

Sonderdruck aus:

Markus Köhbach, Stephan Procházka, Gebhard J. Selz, Rüdiger Lohlker (Hrsg.), *Festschrift für Hermann Hunger zum 65. Geburtstag gewidmet von seinen Freunden, Kollegen und Schülern (Wiener Zeitschrift für die Kunde des Morgenlandes 97)*. Institut für Orientalistik: Wien 2007

The Winged Snakes of Arabia and the Fossil Site of Makhtesh Ramon in the Negev

By KAREN RADNER (London)

Hermann HUNGER is renowned for his expertise in Ancient Near Eastern astronomy and mathematics, and as his student I had the good fortune to be instructed by him in these rarely taught subjects. As a small token of my gratitude I would like to offer him the present paper which attempts to link Ancient Near Eastern studies with yet another „hard science”, palaeontology.

Winged snakes are reported independently in an annalistic text of Esarhaddon of Assyria¹ and in the *Histories* of Herodotus (II 75; III 109) and associated in both accounts with the desert that links Egypt with the Levant and is controlled by the Arabs. Modern commentators have often seen these reports as no more than a good story. While the Assyrian account was only recently termed „a mixture of a military itinerary ... and imaginary heroic clichés”², Herodotus’ version has been used as undeniable proof that the Father of History was a „liar”, prone to embellish and even make up what he presented as fact: there are no winged snakes, therefore Herodotus cannot have seen their skeletons, as he claims, therefore he must have invented the story.³

Yet if the same creatures are referenced already in an Assyrian account of an expedition conducted in 671 BC, more than two centuries before the composition of the *Histories*, the story of the winged snakes cannot be explained simply as the product of Herodotus’ fertile imagination. But do Esarhaddon’s annals actually make mention of winged snakes?

That snakes similar to those described by Herodotus – and many later Classical writers⁴ – are mentioned in a fragmentarily preserved clay tablet from Nineveh with a year-by-year account of Esarhaddon’s military campaigns has been maintained by Assyriologists since the early days of the discipline, but it is worthwhile to point out that the passage in question is rather damaged: according to the standard edition of K 3082+ K 3086+ Sm 2027 by R. BORGER, the crucial sign MUŠ = *šēru* „snake” is not preserved on the tablet,⁵ and its restoration cannot easily be separated from the fact that pioneers of Assyriology such as E. SCHRADER and H. WINCKLER were of course familiar with the

¹ K 3082+ K 3086+ Sm. 2027; edition: Borger 1956: 111-113: § 76 = Fragment F.

² Tadmor 1999: 59.

³ Most importantly Fehling 1971: 20-23.

⁴ The reports of Cicero, Pomponius Mela, Pliny the Elder, Josephus, Pausanias, Aelian, Solinus, Ammianus Marcellinus and Isidoros of Sevilla are collected and discussed by Rollinger / Lang 2005; they are taken to be dependent on Herodotus’ accounts.

⁵ Borger 1956: 112-113: § 76 rev. 4.

passages in Herodotus and also the Biblical account of winged snakes in the desert (Isaiah 6:2.6; 14:29; 30:6)⁶ – knowledge which may well have prompted the reading and interpretation of the damaged Assyrian text. The *Akkadisches Handwörterbuch*, for example, does not have faith in the winged snakes and proposes to restore a bird name instead.⁷

A careful autopsy of the original tablet must therefore stand at the beginning of our investigation, and the following edition of the relevant parts of the text is based on my collations in the British Museum in October 2006.⁸ As regards the winged snakes or more precisely „yellow snakes spreading wings”, they exist, at least according to our text – while the sign MUŠ in rev. 6 is damaged, the remaining traces make it virtually certain that its restoration is correct: what survives is the final *Winkelhaken* and the heads of the three verticals preceding it.⁹ The following is my edition of the relevant passage.

rev.

- 1 *ki-i qí-bit AN.ŠÁR EN-ia ina GEŠTUG₂.MEŠ-ia ib-ši-ma*
[*uš-ta-a-bi-la k*] *a-bat-ti*
- 2 ANŠE *gam-mal-li šá LUGAL.MEŠ KUR.A-ri-bi ka-li-šú-un*
a[d-ke-e-ma KUŠ.na-a-di KUŠ.ḫi-in-ti¹⁰ e-m]id-su-nu-ti
- 3 ʾ2ʾ0 DANNA *qaq-qar ma-lak* 15 U₄.ME *ina ši-pik b[a-ši KALAG.MEŠ*
a-šar šu-ma-a-me¹¹] ar-di
- 4 4 DANNA *qaq-qar ina NA₄gab-e mu-ša [...]* *al-lik*
- 5 4 DANNA *qaq-qar ma-lak* 2 U₄.ME MUŠ 2 SAG.DU.MEŠ x¹² ... *ša*
li-pit-su-u]n¹³ mu-tú-ma
- 6 *ad-da-iš-ma e-ti₇-iq* 4 DANNA *qaq-qar ma-lak* [2 U₄.ME MU]Š.MEŠ
SIG₇.MEŠ

⁶ Discussed by Rollinger 2005: 931-933; establishing these passages' composition date is problematic: it may be as late as the 4th century BC.

