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Praying in the dark: religious practices in the emerald mines of the Eastern Egyptian Desert between the Early Roman and the Late Antique period

Abstract: This paper focuses on the religious practices in the Roman emerald mines of the *Smaragdos*. The recent archaeological work in this area, corresponding with the current Wadi el Gemal National Park in the Egyptian Eastern Desert, is showing the relevance of sacred spaces and ritual activities in the life of the mining communities in this region. We will offer a first approach to these religious activities, analysing the temples from the Sikait settlement and several recently discovered elements found in the emerald mines in a wide chronological framework going from the Early Roman until the Byzantine (or Blemmyan) period.

Key words: *Smaragdos*, emerald mining, Wadi Sikait, religion, Blemmyes.

The *Smaragdos* was an area located in the Egyptian Eastern Desert that several classical sources identified as the only known region within the Roman Empire where emeralds could be extracted.¹ When we say emerald, we refer to the chromium and/or vanadium variety of beryl, an aluminium-beryllium silicate that in its green coloured version has attracted commercial interest since ancient times (Schwartz, Schmetzer 2002, pp. 74-78). The archaeological work conducted since the end of the 20th century in the Eastern Desert, mainly directed by S. E. Sidebotham from the University of Delaware, was able to identify the *Smaragdos* with the current area of the Wadi el Gemal National Park (fig. 1).² In this zone, an extensive network of archaeological sites was documented, most of them being related to the beryl mining operations. Among them, the most impressive is the settlement of Sikait, which has focused most of the archaeological interventions so far, including topography of the site, detailed survey and 28 excavated trenches.

Archaeological work in Sikait was started by the team led by S.E. Sidebotham and, since 2018, was resumed by the Sikait Project, a Spanish-Polish mission based on the *Universitat Autònoma de Barcelona* with the main goal of getting a better understanding of the extraction and trade of emeralds in antiquity. So far, apart from the trenches conducted in Sikait, the team has done an extensive survey work of the emerald mines that has documented 15 emerald mining areas and over 330 underground mines, together

¹ Authors such as Strabo (Geog. 17.1.45), Pliny the Elder (NH 37.17.65, 37.18.69), Claudius Ptolemy (Geog. 4.5.8), Olympiodorus (FHN 3.309), the fourth-century monk and bishop Epiphanius (FHN 3.305) and the sixth-century monk Cosmas Indicopleustes (Christian Topography 11.21).

² For a summary of this work, see: Rivard *et alii* 2002; Sidebotham *et alii* 2004; Foster *et alii* 2007; Sidebotham *et alii* 2008; Sidebotham *et alii* 2019.

with tens of infrastructures dedicated to allowing the miners to work and live in such an extreme environment.³

This paper will focus on one of the aspects that has been increasingly revealed during these last years of work: the religious practices and cult activities of the mining communities living in the *Smaragdos*. Our work has shown that this aspect supposes one of the best-preserved pieces of evidence about the features of the miners' life. We will try to offer an approach to it in two different frameworks: the site of Sikait and the emerald mines.



Fig. 1: Position of Sikait in Egypt (source: Sikait Project).

1. Religion and devotion in mining contexts

However, before approaching the specific case of the Wadi Sikait area, we must do an overview about what we know of religious life in the mining regions. It is one of the most interesting aspects of the mining communities, as the challenges and dangers of the extractive operations make them especially devoted to the gods and goddesses that could offer protection against these perils and fortune in the search of the mineral veins.

This relevance has attracted the interest of several researchers. However, for the ancient period analysis has normally focused on other aspects such as the technological, juridical,

³ Regarding the work of the Sikait Project, see: Oller *et alii* 2019; Oller *et alii* 2021a; Oller *et alii* 2021b; García-Dils *et alii* 2021; Oller 2022a; Oller 2022b; Oller *et alii* 2022a; García-Dils *et alii* 2022.

or commercial spheres and it is not usual to find general studies regarding religiosity in mining communities. More typical is the research concerning more recent periods and, for instance, we can highlight the studies about the veneration of the so-called “colliery gods and goddesses”, related to coal mines,⁴ or the ones focusing on South America mines, with especially significant cases such as the veneration of divinities like Pachamama or “el Tío” in the Potosí mines (p.e. Absi 2005, pp. 87-133).

For the classical period, archaeological, epigraphic, and literary sources offer a rich amount of data that allows to create a general idea about the religious practices and cult activities in mining areas. The main belief was that the earth, where the mineral could be found, was identified with a Mother Goddess related to fertility; but fertility understood in a general sense, not only from an agrarian point of view, but also concerning mineral richness (Munday 2016, p. 2). Thus, this mother kept in her womb all the metals and precious stones that were ambitioned by humanity. While entering the mines to extract the minerals, the miners were, symbolically, penetrating and exercising violence on the goddess and that is why different cult activities were required before doing so, to avoid the punishment.⁵ It is also interesting that this goddess or other gods related to the mining operations also had some connections with the underworld, as they exist in the same part of the world, in a region closer to the dead than to the living (Domergue 1981, p. 91). In fact, a general aura of mystery surrounded the mining operations, partially due to the lack of geological knowledge that avoided a specific understanding about the processes that originated the mineral veins. Regarding that, a common belief was that these minerals were constantly regenerating, in a permanent cycle that, again, needed divine intervention to continue.⁶

The mines are, then, a mysterious and dangerous space where a person could find wealth, but also death. They are, therefore, an ideal environment for extremely devoted communities that relied on their divinities for assuring their safety and the success of the mining operations. All these features considered, it is not strange that specific gods and

⁴ Without being exhaustive, we can highlight recent studies about coal mines from China (Yang 2022) or India (Kumar Nite 2016). There are also different studies regarding the religious life of European modern mining communities, for example in the tin mines of Cornwall, England (Rule 1998).

⁵ In a perception that overcomes a single culture and can be found along history in several civilizations, as M. Eliade already pointed out (Eliade 1962, p. 41-55).

⁶ Domergue 1981, 91, with several examples from the classical sources. It is also a common belief in other areas or periods, for example, in the case the Potosí mines with Pachamama as a regenerating goddess: Absi 2005, pp. 90-91.

goddesses were especially venerated in mining communities, basically chthonic divinities associated with fertility and the underworld. Thus, cult activities in mining regions from the Roman Empire were related to Liber and Libera, Silvanus, Diana, Ceres, Dis Pater, Vulcan, Apollo or, especially, Terra Mater (Domergue 2008, pp. 25-26). Of course, other divinities can be found, linked with other relevant aspects of the mining operations - Neptune with the water, for instance- or with relationships that are not so clear and that can be interpreted in a more official way, as the case of Jupiter (Dusanic 1999, pp. 134-136).

Evidence for the veneration of these divinities can be found in different structures or spaces, such as temples, shrines, or altars, with special importance for the epigraphic record that offers the best examples about these religious practices. We are not interested in offering an overview of these testimonies around the classical world, as it overcomes the goal of this paper. Instead of that, we will focus our interest on the Egyptian Eastern Desert in the imperial period, as it is the geographical and historical context of the *Smaragdus* emerald mines. In this zone, we have several productive regions that provide interesting evidence about religious activities. For instance, probably the best-known examples come from the imperial quarries, dedicated to the extraction of quality stone for the empire. *Mons Claudianus* preserves one impressive religious complex devoted to “Zeus Helios Great Serapis”, and probably other gods (Sidebotham *et alii* 2008, p. 122), with a chronology from the beginning of the 2nd century AD. In fact, thanks to a dedicatory inscription of the *cohors II Ituraeorum* to this Zeus Helios Great Serapis, we know that the exploitation of the quarries in the *Mons Claudianus* ceased before the middle of the 3rd century AD, during the rule of Alexander Severus (*O.Claud.* inv. 7363; Peacock 1992, p. 9; Hirt 2010, p. 12).

