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ALEXANDER’S LAST DAYS:
MALARIA AND MIND GAMES?

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ABSTRACT

While no one had a particular interest in Alexander’s surviving his last illness in Babylon in 323, it remains possible that he died of natural causes. This paper offers a medical commentary on a range of theories on the nature of his final illness, but also considers a number of other possible contributory causes of his death. That Alexander had become a problem for his officers is suggested by the ways they sought ‘closure’ directly after his death, and abandoned his plans. Consideration is also given to the significance of the embalming of his body, the period he was left in Babylon, the ‘hijacking’ of the hearse to Egypt and the interment of his remains first in Memphis-Saqqara and then Alexandria.

By the time Alexander fell ill in Babylon before the end of May 323, there can have been few among his officers and men who had any real interest in his continued existence. He had lost face when his troops forced him to abandon his plan to advance from the river Beas (Hyphasis) to the Ganges, and from that point the odds on his succeeding at every challenge were lengthening. The march through the Gedrosian desert was a disaster, as

* John Atkinson is grateful to Elsie and Etienne Truter for their professional guidance on the medical issues, and absolves them of any culpability for any errors, omissions and illogicalities in the more historical sections. Versions of this paper were tried out in a seminar at Rhodes University and at the CASA conference in Pretoria in June 2009. Thanks are extended to those who offered suggestions on these occasions, and to the anonymous referees for their critical comments.

1 It is quite possible that Alexander stage-managed the mass meeting on the Hyphasis, when Coenus articulated the troops’ concern that there should be no further advance into India (so Spann 1999, followed by Heckel 2003:225). But even if Alexander engineered the event to secure what he had already decided, it could be seen as an admission that he could not take the support of the troops for granted.
supplies ran out, and Plutarch reports that some 75% of those with Alexander perished (Alex. 66.4), though despite Plutarch’s phraseology this may refer principally to camp-followers. Alexander then launched a purge of those who could share the blame for failing to get adequate supplies to the army, and a purge of satrapal and army officers whom he could accuse of disloyalty or incompetence. When Alexander reached Susa in March/April 324 the Macedonian troops felt seriously threatened by the arrival of the thirty thousand Epigonoi, young Asians who had been conscripted and forced to undergo military training in the Macedonian manner. Macedonian resentment intensified when Alexander announced that he was going to send back to Macedonia the large number of troops whom he considered no longer fit for active service. Their response was that they should all be demobilised and sent home. What waited for all who remained with Alexander was a new phase in the war, with an invasion of ‘Arabia’, which may have meant in the first instance Oman. Beyond that it is not certain what he had in mind, but a campaign along the North African coast as far as Carthage, and perhaps even the Pillars of Heracles, seems to have been promised. Certainly two fleets were being built up, one to operate in the Mediterranean, and the other to back up the invasion of Arabian territory. The insecurity felt by the Macedonian troops would have intensified when in 323 Peucestas arrived in Babylon with a further twenty thousand Persian troops, who were integrated into the battalions of the Companion Infantry. These were now constituted in platoons of sixteen, of whom four would be Macedonian ‘NCOs’ (A. 7.23.3-4). Apart from any operational advantage, this major reform was a way of countering the growing solidarity among the Macedonian common soldiers. He needed to promote a code of honour that set competitive values above cooperative, while at the same time trying to create an integrated multi-ethnic army. He was not winning: his Macedonian troops, and probably his Greek troops too, had grievances about their conditions of service, were alarmed by the progressive orientalising of the army, court and administration, and had reason to be apprehensive about his ambitions, which were

3 Arrian (henceforth A.) 7.6.1; Plut. Alex. 47.6 and 71.1; Diodorus Siculus (henceforth D.S.) 17.108.1-3; Curtius Rufus 8.5.1.
3 Cf. Bosworth 1996:154. Achaemenid texts affirm Persian suzerainty over the Makai and Maka appears to have been a satrapy, and this is taken to mean the territory of Oman; cf. Salles 1990.
4 A. 7.19.4; D.S. 18.4.4; J. 13.5.7; Curtius 10.1.19; Strabo 16.1.11.741.
5 The concept of honour on the horizontal plane in Alexander’s army calls for separate treatment to complement Atkinson 2007. Bose 2003, esp. 131-70, analyses Alexander’s leadership skills under seven broad headings, but does not focus on the problems he created or confronted in 324/3.
not only for fresh conquests but also for recognition of his divine nature. He died in the late afternoon or early evening of 11 June 323.