⁷ *AHw* 1065 s.v. *šabābu, šapāpu* D: „Flügel spreizen: [Vögel?] *ša šu-ub-bu-bu agappē*.”

⁸ I would like to thank the Trustees of the British Museum for the possibility to consult the original tablet in the students' room of the Department of the Ancient Near East. An edition of the full text is presented in my forthcoming article „Esarhaddon's expedition from Palestine to Egypt in 671 BC: A trek through Negev and Sinai” in the *Festschrift* in honour of Hartmut Kühne.

⁹ Note also the collation of the sign by Michael Jursa reported by Rollinger 2004: 944.

¹⁰ Restored after Borger 1956: 113: § 78 obv. 10 (with improved reading KU[Š.n]a-a-di KUŠ.ḫi-in-ti given in Borger 1957/58: 118).

¹¹ The restoration follows the parallel text of Esarhaddon's stela from Zanjirli: Borger 1956: 98: § 65 rev. 36.

¹² The broken sign begins with a Winkelhaken and a vertical wedge; these remains do not allow the restoration of the sign KA, as tentatively suggested by Borger 1956: 112.

¹³ Restoration according to parallels in ritual texts, see CAD M/2 318 s.v. *mūtu* d.

7 *ša šu-ub-bu-bu a-gáp-pi* 4 DANNA *qaq-qar ma-lak* 2 U₄[ME ... x]¹⁴ li ti
 8 16¹ DANNA *qaq-qar ma-lak* 8 U₄.ME *ar-di* [... x]¹⁵ *ma-a-diš*
 9 ^dAMAR.UTU EN GAL-ú *re-šu-ti il-lik* [...]
 10 *ú-bal-liš ZI-ti ERÍN.HI.A-ia* 20 U₄.ME 7 [...]
 11 *ša mi-šir* "KUR.Mu-šur áš-t" *a-kan nu-bat-ti* [...]

(rev. 1) According to the command of my lord Aššur, an idea came to my mind and I conceived (the following): ⁽²⁾ I mobilised the camels of all the kings of Arabia and loaded them with [water skins and water containers]. ⁽³⁾ Twenty 'miles' of land, a journey of 15 days, I marched through [mighty sand] dunes. ⁽⁴⁾ Four 'miles' of land I travelled over alum, *mušû* stones [and other stones]; ⁽⁵⁻⁷⁾ four 'miles' of land, a journey of two days, I stepped repeatedly on two-headed snakes¹⁶ [... whose *touch*] is deadly, but continued; four 'miles' of land, a journey of [two days] – yellow snakes spreading wings (but continued); four 'miles' of land, a journey of two days, [...]: ⁽⁸⁾ (in sum) 16 'miles' of land, a journey of eight days, I marched. [...] very much. ⁽⁹⁾ The great lord Marduk came to my rescue [...]. ⁽¹⁰⁾ He revived my troops. Twenty days seven [...]⁽¹¹⁾ of the border of Egypt, I set up a night camp [...].

According to this text, the „yellow snakes spreading wings” are one of the landmarks that are used in the account of Esarhaddon's campaign from Palestine to Egypt to evoke a remote and dangerous environment, devoid of human settlements. The itinerary mentions a journey of 15 days covering twenty 'miles' (of c. 10.8 km each) of desert and a journey of eight days covering 16 'miles' of rocky, dangerous terrain which brings the Assyrian army, with the help of camels mustered from Arabian allies, from the region of Rapihu (mod. Rafah) to the Isthmus of Suez. As I have discussed elsewhere,¹⁷ this itinerary of c. 390 km describes not, as often assumed, a march tracking the Mediterranean coast, the so-called *via maris*, but instead a trek through the Negev highlands, following the first stages of the Spice Route, and then across the Sinai desert; this gives us the general location of the winged snakes encountered by the Assyrians in 671 BC.

Herodotus, on the other hand, first mentions the winged snakes in his overview of the spectacular fauna of Egypt; although he tends to focus on the exotic and sensational his account seems to be informed by detailed knowledge, can be at times confirmed by independent information and is generally

¹⁴ The remains of the sign indeed look like GAD, as read by Borger 1956: 112, but may also be interpreted as the final wedges of a sign such as RI. I am unable to suggest a convincing reading and interpretation of the passage, also because it is unclear how many signs are to be restored in the gap.