The other major quarrying area, *Mons Porphyrites*, is even more spectacular regarding cult evidence, with the presence of, at least, three temples with their corresponding inscriptions, all of them created between the 1st and 2nd centuries AD. The most impressive of them is a temple to Serapis in the main settlement of Wadi Ma'mal, but there is another one dedicated to Isis and, already in the Lykabettus quarries, a third one dedicated, again, to Isis Myrionomos (Sidebotham *et alii* 2008, pp. 119-121). Finally, we must highlight the recovery of an interesting inscription, in a building within a satellite quarry -the Bradford quarry-, of a certain *C. Cominius Leugas*, discoverer of the quarrying area (*SEG XLV 2097 = AE 1995: 1615*). This exceptional epigraphic document, inscribed

on an elegant black porphyry stele, informs that, on 23 July 18 AD, he dedicated a sanctuary here to the gods Pan-Min and Serapis, for the health of his children. This testimony, the first to record the term porphyrites (πορφύριτης) in the Roman world as a whole, is evidence that exploitation would have begun at that time, at the beginning of Tiberius' rule (Van Rengen 1995; Maxfield, Peacock 1998, p. 185; Hirt 2010, pp. 20, 221-222).

Also concerning the stone quarries, we must mention the rock shrine dedicated to the god Min, the *Paneion* in the Wadi Hammamat. Inside and near this shrine were documented tens of hieroglyphic, hieratic, Demotic and Greek graffiti, along with figure drawings, composed by expedition leaders, workmen and scribe, who had been commissioned to work in the nearby quarries, extracting high quality stone. While most of the texts and drawings are devoted to or mention the patron deity of the wadi, Min, other deities are found, mainly Isis, who along with Harpocrates formed a triad. Most of the inscriptions from the *Paneion* have been dated between the reign of Nectanebo II, through the Ptolemaic Period, to the beginning of the Roman Period (Thissen 1979; Cruz-Uribe 2001).

Apart from these best-known examples, other quarries from imperial period have preserved buildings that had been interpreted as possible shrines or temples, such as are the cases of sites like Umm Huyut, Fatireh al-Beida or the quarries of *Mons Ophiates*, being especially remarkable the last one, with the recovery of a Greek inscription documented inside the remains of an impressive building created in the reign of Augustus and devoted to Pan/Min.⁷

If we consider other productive regions, we can refer to areas dedicated to the extraction of precious metals and stones. The most relevant among them would be the gold mines, omnipresent all along the Eastern Desert and, probably, the most appreciated mineral resource extracted from it since the Pharaonic period (Faucher 2018). However, although its importance cannot be denied, there is, comparatively, not a large amount of religious evidence related to these gold mining operations. We can mention a possible altar located inside of the Samut fort (Sidebotham *et alii* 2019, pp. 197-198); or a single room roofed building identified as a shrine in the gold mining settlement of Bokari (Harrell *et alii*

⁷ For a brief overview of these elements, see: Sidebotham *et alii* 2008, pp. 123-124.

2006, 136).⁸ Maybe the most interesting data comes from the Byzantine gold mines of Bir Umm Fawakhir, with the presence of a Min sanctuary from the Ptolemy III period that still existed in the 5th century AD (Meyer 2018).

Finally, we can also mention the interesting case of the amethyst mines, probably the best example for the *Smaragdos*, as they are the only other well-studied extractive area for precious stones in the Eastern Desert. Considering the two main areas, Wadi el Hudi and Wadi Abu Diyeiba, the last one is the most relevant, as its chronology lies in the Graeco-Roman period. There, fragments of different Greek inscriptions were recovered, mentioning gods and goddesses such as Pan, Apollo, Serapis and Harpocrates. Also, dozens of human foot representations were identified, carved in the rocks and on stone slabs found in the area, normally associated with Isis veneration. Finally, near the main settlement, a small building composed by a single roofed room with a surrounding wall and a staircase has been recognized as a temple or shrine (Harrell *et alii* 2006; Sidebotham *et alii* 2008, pp. 115-117). The large concentration of cult evidence in Wadi Abu Diyeiba highlights its probable role as an administrative and religious centre linked with the extraction of amethyst during the Ptolemaic and, at least, Early Roman period.

Thus, there is an important corpus of written and archaeological data concerning the religious life of the mining communities in the Eastern Desert. Together with the most recent evidence coming from the *Smaragdos*, we consider that it is possible to do a first approach to the relevance and features of religious practices in the productive regions of this extensive area during the Early and Late Roman period.

2. The temples of the ancient *Senskis*

The site of Sikait, ancient *Senskis*,⁹ is located in the Eastern Desert, 45 km inland from the Red Sea coast, on a branch tributary of Wadi el Gemal. It is the most impressive of the emerald mining settlements in the region, consisting of an extensive site cut into two parts -eastern and western- by the Wadi Sikait with an extension of 560 m north-south by 270 m east-west, comprising between 150-200 visible structures. The chronology lies

⁸ Although in that case, corresponding to the Ptolemaic period.

⁹ The name of *Senskis* -or *Senskete*- was identified in the preserved inscription of the so-called “*Small Temple*” of the site. It is a dedication done by some Polyphantos thanking the gods Apollo, Serapis and Isis of *Senskis* for the opening of a well in the settlement. For this inscription: Bernand 1977, pp. 167-177.

between the 1st and the 8th c. AD. It is important to highlight that we know, thanks to the classical sources, that since the end of the 4th c. AD the mines were no longer under Roman control. The Blemmyes, a nomadic tribe native from the Nubian area, took over the mines and controlled several other areas of the Egyptian Eastern Desert.¹⁰ The relevance of this fact is that, so far, most of the archaeological levels and materials documented in Sikait cannot be traced back to before the 4th c. AD. (Oller *et alii* 2021b, p. 28-29; Oller 2022b, pp. 374-381). So, we need to introduce this factor -the presence of the Blemmyes- in any analysis of the archaeological evidence from Sikait, especially considering that the recovered material culture seems to reinforce this option.

From a religious point of view, Sikait is also a paradigmatic example, as for the moment we have identified four temples in the settlement: the Southern, Large and Small temples and the so-called Mountain Shrine. Archaeological trenches have been conducted in the three first buildings. We will not do here a detailed review of the features of these temples or a report of the trenches' results, but we will base this part of the analysis on them.¹¹

If we begin with the structure of the temples, three of them correspond to the "*hemispeos*" type; meaning that they are partially rock-cut and partially built with masonry walls. It is the case of the most known of the Sikait temples: the Large Temple (fig. 2). Already documented by the first visitors in the 19th century, it has been excavated during three seasons, uncovering a big religious complex in use between, at least, the 1st century until the 6th-7th century AD. The temple is formed by three rooms: the first and largest one has two columns in the interior; the following one is further divided into three parts and leads to the last and deepest room, also tripartite and featuring altars associated with the divinities to whom the sanctuary was devoted. The entrance to the temple is flanked by two (partially collapsed) masonry walls and in the lateral areas there are two small shrines on different levels. In the front part of the temple façade there are still some remains of a mostly lost Greek inscription. Other sacred spaces have been documented above the southern shrine and even south from there, with several niches carved in the bedrock working together with other structures of probable ritual function and later addition.

¹⁰ Concerning the Blemmyes, for an overview about their role in this area, see: Török 1985, Updegraff 1988; Pierce 2012; Dijkstra 2012; Power 2012; Cobb 2021; Cooper 2021; Cuvigny 2022.

¹¹ There are already different publications with this information, especially: Foster et al. 2007; Oller 2022a.



Fig. 2: View from the west of the Large Temple.

