

# Expedition to Atika

In his book *Timna* Rothenberg<sup>1</sup> cites a section of text from Papyrus Harris (Pap. Harris I 78; 1-5), a document which in its entirety is a recounting of the benefactions to gods and people which Ramesses III made during his reign (of 31 years).<sup>2</sup> Here there is a rare reference to copper mines, which he suggests could be an allusion to Timna.<sup>3</sup>

For reasons that will become clear I have chosen to include in my translation a further couple of lines (Pap. Harris I 78; 6-8) which are in my opinion relevant to the understanding of this passage.

'I sent my agents to the foreign land *Atika* [the word 'agents' denotes only the fact that these people were sent in some official capacity, their titles and ranks are not implied in the expression used] to the great copper mines which are in that place. While their ships were filled with them, others went overland on donkeys. It was not heard before since [the] kingship [began]. Their mines were found full of copper which was loaded like tens of thousands to their ships. Ordering them to Egypt, arriving safely, carrying what they made in heaps under the canopied shrine as many copper ingots like hundreds of thousands. They were of the appearance of gold of number 3. I caused that everyone should see them like marvels'.

'I sent butlers and officials to the *mefkat* country [the translation 'butlers and officials' is used here for convenience, the words in the text are official titles which do not necessarily denote a specific post] to my mother, Hathor, mistress of the *mefkat*. Presented to her was silver, gold, royal linen, and many things into her presence, like sand. There were brought for me wonders of real *mefkat* in numerous bags presented before me. It had not been seen brought back since kingship.' [The word *maat* translated here as 'real' is taken to indicate the authenticity of the mineral as opposed to any imitations].




We know from the work of Rothenberg and the Arabah expedition team that the Egyptians were involved in copper mining and smelting activities, especially during the Middle and New Kingdoms. The two most important sites relating to copper are Timna in the Arabah and Bir Nasib in the north-west of Sinai. The first includes a little temple for the goddess Hathor which was originally built by Sethi I (1291-1278, XIXth dynasty) rebuilt by Ramesses II (1279-1212) and later reconstructed by Ramesses III (1182-1151). Above this shrine there is a stela carved in the rock face depicting Ramesses III giving offerings to Hathor. The second site is well described by Professor H. G. Bachman: 'Bir Nasib, the largest smelting site in Sinai, is also a place of copper ore and turquoise mining ... The small adits visible in the sandstone cliffs surrounding the smelting area ... show green lumps consisting of malachite, paratacamite and quartz ... The whole district, extending as far as Um Bogma and Gebel Um Rinna ... is rich in copper mineralisation, all within the Nubian sandstone, Bir Nasib should rather be considered the centre of an ancient copper mining district instead of an individual mine.'<sup>4</sup> The slag heap at this site, which was noticed by Petrie,<sup>5</sup> is estimated by Bachman to be the waste product of the manufacture of 5000 tons of copper.<sup>6</sup>

Rothenberg points to line 3 of the text which reads 'While their ships were filled with them, others went overland on donkeys', as a possible indication that the location of *Atika* is Timna. The mention of access to the mines by land and water fits this location well. It is implied in the text that the people on ships came directly from Egypt, yet where these 'others' on donkeys came from is not implicit. What is implied is that the arrival of both these groups was simultaneous. Who then were



Fig. 1. Depiction of Asiatics. Serabit, Sinai 405. Middle Kingdom.

these others on donkeys and where might they have come from? We are reminded of the great numbers of donkeys brought on expeditions which are mentioned on various of the Sinai stelae (110, 137, 114, etc.) as well as the images of the 'Prince of Retenu' the Asiatic illustrated on his donkey (Fig. 1). Is this an allusion to another people? Finds in the temple of Timna have led Rothenberg to the conclusion that: 'In Timna, according to the evidence in the temple, the Midianites and the Amelekites, the indigenous inhabitants of the area, seem to have become some kind of 'partners' not only in work but also in the worship of Hathor.' (*Timna* p. 183). This evidence is strengthened by finds of two contemporaneous but distinct furnace technologies which appear side by side during the New Kingdom, a situation which might reflect two ethnic groups working together.<sup>7</sup> Were other peoples of the area apart from Egyptians summoned to get on their donkeys and join a re-vitalised industry?