¹⁵ Only a vertical wedge survives of the first sign after the gap.

¹⁶ Two-headed snakes are also mentioned in the lexical list HAR-*ra* = *hubullu* and in the omen compendium *Šumma ālu* (CAD Š 149 s.v. *šēru* B 1.e.).

¹⁷ See fn. 8.

taken to be reliable – with the exception of the winged snakes which, to the best of our knowledge, do not exist, neither today nor in the first millennium BC. „Not far from the town of Buto, there is a place in Arabia to which I went to learn about the winged serpents. When I came thither, I saw innumerable bones and backbones of serpents; many heaps of backbones there were, great and small and smaller still. This place, where lay the backbones scattered, is where a narrow mountain pass opens into a great plain, which is joined to the plain of Egypt. Winged serpents are said to fly at the beginning of spring, from Arabia, making for Egypt; but the ibis birds encounter the invaders in this pass and kill them. The Arabians say that the ibis is greatly honoured by the Egyptians for this service, and the Egyptians give the same reason for honouring these birds” (*Histories* II 75). And after describing the ibis bird Herodotus continues: „The serpents are like water-snakes. Their wings are not feathered but most like the wings of a bat” (*Histories* II 76b).¹⁸ The second passage in the *Histories* discussing the winged snakes mentions them in conjunction with the description of how the Arabs collect frankincense; this account has little in common with how frankincense is actually produced but succeeds in presenting the enterprise as an extremely dangerous one, as the winged serpents that guard the frankincense trees are small but deadly: „Again, Arabia is the most distant to the south of all inhabited countries; and this is the only country which yields frankincense and myrrh and casia and cinnamon and gum-mastic. All these but myrrh are difficult for the Arabians to get. They gather frankincense by burning that storax which Phoenicians carry to Hellas; this they burn and so get the frankincense; for the spice-bearing trees are guarded by small winged snakes of varied colour, many round each tree; these are the snakes that attack Egypt. Nothing save the smoke of storax will drive them away from the trees” (*Histories* III 107).¹⁹ Herodotus subsequently deals with the unusual pattern of these snakes’ procreation, resulting first in the death of the male after copulation and then in the death of the female in the course of the birth of the young (*Histories* III 109).

Attempts to reconcile Herodotus’ description with existing animals are a testament to the goodwill of modern scholars towards the Father of History, but the identification with flying lizards (*Draco volans*, found in far-away Malaya rather than in the Arabian desert) or, remarkably, locusts are highly problematic; they both have been thoroughly refuted,²⁰ and justly so in my opinion.

¹⁸ Herodotus. *The Persian Wars 1: Books I-II*, with an English translation by A.D. Godley (= Loeb Classical Library 117), Cambridge MA and London 1926 (revised ed.), 360-363.

¹⁹ Herodotus. *The Persian Wars 2: Books III-IV*, with an English translation by A.D. Godley (= Loeb Classical Library 118), Cambridge MA and London 1938 (revised ed.), 134-135.

²⁰ Most recently by Braun 2004: 272-273 and Rollinger 2005: 929-930 (both with previous literature).

Herodotus mentions that the site where he saw the bones of the winged snakes was in Arabia, „not far from the town of Buto.” Buto or Per-Wadjet, to use the Egyptian rather than the Greek name (mod. Tell el-Fara'in²¹), is situated in the north-western delta of the Nile, and to describe it as in the vicinity of Arabia makes sense only when thinking in grand dimension. Yet Herodotus presents this story in his survey of the fauna of all of Egypt and compared to, say, Thebes Buto is indeed close to Arabia. Yet the reason why Herodotus connects Buto with his account about the winged snakes in the first place would appear to be associative: as it happens, that city's principal deity is the goddess Wadjet / Uto who was commonly depicted as a cobra, and sometimes even as a winged cobra.²² This has led some scholars, most recently Robert ROLLINGER, to see Wadjet at the root of what he terms the „Wundergeschichte” of the winged snakes.²³

If a geographical connection with Buto is given only in a very general sense, what, then, can be gained from Herodotus' account in terms of historical geography? Firstly, a close connection between the winged snakes and the desert of Arabia; secondly, an association with Arabs and frankincense; thirdly, the description of a specific site where bones of the winged snakes can be seen: „When I came thither, I saw innumerable bones and backbones of serpents; many heaps of backbones there were, great and small and smaller still. This place, where lay the backbones scattered, is where a narrow mountain pass opens into a great plain, which is joined to the plain of Egypt.”