The Small Temple, on the other hand, is located at the very entrance of the settlement, some 100 meters before the “Southern Temple” (fig. 3). Recently excavated, it comprises an artificial elevation standing two meters above the level of the wadi, with three terraces, being the upper one where the religious complex stands. The upper terrace contains the structures belonging to the temple, with a central chamber completely carved on the bedrock, which was accessed by an entrance divided by three doors and framed by columns that are only partially preserved on both sides. This chamber has a central niche for the offerings and/or the statue of the divinity, together with several other small niches covering the bedrock walls. We know that this structure was the original one, being accessed directly from the wadi through a ramp or staircase and probably being created in the 3rd century AD. Several changes occurred after the 4th century, with the blocking of the original access, the building of the currently preserved terraces with a small courtyard, and the creation of a staircase in the southern side for accessing the temple. Two latter phases were identified that implied the building of two small rooms in the courtyard, in a moment were, probably, the structure had no longer a ritual use, as it suggests the abundant founding of beryl fragments and tools such as quartz pounders (Oller *et alii*, forthcoming). Of course, the most striking aspect of this temple is the

previously mentioned preserved inscription with a Greek dedication to Apollo, Serapis, and Isis of *Senskis*.



Fig. 3: View from the west of the Small temple, after its excavation.

The third example is the so-called “Mountain Shrine”, located at the highest point of a small peak overlooking the south-eastern end of the site. Although its features and dimensions are modest, its relevance becomes obvious if we consider the logistics involved in the creation of a means of access to it. We have documented a large, but poorly preserved, staircase built with schist rocks in the wadi floor linking to a narrow path climbing up the hill where the shrine is located. Before reaching it, there is another monumental staircase that confers direct access to the sanctuary. Its remains are completely rock-cut, consisting of a single chamber with three niches in the back part of the room, probably acting as ritual spaces for small statues or offerings. Unfortunately, this is the only temple where no excavation has been conducted so far and the lack of data prevents a detailed interpretation.

Finally, the Southern Temple is the only religious free-standing building documented so far (fig. 4). Located on the southern end of the western slope, atop a large retaining terrace accessed from three directions, it consists of three rooms along a central axis of doorways. It is remarkable for the good state of preservation of its walls, including some of a

preserved height of more than 4 m. It is built with local grey quartz-mica schist, joined using mud mortar. The building had three monumental entrances: a ramp from the southwest, a staircase in the south-eastern corner of the retaining terrace and another staircase from the north. Concerning the structure of the building, the three rooms become progressively smaller, and the last and smallest was cut into the bedrock. Access to the first and largest room was via a frontal monumental door and a smaller lateral one on the south side. The room has two windows, and the rear wall is decorated with two double shelves. In the middle of this rear wall is the door to the second room, in which other decorative elements are preserved, including another double shelf on the southern wall. Finally, the rear wall of the second room had a door leading to the third, probably the *cella*, which is cut into the bedrock and has a partially preserved ceiling, composed of six massive stone slabs, two of which are still *in situ*. Unfortunately, this last room is mostly covered by debris from the collapse of part of the ceiling, which prevented work inside it. The floor to the building is sloped, creating a difference of almost half a meter from the entrance to the third room. The chronology lies between the 4th and 5th century AD. All these features turn the Southern Temple into the most impressive structure of the site and one of the best-preserved free-standing buildings from the Roman period in the Eastern Desert.



Fig. 4: View from the east of the Southern Temple.

The first important aspect we must highlight about these temples is that what we know is mainly related to their late phases of occupation, mostly from the 4th century AD onwards. We have the cases of the Large and Small Temple, built in the Early Roman period, but the preserved levels belong to the Late Roman phase. As we have seen before, this is a general situation in the site, as almost all the excavated structures and levels are related to this late moment. We will not deepen in this subject, but as the evidence coming from the mines show that they were exploited at least since the 1st century AD, we suggest as a hypothesis that during the Early Roman period the miners were temporary workers living seasonally in non-permanent camps. That is why only a few buildings, such as the mining infrastructures or some temples and administrative buildings, are preserved. After the Blemmyes took control over the mines, a new settlement pattern was created, with the building of the current site, a large permanent settlement thought to be the key point of the extractive network in the Wadi Sikait. From a religious point of view, the newcomers reused the existing temples and built new ones in a different architectural way, such as the Southern Temple (Oller 2022b, pp. 374-381).¹² In fact, it is interesting to note that, while we have other examples from Pharaonic and Ptolemaic periods of rock-cut temples in the Eastern Desert such as Kanaïs or Bir Abu Safa,¹³ the “Southern Temple” type seems more related to this specific moment and area of this region (fig. 5). So, we have other examples of these free-standing buildings, normally located in an elevated and prominent position, accessed through monumental staircases and with a tripartite structure. For instance, we have the Nugrus settlement, located in the parallel wadi –Wadi Nugrus– and exactly with the same structure: with a long staircase coming from the wadi until a higher terrace where the building stands, divided into three rooms and with other small spaces of unknown function besides the main building (fig. 6 and 7). Another two possible temples have been identified in Nugrus, although only further archaeological work could confirm this hypothesis.¹⁴ Similar structures have been identified in other settlements within the *Smaragdos*, with a chronological frame that also covers the Late Roman period, such as

¹² For the most recent epigraphic data coming from the emerald mines and confirming the beginning of the mining operations in the 1st century AD, with a direct participation of the Roman army, see: García-Dils *et alii*, 2022.

¹³ For the case of Kanaïs: Gauthier 1920; Mairs 2010. For Bir Abu Safa: Sidebotham *et alii* 2008, pp. 113-115.

¹⁴ For the archaeological information regarding Nugrus, see: Sidebotham *et alii* 2019, pp. 130-136.

Kab Marfu'a or Gelli,¹⁵ or even in the emerald mines, as we will see later. Again, more archaeological work is required to get a better understanding of these buildings.



Fig. 5: View of the Southern Temple from the west, where the tripartite structure can be appreciated, with the slabs covering the *cella*.

¹⁵ For the case of Kab Marfu'a: Sidebotham *et alii* 2005; Sidebotham *et alii* 2019, pp. 123-130.



Fig. 6: View of the temple in Nugrus from the northwest. In the lower central part the staircase can be seen, while in the upper part stands the temple.



Fig. 7: View of the doorways connecting the three rooms of the temple in Nugrus.

Linked with the chronological issue is the information provided by the votive materials recovered in the temples. In this regard, a large number of items have been found during

the excavation of the Southern, Large and Small temples. Although a thorough presentation of all of them is impossible because of the lack of space, we can highlight some interesting aspects. First, we can consider the Large Temple, which has provided the largest set of votive items so far. Among the materials recovered we have a large amount of pottery, but also more interesting elements like figurines, coins, incense burners, steatite dishes, beryl fragments, ex-votos, etc. (Oller *et alii* 2021a, pp. 134-135) Those have appeared in all the trenches dug in the temple, with an especial concentration in the courtyard that precedes the first room of its central chamber. The most remarkable feature of these materials is that they show a mixture of different cultural traditions. Thus, we have figurines and pendants representing traditional Egyptian gods and goddesses such as Osiris, Isis, Bes or Harpocrates (fig. 8 D and E), coexisting in the same context with Graeco-Roman images depicting classical goddesses (fig. 8 B) or probably a nymph riding a marine animal (fig. 8 C). This is not something surprising in a province as Roman Egypt, characterised by a strong syncretism between Pharaonic and Classical traditions, especially in the religious sphere.