The key source used by Plutarch and Arrian, known as *The Ephemerides (Royal Journal)*, recorded two days of heavy drinking, followed by eleven days of sickness before death. Plutarch and Arrian clearly believed this source to be genuine and authoritative, even though it is not cited for any other military or political event in the history of Alexander's campaigns. Diodorus Siculus and Curtius Rufus, both probably following Cleitarchus, have little of substance to add, but support the tradition that the official line was that Alexander died from some sickness. The versions of the *Ephemerides* offered by Plutarch and Arrian do not cohere too well, and may derive from different sources or editions. A rationalised summary is offered in the following Appendix.

The sources that follow or reflect this orthodox account all show awareness of the counter-tradition that Alexander was the victim of a plot hatched by Antipater. The allegations probably started just after Alexander's death: Onesicritus confirmed that there had been a plot, but was reluctant to give names. Plutarch states as fact that in Athens Hyperides proposed honours for the supposed poisoner, and that a few years later, in 317, Olympias desecrated the tomb of Antipater's son, Iollas, who had supposedly administered the poison, and in the same context she killed another son of

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6 The main sources on Alexander's death are: A. 7.24.4-27.3; Plut. *Alex.* 75.2-77.3; D.S. 17.117.1-4; J. 12.13.7-16.1; Athenaeus 10.434a-b. Livy 8.3.7 simply states that Alexander died of some illness. On the date of his death Depuydt 1997 argues around the key entry in the Babylonian astronomical diary, Sachs & Hunger 1988: 206-07, No. -322B obv. 8', and on the time of death he starts from Plut. *Alex.* 76.9. Incidentally the Babylonian entry for 29th Aiaru states laconically that 'the king died'. The next line gives the commodity prices for cress and sesame.

7 The contemporary writer, Ephippus, in *On the deaths of Hephaestion and Alexander*, stated that Alexander's fatal illness followed directly upon competitive binge-drinking (according to Athenaeus 10.434a-b = FGrH 126, F.3); cf. Pearson 1960:61-62. Plutarch's version can be found in Worthington 2003:4-5.

8 The issues are fully explored by Bosworth 1988b:157-84; cf. Atkinson & Yardley 2009:141-43 and 235-36. Brunt 1983:289 takes the differences to show that 'neither [P] nor A. quoted verbatim'. Bosworth suggests that Arrian derived his version of the *Ephemerides* from Ptolemy's account, while also using Aristobulus. Badian 1987 goes further, in arguing that the two versions are so different that they must come from two distinct, fictional accounts, void of any historical value.

9 Though only Justin seems to give this tradition serious credence.

10 *Libro de Morti* 97-98 (FGrH 134, F.37); Bosworth 1988b:175.

11 Hyperides proposed a decree honoursing Iollas, who supposedly administered the poison (Plut. *Mac.* 849b).
Antipater, Nicanor (D.S. 18.11.8). But Hypereides, Olympias and others had their own political reasons for treating the assassination story as historical, and the reality of their manoeuvres does not guarantee the historicity of the story itself. Quite separately, the conspiracy theories that surfaced immediately after Alexander’s death fed into the pamphleteering that emerged in the power struggle among the Successors. This tradition is well represented by the moving dramas of Alexander’s death, complete with the will which he supposedly dictated, in Pseudo-Callisthenes, *The Alexander Romance* 3.30-33, and the *Liber de Morte* (*Book on the Death of Alexander the Great*), 87-112. The earlier version, in the *Liber de Morte*, was obviously created to serve a political purpose, and not just to discredit the family of Antipater. Bosworth (1971: 115-16), suggested that this pamphlet was written to serve Perdiccas’s purposes after the break with Antipater in 321 BC, but Heckel (1988) argues that it was produced in Polyperchon’s circle, probably by Holkias, and not before about mid-317, as part of a campaign to discredit Cassander and Antigonus. Bosworth (2000) revises his earlier interpretation and advances a more compelling case for dating the *Liber de Morte* as we have it, to 309/8 and recognising it as a product of the Ptolemaic camp. But the immediate point is that the *Liber de Morte* and other texts that set out variants on the conspiracy theory have no independent value for the study of Alexander’s fatal illness. This is not to say that the *Ephemerides*, as the quasi-official version, can be taken as offering the full truth. It may be not too much of an exaggeration to say that Alexander was never so revered as when he was newly dead; and Meeus (2009) for one, contends that the troops’ loyalty to Alexander’s memory was strong and persisted despite their preoccupation with a series of more immediate issues. But, in any case, his inner circle of officers were vulnerable to any suspicion of foul play, and they would have had reason to produce a record that demonstrated that nature had taken its own doleful course, though it has to be added that the *Ephemerides* offers something more like a court circular than a medical case history. Indeed, it made sense to record, apart from a summary of the development of his illness, where he was day by day, what he did, and who had access to him. The model was probably the ‘astronomical diaries’ maintained by the