Herodotus speaks only of the skeletons of winged snakes, and this has recently led Adrienne MAYOR²⁴ to postulate that what he saw were fossils rather than remains of recently deceased animals; *a priori* this idea could also be reconciled with the mention of winged snakes in Esarhaddon's itinerary (which does not specify whether the animals are dead or alive²⁵), a source that MAYOR is not familiar with. However, her attempt to identify the winged snakes with fossils of *Spinosaurus aegyptiacus* from the Cretaceous age²⁶ is unsatisfactory: while very well attested in the Bahariya Oasis in Egypt's Western Desert, these

²¹ Identified in 1888 by Sir Flinders Petrie and since 1983 excavated by the German Archaeological Institute, with ongoing publication of reports in the journal *Mitteilungen des Deutschen Archäologischen Instituts Kairo* since 1984.

²² Fischer-Elfert 1986.

²³ Rollinger 2005: 936. The possibility is also discussed and dismissed by Braun 2004: 273-277 (with previous literature) who in my opinion has a good point when he argues that the cobra, especially in its representation as uraeus, holds a very special place in Egyptian culture and must be distinguished from other snakes (p. 276-277).

²⁴ Mayor 2000: 135-136, 306 (n. 29); there is no need to locate a second Buto in the Suez area. Additional literature on *Spinosaurus aegyptiacus* in Braun 2004: 277-278.

²⁵ Contra Braun 2004: 272 who is mistaken when he asserts that Esarhaddon claims to have seen the snakes alive.

²⁶ See also Braun 2004: 277-278.

fossils are not known at all in what would have been referred to as Arabia by either Herodotus or Esarhaddon and moreover, with an estimated length of 12-17 m spinosaurs are far too big to fit the search profile;²⁷ none of their skeletal parts on its own is likely to have been described as the bones of a winged snake.

That *Spinosaurus aegyptiacus* fossils cannot be linked to the report of the winged snakes of Arabia is of course not a valid argument against the basic idea that Herodotus (and Esarhaddon) might describe fossils rather than contemporary animals. But are there any fossil finds that can be reasonably associated with the winged snakes? Rather than looking through the palaeontological literature for dinosaurs that might be thus described²⁸ we should use the geographical information gained from our sources to identify a region where appropriate fossil assemblages might have been interpreted as the remains of winged snakes. This region is „Arabia” according to Herodotus and for him, this toponym designates the Sinai and the Negev,²⁹ this is of course also the arena of Esarhaddon’s march from Palestine to the Eastern Delta: it is in this very area that we must cast our net.

And the region of modern day Israel is fortunately very well explored in terms of geology and palaeontology, including the Sinai which was thoroughly investigated by Israeli researchers in the aftermath of the Sinai Campaign in 1956.³⁰ When looking for winged snakes, the c. 97 million year-old fossils of aquatic snakes with hind legs come first to mind, recent finds which have renewed interest in the evolutionary origin of snakes and generated intense debate.³¹ A layperson, modern or ancient, may easily be excused if interpreting the remains of *Pachyrhachis problematicus*³², *Haasiophis terrasanctus*³³ and *Eupodophis descouensi*³⁴ as those of winged serpents, but that specifically these Cretaceous fossils lie at the root of our story is highly unlikely: not only were the fossil deposits not openly visible, they stem from Ein Yabrud near Jerusalem and Haqel in Southern Lebanon – regions too far to the north to be reconciled with the information gained from Esarhaddon and Herodotus.

²⁷ As also stressed by Braun 2004: 278.

²⁸ Note the (not very thorough) attempt to do so by Braun 2004: 278-279.

²⁹ Hoyland 2001: 2-3.

³⁰ Cf. Meshel 2000: iii: „In 1967 the gates of Sinai were thrown open to Israeli researchers.”

³¹ See Coates / Ruta 2000; note that Rage / Escuillié 2003 argue that three more fossil snakes, also from the Mediterranean region and the Cenomanian age, for whom posterior limbs have not yet been demonstrated, are hindlimbed and closely related to the group of „snakes with legs”.

³² Caldwell / Lee 1997; Zaher / Rieppel 2002.

³³ Tchernov *et al.* 2000; Rieppel *et al.* 2003.

³⁴ Rage / Escuillié 2000; Rieppel / Head 2004.