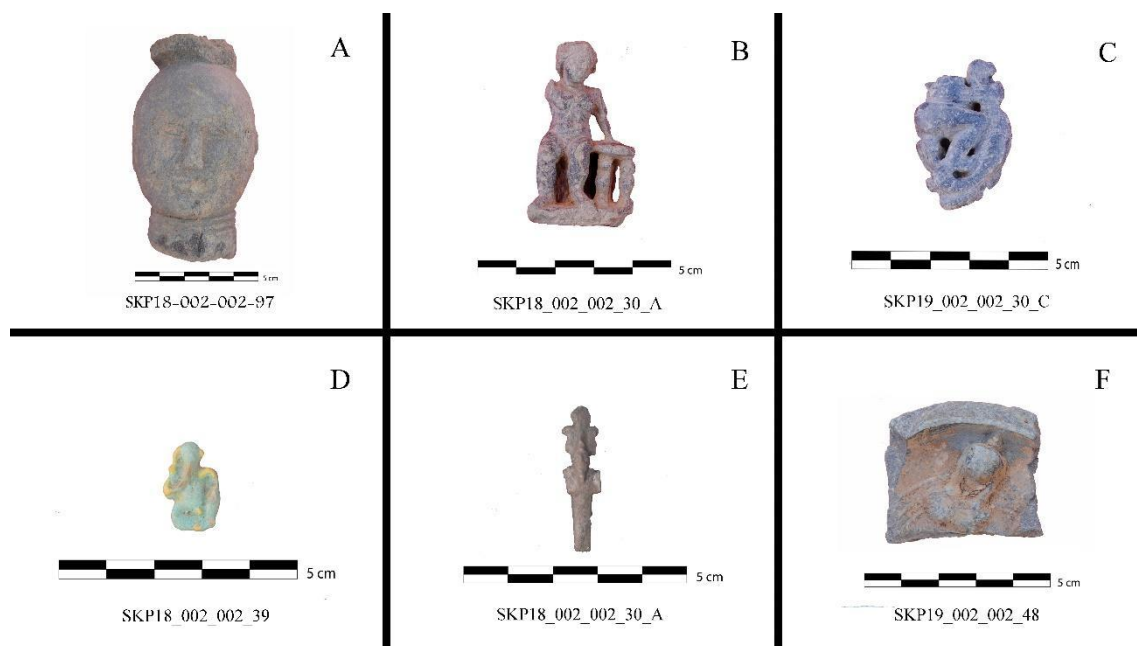


Fig. 8: Votive materials recovered in the Large Temple.

However, together with these more expected items, we can find others that do not correspond to any of those cultural traditions. They are figurines, normally made of locally available steatite stone, that are of simpler facture and are not related to any of the classical divinities venerated in Roman Egypt, including heads, praying men or camels (for example, fig. 8A and fig. 9). Considering the late chronology where they were

recovered, we suggest that these votive elements must be linked precisely with the Blemmyan population that arrived at Sikait since the 4th century and that incorporated their cults and religions traditions to the pre-existing or new temples in the site. So, it is normal that these items are not related to the Egyptian or the Graeco-Roman traditions, but more likely to the Meroitic or, in a more general sense, Nubian traditions. Thus, the votive materials recovered in the Large Temple are showing an extremely interesting process of cultural interaction between communities that probably led to a religious hybridization mainly featured by the Blemmyes, as it can be already seen in other key settlements at this period such as Berenike (Oller *et alii*, 2022).



Fig. 9: Figurine probably depicting a praying man recovered in the Large Temple.

Another good example of this process can be traced at the Southern Temple. There, also an interesting set of votive elements were recovered during the excavation of the first two rooms of the temple, including a lot of nineteen coins, fragments of incense burners, fragments of mosaic glass, a bronze figurine of probably Horus, two steatite figurines of birds, a fragment of a steatite dish, and a white steatite plaque with graffiti on it depicting two facing birds with a palm tree in the middle and two suns above (Oller *et alii* 2021a, pp. 130-132). Although this set of materials is smaller than the one found in the Large Temple, it raises suggestive questions related to the prominence of a falcon god between the Blemmyan population.

Thus, it is already known, thanks to the classical and Christian sources, that there was a cult to a falcon god in Philae, an area of intense contact with the Nubian population. For instance, Strabo mentions the existence of a sacred falcon (17.1.49), while the Coptic *Life of Aaron*, from the 5th century AD, refers the story of the bishop Macedonius, who deceived the priests of a pagan cult to a falcon, achieving to enter the shrine, cut off the head of the falcon and burn it (Dijkstra, van der Vliet 2019). The story is set in the mid fourth century AD and it has been traditionally linked with the Blemmyan presence in Philae (Frankfurter 1998, 110). This type of cult to a falcon god by the Blemmyes has been recently confirmed by archaeological data, thanks to the excavation of the so-called “Falcon Shrine” in Berenike by our team.¹⁶ Briefly, this shrine was found within the “Northern Complex”, one of the largest buildings from the Late Roman Berenike. It is an edifice of Early Roman origin that was reused in the late period. However, the most striking aspect is that inside of the building two dedications to Blemmyan kings have been recovered, offering clear evidence of the Blemmyan presence in Berenike (Ast, Radkowska, 2020). In one of the sectors of this complex, a structure composed by a large narrow antechamber connecting to a square shrine was discovered. The name of “Falcon Shrine” is due to the recovery of fifteen falcon individuals deposited inside of the shrine, most of them headless. Together with that, other interesting votive materials were recovered, such as a block statue, an harpoon or a stela depicting Harpocrates, Isis and Khonsu with a falcon head, and the pharaoh, with a Greek inscription referring to cultic practices.

So, all this evidence suggests that the cult of a falcon god was relevant to the Blemmyan population. Therefore, the votive elements recovered in the Southern Temple seem to point to this same direction, as most of them are precisely related to a falcon god or, at least, to some religious veneration to the birds -the bronze Horus figurine, the two steatite birds, maybe falcons, or the plaque with, again, two birds-. In fact, if we consider the coinage recovered, we have suggested that these coins were part of votive offerings, as most of them were found in joint depositions, sometimes together with other of the votive elements, such as the bronze figurine (Oller *et alii* 2021a, p. 131).¹⁷ Most of these coins were from the 4th century, but with an exception: a bronze tetrobol from Ptolemy III

¹⁶ For a detailed analysis of the Falcon Shrine, see: Oller *et alii* 2022b.

¹⁷ Concerning the use of coins as votive offerings: Crawford 2003; Wigg-Wolf 2005; Lykke 2017, pp. 219–222; Gazdac 2018; Burstroom, Ingvardson 2018.

minted in Alexandria. It is understandable that this coin would consist of an interesting offering for the temple because of the value that implied its antiquity. However, we suggest that this was not the only valuable aspect of the coin in this context. The fact that the reverse of the coin depicted an eagle, as it was usual among the Ptolemaic kings, maybe could have added an extra interest in this context of “bird veneration”.

It is interesting to note that no actual bird offerings were found in the Southern Temple. However, if we move to the Small Temple, there, in the 4th to 5th century levels of the second phase -the “Blemmyan” levels-, in the south-eastern corner of the courtyard, the offering of an ibis was documented. In addition to that, in the southern room of the courtyard that was built in the following phase of use, below one of the walls we excavated a votive foundation deposit consisting of half amphora with some burned remains. Above the cover of the amphora, more bird bones were found. We suggest, then, that the temples of Sikait are showing the arrival of a new group of population, the Blemmyes, that incorporated their religious traditions and mixed them with the existing Egyptian and Graeco-Roman cultural background. Among these new cults, it seems clear that the veneration of a falcon-god or bird-god was preeminent.

To finish with Sikait temples, we must refer to another interesting finding made during the 2022 season in the Small Temple. In the same 4th to 5th c. levels where the ibis appeared, the other main votive item recovered was a bronze drachma from Antoninus Pius. It corresponds to a well-known series of bronze drachmas depicting the 12 zodiacal signs issued during the years of 144-145 AD in the imperial mint of Alexandria under the reign of this emperor. These series have been related to the Sothic cycle or, more recently, to the commemoration of dynastic ephemerides such as the marriage of Marcus Aurelius.¹⁸ The interest of this coin resides in the fact that, as it happened with the tetrobol from Ptolemy III, it does not belong to the chronological context of the layers where it was found. On the other hand, although it is not preserved in the coin, other parallels show clearly that the centre of the coin reverse depicted the divine couple formed by Isis and Serapis.¹⁹ And this is interesting because, as we have seen previously, the preserved inscription in the Small Temple is a dedication from the period of emperor Gallienus to Apollo, Serapis, and Isis of *Senskis*. Thus, we suggest that the offering of these ancient

¹⁸ For these series, see: Carbone, Farrior, 2022.

¹⁹ For example, in RPC IV.4 15321.

coins was not only related to the value attributed to its age, but also with a symbolic link with the temple, the devoted gods, and the rituals conducted in it.