13 That natural sentiment no doubt reinforced by their perception of the unseemly power struggle that broke out in the absence of a succession plan. With the failure of leadership after Alexander’s death the familiar grumble might have been heard, ‘At least we knew where we stood …’. 
assembly of the Esagila temple in Babylon which included key secular events.\(^{14}\)

Discussion of the cause of Alexander's death has also to take in one further element in the source tradition, that, while the political turmoil in Babylon distracted attention from planning the obsequies, those who were put to prepare the corpse for interment found that even after a week (Curtius 10.10.9)\(^ {15}\) – if not a month\(^ {16}\) – there was no evidence of putrefaction. As Curtius puts it, 'no decay had set into it and ... there was not even the slightest discoloration' (10.10.12; cf. Plut. \textit{Alex.} 77.5). This would be medically impossible, and the detail may have been invented to strengthen the image of Alexander as having a super-human nature, or even to reinforce the official version that he died of natural causes, there being no evidence of poisoning or assault. Furthermore, in contrast with Curtius's statement, Lucian has Philip taunt Alexander about his pretensions to divinity, which were mocked when people saw that his corpse began to decompose like that of any mortal (Lucian, \textit{Dial. Mort.} [\textit{Dialogues of the Dead}] 12.5 [OCT edition]) – not that one can safely build on an element in a fictional dialogue. If there is, nevertheless, any truth in the tradition that despite the heat and humidity of Babylon there was no evidence of putrefaction, even after many days, then it is not impossible that Alexander was in fact in a very deep coma for some time after he was presumed dead (so Hammond 1989:305 n. 174). But the absolute limit would have been four or five days, as a person could not survive longer without the intake of fluids. Thus the tradition as given by Curtius is quite implausible. We can turn to some theories on the fatal illness.

\textbf{Alexander's last illness}\(^ {17}\)

(i) \textit{Malaria}

A recurrence of \textit{falciparum} malaria is an obvious possibility, since this was quite possibly the cause of his collapse in Cilicia in September 333 (Engels 1978:226-27; Curtius 3.5-6); and indeed, he could even have been infected by it earlier, as malaria was endemic in Macedonia (Borza 1979; Engels 1979).\(^ {18}\)

\(^{14}\) Sachs & Hunger 1988:11-12 on the assembly.

\(^{15}\) Cf. Plut. \textit{Alex.} 77.5: many days.

\(^{16}\) Aelian, \textit{VH} 12.64; Meeus 2008:59 and n. 94.

\(^{17}\) The sources provided the basis for a fascinating clinicopathological protocol drawn up by Dr D.W. Oldach for the \textit{New England Journal of Medicine} 338, no. 24 (11 June 1998):1764-69, as part of a report on a clinicopathological conference held at the Maryland School of Medicine in 1996, when Alexander was taken as a case study. The report is reviewed, and expanded, by Borza & Reames-Zimmerman 2000.
Thus, there has been wide support for the idea that Alexander died from tertian malaria (*Plasmodium falciparum*, Engels 1978; Cilliers and Retief 1999). Where malaria is endemic, there is a complex pattern of relationship between malaria, anaemia and porotic hyperostosis,\(^{18}\) and Schachermeyr (1973:563) counts leukaemia as a contributory factor in Alexander’s death, though there is no evidence of a history of bleeding and bruising.

If the supposed absence of putrefaction in the corpse means that he had been declared dead when he was in fact rather in a deep coma, this condition could be evidence that his illness was *malaria tropica* or malarial hemoglobinuria (better known as blackwater fever), which can arise as a complication after malignant tertian malaria (*Plasmodium falciparum*). Grmek (1989:296) recognises the first attestation of blackwater fever in the case history of one Philiscus recorded in the Hippocratean *Epidemics* 1, Case 1.\(^{20}\) As urinoscopy was pioneered by Babylonian doctors, it would presumably have been noted if Alexander had passed black urine, but unfortunately the *Ephemerides* is more an official gazette than a medical report, and does not give such information. In any case, the duration of a coma in this case is indicated as usually only two to four days, and not seven, and certainly not thirty days.