A far better candidate for identification with the bones of the winged snakes is the rich fossil deposit inside the crater of Makhtesh Ramon in Israel, c. 85 km south of Beer-Sheva (fig. 3, inset map). Makhtesh Ramon (also known as Makhtesh Gadol or under its Arabic name, Wadi Ruman) is a large erosional crater of a length of c. 35 km and a width of between 2 and 9 km, surrounded by steep walls of a height of c. 400 m, and it has justly been described as a „laboratory of nature”³⁵: when the creation of the Arava Rift Valley changed the course of the rivers of the region c. 5 million years ago, the water course of Nahal Ramon began to carve out the inside of the crater by erosion, and as the wadi deepened, more and more geological strata were uncovered: its exposed rock sequence ranges from the Middle Triassic to the Cenomanian age and contains rich fossil assemblages.³⁶

Makhtesh Ramon is situated at the transition from the Central Negev Highlands to the Southern Negev, in the boundary zone between steppe and desert.³⁷ In antiquity, it was well connected to the international road and trade network and an important station of the Frankincense Route,³⁸ or Spice Route, as it is also called. This is owed to its geographic position but also to the spring of Ein Saharonim (also known as Sha-ar Ramon, Qasr el-Ein or Qasr el-Mahle)³⁹ which is situated at the lowest spot in the crater, the only reliable natural water source of the region. Makhtesh Ramon is ideally placed on the route from the northern shore of the Red Sea (or Petra in Jordan) to the Mediterranean coast;⁴⁰ today the highway connecting Eilat and Avdat / Oboda follows the same way,⁴¹ but note that the traditional tracks did not correspond with today's road which leads up from the plain to the modern settlement of Mitzpe Ramon (fig. 1).

Makhtesh Ramon's present name „Roman valley / crater” refers to the fact that the route was used in Roman times, as indicated by six pairs of milestones found within the crater,⁴² and the course of the road which was constructed by the Nabataeans in the first century BC⁴³ can be tracked with confidence: it leads from the spring of Ein Saharonim / Sha-ar Ramon up to the Maḥmal

³⁵ Krasnov / Mazor 2001.

³⁶ Nevo 1968: 257.

³⁷ Orni / Efrat 1980: 15-34; Evenari *et al.* 1982: 29-74.

³⁸ On the Frankincense Route and the frankincense trade see Groom 1981 and Keay 2006.

³⁹ Meshel / Tsafirir 1974: 118, pl. XVIII.D (photo); Meshel / Tsafirir 1975: 12-14 (discussion of road station built in first century BC).

⁴⁰ For the so-called „Petra-Gaza Road” see Cohen 1982.

⁴¹ See the map of Rosen 1993: 442 fig. 1.

⁴² Meshel / Tsafirir 1974: 107 fig. 2 (position), pl. XVI.D, XVII.A (photos); Meshel / Tsafirir 1975: 3-8 (discussion).

⁴³ Meshel / Tsafirir 1974: 106.

Pass (Naqep Maḥmala) where it overcomes the steep northern cliff of Makhtesh Ramon (fig. 2).⁴⁴ In the course of the construction of the Nabataean road the pass was cleared, secured and also fortified, but whether this particular path had also earlier on been the preferred route through the crater is unclear.⁴⁵ Yet wherever it is that the northern cliff is scaled the rich fossil deposits enclosed in the rock sequence cannot fail to attract the attention of the traveller.

Fossils at Makhtesh Ramon have first been reported in the palaeontological literature of the 1940s and systematic studies have been published since the 1950s.⁴⁶ Although the fossils from Makhtesh Ramon are widely known to palaeontologists and also tourists, references to these finds lack entirely in the archaeological literature.⁴⁷ This is surprising in light of the fact that fossils are known to have been part of the conscious environment of the local population in antiquity: in the Hathor temple at nearby Timna, for example, fossils constitute one of the most important groups of offerings.⁴⁸

Of the fossils of Makhtesh Ramon (fig. 3), the spiral ammonites in various sizes are most obvious to the modern visitor, with diameters of a centimetre to more than a meter and openly visible and accessible on the surface of the hill-sides of the crater at eye's level height;⁴⁹ this has sadly led to major damage as a result of the last decades' increased tourist activity. Higher up on the hill-sides, rich vertebrate fossil assemblages can be found, such as the remains of various sauropterygia⁵⁰ and amphibians. It should be noted that these fossils are easy to spot, as the cream-coloured rock sets off the darker bones. When Esarhaddon's account speaks of „yellow" snakes, this description can easily be reconciled with the colour of the fossils at Makhtesh Ramon. For us, the most relevant published collection of fossils are the amphibian remains which, to a layman's eye, indeed resemble snakes with wings: fossils of long-bodied salamanders (*Ramonellus longispinus*), different frog species and their tadpoles

⁴⁴ Meshel / Tsafirir 1974: 107 fig. 2, 114-118, pl. XVI.C, XVII.A.B.C, XVIII.B.

⁴⁵ Meshel / Tsafirir 1974: 114: „Although it is almost certain that the actual course was already known in early periods, it may be assumed that the Nabataeans were responsible for building the path for the passage of caravans when the road and Maḥmal Fort were constructed.”