It is interesting to note that what is loaded on the ships is *khemet* , 'copper' where as what ends up in a pile in Egypt are *debet khemet* , 'ingots of copper' whose appearance was that of 'gold of number 3'. The terms *n sp2.* (+ *n sp 3.*) are terms confined to Pap. Harris; the *Wörterbuch* and J. R. Harris both consider these to do with the grading of the quality of copper. In the same papyrus there is another copper related product  *khemet kemet* literally 'black copper'. There is no consensus as yet as to the precise nature of this copper product. One suggestion is that it refers to the plano-convex bun ingots which were the product of one stage of refinement;<sup>8</sup> another suggestion is that this name refers to a special copper and gold alloy that produces a particular black patina. Whatever the precise meanings of these terms they are never the less evidence to the recognition of different types of copper alloy.<sup>9</sup>

The second extract of text (lines 6-8) is interesting as it presents something of a contrast in relation to the section which precedes it. Here the king sends 'Butlers and officials' as opposed to messengers, and these are sent with a task of giving tribute to Hathor Lady of *mefkat*, whereas in the first section the objective is taking. Hathor Lady of *mefkat* was the chief deity of the whole of the mining region consisting of Sinai and the Southern Arabah, to whom both the Serabit and Timna temples were dedicated. Whether the 'Butlers and officials' are going to Timna or Serabit is impossible to say; however, both sites are located in the Egyptian mind within the '*mefkat* country' which is Hathor's domain. *Atika* on the other hand appears to be a specific place-name to which the king's 'messengers' were sent. The only things brought back from the second trip were bags of 'true *mefkat*'. Presuming Rothenberg is right about the location of *Atika*, an area which is covered by Hathor Lady of *mefkat*, it seems natural that a narrative of



acquisition should be followed immediately by one of voyage to the *mefkat* country the object of which was returning tribute to this very goddess.

**What is mefkāt which Hathor is the goddess of and which was so highly prized?**

Champollion took *mefkat* to be green copper ore. He backed his opinion with a drawing that appears in the tomb of Rekhmire (Fig. 2), a depiction of a bowl containing some green substance above which is the caption *mefkat*. Since then there has been a considerable amount of debate concerning the precise meaning of this word. In Harris' eyes however it was Loret who finalised the debate stating that *mefkat* could only be 'turquoise'. All the same, this is a status-quo rather than a conclusion as Harris himself concedes that there are still problems, as although '... the meaning of *mefkat* is clearly established as turquoise and nothing else. It is, not, however, always possible to determine whether the word refers to precious stone, or to faience or glass imitation which bore the same name, though there are clear indications of both.' These varieties of *mefkat* were explained by him in reference to *mefkat maat* ('true *mefkat*'), a term which most commonly appears in formal lists of precious substances. It was his opinion that this term in itself suggests that all other varieties were just imitations of the 'real' thing. In the Introduction to *The inscriptions of Sinai*<sup>10</sup> it is stated that: 'If *mefkat* meant Malachite, as used to be thought, it seems strange that so few malachite objects have been found and that there should be no mention at all in the Egyptian texts of the frequently recurring turquoise.' I might add to this comment that it is just as strange that in all the textual evidence from Sinai and the Arabah it is the mineral *mefkat* which is mentioned, while the word for copper surprisingly appears only three times.<sup>11</sup> This is all the more puzzling in light of the fact that this area became increasingly orientated towards copper from the Middle Kingdom onwards. The confusion and disagreement about the meaning of *mefkat* in itself attests to a state of incompatibility between the Ancient Egyptian concept which is invested in this word and our own modern way of thinking, which has so far been loath to accommodate a single word or set of words that would fulfil the range of meanings which *mefkat* seems to project in its various contexts. Since Harris' publication in 1961<sup>12</sup> considerable work has been done in Sinai<sup>13</sup> which has shed light on the mining and copper smelting industries there. It is now therefore possible to map more accurately the location, nature and development of the Ancient Egyptians' enterprise in Sinai and the Arabah and assess how this information correlates with the development of related terms in the Ancient Egyptian language.