\(^{18}\) Botza 1979 accepts J.L. Angel’s findings that sickleemia, thalassemia and favism (the G6PD deficiency) may protect a population to some extent against malaria, and their presence may be an indicator of the endemicity of malaria; but he does not find that the incidence of cases of porotic hyperostosis in skeletal remains is significant enough statistically to justify Angel’s conclusion that malaria was virtually absent from the eastern Mediterranean region in the classical period (p. 108).

\(^{19}\) But the aetiology of porotic hyperostosis is now seen as more complicated than when Angel and others wrote about the linkage between that condition and malaria. More weight is now attached to diet, and in particular a deficiency in dietary iron as a cause of porotic hyperostosis (Sallares 1991: esp. 273-77). Thus, even if there was any evidence that Alexander suffered from some form of anaemia, that would not in itself constitute proof that he had suffered from malaria.

\(^{20}\) The initial fever faded on the third day; urine black on the third and fourth days, becoming cloudy with particles on the fifth, and returning to black on the sixth; dementia appeared on the third day, intensifying on the sixth, till Philiscus lost the power of speech and died on the same day. There is no indication of a coma.
(ii) Alcohol-related problems

Battersby (2007) picks up on the many references to alcohol abuse. He suggests that binge-drinking was the main contributory factor to his final illness, and considers the possibility of acute pancreatitis, or a perforated peptic ulcer, which could lead to intra-abdominal sepsis with high fever, and death at about ten days. But, because of the absence of any reference to repeated vomiting, he concludes that the most likely cause was another hazard of binge-drinking (or eating), that is, the ‘spontaneous’ perforation of the oesophagus, referred to as Boerhaave’s Syndrome. This is commonly caused by serious vomiting (which spoils Battersby’s case), or repressed vomiting, that tears the wall of the lower section of the oesophagus. This too, can cause death from sepsis within ten days. Any one of these conditions might explain upper-abdominal and retrosternal chest pain, which brings us to Plut. Alex. 75.5, where it is said that Alexander was drinking at Medeius’s party, and began to be feverish, and was smitten with a sudden pain in the back (metaphrenon – the area behind the phrenes, ‘lungs’), as though struck by a spear. Plutarch clearly refers to the back rather than the abdomen, for his phrase echoes Homeric expressions for striking a fleeing individual with a lance in the back (metaphrenon), between the shoulders (as in Iliad 3.40 and 56). Plutarch’s phrase is not too different in sense from the corresponding expression in The Alexander Romance, ‘as though he had been struck in the liver by an arrow’ (Ps.-Call. 3.31.11), if one relates this to the

21 For example, the binge-drinking contest, after the suicide of Calanus, that cost the lives of 41 plus Promachus (Plut. Alex. 70.1); cf. Ephippus as cited by Athenaeus 10.434a-b. Curtius Rufus 10.5.34 mentions excessive love of wine and proneness to anger as character flaws that might have been mitigated had he lived to old age. Atkinson & Yardley 2009 ad loc. give further references; cf. Worthington 2003:4. 22 Sbarounis 1997 assumes the persistence of acute abdominal pain, and diagnoses the killer as ‘acute necrotizing pancreatitis with sepsis and multiple organ failure.’ 23 Admittedly, Plutarch mentions this sudden stabbing pain before he introduces the Ephemerides, and as part of a story line which he dismisses as melodramatic fictionalising. 24 While the phrenes came to be equated with the diaphragm (cf. Arist. Part. Anim. 3.671b, and Plato, Timaeus 70a), the original meaning of phrenes (plural) was the lungs, which were blackish in colour and housed the vaporous thymos. The term was then applied to the assumed functions of the lungs, which included consciousness and intelligence (Onians 1954:23-38). Thus a wound in the metaphrenon has to mean behind the lungs, and thus in the back. 25 The other references to his pain, at 32.1, and Liber de morte 99, and 110, on a second bout, do not say where the pain was felt; and these references in The Alexander Romance and the Liber de Morte are all directly linked with the administration
Homer's reference where Odysseus thought of stabbing the Cyclops 'in the chest, where the phrenes (plural, and thus again probably the lungs) hold the liver' (Od. 9.301).26