⁴⁶ For a brief history of the exploration of the Makhtesh Ramon fossil finds see Rieppel *et al.* 1999: 1.

⁴⁷ Most surprisingly, even Rosen 1994: 9-12, despite giving a good description of the modern and ancient environment, does not refer to the fossil deposits.

⁴⁸ Rothenberg 1972: 176 with pl. 105-108.

⁴⁹ For a general columnized section of the Lower Cretaceous age at Makhtesh Ramon see Nevo 1968: 259 fig. 2

⁵⁰ Rieppel *et al.* 1999. For the gigantic mosasaurus discovered only in 1994 in the Oron phosphate mine see Christiansen / Bonde 2002.

were openly visible at the so-called „Amphibian Hill” in the southeast of the crater⁵¹ and have been scientifically excavated and studied.⁵²

I propose to identify Makhtesh Ramon as the site to which the accounts about winged snakes of Esarhaddon and Herodotus refer. Herodotus’ description of the site as „where a narrow mountain pass opens into a great plain, which is joined to the plain of Egypt” matches the fact that the known path leads through a cramped pass from the Negev highlands down into the crater, descending more than 400 m into a plain that is part of the Negev desert, the Sinai’s eastern extension. Its geographical position fits both sources and makes good sense as a part of Esarhaddon’s itinerary from Rapihu to Egypt.⁵³ Moreover, Makhtesh Ramon features visible remains of „innumerable bones and backbones of” vertebrate fossils, „great and small and smaller still”, some of which – especially *Ramonellus longispinus*, a salamander with a very elongated snake-like body⁵⁴ – indeed invoke the idea of winged snakes (fig. 4a.b).

Adrienne MAYOR⁵⁵ has convincingly shown that the rich assemblages of *Protoceratops* fossils of the Gobi Desert in Mongolia are at the root of the stories about the gold-guarding griffins of classical legend: these remains could easily have been interpreted as those of lion-like creatures with beaked, long-eared heads, and the presumed presence of such beasts in a region rich in gold may have been used by the Scythians who prospected the Gobi to discourage others from venturing into the area, with the fossils providing tangible proof for the tales of monstrous guardians. Widespread belief in the existence of such monsters was likely to be a useful element in a protective strategy employed to dissuade potential competitors by emphasising the need for special knowhow in order to survive in a hostile and alien environment. A parallel to this can easily be recognized in the story of the winged snakes: here, the region guarded by dangerous creatures is the Frankincense Route through the Negev and beyond, which is under the exclusive control of the Arabs and their camel caravans – the real expertise necessary to master the perilous journey from Oman and Yemen to the Mediterranean is complemented by another, imagined skill of harvesting and transporting frankincense despite the presence of the dangerous winged snakes, and the brief mention of „yellow snakes spreading wings” in Esarhaddon’s account of the trek to Egypt demonstrates that this story circulated among those who traded and interacted with the Arabs as early as the 7th century BC.

⁵¹ Nevo 1968: 258 fig. 1 (= Nevo / Estes 1969: 541 fig. 1), 260 fig. 3.

⁵² Nevo 1956; 1964; 1968; Nevo / Estes 1969.

⁵³ Discussed in detail in another forthcoming article, see fn. 8.

⁵⁴ Estes 1981: 25.

⁵⁵ Mayor 2000: 15-53.