From Pre-dynastic times right through to the New Kingdom period the three main minerals sought after in Sinai and the Arabah were Malachite  $\text{Cu}_2(\text{OH})_2\text{CO}_3$  Paratacamite  $\text{Cu}_2(\text{OH})_2\text{Cl}$  and Turquoise  $(\text{Cu}, \text{Zn})(\text{Al}, \text{Fe})_6(\text{OH})_2(\text{PO}_4)_4 \cdot \text{H}_2\text{O}$ . All are copper ores, the turquoise being the exception in that metal cannot be extracted from it. Around these mining areas there grew an industry of copper smelting the history of which was determined by two main factors: 1. Periods of lull, due to political changes and availability of relevant supplies. 2. The development of new mining and smelting techniques. The shift in the focus of this industry coincided with the advances made by the ancient smelters at their craft, a process which culminated in their mastery of it. A long evolution of furnace design, slag tapping and experiments with different charges<sup>14</sup> culminated in a technology that achieved optimal separation of copper from all the other minerals present in the ore. Much of the evidence for this is to be found in the waste product left behind, namely the slag. Characteristically, the Egyptian industry expanded and reached a peak in the New Kingdom. Rothenberg's comment that 'Although the Pharaohs of the New Kingdom contin-

ued to take an interest in the turquoise mines, the centre of industrial activity clearly shifted to the production of copper'<sup>15</sup> illustrates this process well.

**About the general nature of Sinai's mining stela texts**

Expeditions to foreign and often hostile places in search of minerals and other precious, rare or otherwise unavailable goods were considered by the Egyptians as heroic. The size of the expedition party, its arrival in full force, obstacles faced, unprecedented success and reference to some ceremonial dedication are all part and parcel of the heroic narrative, grand explorations akin to warfare. Despite the rather formulaic structure of such texts their owners were particularly fond, if possible, to express the uniqueness of their own actions, usually by such statements as 'it has not been seen since kingship' or 'the like was not done since kingship'. Unfortunately texts that describe technical processes are rare; it might be that there was no interest in writing such texts, yet it is also possible that none as yet have been unearthed. Even though the texts on the Sinai stela generally adhere to form they still use some specialised vocabulary which alludes specifically to mining and its related activities. Although it is not obviously manifest in the texts we now know that during the Middle Kingdom the technology of smelting was developing, and quite naturally mining activities expanded accordingly. In antiquity this kind of progress might well have been viewed as heroic. For us, how

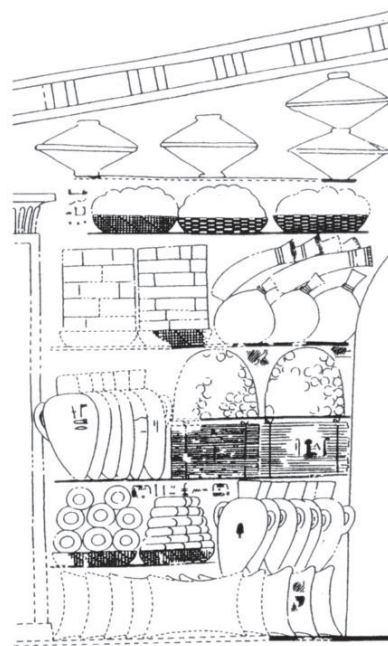


Fig. 2. Storeroom represented in the tomb of Rekhmire. New Kingdom, Thebes.

ever, all that is left from these great innovations are only a collection of ancient inscriptions and the scant ruins of great mining sites, workers camps and slag heaps.

Before going back to the texts in the Sinai itself where *mefkat* comes in narrative contexts let us look at some of the forms in which it appears in lists of products or as a simile in poetic or religious texts.

**Products of mefkāt**

In the illustration from Rekhmire's tomb we observed *mefkat* stored with other particularly precious substances, just as in the texts it appears in formulaic sequence with some of these very same materials.














