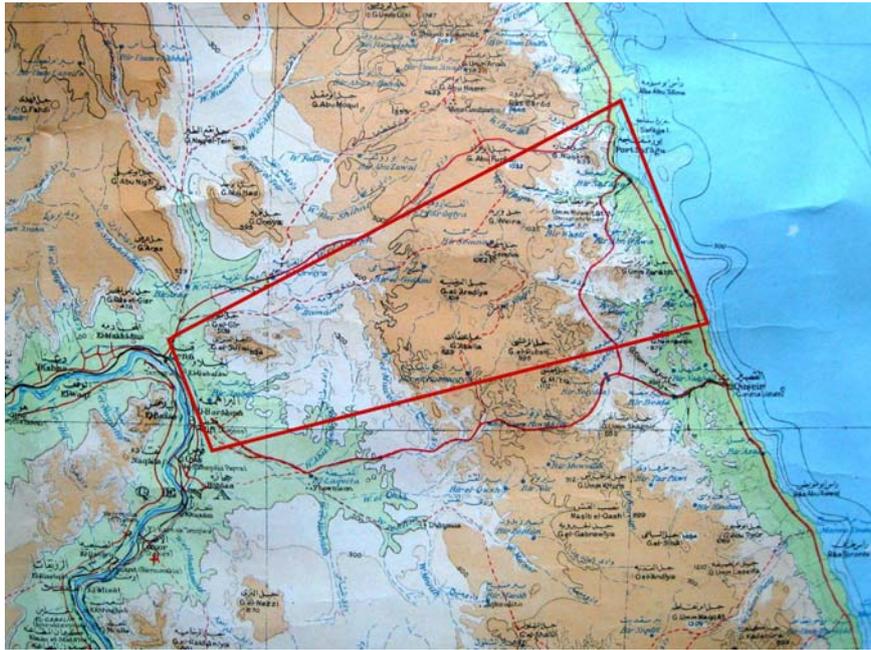


Fig. 1 - The grant of the Italian Archaeological Mission in the Central-Eastern Desert (Map 1:1.000.000, courtesy of Dep. of Geology, Cairo University, [graphic processing Pirelli](#))

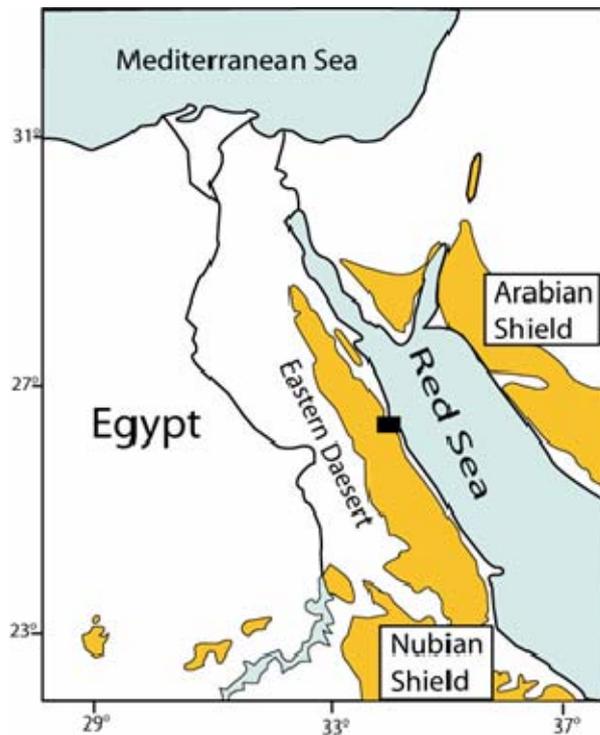


Fig. 2 - The Distribution of Precambrian rocks on both sides of the Red Sea. The black square defines the location of Wadi Gasus area

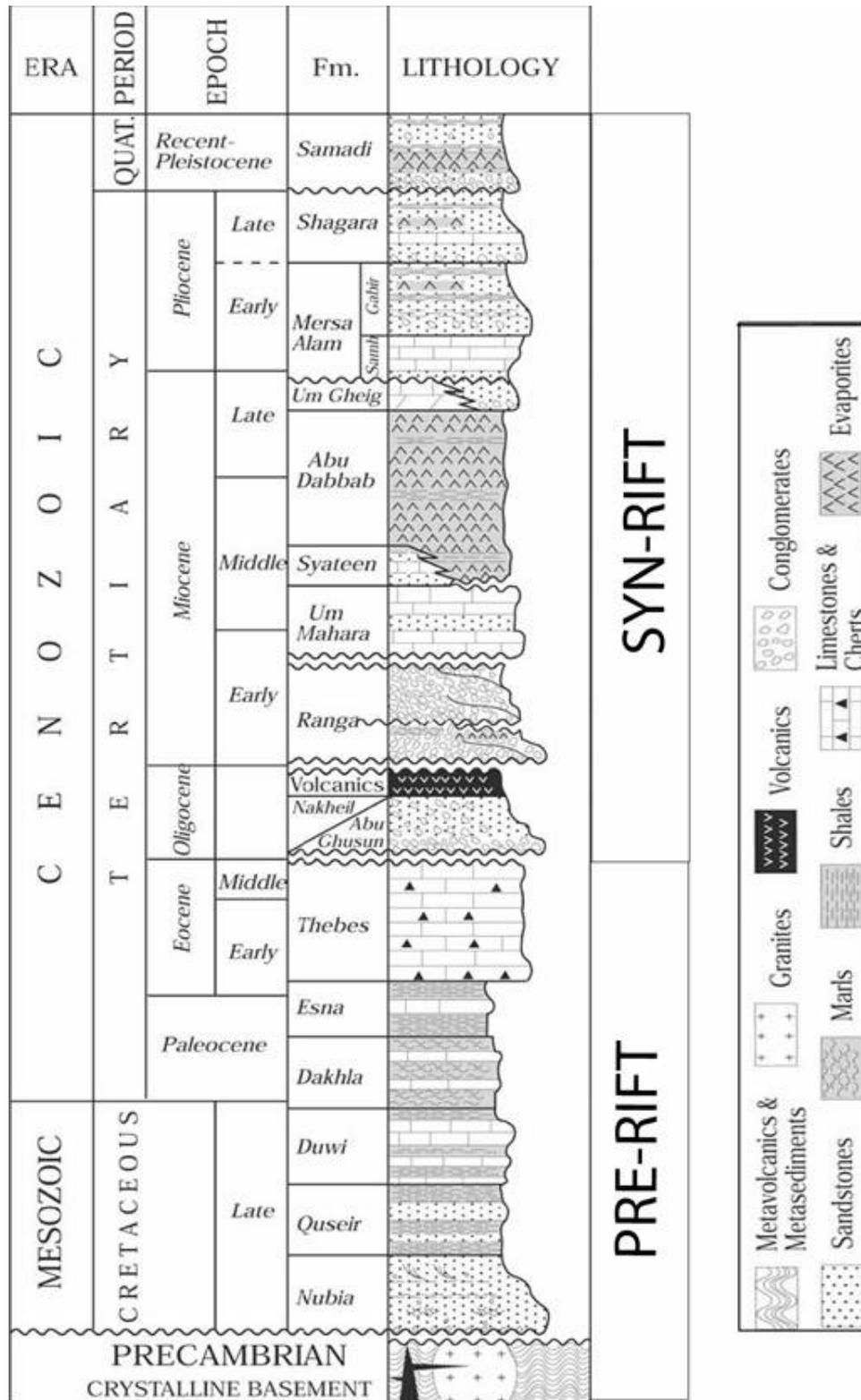


Fig. 3 - Compiled stratigraphy of the north western segment of the Red Sea coast (Khalil and McClay 2009)

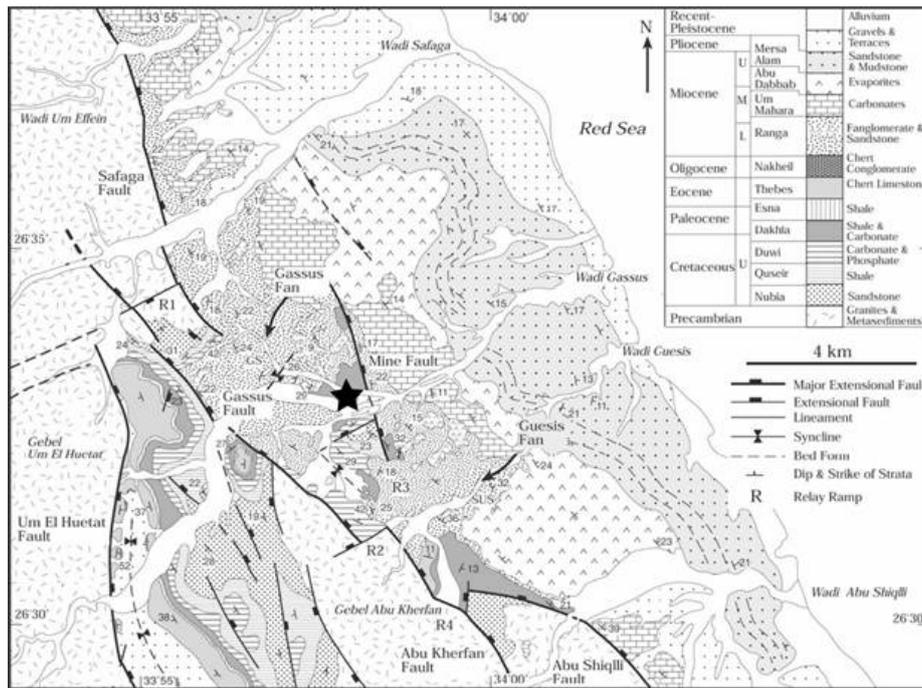


Fig. 4 - Geologic map of Wadi Gasus and surrounding area indicates the location of the Roman station (Black star) after Khalil and McClay (2009)



Fig. 5 - The two Precambrian rock units in the area, the black basaltic rocks to the right and the red granitic rocks to the left



Fig. 6 - Highly fractured granite



Fig. 7 - Exfoliated granites



Fig. 8 - Xenoliths of black fine-grained volcanic rocks in the granitic rocks



Fig. 9 - Polymictic conglomerate of Miocene age



Fig. 10 - Well-rounded granitic cobbles derived from Ranga Formation

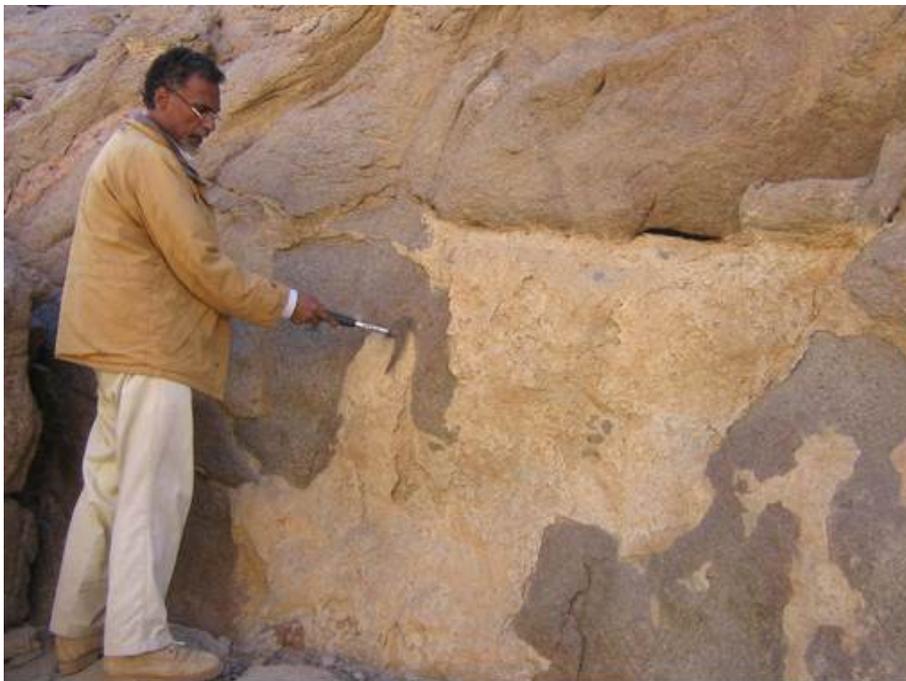


Fig. 11- Pleistocene Tufa crust on granitic rocks



Fig. 12 - Black shale and phosphate-bearing carbonate of pre-rift sequence (Dawi Formation)