Borza and Reames-Zimmerman note that methanol toxicity might retard putrefaction, as the body 'converts the natural substances in wine to formaldehyde' (2000:25). But, they note as symptoms not associated with methanol toxicity, fever and abdominal pain (25). On the latter point they are incorrect as abdominal pain would be a significant symptom; and, for what it is worth, there is no reference to abdominal pains in the 'official' version as recorded by Arrian and Plutarch.27

(iii) Typhoid fever

Borza and Reames-Zimmerman (2000:25) note as an alternative explanation, that it is possible for ascending paralysis in terminal cases of diseases, such as typhoid fever, to give a premature indication of death.

Cunha (2004) argues that the symptoms described in Alexander's last illness are most consistent with typhoid fever: a slowly rising fever, 'unaccompanied by chills or drenching sweats' (Cunha's summary), increasing lethargy leading into coma. The MayoClinic website entry states that by the third week the patient may 'lie motionless and exhausted with … eyes half-closed.' Cunha does not mention abdominal pains and diarrhoea, nor a distended abdomen, symptoms that may intensify in the second week of typhoid fever.28 By contrast, some modern studies of Alexander's case make much of the symptom of severe abdominal pain radiating to the chest,29 but, as noted above, Arrian and Plutarch in their summaries of the entries in the Ephemerides do not refer to a pattern of abdominal pain (nor diarrhoea).30


26 The case is argued by Onians 1954:26.

27 And Zonaras 4.14, pp. 303-04 mentions high fever, but not abdominal pains.

Borza & Reames-Zimmerman should rather have commented on the time span of Alexander's illness, and the absence of any indication that his eyesight was affected.

28 An adult victim may initially present with chronic constipation, but that would be unlikely to persist into the terminal stages of the disease.

29 Thus Sbarounis 1997:294, re the record for 15th and 16th Daisios; Borza & Reames-Zimmerman 2000:25.

30 Apart from Ps.-Call. 3.31.11, discussed above, the passages in The Alexander Romance, Ps.-Call. 3.32.1, and Liber de Morte 99 and 110, referring to the supposed administration of poison by Iollas, do not say where the pain was felt. Zonaras 4.14. pp. 303-04 mentions high fever but not abdominal pains.

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Marr and Calisher (2003) and Battersby (2007) go further, in registering the significance of the absence of references to vomiting, diarrhoea and dysentery. In about a quarter of typhoid cases, patients display rose spots on the trunk, and most patients have severe headaches. These are not noted in Alexander’s case.

It is not an insuperable objection that the sources do not indicate any sort of epidemic, and that Alexander may have been the only one to succumb to typhoid fever (cf. section vi below), though Marr and Calisher (2004) consider that it counts against typhoid (and also malaria) as the disease in question, and we would go farther in finding this quite extraordinary in the context of a military camp with a high population density, and the risk of the spread of the disease through contaminated food or water. Furthermore this was Babylon in early summer.

(iv) West Nile virus encephalitis

Marr and Calisher (2003) suggest that Alexander fell victim to West Nile virus encephalitis. They note that an isolated case ‘is the rule, not the exception’ (2004), and argue from environmental factors, including the endemicity of mosquitoes in ancient Babylon. They give special weight to the story that as Alexander approached Babylon, ravens were flying about in a frenzied way and colliding, and that some fell dead in front of him (Plut. *Alex.* 73.2; Zonaras 4.14, p. 303, 3-5). The symptoms of WNV infection are generally mild and flu-like, and, while in some cases the symptoms may continue for a few weeks, otherwise healthy individuals can shake off the effects within a few days. Alexander would have had to be very run-down or unlucky if he did succumb to WNV infection and this led to encephalitis or meningitis, since the risk of the illness developing into either of these extreme conditions – at least in the modern context – is indicated as less than one in a hundred. In this most severe form the patient may suffer convulsions or paralysis, or lapse into a coma.