A good example of this standard phraseology is in the Harris Papyrus:



'gold, silver, true lapis, true mefkat, every true stone, copper, cloth...' This is a fairly typical statement which would often precede a fuller inventory of goods. The qualifying *maat* 'true' refers always, as in this case, to stone minerals rather than metals. Objects are usually not made of 'true mefkat' as can be seen in the varieties of mefkat amulets, scarabs, rings and glass where it comes without the qualifying *maat*. In Harris Papyrus<sup>16</sup> 'wonders of true mefkat (*maat*) in numerous bags' were presented to the king on the officials return from the 'mekfat country'.

An object of particular interest cited in the same Papyrus is *mekfat wedjekh* (*wḏh*), translated in the *Wörterbuch* as 'glass'. The reference here must be to the substance which was used to colour the glass, i.e. fine quality copper ore.<sup>17</sup> We know that high grade malachite was used also in the manufacture of faience,<sup>18</sup> a reference of which is in a love song from Turin papyrus 500: 'its leaves are like unto mefkat and are ... glass (*tchekhnet*=*ḥnt*).' It is of interest to note that the word *tchekhen*, 'gleaming', is related to the word used for faience *tchekhnet*, and is the very same word used in Sinai 26 to describe an aspect of the quality of the mineral. Another adjective used with mefkat is *akh* (*3h*), 'shining'. The green colour of mefkat is illustrated in Rekhmire's tomb and in objects such as *wšbyt wadj im nt mefkat* (*wsbyt w3ḏ im nt mfk3t*) 'green beads'.<sup>19</sup> In the Book of the Dead mefkat is used as a metaphor for the colour of water and sycamore trees.

#### Mefkat in the Sinai stela texts

The expression *khetyu mefkat* (*xyw mfk3t*) 'terraces of mefkat'  is found in three Old Kingdom inscriptions, two from Magharah in Sinai (13 and 17), a third on the Palermo Stone. In Akhtoy's tomb<sup>20</sup> from the Late First Intermediate or Early Middle Kingdom this expression appears in the text together with 'When I was in Bia (*bi3*) '. 'Terraces of mefkat', which has been thought by some to be specifically Wadi Maghara, does not appear after the Old Kingdom in any inscription in Sinai, *Bia* the 'mining country' does. It appears in eight<sup>21</sup> texts, all of which are Middle Kingdom. In inscription 141 it is spelled thus  and in 90 it is spelt , both forms are reminiscent of the writing for 'bronze'<sup>22</sup> -  or  and the writing for 'mineral' .<sup>23</sup> The word for iron is also *bia*. Harris maintains that the expression '*bia n pt* (*bi3 n pt*) (iron from heaven), first occurs in the 19th dynasty...' (Harris, op. cit. n. 12, p. 59). He was of course not aware in 1961 when he published his *Lexicographical Studies* of evidence from Timna and Bir Nasib which has since proved that iron was extracted as a by product of copper smelting in Sinai already in the Middle Kingdom and possibly even earlier. Sinai stela No 127 from the Middle Kingdom has a small (unfortunately disjointed) passage which reads *ir=f pt n bi3*  'he made heaven of iron (*bi3*).' Harris also states that 'In no instance is any of the common determinatives of *bia* used to write the word for copper (), nor is any of the old copper ideograms applied as a determinative to *bia*.' (ibid. p. 61). If this is the case then Sinai 182 (Hatshepsut, 1498-1483), a New Kingdom stela, has both , 'copper' and , 'iron' mentioned in it. We have here two explicit textual references to iron in Sinai which are consistent with the fact that this metal was being extracted there. The connection between the word for iron and the word which begins to be used for the mining area of Sinai in the Middle Kingdom is not surprising in light of the fact that this is the first place where iron was produced by the Egyptians.