Fig. 13 - Ghost City of Umm el Howeitat surrounded by phosphate-bearing carbonate of Upper Cretaceous Duwi Formation



Fig. 14 - Enlarged (X 40) disseminated Galena in Miocene carbonates



Fig. 15 - Worked quartz dump within the granitic rocks



Fig. 16 - Fine-grained tailing in the middle of the ancient gold (?) mining camp, which is located within the granitic rocks



Fig. 17 - Scattered flint in the course of Wadi Gasus



Fig. 18 - Chert nodules within the carbonate of Eocene Thebes formation

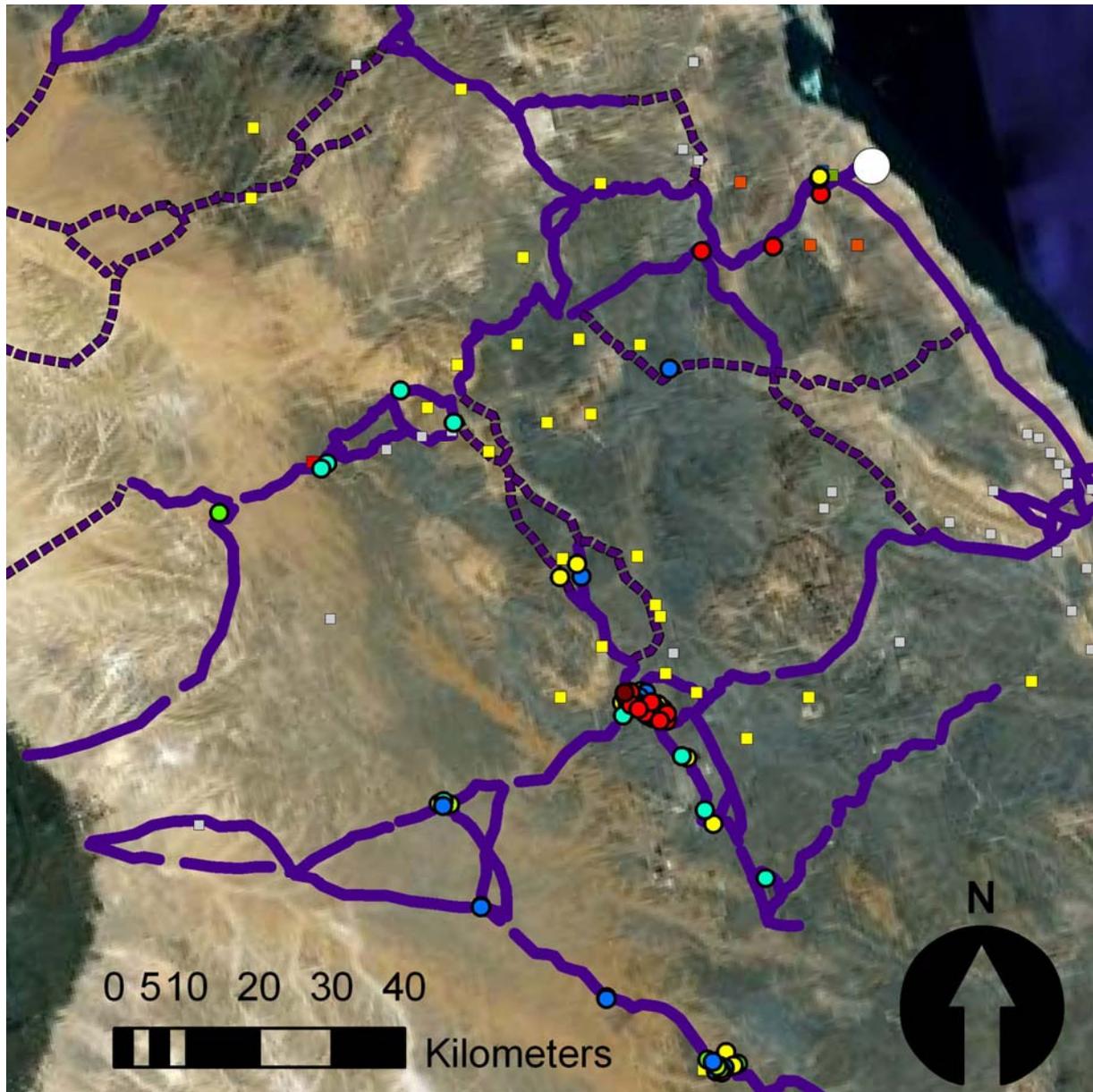


Fig. 19 - Map showing the two main routes crossing the Central-Eastern Desert between the Qena bend and the Red Sea. The white big circle marks the location of Mersa/Wadi Gawasis, the green triangles show the wells, the squares show the mines (yellow: gold, orange: amethyst, green: copper, light green: emerald, blue: galenite, red: iron, violet: lead), the small circles show sites with rock inscriptions (green and light blue: Old Kingdom, yellow: Middle Kingdom, blue: New Kingdom, red: Late Period and Third Intermediate Period)

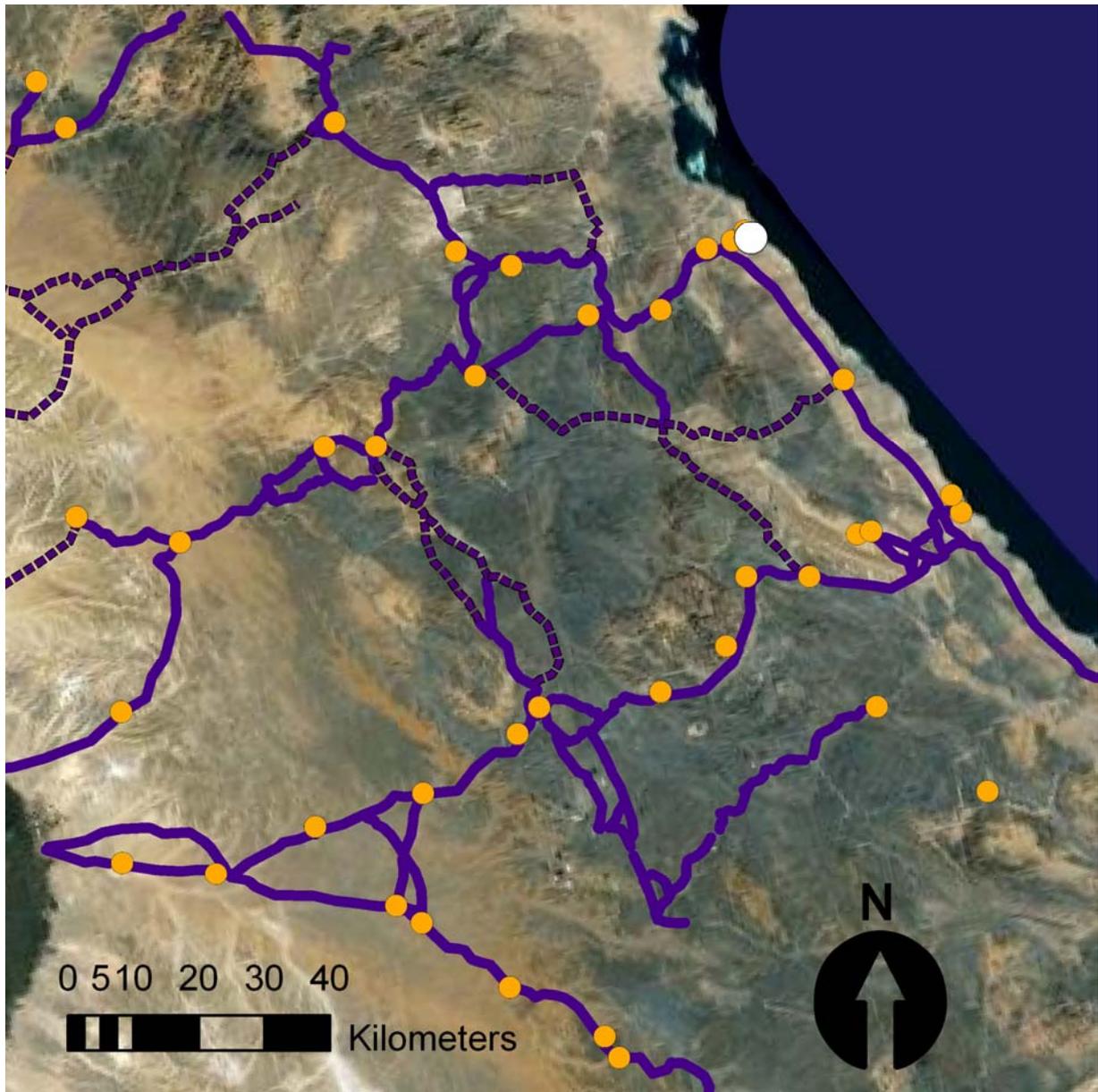


Fig. 20 - Map showing the two main routes between the Qena bend and the Red Sea which may have been used in Pharaonic times and, marked by orange circles, the distribution of the Roman sites