Literature

- Borger R. 1956. *Die Inschriften Asarhaddons, Königs von Assyrien (Archiv für Orientforschung Beiheft 9)*. Graz.
- Borger R. 1957/58. „Die Inschriften Asarhaddons (AfO Beiheft 9).” *AfO* 18: 113-118.
- Braun T. 2004. „Spines of Winged Snakes.” In V. Karageorghis and I. Taifacos (eds.), *The World of Herodotus: 265-285* Nicosia.
- Caldwell M.W., Lee M.S.Y. 1997. „A Snake with Legs from the Marine Cretaceous of the Middle East.” *Nature* 386: 705-709.
- Christiansen P., Bonde N. 2002. „A New Species of Gigantic Mosasaur from the Late Cretaceous of Israel.” *Journal of Vertebrate Paleontology* 22: 629-644.
- Coates M., Ruta M. 2000. „Nice Snake, Shame about the Legs.” *Trends in Ecology and Evolution* 15: 503-507.
- Cohen R. 1982. „New Light on the Date of the Petra-Gaza Road.” *Biblical Archaeologist* 45: 240-247.
- Estes R. 1981. *Gymnophiona, Caudata* (Handbuch der Paläoherpetologie / Encyclopedia of Paleoherpitology 2) Stuttgart and New York.
- Evenari M., Shanan L., Tadmor N. 1982. *The Negev: The Challenge of a Desert*. Cambridge MA.
- Fehling D. 1971. *Die Quellenangaben bei Herodot*. Berlin.
- Fischer-Elfert H.-W. 1986. „Uto.” *Lexikon der Ägyptologie* 6: 906-911.
- Groom N. St.J. 1981. *Frankincense and Myrrh: A Study of the Arabian Incense Trade*. London.
- Hoyland R.G. 2001. *Arabia and the Arabs: From the Bronze Age to the Coming of Islam*. London and New York.
- Keay J. 2006. *The Spice Route: A History*. Berkeley and London.
- Krasnov B., Mazor E. (eds) 2001. *The Makhteshim Country: A Laboratory of Nature. Geological and Ecological Studies in the Desert Region of Israel*. Sofia.
- Mayor A. 2000. *The First Fossil Hunters: Paleontology in Greek and Roman Times*. Princeton.
- Meshel Z. 2000. *Sinai: Excavations and Studies* (BAR International Series 876). Oxford.
- Meshel Z., Tsafrir Y. 1974. „The Nabatean Road from Avdat to Sha-ar Ramon.” *Palestine Exploration Quarterly* 106: 103-118.
- Meshel Z., Tsafrir Y. 1975. „The Nabatean Road from Avdat to Sha-ar Ramon.” *Palestine Exploration Quarterly* 107: 3-21.
- Nevo A. [= Nevo E.] 1956. „Fossil Frogs from a Lower Cretaceous Bed in Southern Israel (Central Negev).” *Nature* 178: 1191-1102.
- Nevo E. 1964. „Fossil Urodeles in Early Lower Cretaceous Deposits of Makhtesh Ramon, Israel.” *Nature* 201: 415-416.
- Nevo E. 1968. „Pipid Frogs from the Early Cretaceous of Israel and Pipid Evolution.” *Bulletin of the Museum of Comparative Zoology* 136: 255-318.

- Nevo E., Estes R. 1969. „*Ramonellus longispinus*, an Early Cretaceous Salamander from Israel.” *Copeia* 1969: 540-547.
- Rage J.C., Escuillié F. 2000. „Un nouveau serpent bipède du Cénomaniens (Crétacé): Implications phylétiques.” *Comptes rendus de l'Académie des sciences de Paris, Sciences de la Terre et des Planètes* 330: 513-520.
- Rage J.C., Escuillié F. 2003. „The Cenomanian: Stage of Hindlimbed Snakes.” *Carnets de Géologie / Notebooks on Geology, Maintenon, Article* 2003/01 (CG2003_A01_JCR-FE).
- Rieppel O., Mazin J.-M., Tchernov E. 1999. *Sauropterygia from the Middle Triassic of Makhtesh Ramon, Negev, Israel* (Fieldiana: Geology new series 40) Chicago.
- Rieppel O., Zaher H., Tchernov E., Polcyn M.J. 2003. „The Anatomy and Relationships of *Haasiophis terrasanctus*, a Fossil Snake with Well-Developed Hind Limbs from the Mid-Cretaceous of the Middle East.” *Journal of Paleontology* 77: 536-558.
- Rieppel O., Head J.J. 2004. „New Specimens of the Fossil Snake genus *Eupodophis* Rage and Escuillié, from the Mid-Cretaceous of Lebanon.” *Memorie della Società Italiana di Scienze Naturali e Museo Civico di Storia Naturale di Milano* 23: 1-26.
- Rollinger R. 2004. „Herodot (II 75f, III 107-109), Asarhaddon, Jesaja und die fliegenden Schlangen Arabiens.” In H. Heftner and K. Tomaschitz (eds.) *Ad fontes! Festschrift für Gerhard Dobesch zum 65. Geburtstag*: 927-944 Vienna.
- Rollinger R., Lang M. 2004. „Die fliegenden Schlangen Arabiens: Transfer und Wandlung eines literarischen Motivs in der antiken Überlieferung – ein Florilegium.” In F. Beutler and W. Hameter (eds.) „*Eine ganz normale Inschrift*” und Ähnliches zum Geburtstag von Ekkehard Weber: *Festschrift zum 30. April 2005 (Althistorisch-epigraphische Studien 5)*: 101-109 Vienna.
- Rosen S.A. 1993. „A Roman-Period Pastoral Tent Camp in the Negev, Israel.” *Journal of Field Archaeology* 20: 441-451.
- Rosen S.A. 1994. *Archaeological Survey of Israel: Map of Makhtesh Ramon (204)*. Jerusalem.
- Rothenberg B. 1972. *Timna: Valley of the Biblical Copper Mines*. London.
- Tadmor H. 1999. „World Dominion: The Expanding Horizon of the Assyrian Empire.” In L. Milano et al. (eds.) *Landscapes: Territories, Frontiers and Horizons in the Ancient Near East* (History of the Ancient Near East Monographs III/1): 55-62. Padova.
- Tchernov E., Rieppel O., Zaher H., Polcyn M.J., Jacobs L.L. 2000. „A Fossil Snake with Limbs.” *Science* 287: 2010-2012.
- Zaher H., Rieppel O. 2002. „On the Phylogenetic Relationships of the Cretaceous Snakes with Legs, with special Reference to *Pachyrhachis problematicus* (Squamata, Serpentes).” *Journal of Vertebrate Paleontology* 22: 104-109.