The change of use from the term 'Terraces of mefkat' to *Bia*






coincides with and reflects changes in the mining and metal industries of Sinai and the Arabah. It also marks the time when Serabit becomes Sinai's mining cultic centre which Hathor patronises with the hitherto unknown title 'Lady of mefkat'. The hieroglyphic form of the word mefkat in this title also shows changes in its development, initially appearing with the block determinative  which stands for stone and mineral, and/or with  which designates 'hill country' and 'foreign



Fig. 3. Wadi Magharah, Sinai 23. Amenemhet III, year 2. Middle Kingdom.

lands'. Eventually in the New Kingdom it assumes a shorter form of the word with just the mineral determinative  or .

There are many Middle Kingdom stela from the reign of Amenemhet III (1842-1797) in Sinai, not least of which is the one on the ridge above the great slag heap at Bir Nasib (Sinai 46) dated to his 20th year. Although the contents of this text do not elaborate much beyond his title its importance is the enormous slag heap in situ which connects him with copper mining and smelting. It is not surprising that Rothenberg described him as 'the first great "copper king" of the Egyptians'.<sup>24</sup> The same combination of minerals found at Bir Nasib is resident in Wadi Maghara, though the turquoise mines in the latter appear to be more prominent. It is in Wadi Magharah, however, that we find stela no. 23 dated to the second year of the same Amenemhet III where we are informed that the said expedition 'was sent to fetch ', 'mekfat khemty (*ḥmt(y)* or *bia* (*bi3*), which can read either 'mekfat and copper' or 'mekfat, more precisely, copper' (Fig. 3). Whichever is the case, this inscription is of particular importance as it is the only text in Sinai which explicitly states as one of its aims the acquisition of 'copper'. This literal specification that a combination of minerals was sought after is important as it reflects the mining reality described by the archaeologists; it is, however, surprising in its uniqueness. But is it unique in this respect or are there other allusions to the complex of minerals they were exploiting? At Serabit there are three inscriptions of particular interest to our investigation, two of which are from Amenemhet III's reign (1842-1797), the third is Middle Kingdom, reign unknown, nos 53 (year 44), 90 (year 6) and 141. I will deal with each in turn. Stela no. 53 which is located by one of the pits (pit B) does not specify in its narrative the quarry which is sought. There is a nice description of the opening of a gallery, *khetet* (*ḥtt*),<sup>25</sup> considered to be a mine shaft. In line 10 is written rather poetically: 'The mountains produce that which is in them; the mountains and deserts bring their offerings.' This statement makes sense considering the whole area was a hive of diverse mining and smelting activities. No. 90, the famous stela of Hawere, sheds a little more light on the subject. Lines 9-12 read: 'There is mefkat in the mountain forever it is its character<sup>26</sup> which is sought in this season, we have already heard the like before ore has come at this time, however it's the character which is missing completely in this difficult season of summer'. Many others have discussed this passage; suffice it to note that it strong-



ly implies varieties of ore. Hawere's implicit description of mineral prospecting is consistent with a complex Sinaitic industry where both turquoise and the various grades of malachite (for cosmetic, glass and faience colouring, soldering<sup>27</sup> and, of course, copper smelting) were sought. This multiplicity is natural for the Egyptians who were not in the habit of ignoring anything they could exploit. Inscription 141 tells another story, here it says: 'I ordered the work which I was going to do




Fig. 4. Serabit, Sinai 72, Middle Kingdom. '...he offers cones of mefkāt for the majesty of this god.'

and I assessed a delivery of 25 *hekat* of *mefkat* daily, of best quality'. This would amount to about<sup>28</sup> 7.57 litres of best quality *mefkat* per person per day. It is curious that the measure here is one of volume used usually for grain, suggesting that the best quality *mefkat* was at least as fine. This description of *mefkat* is reminiscent of 'the wonders of true *mefkat* in numerous bags' mentioned earlier in Papyrus Harris, as well as finds of powdered malachite which are common in graves ranging from Predynastic Badarian times till the XIXth dynasty.




As for the shape of *mefkat* there is, apart from the bowl in Rekhmire's tomb, a textual reference accompanied with an illustration in the Middle Kingdom Sinai inscription no. 72. It reads '... he offers cones of *mefkat* for the majesty of this god'. The little cones in the man's hand might be the natural shape of a pile of crushed ore, an image which appears several times in Sinai (Fig.4).