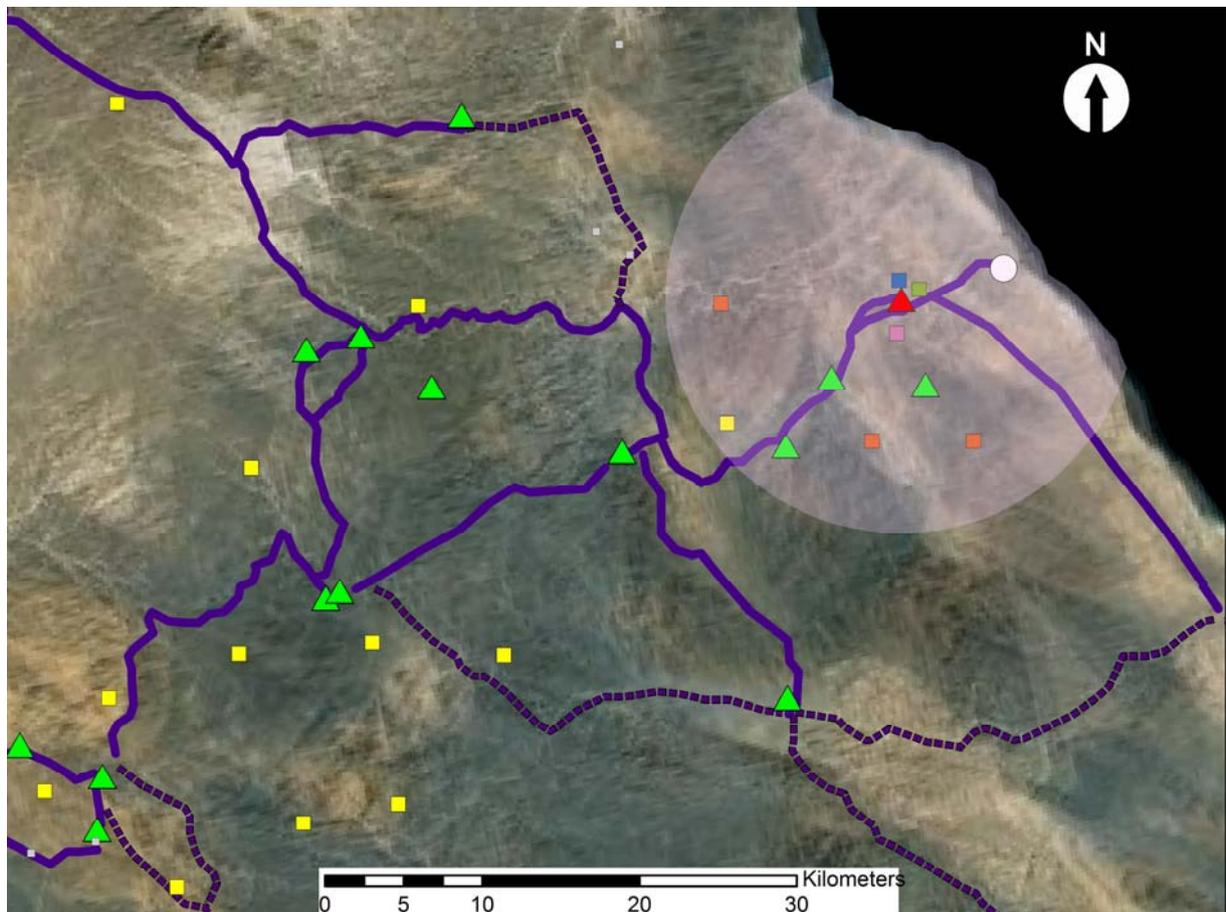


Fig. 21 - Map showing the distribution of resources in the area of the lower Wadi Gasus. The shadowed area shows a radius of ca. 15 km from the site of the “Graeco-Roman” station, marked by the red triangle. The squares mark mines (yellow: gold, orange: amethyst, green: copper, blue: galenite, violet: lead), the green triangles show the wells. The Middle Kingdom harbour of Mersa/Wadi Gawasis is shown by the white circle

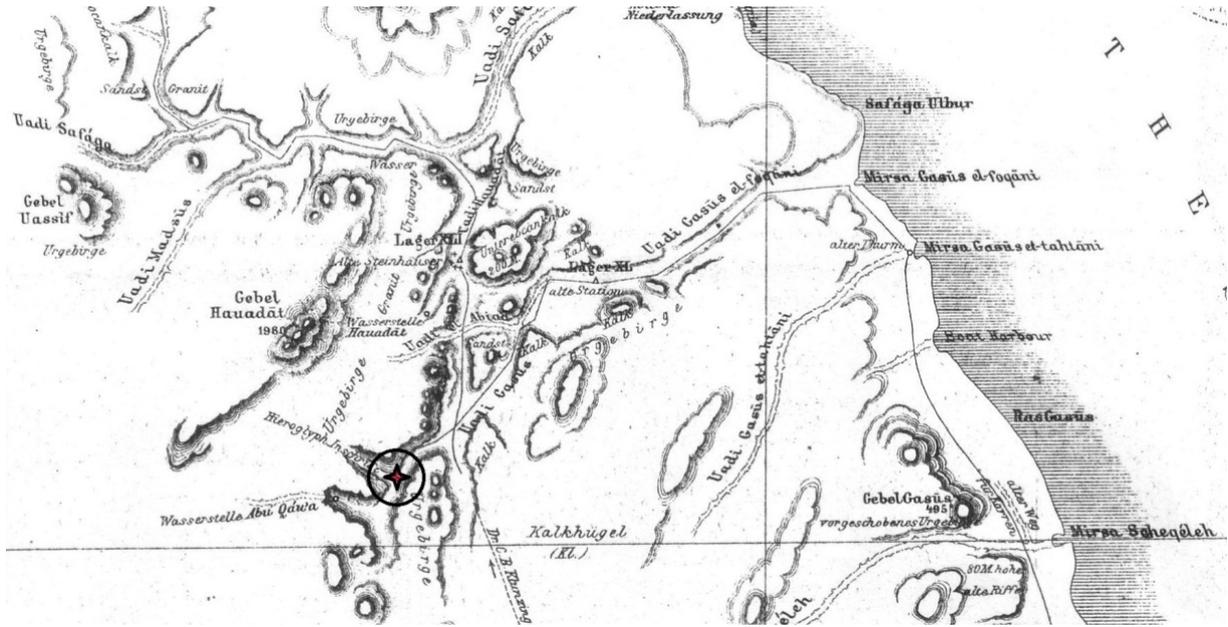
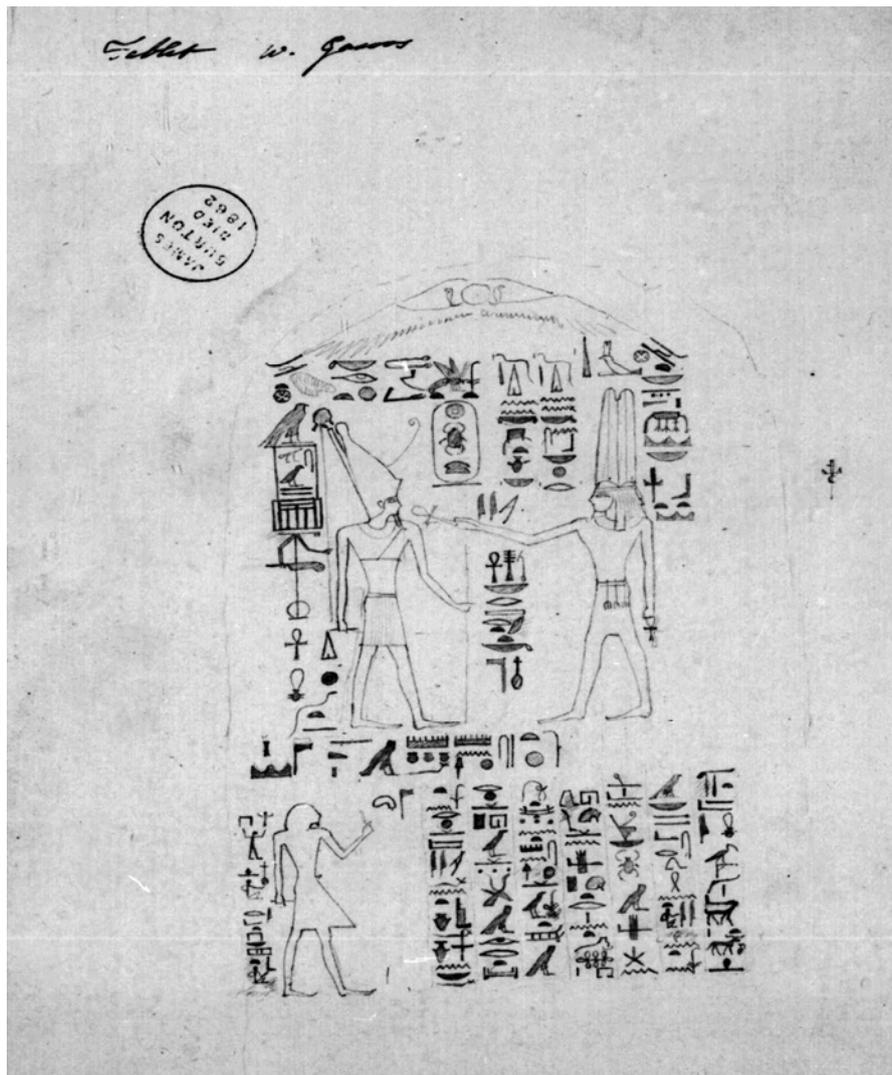


Fig. 22 - Detail of the Wadi Gasis area. The red star indicates the approximate location of Psammethicus I's scene (Schweinfurth 1885, tav. I)



Fig. 23 - Itinerary of the 2012 survey (Google Earth, graphic processing Pirelli)



a



b

Fig. 24 - a) Khnumhotep's "stela" found by Wilkinson in the "station" of Wadi Gasus (Drawing by Burton, Mss ADI 5629, 49); b) back view of the "stela" during restoration (Reproduced by permission of Durham University Museums)