Concerning the inscription, as it is the only one preserved enough to identify the divinities venerated in the temple, we must briefly refer to the gods and goddesses on it. Both Isis and Serapis are not strange references in Graeco-Roman Egypt or the Eastern Desert. On the opposite, as we have seen they were some of the most popular divinities and we can detect them, for example, in the imperial quarries or the amethyst mines. The fact that Isis receives the epithet of the settlement, seems to reinforce her relevance, which is not strange either if we consider that at this same period in Berenike the Great Isis temple was still in use, showing the preference for her cult among the population (Ast, Bagnall 2015; Hense 2017; Sidebotham 2018; Sidebotham *et alii* 2020). We will come back later to the case of Serapis regarding the mining operations, but we just want to remark its association with Min, logical in this mining context. More intriguing is the reference to Apollo, not usually linked with the extractive operations. However, it could make more sense if we consider that Apollo was, at some point, identified with the gold, as this precious metal was associated with the sun (Dusanic 199, p. 139). Thus, this link with the gold would solve the mention of Apollo, as there is also gold in this area and we have gold mining settlements, both ancient and contemporary, all-around Wadi Sikait.²⁰ Therefore, the dedication of the Small Temple of Sikait would offer a perfect triad of divinities to assure the prosperity of the mining operations: Isis as a fertility goddess related to mineral richness, Serapis-Min as the god of the mining operations and miners, and Apollo as the god of gold.²¹

3. Religious evidence in the emerald mines

Even if the evidence coming from Sikait is impressive, the most innovative data is related to the emerald mines. As we have mentioned before, the Sikait Project has identified an extensive network of extractive areas with hundreds of underground mining operations (330 so far). The chronology of these mining structures is mostly located in a long framework between the 1st and the 8th century AD. From a religious point of view,

²⁰ For example, the mining concessions from the beginning of the 20th century not only included extraction of emeralds, but also of gold, and some of the biggest modern trenches located in Wadi Sikait fit better with gold extraction than to emerald mining (García-Dils *et alii*, 2021).

²¹ It is interesting to note that a 3rd century AD author, Claudius Aelianus, wrote about the ravens living around the area of the emerald mines. Referring to this area, he mentions the existence of a temple of Apollo where these birds were sacred (Ael. NA 7.18).

several elements can be related to the miners' cults, offering clear evidence about how the mines' workers experienced devotion and veneration to gods. We will offer an overview of these elements.

First, in the large network of roads, paths and trails connecting settlements such as Sikat with the emerald mines, we have documented different infrastructures that were basic to the development of the mining operations. For instance, we have watchtowers, small villages for the workers, wells, tombs, working zones, cairns, etc. Among them, at some points there are stone structures that could be related to small altars. They are normally located in the middle of the trails, in significant visual points, being sometimes similar to the cairns that are marking the main paths in the area. The main example (fig. 10), is in the main trail connecting the settlement of Sikait with the mining zone C. There, a structure made of local schist stone was documented, 1.50 m high by 1 m wide and 2 m long. In the northern side of the structure, a flat platform was created. Of course, we cannot be totally certain about its function, but we think that the most probable use must be related with a space associated with votive offerings, maybe related to a god protector of mining work and paths such as Pan.²² Further studies are needed to get a better understanding of these interesting features.

²² It is usual to find graffiti in *Paneia* since the Ptolemaic period referring to “Pan of the Successful Journey” (Πανὶ Εὐδόδῳ), for example, in the case of the *paneion* from Al-Kanaïs or Al-Buwayb (Cuvigny *et alii* 2000, *I.Ko.Ko.* 141, 159, 171).



Fig. 10: Possible altar located between Sikait and Zone C. In this view from the north we can appreciate the possible altar for offerings.

If we enter the mining zones, we also have interesting religious elements to analyse. For instance, we have the SKPUS-015-026-027-028-029-030 mining complex,²³ located in Zone B, at the western slope of the Wadi Sikait. It is one of the first mines that were studied in detail and its topography allowed us to obtain the first plan of an ancient emerald mine ever done. The mine consists of tens of galleries following the mineral veins, disposed in three levels with shafts connecting them. There are several remarkable aspects in this mine, but we want to highlight just one of them. So, in one of the chambers of the mine a fragment of lucerna with figural decoration was found, inside a niche carved in the wall, featuring an image that can unequivocally be identified with the god Serapis (fig. 11: Oller *et alii* 2021b, p. 32; García-Dils *et alii* 2021, pp. 39-40). The typology of this specific space within the mine, together with the careful and voluntary deposition of this worked fragment of lucerna makes us suggest that this was a small mining shrine devoted to Serapis. It remains unclear if there was any kind of ritual activity in the shrine and only excavation inside of the mine would help to solve this enigma. However, we must highlight the fact that the small altar was located at the western end of the largest

²³ SKPUS refers to “Sikait Mining Zone Underground Structure” and the numbers identify the different entrances associated with the same mine.

chamber of the mine, in the only place where the excavation did not strictly follow the ore veins, but was extended in both width and height, so that a group of miners could comfortably gather there with enough space to stand (García-Dils *et alii* 2021, p. 39, fig. 14).



Fig. 11: Detail of the fragment of lucerna depicting the image of god Serapis.

If we continue with this religious evidence in the emerald mines, we can remark the case of the so-called “Zone G”, also named West Sikait. It is located between Wadi Sikait and Wadi Nugrus and, so far, is the largest mining area documented, with over 140 underground operations and an approximate extension of 8 ha. It is also one of the areas with more documented infrastructures, with cairns, trails, small camps, watchtowers and a couple of necropolises. Among them, we have also found three elements that can be directly related to religious life. First, in the highest part of the hills, it has been identified a large tripartite building composed by a courtyard –4.70 x 4.50 m–, followed by a hall – 1.35 x 3.45 m, accessed by a ramp– and a third room, more elevated and smaller, that seems to contain some kind of altar –1.00 x 0.85 m– (fig. 12). The architecture of this building, with three consecutive rooms and a last one acting as a possible *cella*, recalls the temples located in Sikait, and we propose the possibility of dealing with another sacred space related to the mining community (Oller *et al.* 2021, p. 32; García-Dils *et al.* 2021, pp. 31-32).



Fig. 12: View of the possible temple in Zone G from the east. In the lower part of the image we can see the remains of the possible altar (looted), the meter is above the staircase connecting with the intermediate room and, at the upper central part of the image, there is the courtyard.

Just below this temple, there are several mining pits and one of them has recently offered another interesting feature. In this case, above the entrance of one of the mines, we have documented the presence of what seems to be a miniature of a building, maybe a temple (fig. 13). The miniature (45 cm long x 40 cm wide) is composed of three elements: a staircase leading to some kind of courtyard and, next to it, a square structure. Considering the type of staircase, it also remains about the typical access of the late temples in the *Smaragdos* area. At the same time, its features and position above one specific mine make us suggest the option of being dealing with a space for offerings and/or libations; a ritual structure where the miners could do some offerings to the divinities before entering into the mines, praying for their safety and asking for good luck in finding new rich veins. For the moment, no parallels have been found in the *Smaragdos* or other mining and quarrying areas of the Eastern Desert, but we think it could fit well with the religious *in situ* practices of the mining communities.



Fig. 13: Detail of the miniature found in Zone G.