But against this identification it is argued that Marr and Calisher (2003) attach too much weight to the episode of the ravens as an omen of death. Not that much rests on the death of ravens, as the carrier of WNV is the mosquito, and it is generally accepted that mosquitoes were a problem in ancient Babylon. At a more scientific level there is debate as to whether the West Nile virus could have existed in its present form as far back as 323 BC. Galli, Bernini and Zehender (2004) take the genetic evidence to show that it is improbable that WNV was established more than a thousand years ago. Cunha (2004) is prepared to admit that it may have been around in Babylonia in the 4th century BC, but rules it out as the cause of Alexander’s death, since
muscle failure and mental disturbance present at the outset of this illness, whereas our sources indicate that Alexander’s mind only really collapsed nine or ten days into his illness. He also argues that a steadily rising fever is not a defining characteristic in the normal pattern of West Nile encephalitis.

It may be added that, if the West Nile virus was endemic in the area, the local doctors would have been familiar with the symptoms, and would have had some idea of how to treat Alexander.

(v) Schistosomiasis

This snail-borne disease, associated particularly with the Nile, has been suggested, but is summarily, and rightly, rejected by Marr and Calisher (2004) as inconsistent with the case presented by the Ephemerides.

(vi) Some water-borne disease, leading to pneumonia

Behind the story that Alexander was poisoned by water from the mouth of the Styx near Nonacris,31 carried to Babylon in the hoof of an ass, lies the probability, in Mary Renault’s view (1975), that Alexander was given contaminated water from the Euphrates. Persian kings relied on water from a special spring, and had it boiled, but Alexander quaffed river water enriched with ‘the untreated excreta of a dozen diseases’ (p. 228). In a feverish state he then compounded his sickness by persevering with drinking alcohol, and subsequently developed pneumonia, which turned into pleurisy (p. 230). As Mary Renault had years of experience in the nursing profession, her opinion deserves some attention.32 If Alexander fell victim to pleurisy, this might have been caused by one of the enteroviruses, such as Coxackieviruses A&B and Echoviruses, that may cause pleurisy, but this symptom is set against a ‘backdrop’ of abdominal pain, vomiting and diarrhoea and other symptoms of gastrointestinal infection such as bloating and flatulence, which again are not mentioned in this case. If Alexander got sick from contaminated water (unless by some deliberate action) so must many others, and here the silence of the sources may be more significant. This would also have been easily recognised by the Babylonian doctors. But Renault’s suggestion of pneumonia and pleurisy is indeed plausible, as that progression would be an agonal event in the context of whatever severe disease he may have had: pneumonia is what kills most individuals who are gravely ill.

32 Though Green 1974:477 mentions ‘raging pleurisy’, he does not mention Mary Renault in his bibliography.
Whether or not he died from one of those afflictions listed above, or one of the others that have been suggested, he may indeed have been vulnerable to any opportunistic disease after years of strenuous campaigning, and injuries in battle. Near Samarkand or on the Jaxartes he was struck in the leg by an arrow that fractured his fibula (A. 3.30.11; Plut. Alex. 45.5, Mor. 341b; Curtius 7.6.3); then at Cyropolis in 329 he received concussion from a blow on the head and suffered what may be the first attested case of transient cortical blindness (A. 4.3.3; Curtius 7.6.22-23). Though not fully recovered, he launched a campaign across the Jaxartes (Syr-Darya), but was smitten with diarrhoea from drinking contaminated water (A. 4.4.9; Curtius 7.9.14; Plut. Mor. 341c). Then, and most seriously, in the battle for the city of the Malli, he suffered a chest wound with the complication of a pierced lung, hemopneumothorax (A. 6.10.1-11.8; Plut. Alex. 63.3-6; Curtius 9.5.9-6.1; D.S. 17.99.3; Plut. Mor. 327b, 341c; Met. Epitome 75-77). Furthermore, psychosomatic factors may have increased Alexander’s vulnerability. Borza and Reames-Zimmerman (2000:27-30) focus on the intensity of Alexander’s grief for Hephaestion, and cite papers in medical journals on the pattern of connection between bereavement and the suppression of lymphocyte stimulation (which means damage to the immune system), but they also note that the consolation he sought in excessive drinking would not have helped. His extravagant grief for Hephaestion is recorded by A. 7.14.1-15.1, Plut. Alex. 72.1-3 and D.S. 17.114-15. But there is no scientific evidence that grief contributes to leucopenia (an abnormally low count of white blood cells). Borza and Reames-Zimmerman are thus right to avoid the claim that bereavement killed Alexander, and to stress rather that ‘a constellation of factors contributed to the king’s final demise’ (p. 27).