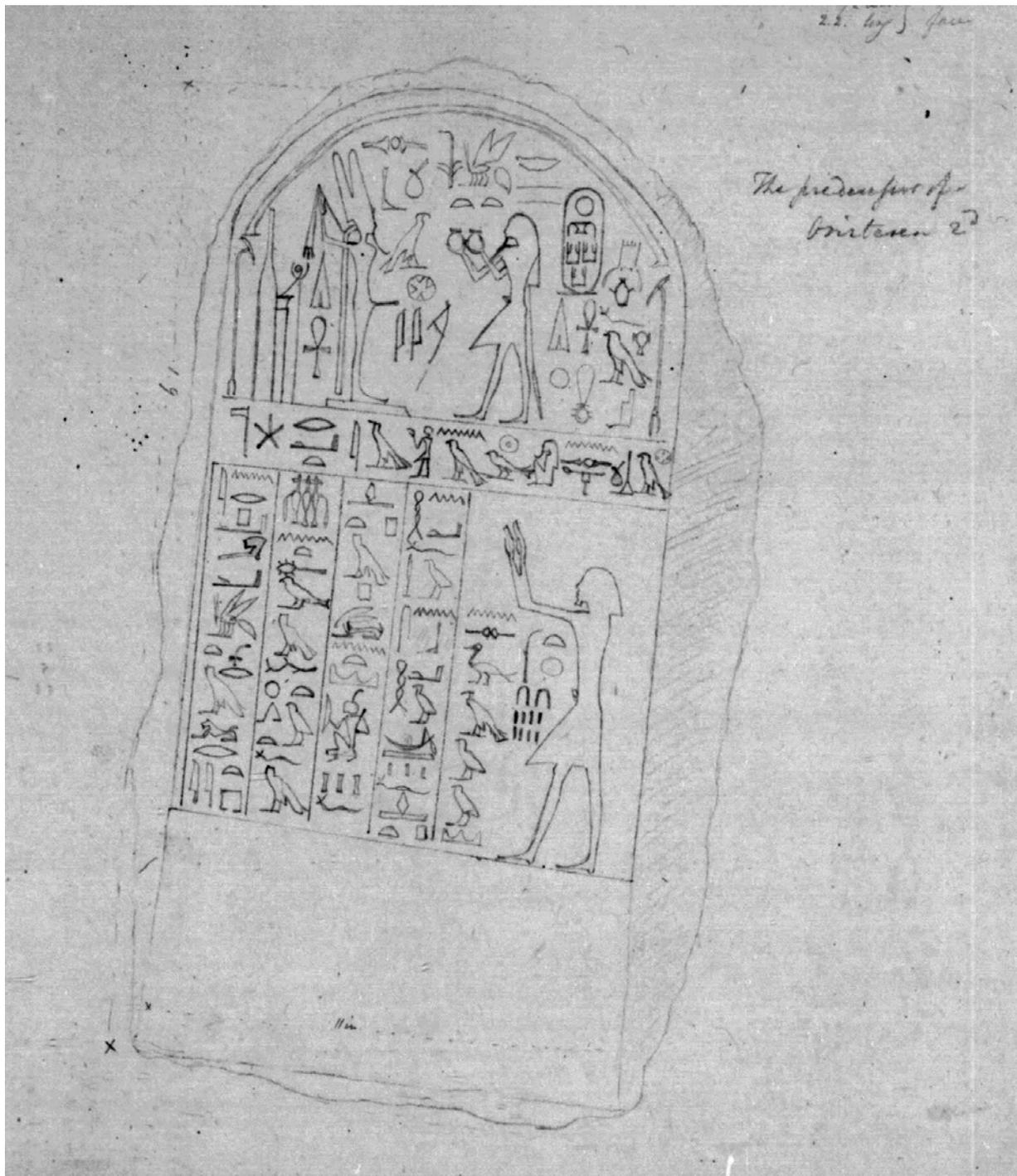
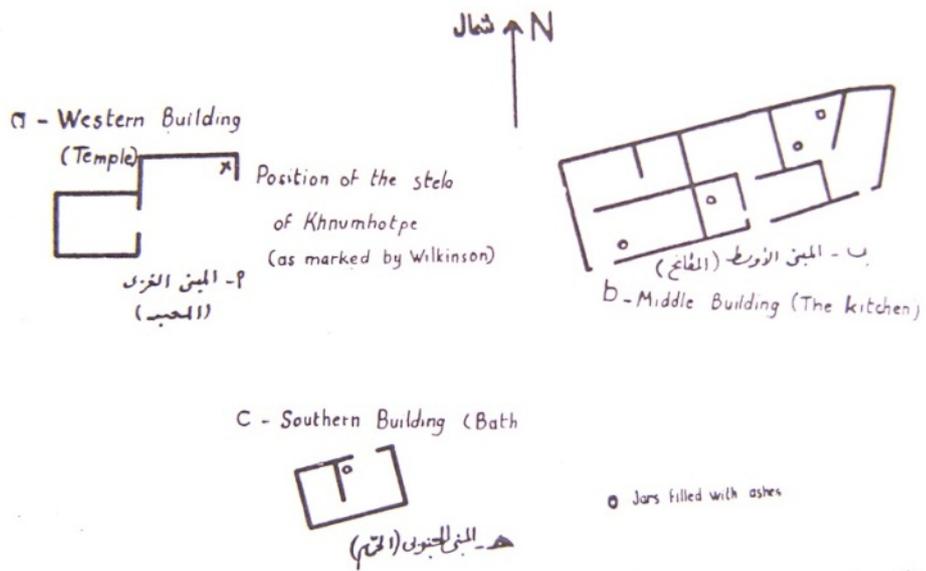


Fig. 25 - Khentykhetywr's "stela" found by Burton (Drawing by Burton, Mss ADD. 25629, 50)



شكل (٦) : مسقط افقى لمجموعة المباني الثلاثة المتجاورة في المحطة الرومانية بعد أن كشفت البعثة عن أساساتها (نراجع ص ١٣).

Fig. 26 - Sayed's plate with the spot of the "stela" found by Wilkinson (Sayed 1978)

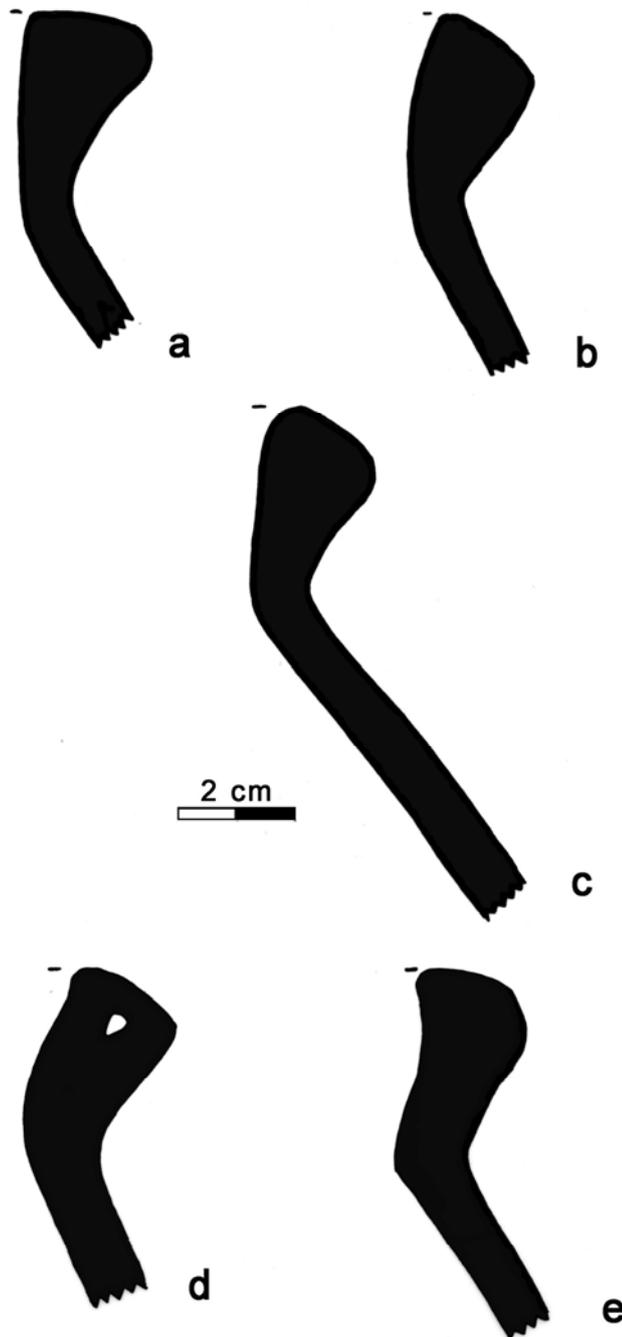


Fig. 27 - Profiles of rims of Marl C big size jars from the “Graeco-Roman” station; a-c: class 1; d-e: class 4



Fig. 28 - Rim sherds of jars from the "Graeco-Roman" station; a: class 1 Marl C big size jar; b: class 7 Marl A3 jar (scale in cms)

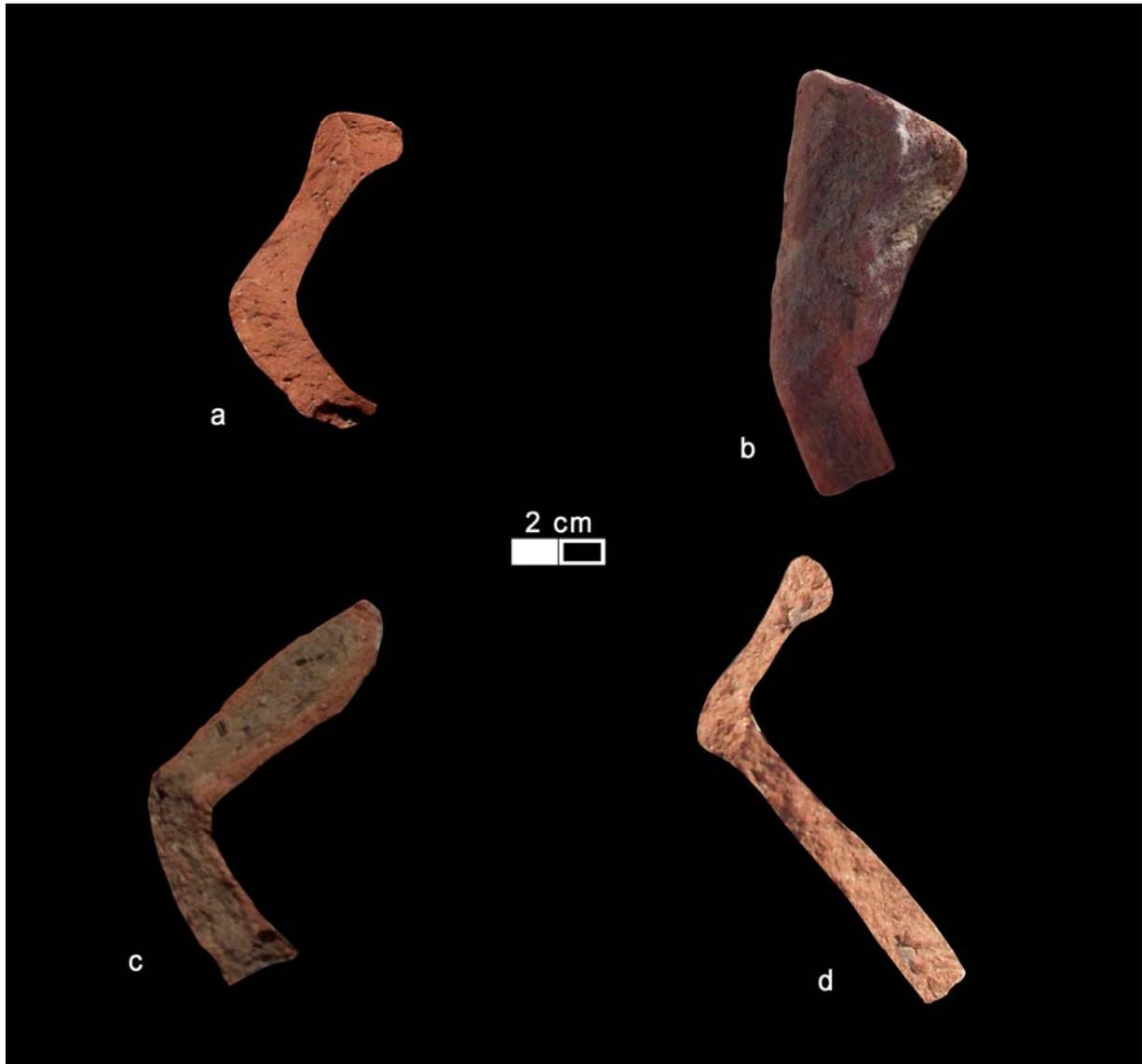


Fig. 29 - Profiles of rims of Marl C jars and bottles from the “Graeco-Roman” station; a: class 2; b: class 3; c: class 5; d: class 6

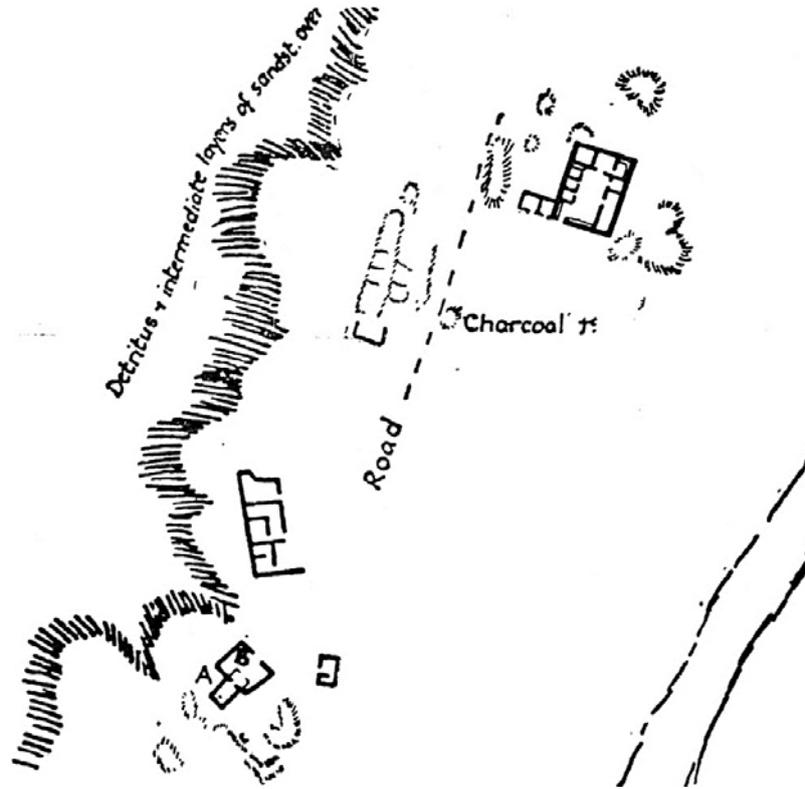


Fig. 30 - "Graeco-Roman Station": plan in Sayed (1978).