Last but not least, we have another interesting sacred space in zone G: a shrine carved in the bedrock and probably dedicated to Serapis was documented next to the entrance to the mine SKP-US148.²⁴ The shrine is literally located between mine entrances, far away from any populated site or route, and so it is clear that it was for the exclusive use of the miners. It is composed of a rectangular niche (82 cm long x 44 cm high x 18 cm wide) delimited by a frame in the form of a temple façade standing on a stylobate, with two lateral columns crowned by a triangular pediment ornamented with schematic acroteria placed on the outer angles. Inside the pediment, a rudimentary depiction of a sun flanked by two snakes can be seen as well. All around, several modern graffiti can be distinguished, both in English and Arabic. Several holes and marks around the niche clearly indicate that it had doors that allowed closing the shrine. Inside the niche there is a small sculptural panel carved in the back wall, framed by an architectural representation similar to the previous one, in this case crowned by a straight lintel, in whose interior the silhouette of a human figure can be recognized, most probably the representation of the

²⁴ This shrine had previously been identified by the Streeter expedition during their visit in the area (MacAlister 1900, p. 544).

divinity venerated here. Although almost no features of the divinity represented here are preserved, the presence of a *modius* on the head, together with the general composition of the sculpted representation, indicate that we are probably looking at an image of Serapis (Clerc, Leclant 1994), especially considering the general context in which it is found on the shrine, the chronology of the mines around it, and the parallels we have in Sikait itself (fig. 14 and 15). At both sides of the interior frame, there are a couple of other elements not really well preserved. They seem like small seats and, if that was the case, maybe they had other gods or goddesses on them, depicting a sacred triad. However, it is impossible to be certain about it. Finally, there is a short word in Greek engraved below the image of the divinity which, considering that it is off-centred –obviously avoiding the crack in the wall to its left– and has been carelessly inscribed, is probably a personal name left by a visitor to the altar, currently difficult to interpret.



Fig. 14: View from the east of the shrine to Serapis.



Fig. 15: Detail of the interior of the Serapis shrine.

The main problem related to these religious elements is that they are difficult to date with precision. In the case of the Serapis shrine inside of the mine or in the temple from Zone G, the lack of data prevents, for the moment, a chronological approach. On the other hand, if we consider the miniature and the outside Serapis shrine, we do not have any material that can help us. So, until further archaeological work could provide more information, we must be cautious and keep the general dates of the mines, between the 1st and 8th century AD, as the chronological framework.

4. The religion of the miners in the *Smaragdos*

As we have seen, recent archaeological data is offering new and interesting ways of approaching the religious and ritual practices of the emerald mines' workers. This evidence shows that, as it happens in other mining communities in Antiquity or other periods of history, the people living and working in the *Smaragdos* were especially devoted to the gods, probably because they relied on them for their safety and also their fortune in the mines. Apart from this general fact, we can conclude with several other ideas about this subject.

First, we think that there is a separation between the divinities venerated in the sites such as Sikait and in the mines. This is well-attested thanks to the inscription from the Small Temple and the votive materials recovered in the Large and Southern temples. We are there dealing with gods and goddesses that can be related to a more “official” tradition of religious dedications. Thus, as we have seen, the reference to Isis, Serapis and Apollo in the Small Temple can be easily linked with some of the most appreciated divinities in the mining quarrying areas of the Roman Empire. They are worshipped because they offer protection and fertility -from a mineral point of view- and can be found together with other major gods and goddesses such as Zeus-Jupiter, Pan, Min, or Diana. On the other hand, considering the data coming from the later levels of the Large and Southern temples, although we are still beginning to understand the religious life of the Blemmyes, it seems that the preference for a “falcon-god” or “bird-god” could fit quite well with some of the most important cults of these tribes, also documented in Berenike or Philae.

However, if we go to the actual mines the situation changes. What our research is showing for the moment is an absolute predominance of the Serapis cult. Of course, we are still at an initial point of the documentation of the emerald mining zones but having found a shrine devoted to Serapis both inside and outside the mines is suggestive. The point is that this situation is perfectly understandable. Thus, during the Graeco-Roman period Serapis was a popular divinity across the Mediterranean. As a chthonic deity, he was related with the underworld and, so, he was a perfect god for the mining activities. He was syncretized with several other gods, both Egyptian and Greek, such as Zeus, Asklepios or Helios, but also with different chthonic divinities that can be related to fertility and the underworld, such as Osiris, Hades, or Dis Pater (Murphy 2021, p. 41). It is especially interesting the association with Dis Pater or Pluto, gods directly related with the underground richness, referred by authors like Tacitus (*Hist.* 4.84) or Plutarch (*De Iside*, 28).²⁵ So, Serapis appeared to the workers as a logical choice while entering into the mines: a god that had the knowledge of the depths of the Earth and that, of course, could offer to them protection against the dangers of their work, but also guidance to the richest mineral veins.

In fact, in other key mining areas of the Empire, such as the *Hispaniae*, the epigraphic record seems to be clearly indicating this preference for Serapis by the miners. So, if we

²⁵ For instance, it seems that Dis Pater was especially appreciated by the Dalmatian *fossores* (Dusanic 1999, p. 132).

examine the distribution of the religious testimonies concerning Serapis in *Hispania*, present in the Iberian Peninsula from Republican dates, in the 1st half of the 1st c. BC – or even still in the 2nd half of the 2nd c. BC–, we observe that a good number of them are associated with mining contexts and even directly with individuals linked to mining exploitations (García y Bellido 1956; González Wagner, Alvar 1981; Uroz 2004-2005). In this sense, two altars from *Asturica Augusta* dedicated to Serapis and Isis –and Kore-Persephone in one of them– by two imperial procurators in charge of the administration of the mines are of special importance (de Hoz 2013, pp. 219-220). They were C. Iulius Silvanus Melanio –“*Serapidi / Sancto / Isidi Myr(i)onymo(e) / Cor(a)e Inuictae / Apollini / Granno / Marti Sagato*” (AE 1968, 230)–, whose presence is also documented in *Britannia* (AE 1982, 654), Gaul (CIL XIII 1729) and *Dalmatia* (CIL III 12732 = AE 1893, 129 = AE 2012, 131), and Claudius Zenobius –“*Inuicto deo / Serapidi et / Isidi*” (AE 1968, 232)–.

In *Hispania*, we can also cite other remarkable examples, such as the dedications to Serapis and Isis / Kore-Persephone –“*Diis Serapidi Isidi / Diis Deabus omni/bus*”, “Υψισ(τω) τῷ Σερά/πιδι σὺν ἄν Κό/ρα (HEp 2014/15, 891-892; Santos *et alii* 2014)– in the rock sanctuary of Panóias (Vila Real, Portugal), a religious place undoubtedly related to the gold mines of the surrounding area (de Hoz 2013, pp. 220-222). In general, there has been a tendency to associate these cults merely with the spreading of oriental cults due to the presence of merchants and soldiers, although we suggest that it is possible to relate them specifically to mining activities, especially when we document these cults in small inland localities of the Iberian Peninsula, far from the commercial ports and the main cities.

Thus, while in the settlements the general dedications and offerings in the temples could be made to several deities traditionally related to the mining works, the people actually working in the mines had a more precise and “efficient” worshipped divinity. The fact that we have these shrines, temples and offering tables in the entrances or even within the mines themselves perfectly reflects this situation and fits well with evidence from other areas and periods. For instance, it reminds about the shrines and offering spaces for divinities such as “el Tío” in the Potosí mines, a devilish entity that the miners could find inside of the galleries and that, if it was correctly worshipped, could protect or guide them to the rich mineral veins (Absi 2005, pp. 100-107).

A final remark regarding chronology. As we have seen, most of the archaeological data coming from Wadi Sikait and surroundings must be linked with the Late Antique period (from the 4th century AD and onwards). This poses the question about the religiosity of the Blemmyan population, that we know now that was more present in this area than thought before. The *Smaragdus* is the paradigm of this situation, as both literary sources and archaeological data are pointing in that direction. Precisely, the excavation of the temples in Sikait suggest that this arrival of newcomers implied the introduction of new divinities and cults but does not seem to imply the disappearance of the previously venerated deities. On the contrary, archaeological evidence from Sikait and Berenike shows a process of syncretism between previous and new religious practices, a process that we are just starting to understand. The main problem regarding the religious elements from the mines is that, for the moment, we do not have precise chronological data. However, we know that there are no significant changes in the extractive activities between the Early Roman and the Late Antique (or even Early Islamic) periods. So, we suggest that it could be possible that when the Blemmyes took over the mines, they continued with the previous ritual mining traditions, involving underground gods such as Serapis, maybe now syncretized with their own beliefs.²⁶

Of course, only the continuity in the archaeological work in these areas will allow us to increase our understanding of these processes. By this first approach, however, we consider that the study of the religious aspects in the *Smaragdus* can offer a turning point about the general knowledge about religion and ritual in the Egyptian Eastern Desert during the Roman and Late Antique period.