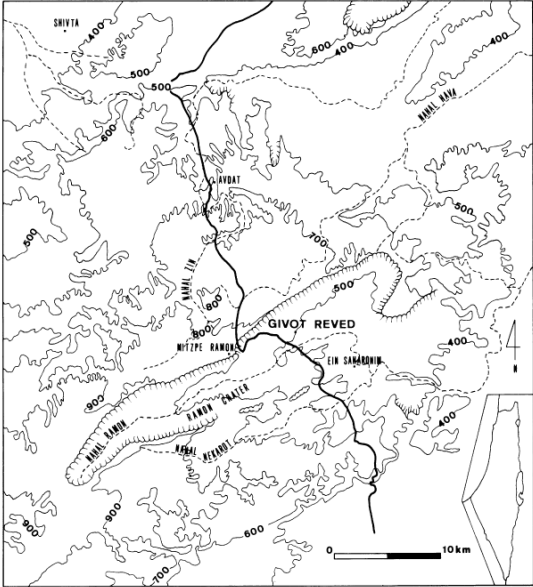


Fig. 1: The crater of Makhtesh Ramon (from Rosen 1993: 442)

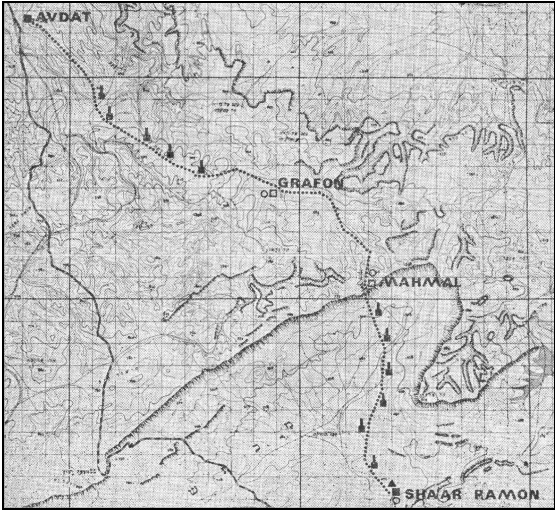


Fig. 2: The Nabataean road between Avdat and Sha'ar Ramon (from Meshel / Tsafir 1974: 107 fig. 2)

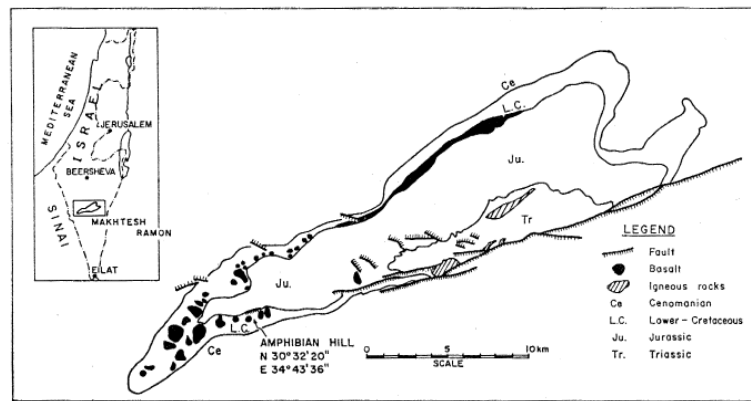


Fig. 3: The geology of Makhtesh Ramon (from Nevo 1968: 258 fig. 1)

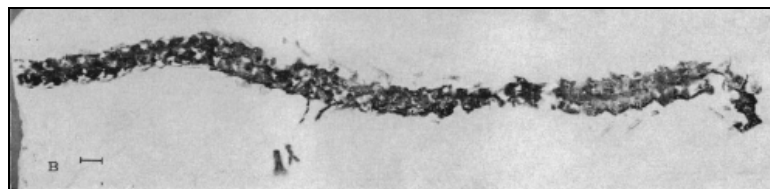


Fig. 4a: *Ramonellus longispinus* (from Nevo / Estes 1969: 545 fig. 5b).



Fig. 4b: *Ramonellus longispinus* (from Nevo 1964: 415 fig. 1).