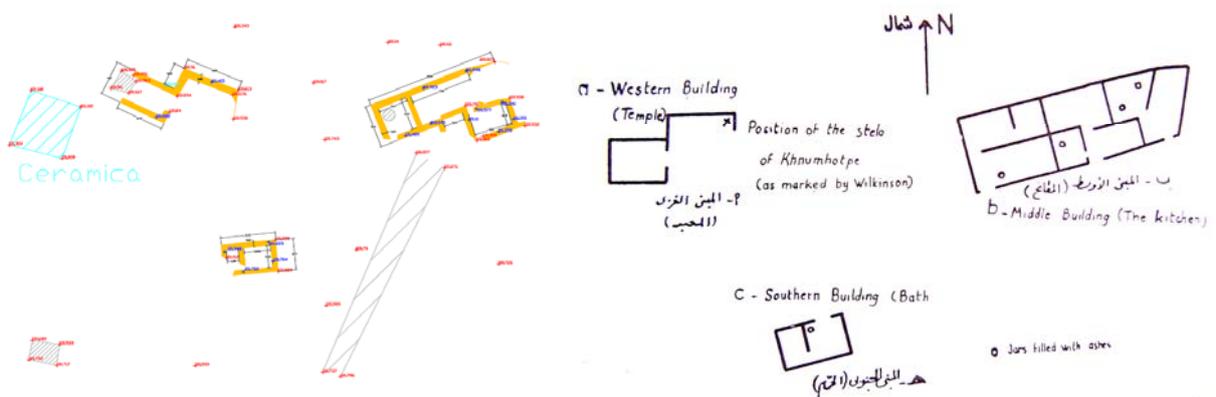


Fig. 31 a, b - "Graeco-Roman Station": western part in (a) its present condition; (b) in Sayed (1978)



Fig. 32 - “Graeco-Roman Station”, Eastern building: detail of the Northern internal wall (photo Bragantini)



Fig. 33 - “Graeco-Roman Station”, Eastern building: detail of the Northern external wall (photo Zoppi)



Fig. 34 - “Graeco-Roman Station”: “Temple”: details of the south-western corner, with saw marks on the basaltic rock (photo Zoppi)



Fig. 35 - “Graeco-Roman Station”, Eastern building: foundation layers exposed by illegal excavation (photo Pirelli)



Fig. 36 - “Graeco-Roman Station”, stone precinct on the wadi bottom (photo Barbarino)



Fig. 37 - “Graeco-Roman Station”, fragment of Roman lamp (photo Pirelli)



Fig. 38 - “Graeco-Roman Station”, fragment of cooking pot with grooved rim (photo Zoppi)



Fig. 39 - “Graeco-Roman Station”, concentration of pottery fragments near the “Temple” (photo Zoppi)



Fig. 40 - “Graeco-Roman Station”, pottery wall with finger marks (photo Pirelli)



Fig. 41 - “Graeco-Roman Station”, pottery walls coated by a vitreous, bluish “glaze” (photo Zoppi)



Fig. 42 - “Graeco-Roman Station”, pottery wall with traces of a gauze under a vitreous glaze (photo Pirelli)



Fig. 43 - “Graeco-Roman Station”: remains of light blue (raw?) material (photo Zoppi)



Fig. 44 - “Graeco-Roman Station”, “Temple”: stones sorted by nature and colour by Sayed, in search of pharaonic remains? (photo Zoppi)



Fig. 45 - Stone anchor of Roman period (photo Zoppi)

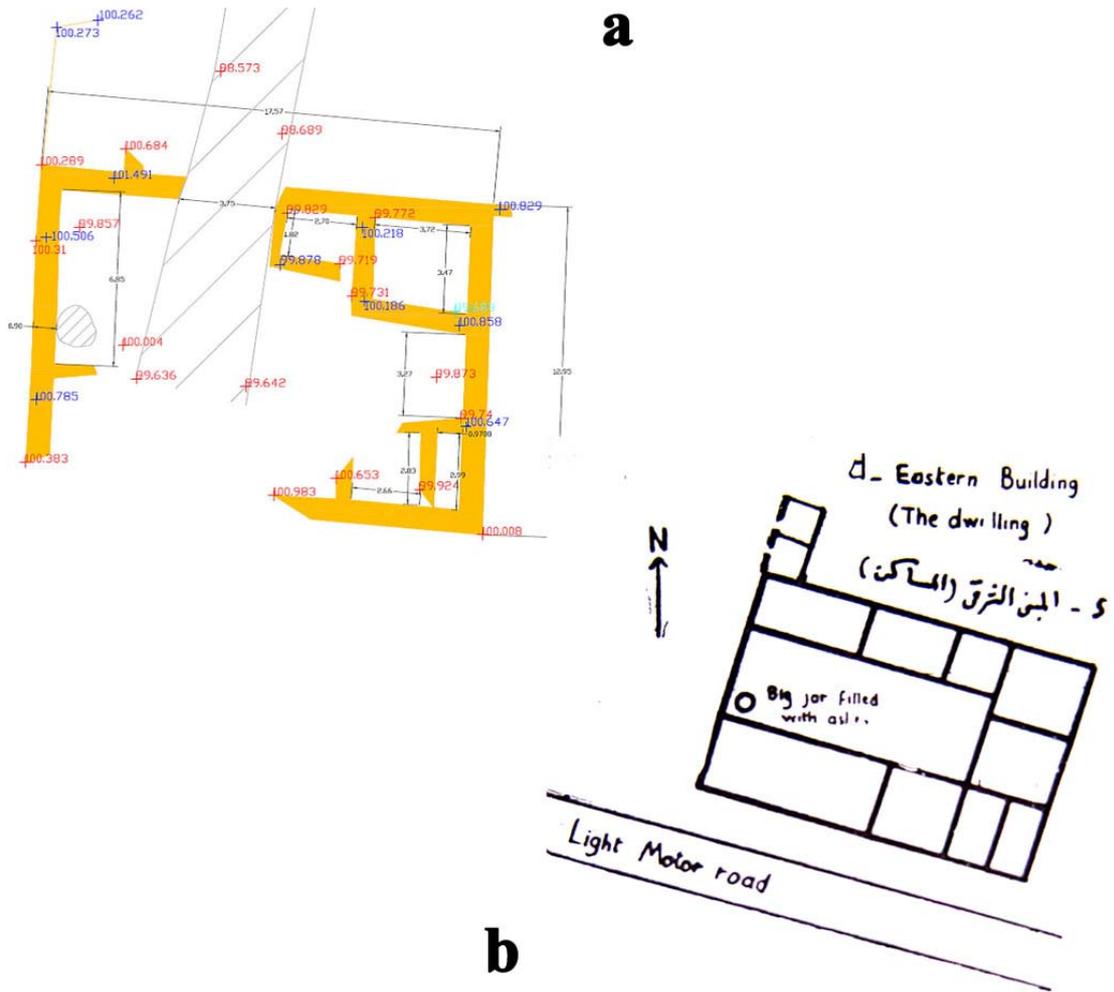


Fig. 46 a, b - "Graeco-Roman Station": Eastern building in (a) its present condition; (b) in Sayed (1978)



Fig. 47 - “Graeco-Roman Station”, Eastern building: traces of a kitchen (?) bench; in the foreground pottery fragments arranged in a round shape (photo Pirelli)

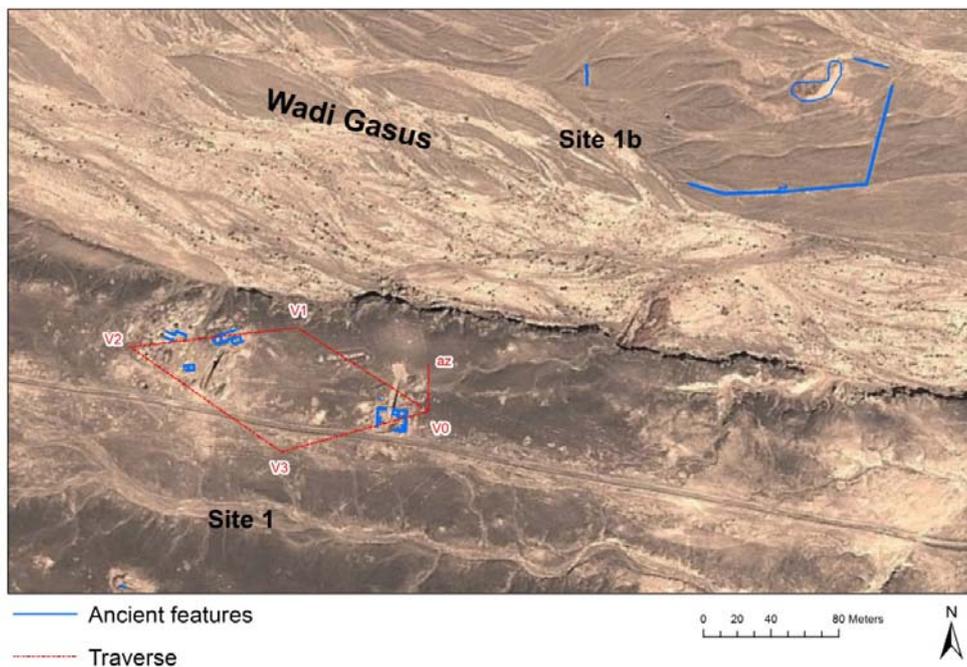


Fig 48 - Topographic survey: control traverse and ancient structures at Site 1 and Site 1b



Fig. 49 - General view: modern structures in the bed of the wadi (in red), modern structures on the plateau north of the wadi (in blue) (photo Zoppi)



Fig. 50 - Remains of a wall, south of the Station, with traces of bulldozing (photo Zoppi)



Fig. 51 - Remains of two *tumuli* (?), plundered (photo Zoppi)



Fig. 52 - Remains of structures, of unknown function, south-west of the Station (photo Zoppi)



Fig. 53 - Remains of *tumuli* (?), plundered (photo Zoppi)



Fig. 54 - Structures on the Northern side of Wadi Gasus (photo Zoppi)



Fig. 55 - Pottery fragments in association with the structures at Fig. 54 (photo Zoppi)