## Conclusion

This review of the evidence shows that although it is in some instances tempting to translate *mefkat* as purely turquoise, it is in a wider sense inappropriate. Although I cannot suggest a single word to replace turquoise, considering the evidence, I believe *mefkat* to be a substance which had symbolic as well as practical value, most likely a generic even ideal term for the purest form of the family of copper ores the Egyptians went to fetch in Sinai and the Arabah. It is indisputable that the reference is in many cases to turquoise, but that paratachamite and especially the malachite in all its varieties were ignored is unlikely and contrary to the evidence. It is important to bear in mind that where copper was concerned it was not the metal which was extracted from the ground but the rock ore. The recovery of the metal was achieved by a sophisticated pyrotechnological process in consequence of which the original mineral was totally transformed and any relation to its original form was lost. We take for granted our understanding of this process via the modern concept of chemistry. For the Ancient Egyptian a different rationale was appropriate; it is possible that their concept of the nature of copper bearing ores from the Sinai is preserved in the word *mefkat* .

Dan Levene

## Notes

- <sup>1</sup> Rothenberg 1972.
- <sup>2</sup> The nature of this document is still a matter of discussion. For further reference see: Gottinger *Miscellen* Vol. 123 (1991), pp. 57-90.
- <sup>3</sup> The translation used was the one published by J. H. Breasted in 1906.
- <sup>4</sup> Rothenberg 1987.
- <sup>5</sup> *Researches in Sinai*. W. M. Flinders Petrie. 1906.
- <sup>6</sup> *IAMS*, 10/11, 1987.
- <sup>7</sup> Rothenberg 1990.
- <sup>8</sup> Personal communication Dr J. Merkel.
- <sup>9</sup> Classification of metal alloys in antiquity is also attested from the Pedinato archives found at Ebla.
- <sup>10</sup> A. H. Gardiner et al., 1955, p. 10.
- <sup>11</sup> Sinai 23 - Middle Kingdom 12th dynasty, Sinai 127 - Middle Kingdom, *ir=f pt n bi3* 'he made heaven of copper', Sinai 182 - New Kingdom  (of this particular form there is only the one example), .
- <sup>12</sup> Harris 1961.
- <sup>13</sup> The Arabah Expedition to Sinai 1967-1978.
- <sup>14</sup> 'The combination of crushed ore with fuel and flux prepared for loading in a smelting furnace.'
- <sup>15</sup> Rothenberg 1979, p. 166.
- <sup>16</sup> I 78; 5-8.
- <sup>17</sup> Lucas 1962, pp. 188-9.
- <sup>18</sup> *Ibid.* pp. 172-4, 340-4.
- <sup>19</sup> *Mutt. u. Kind* 1.1, Middle Kingdom.
- <sup>20</sup> Gardiner 1917.
- <sup>21</sup> Sinai 53: 3; 90:2, 3, 9, 13; 106: N1; 115: W5; 141: W5; 167; 409: 4; 36: 3, 5-6.
- <sup>22</sup> *Concise Dictionary of Middle Egyptian*. R. O. Faulkner. Oxford, 1962, p. 80.
- <sup>23</sup> Sinai 90, and 53 where it appears as .
- <sup>24</sup> Rothenberg 1979, p. 164.
- <sup>25</sup> See also Akhtoy's tomb (Gardiner 1917) in which there is mention of the opening of a *khetet* within 'this mountain of the house of Horus of the *mefkat* terraces'.
- <sup>26</sup> 'To bow down to everybody, not to hide the face from a starving man: "The helping hand is what is beloved." That is (*inn*) Character.' U.C. 14333. A neglected Wisdom Text. H. Goedicke, *JEA* 48 1962-3 (I would like to thank J. Clayton for bringing my attention to this parallel).
- <sup>27</sup> *Jewels of the Pharaohs*. Cyril Aldred. London, 1971.
- <sup>28</sup> Faulkner, op. cit., in note 22.

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