²⁶ We cannot forget that we do not have a precise knowledge about the changes in the *Smaragdus* from a demographic point of view. So, we know that some of these Blemmyes settled in the region (Oller *et alii* 2022a), but this does not mean that the previous settlers abandoned it. So, probably some of them stayed in the area, conserving their religious traditions, and facilitating the cultural exchange between both groups.

Abbreviations

AE = *L'Année épigraphique*.

LIMC = *Lexicon Iconographicum Mythologiae Classicae*.

O.Claud. = *Mons Claudianus. Ostraca Graeca et Latina*.

RPC = Roman Provincial Coinage.

SEG = *Supplementum Epigraphicum Graecum*.

Bibliography

P. ABSI 2005, *Los ministros del Diablo. El trabajo y sus representacions en las minas de Potosí*, La Paz.

R. AST, J. RAĐKOWSKA 2020, *Dedication of the Blemmyan Interpreter Mochosak on Behalf of King Isemne*, “*Zeitschrift für Papyrologie und Epigraphik*”, 215, pp. 147-158

A. BERNAND 1977, *Pan du désert*, Leiden.

L. CARBONE, M.E. FARRIOR 2022, *Minting the stars: the Alexandrian zodiac series under Antoninus Pius*, “*American Numismatic Society*”, 21/1, pp. 9-25.

G. CLERC, J. LECLANT 1994, *Sarapis*, *LIMC* VII.1, pp. 666-692 and *LIMC* VII.2, pp. 504-518.

M. COBB 2021, *Barbarians and Blemmyes: who was in control of the Red Sea port of Berenike in the Late Antique period?*, “*Journal of Late Antiquity*”, 14/2, 267-293.

J. COOPER 2021, *A nomadic state? The Blemmyean-Beja polity of the ancient Eastern Desert*, “*Journal of African History*”, 61/3, pp. 383-407.

M.H. CRAWFORD 2003, *Thesauri, hoards and votive deposits*, in O. de Cazanove, J. Scheid (eds.), *Les sources documentaires et leurs limites dans la description des lieux de cultes*, Napoli, pp. 69-84.

E. CRUZ-URIBE 2001, *Demotic Graffiti from the Wadi Hammamat*, “*Journal of the Society for the Study of Egyptian Antiquities*”, 28, pp. 26-54.

H. CUVIGNY, A. BÜLOW-JACOBSEN, N. BOSSON 2000, *Le paneion d'Al Buwayb revisité*, “*Bulletin de l'Institut français d'archéologie orientale*”, 100, pp. 243-266.

H. CUVIGNY (ed.) 2022, *Blemmyes, new documents and new perspectives*, Cairo.

M.P. DE HOZ 2013, *Cultos griegos, cultos sincréticos y la inmigración griega y greco-oriental en la Península Ibérica*, in M. P. DE HOZ, G. MORA (eds.), *El oriente griego en la Península Ibérica. Epigrafía e historia*, Madrid, pp. 205-254.

J.H.F. DIJKSTRA, *Blemmyes, Noubades and the Eastern Desert in Late Antiquity. Reassessing the written sources*, in H. BARNARD, K. DUISTERMAAT (eds.), *The History of the peoples of the Eastern Desert*, pp. 239-247.

C. DOMERGUE 1981, *La notion d'espace minier dans l'Antiquité gréco-romaine*, "Pallas", 28, pp. 89-99.

C. DOMERGUE 2008, *Les mines antiques: la production des métaux aux époques grecques et romaines*, Paris.

S. DUSANIC 1999, *The miners' cults in Illyricum*, "Pallas", 50, 129-139.

M. ELIADE 1962, *The Forge and the Crucible*, Chicago.

T. FAUCHER 2018, *Ptolemaic gold: the exploitation of gold in the Eastern Desert*, in J.P. BRUN, T. FAUCHER, B. REDON, S.E. SIDEBOTHAM (eds.), *The Eastern Desert of Egypt during the Greco-Roman Period: Archaeological Reports* [online], Paris. <<http://books.openedition.org/cdf/5241>>. ISBN: 9782722604889. DOI: <https://doi.org/10.4000/books.cdf.5241>.

B.C. FOSTER, J.-L. RIVARD, S.E. SIDEBOTHAM, H. CUVIGNY 2007, *Survey of the emerald mines at Wadi Sikait. 2000/2001 seasons*, in S.E. Sidebotham, W. Wendrich (eds.), *Berenike 1999/2000. Report on the excavations at Berenike, including excavations in Wadi Kalalat and Siket, and the survey of the Mons Smaragdus region*, Los Angeles, pp. 304-343.

S. GARCÍA-DILS, J. OLLER, D. FERNÁNDEZ, V. TREVÍN 2021, *The Emerald Mines of Wadi Sikait (Egypt) from a Diachronic Perspective. Results of the 2020 and 2021 Seasons of the Sikait Project*, "Trabajos de Egiptología", 12, pp. 19-48.

S. GARCÍA-DILS, R. AST, J. OLLER, D. FERNÁNDEZ, V. TREVÍN 2022, *Loci and the legio III Cyrenaica in new inscriptions from the Roman emerald mines of Wadi Sikait (Eastern Desert of Egypt)*, "Zeitschrift für Papyrologie und Epigraphik", 223, pp. 109-119.

A. GARCÍA Y BELLIDO 1956, *El culto a Sárapis en la Península Ibérica*, "Boletín de la Real Academia de la Historia", 139, pp. 293-355.

H. GAUTHIER 1920, *Le temple de l'Ouâdi Mîyah (el Knaïs)*, "Bulletin de l'Institut Français d'Archéologie Orientale", 17, pp. 1-38.

C. GAZDAC 2018, *The coin assembly as a votive deposit in Iron Age. The case of coins in the ritual complex at the Dacian fortress of Costesti-Cetatuie (Hunedoara county, Romani)*, "Journal of Ancient History and Archaeology", 5/3, pp. 55-65.

E. C. GONZÁLEZ WAGNER, J. ALVAR EZQUERRA 1981, *El culto de Sarapis en Hispania*, in Ministerio de Cultura (ed.), *La religión romana en Hispania*, Madrid, pp. 321-333.

J.A. HARRELL, S.E. SIDEBOTHAM, R.S. BAGNALL, S. MARCHAND, J.E. GATES-FOSTER, J.-L. RIVARD 2006, *The Ptolemaic and Early Roman amethyst quarry at Abu Diyeiba in Egypt's Eastern Desert*, "Bulletin de l'Institut Français d'Archéologie Orientale", 106, pp. 127-162.

A.M. HIRT 2010, *Imperial Mines and Quarries in the Roman World. Organizational Aspects 27 BC – AD 235*, Oxford/New York.

D. KUMAR NITE 2016, *Worshipping the colliery-goddess: religion, risk and safety in the Indian coalfield (Jharia)*, "Contributions to Indian Sociology", 50/2, pp. 1895-2009.

A. LYKKE 2017, *Ritualizing the use of coins in ancient Greek sanctuaries*, "Journal of Ancient History", 5/2, pp. 205-227.

D.A. MACALISTER 1900, *The Emerald Mines of Northern Etbai*, "The Geographical Journal", 16/5, pp. 537-549.

R. MAIRS 2010, *Egyptian "Inscriptions" and Greek "Graffiti" at El Kanais in the Egyptian Eastern Desert*, in J.A. Baird, C. Taylor (eds.), *Ancient graffiti in context*, New York/London, pp. 153–164.

M. HENSE 2017, *The Great Temple in Berenike: new findings of the Berenike Temple Project*, "Polish Archaeology in the Mediterranean", 26/2, pp. 133-145.