Fig. 56 - One of the shaft of the lead mine, protected by a stone wall (photo Pirelli)



Fig. 57 - The entrance of one of the chambers of the lead mine; the arrow indicates the spot of the short inscription (photo Pirelli 2012)



Fig. 58 - The short inscription at the entrance of one of the chambers of the lead mine (photo Pirelli 2012)

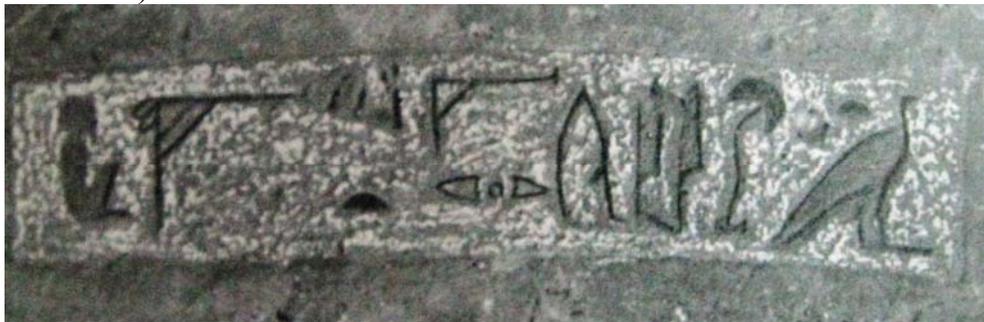


Fig. 59 - The text of the short inscription (photo Tregenza 1951 in Vikentiev 1956)

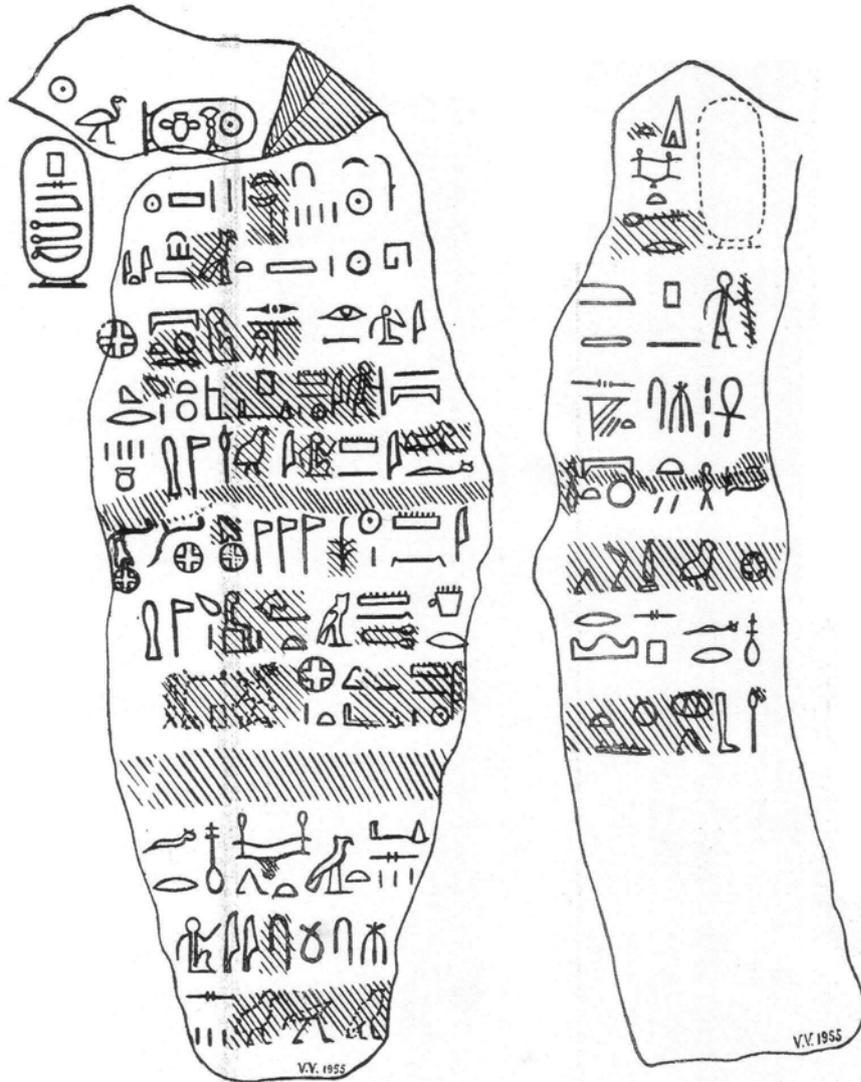


Fig. 60 - Facsimile of the "small stela" copied by Tregenza (Vikentiev, 1956)

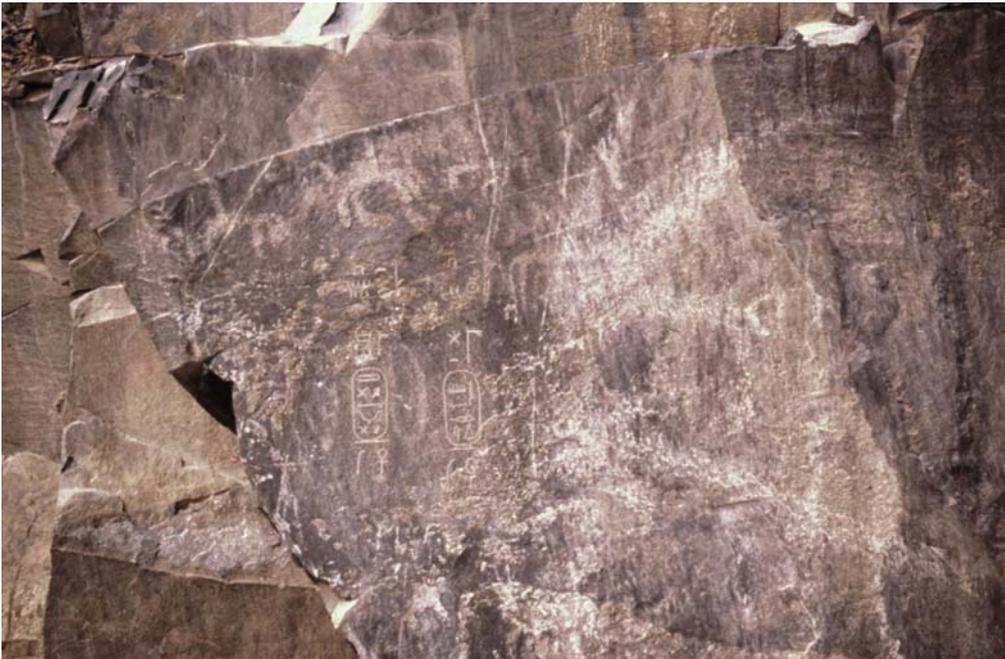


Fig. 61 - Picture of the cartouches of the two "Divine adoratrices"  
(Courtesy by J. F. Quack, photo 1992-1994)

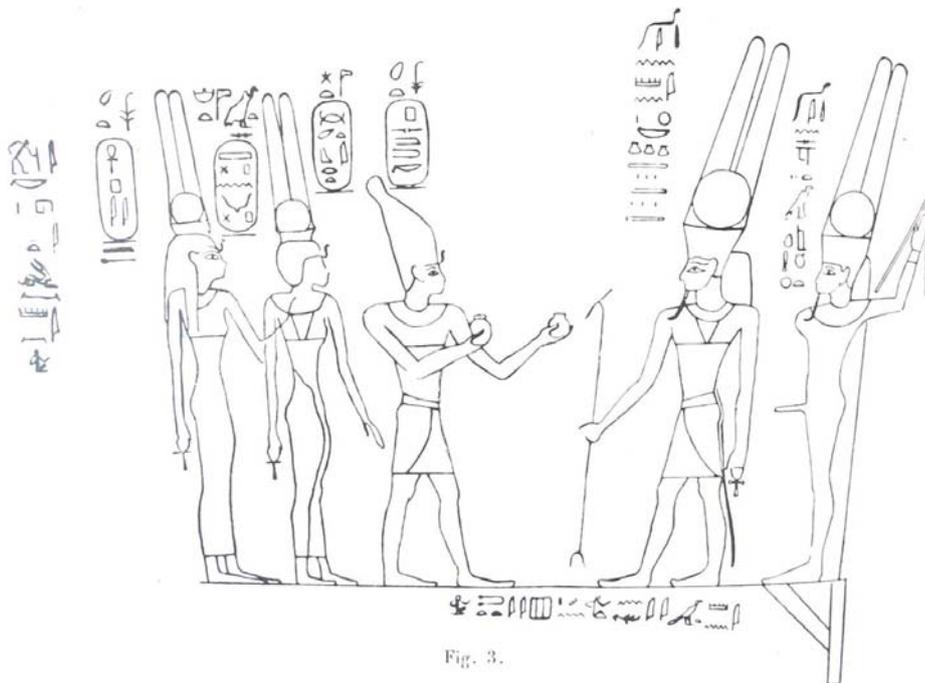


Fig. 3.

Fig. 62 - Meredith's drawing from Burton's Mss ADD. 25629, 48



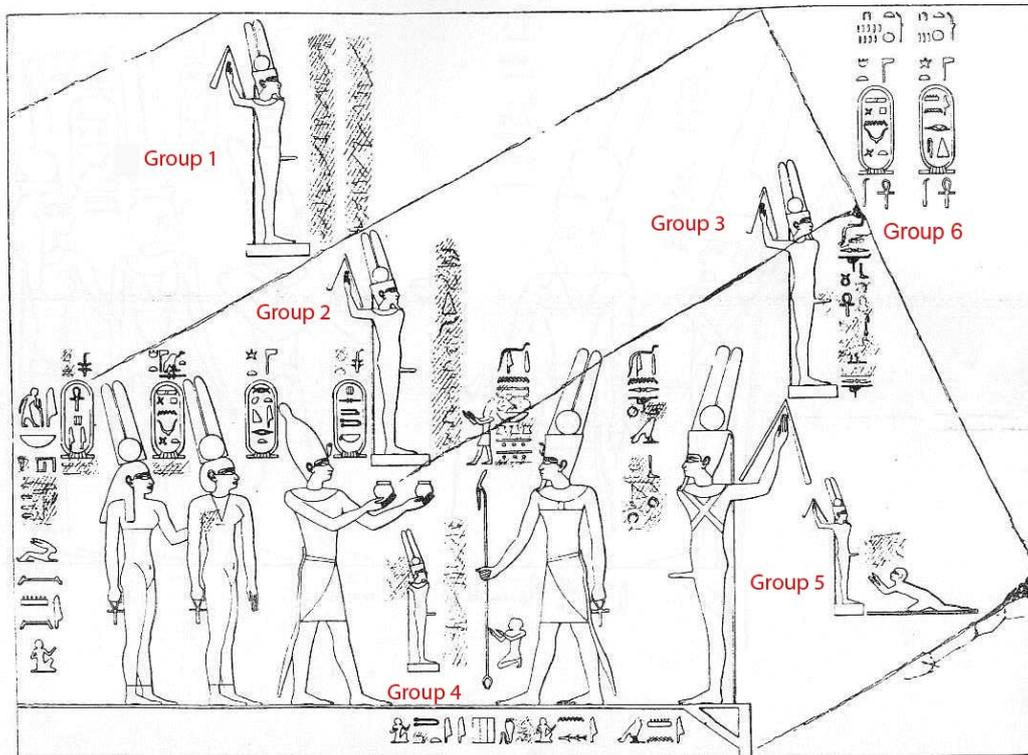


Fig. 63 - Wagner's drawing of the "Great scene" of Psammethicus I in Wadi Gasus (Schweinfurth 1885)

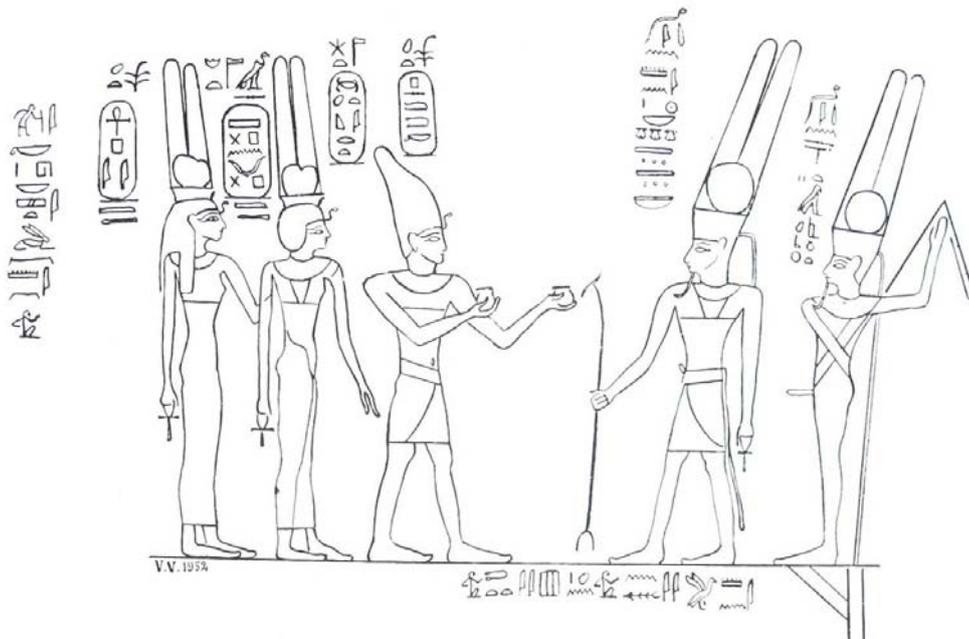


Fig. 64 - Vikentiev's drawing of the "main scene" of Psammethicus I in Wadi Gasus (Vikentiev 1956)



Fig. 65 - Tregenza's picture of the "main scene" of Psammethicus I (Vikentiev 1956)



Fig. 66 - Leclant's picture of the "main scene" of Psammethicus I (Vikentiev 1956)

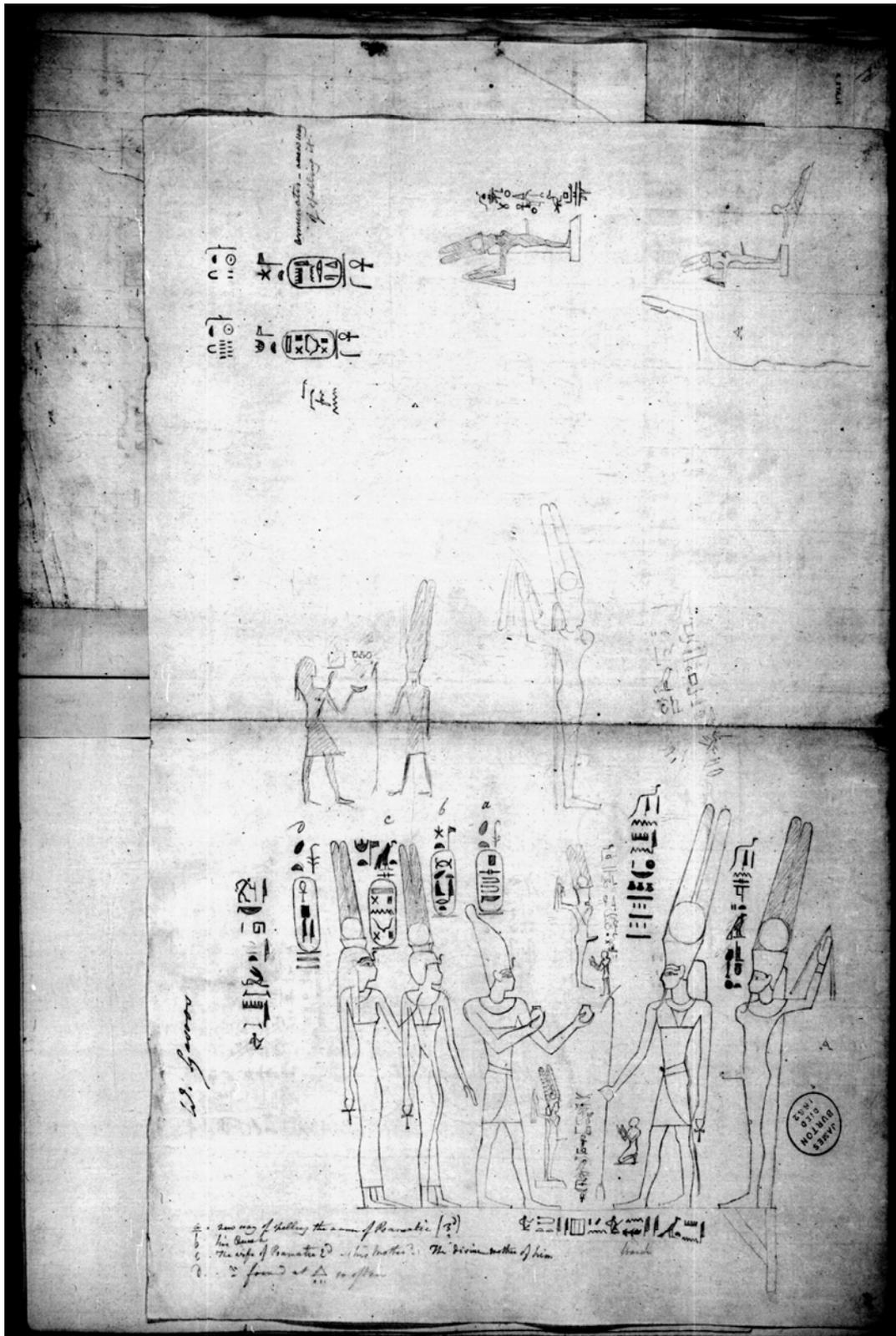


Fig. 67 - Reproduction of two pages of Burton's block-notes (Mss ADD. 25629, 48)



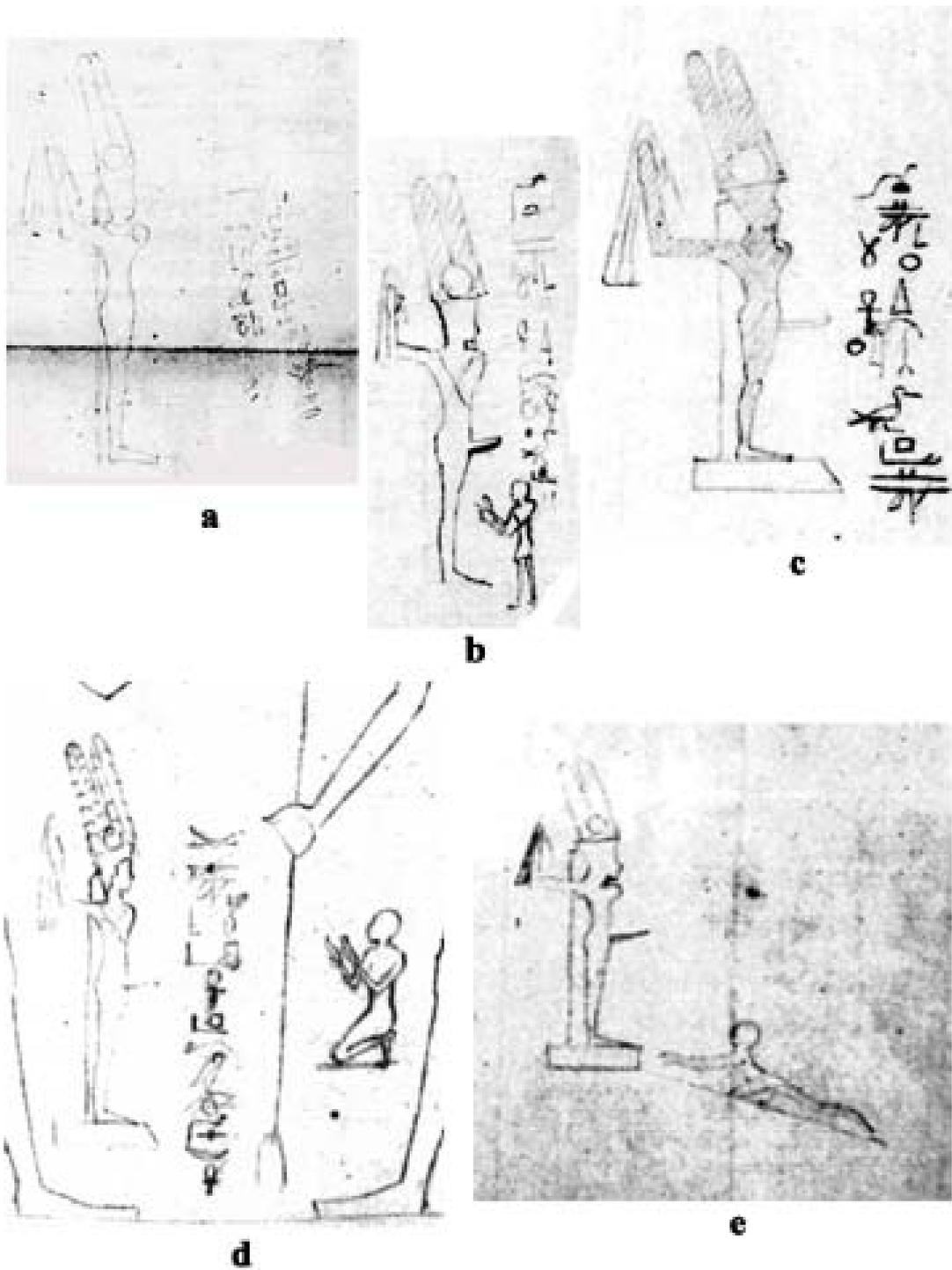


Fig. 68 a-e - Group 1-5 inserted in and around the "main scene" of Psammethicus I (Details from Mss ADD. 25629, 48)





Fig. 69 - Picture of the cartouches of the two “Divine adoratrices” (Courtesy by R. Klemm, photo 1990)