V. MAXFIELD, D. PEACOCK 1998, *The Archaeology of an Industrial Landscape: An Interim Report on the Work of the Imperial Quarries (Mons Porphyrites) Project*, in O. E. Kaper (ed.), *Life on the Fringe*, Leiden, pp. 181-196.

C. MEYER 2018, *Bi'r Umm Fawâkhir: Gold Mining in Byzantine Times in the Eastern Desert*, in J.P. BRUN, T. FAUCHER, B. REDON, S.E. SIDEBOTHAM (eds.), *The Eastern*

Desert of Egypt during the Greco-Roman Period: Archaeological Reports [online], Paris.
<<http://books.openedition.org/cdf/5241>>. ISBN: 9782722604889. DOI:
<https://doi.org/10.4000/books.cdf.5241>.

P. MUNDAY 2016, Mining Cultures and Mary Cults Where the Sacred and Profane Meet, “Technology and Culture”, 57/1, pp. 1-23.

L. MURPHY 2012, Beware Greeks bearing gods. Serapis as a cross-cultural deity, “Amphora”, 2, pp. 29-54.

N. BURSTREOM, G.T. INGVARSDON (eds.) 2018, *Divina Moneta. Coins in religion and ritual*, London/New York.

J. OLLER 2022a, *Temples and shrines in the emerald mines: the religious buildings of ancient Senskis*, in A.I. FERNÁNDEZ PICHEL (ed.), *Of Gods and Men. Research on Egyptian Temple from the New Kingdom to the Greco-roman Period*, Alcalá de Henares, pp. 241-267.

J. OLLER 2022b, *From the sea, to the river, through the desert. Some issues regarding the emerald trade network in Roman Egypt*, in C. DURAN, J. MARCHAND, B. REDON, P. SCHNEIDER (eds.), *Networked Spaces. The spatiality of networks in the Red Sea and Western Indian ocean*, Lyon, pp. 365-384.

J. OLLER, D. FERNÁNDEZ, V. TREVÍN, O. ACHON 2019, *La explotación de esmeraldas en el Egipto romano. Primeros resultados del Sikait Project*, “Trabajos de Egiptología”, 10, pp. 283-303.

J. OLLER, D. FERNÁNDEZ, V. TREVÍN, O. ACHON, S. GARCÍA-DILS 2021a, *New evidence regarding emerald production in Roman Egypt at Wadi Sikait (Eastern Desert)*, “Journal of Near Eastern Studies”, 80/1, pp. 123-142.

J. OLLER, D. FERNÁNDEZ, V. TREVÍN, O. ACHON, S. GARCÍA-DILS, F. SÁNCHEZ 2021b, *Emerald mining during the Roman period in the Egyptian Eastern Desert: recent evidence from Wadi Sikait*, “Thetis”, 26, pp. 25-35.

J. OLLER, V. TREVÍN, D. FERNÁNDEZ, J. OLEKSIK, S.E. SIDEBOTHAM 2022a, *A new ‘enigmatic settlement’ discovered in the Eastern Desert of Egypt: Zabara Northwest*, “RÉvue des Etudes Anciennes” 124/1, pp. 71-91.

J. OLLER, D. FERNÁNDEZ, V. TREVÍN, O.E. KAPPER, R. AST, M. OSYPINSKA, S.E. SIDEBOTHAM 2022b, *A falcon shrine at the port of Berenike (Red Sea coast, Egypt)*, “American Journal of Archaeology”, 126/4, pp. 567-591.

D.P.S. PEACOCK 1992, *Rome in the Desert. A Symbol of Power*, Southampton.

R.H. PIERCE 2012, *A Blemmy by any other name... A study in Greek ethnography*, in H. BARNARD, K. DUISTERMAAT, (eds.), *The History of the Peoples of the Eastern Desert*, Los Angeles, pp. 227-237.

T. POWER 2012, “You shall not see the tribes of the Blemmyes or of the Saracens”: on the other barbarians of the Late Roman Eastern Desert of Egypt”, in H. BARNARD, K. DUISTERMAAT, (eds.), *The History of the Peoples of the Eastern Desert*, Los Angeles, pp. 283-297.

J.-L. RIVARD, B.C. FOSTER, S.E. SIDEBOTHAM 2002, *Emerald city*, “Archaeology”, 55, pp. 36-41.

J. RULE 1998, *A risky business: death, injury and religion in Cornish mining, 1780-1870*, in A. KNAPP, A. BERNARD, V.C. PIGOTT, E.W. HERBERT (eds.), *Social approaches to an industrial past: the archaeology and anthropology of mining*, London, pp. 155-73.

M.J.C. SANTOS, H. PIRES, O. SOUSA 2014, *Nuevas lecturas de las inscripciones del santuario de Panóias (Vila Real, Portugal)*, “Sylloge Epigraphica Barcinonesis”, 12, pp. 197-224.

D. SCHWARZ, K. SCHMETZER 2002, *The definition of emerald: the green variety of beryl colored by chromium and/or vanadium*, in *Emeralds of the world, ExtraLapis English 2: The legendary green beryl*, pp. 74-78.

S.E. SIDEBOTHAM 2018, *Berenike, a Ptolemaic-Roman port on Egypt's Red Sea shore*, “KMT”, 29/1, pp. 53-61.

S.E. SIDEBOTHAM, H. BARNARD, L.A. PINTOZZI, R.S. TOMBER, (2005), *The enigma of Kab Marfu'a: precious gems in Egypt's Eastern Desert*, “Minerva”, 16, pp. 24-26.

S.E. SIDEBOTHAM, M. HENSE, M. NOUWENS 2008, *The Red Land. The illustrated archaeology of Egypt's Eastern Desert*, Cairo/New York.

S.E. SIDEBOTHAM, H.M. NOUWENS, A.M. HENCE, J.A. HARRELL (2004), *Preliminary report on archaeological fieldwork at Sikait (Eastern Desert, Egypt), and environs: 2002-2003*, "Sahara", 15, pp. 7-30.

S.E. SIDEBOTHAM, J. GATES-FOSTER, J.-L. RIVARD (eds.) 2019, *The archaeological survey of the desert roads between Berenike and the Nile valley. Expeditions by the University of Michigan and the University of Delaware to the Eastern Desert of Egypt, 1987-2015*, Boston 2019.

S.E. SIDEBOTHAM, I. ZYCH, R. AST, O.E. KAPER, M. HENSE, M. BERGMANN, M. OSYPINSKA, C. NEWTON, A. CARANNANTE, R.S. TOMBER 2020, *Berenike 2019: Report on the Excavations*, "Thetis", 25, 11-22.

H.-J. THISSEN 1979, *Demotische Graffiti des Paneions im Wadi Hammamat*, "Enchoria", 9, pp. 63-92, pl. 11-25.

L. TÖROK (1985), *A contribution to Post-Meroitic chronology: the Blemmyes in Lower Nubia*, "Meroitic Newsletter", 24, pp. 1-96.

R.T. UPDEGRAFF 1988, *The Blemmyes I: the rise of the Blemmyes and the Roman withdrawal from Nubia under Diocletian*, "Aufstieg und Niedergang der römischen Welt", II/10.1, pp. 45-106.

H. UROZ RODRÍGUEZ 2004-2005, *Sobre la temprana aparición de los cultos de Isis, Serapis y Caelestis en Hispania*, "Lucentum", 23-24, pp. 165-180.

W. VAN RENGEN 1995, *A new Paneion at Mons Porphyrites*, "Chronique d'Égypte", 70, pp. 240-245.

D. WIGG-WOLF 2005, *Coins and ritual in late Iron Age and Early Roman sanctuaries in the territory of the Treveri*, in C. HASELGROVE, D. WIGG-WOLF (ed.), *Iron Age coinage and ritual practices*, Mainz, pp. 361-379.

X. YANG 2022, *Worshipping colliery gods in China: a religious view of resource extraction and mining safety*, "The extractive industries and society", 9, p. 101041.