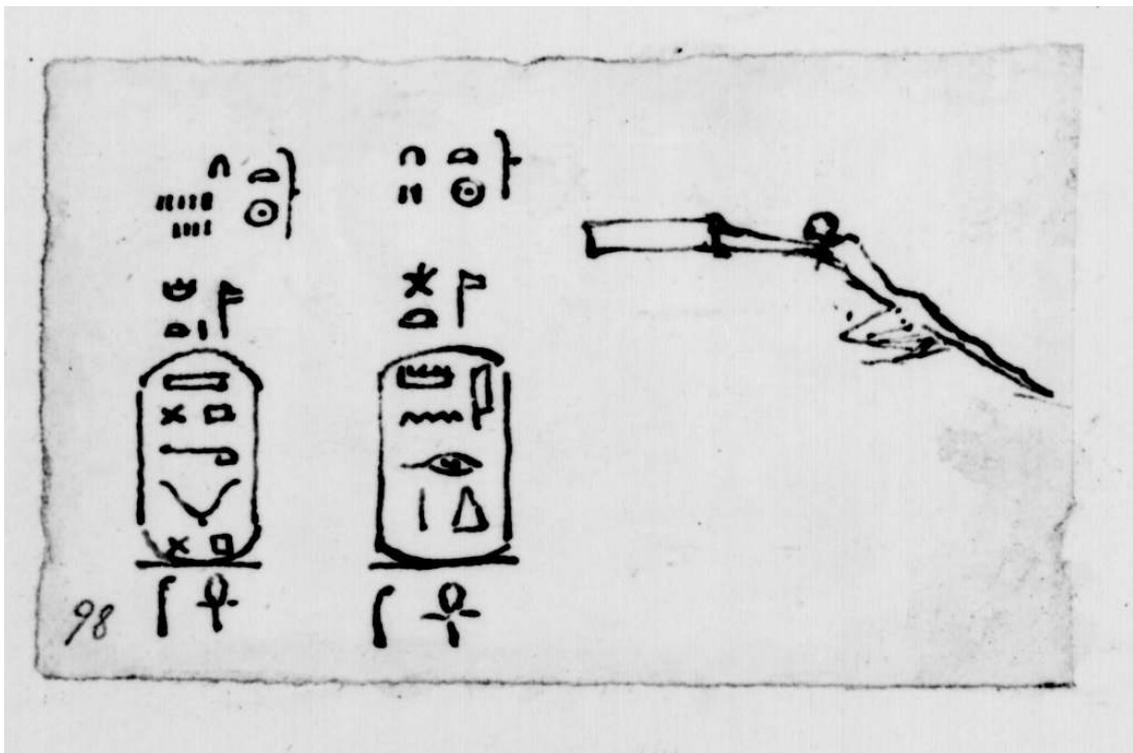


Fig. 70 - Burton's reproduction of the cartouches of the two “Divine adoratrices” (Group 6: Mss ADD. 25654, 98)



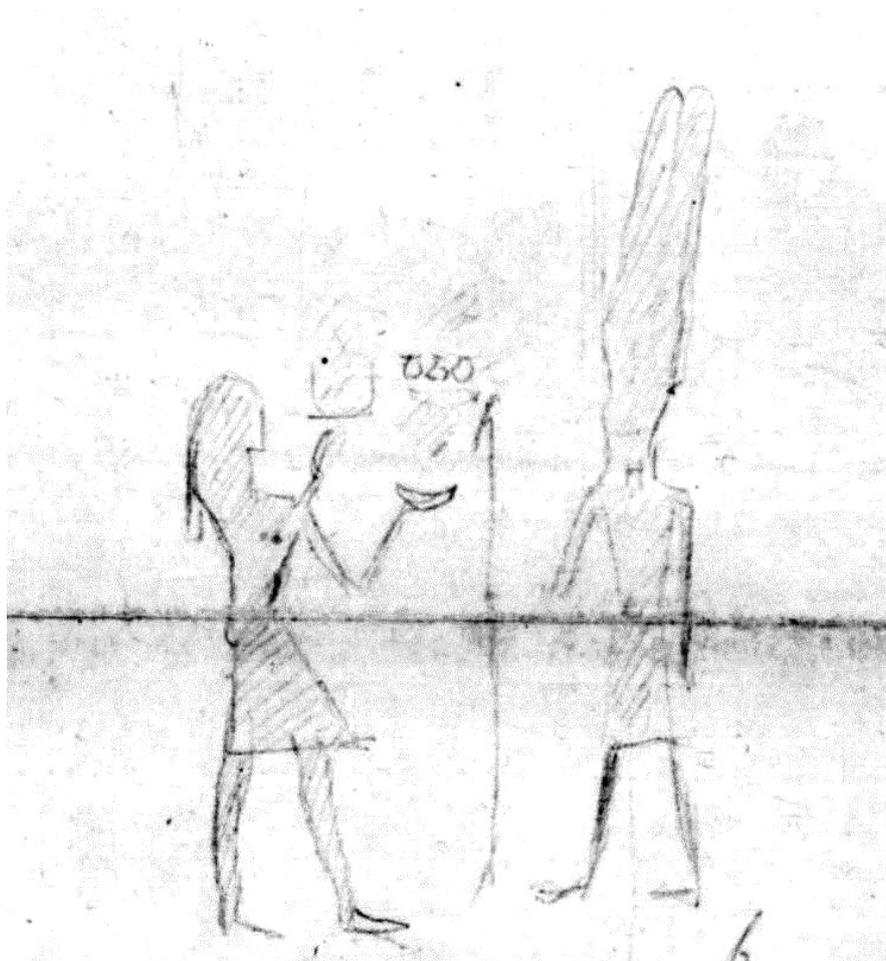


Fig. 71 - Burton's reproduction of the offering scene devoted to Amon-Ra, (Group 7: detail from Mss ADD. 25629, 48)





Fig. 72 - Mining site, round “hut” (photo Zoppi)



Fig. 73 - Mining site, rectangular structure (photo Zoppi)





Fig. 74 - Mining site, tailings (photo Bragantini)



Fig. 75 - Mining site, washing-table (photo Pirelli)



Fig. 76 - Mining site, round millstone (photo Bragantini)



Fig. 77 - Mining site, rim of Egyptian sigillata (photo Bragantini)



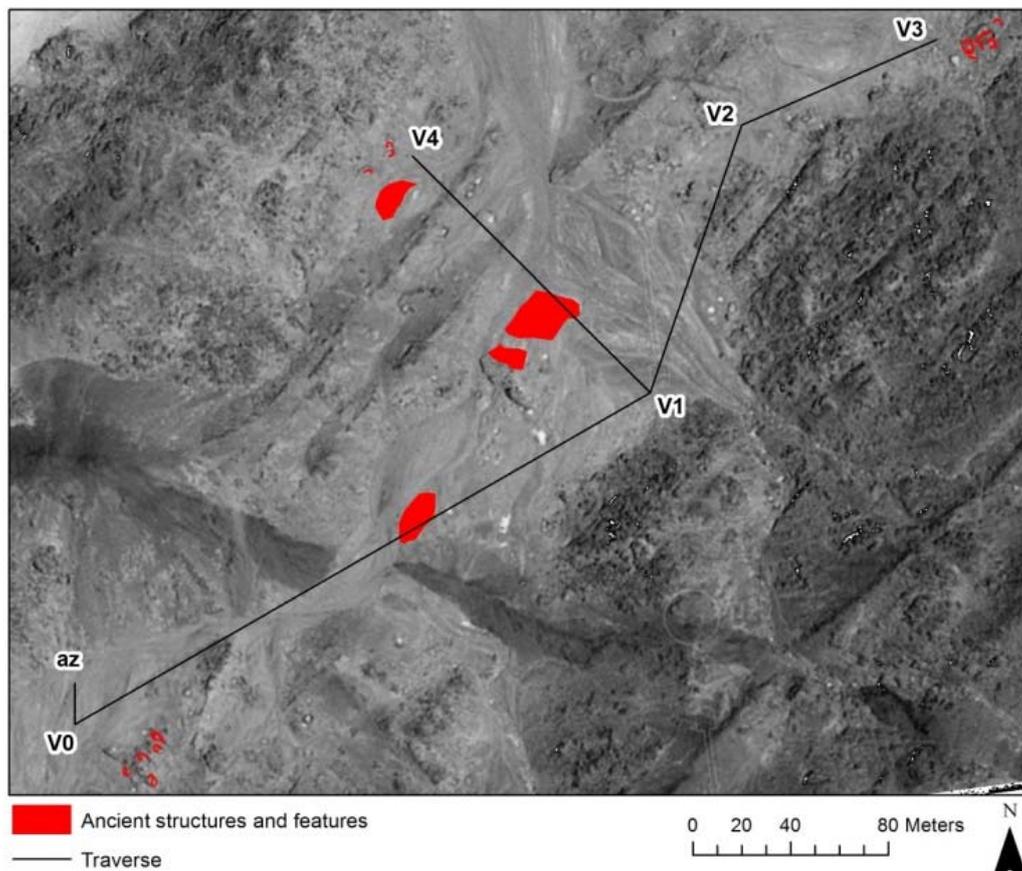


Fig. 78 - Control traverse, ancient structures and feature at Site 7

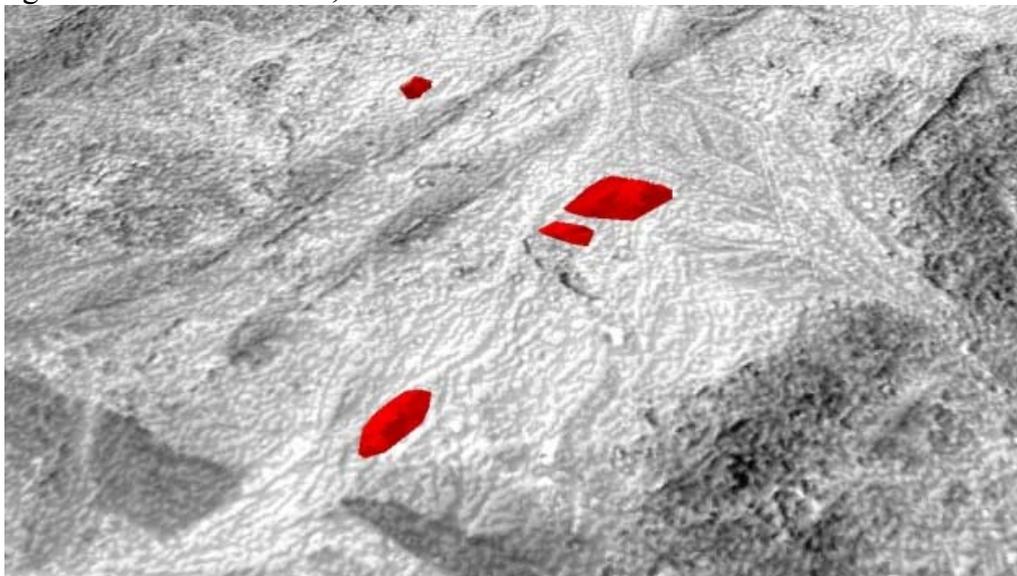


Fig. 79 - 3-dimensional TIN model of the ancient features



Fig. 80 - Small canyon surrounded by basaltic rocks, enclosing Bir Abu Gowah



Fig. 81 - Tufa deposited on the wall of the basaltic rocks in Bir Abu Gowah area delineating ancient waterfall



Fig. 82 - Calcium carbonate of the deposited tufa showing colloform texture of biogenic origin



Fig. 83 - Galena mining site, square houses with wooden beams (photo Zoppi)



Fig. 84 - Galena mining site, view of the square houses along the hill (photo Zoppi)



Fig. 85 - Galena mining site, view of the circular huts (photo Zoppi)



Fig. 86 - Galena mining site, general view of the huts area (photo Zoppi)



Fig. 87 - Galena mining site, some examples of shell found on the site (photo Zoppi)



Fig. 88 - Galena mining site, some examples of ceramic found on the site (photo Zoppi)