Of course it remains possible that he was murdered and Michael Wood (1997:230), for one, is attracted to the idea that Alexander, and before him Hephaestion, were poisoned by strychnine administered in unmixed wine.®


®® The idea appears earlier in Green 1974:477; and Milns 1968:256-58 makes out a case for strychnine as the poison in the case of Alexander, and goes as far as to suggest that there may be truth in the tradition that the plot was hatched by Aristotle, Antipater and Cassander. G. Phillips, Alexander the Great: Murder in Babylon (2004, known to us indirectly) suggested that Roxane poisoned Alexander with strychnine from the plant Strychnos nux vomica, which she could have collected while
But the Liber de Morte and The Alexander Romance, which have the story of the poisoning, do not mention signs of poisoning, such as cyanosis, which can indicate strychnine as the poison. And against the conspiracy theories, Badian (1985:489), followed by O’Brien (1992:228), concludes that Alexander ‘died of disease, undiagnosable to us.’

But even so, it is worth considering the immediate political context of his death. In Arrian’s version of the Ephemerides it is stated that on the third day of his final illness he gave instructions to his officers for the mobilisation of the foot soldiers after three days, and for the sailing of the boats after four days (A. 7.25.2). This was for the invasion of Arabian territory, and as Bosworth (1996:153) suggests, Alexander’s real reasons for wanting to launch this campaign were “personal vanity” and commercial exploitation.”34

The avowed, non-negotiable issue was that the native peoples were supposed to make diplomatic overtures, and the Arabs were the only people in that part of the world who had not delivered appropriate and honorific gestures of deference (A. 7.19.6). It is not self-evident that the troops would have wanted to invade Arabia, but the start of the mission was on countdown. The deadline came and went. Alexander died a few days later, and in the turmoil after his death the plans seem to have been quietly forgotten. Indeed, Perdiccas was soon able to get the army assembly to scrap all the grand projects which he presented to them as Alexander’s last plans.37

In the period before his death, we can imagine the flurry of activity among the doctors in Alexander’s court. They could be damned if he died, and marked men if he survived. They knew that Glaucias, who had attended to Hephaestion, was crucified for his failure (A. 7.14.4; Plut. Alex. 72.3), and that Philip, the doctor who attended Alexander in Cilicia, had risked his life by prescribing a potentially lethal medicine (Curtius 3.6.1 sq.). Perhaps Greek doctors were now deferential to Babylonian doctors, who offered their mix of magic and medicine, diagnosis and prognosis; but the Babylonian doctors remembered their manners and deferred to the Greek doctors.

The officers were dealing with a man who had become paranoid and unstable, and was suicidal – in the sense that he considered his own life cheap, and the problem was that he considered the lives of others no less

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34 She was in the Indus valley, but this idea has gathered no serious support from Alexander historians.
35 Personal vanity is reflected in the story that Alexander wanted the Arabs to recognise him as their third god after Uranus and Dionysus (A. 7.20.1; Strabo 16.1.11.741).
36 A. 7.20.2 mentions the prospect of trade in cassia, myrrh, frankincense, cinnamon and spikenard.
37 D.S. 18.4.4-6, with Badian 1968.
cheap. Men who valued their own lives would have had no wish to be led by one who might again recklessly risk his own life and put his men into unnecessary mortal danger. Tritle (2003) reviews Alexander’s record from the time of his killing of Cleitus in 328, and finds evidence of a number of symptoms that would today justify a diagnosis of post-traumatic stress disorder. The pattern of heavy drinking might be one such symptom, and a worrying one for those who wanted clear-headed leadership. In this situation the question should not simply be whether Alexander died of some disease or was poisoned, but rather whether he died of some disease alone, or there was some action that aggravated his affliction. Marr and Calisher (2003) rule out the possibility of poisoning, since ‘plants [salsylates and alkaloids], mycotoxins and arsenic are not likely causes of death, since none would have caused the reported high, sustained fever.’ But in their 2004 paper they qualify ‘none’ with the comment ‘but some do’. In any case, what is suggested here is that some form of poisoning, or whatever, may have contributed to an already serious situation. An anaesthetic drug might be considered, such as mandragoras (mandrake), which was an ingredient in a prescribed potion, to be taken in unmixed wine, by a patient smitten with quartan fever (Hippocrates, Diseases 2.43). Then there is the drug strychnon manikon, on which the sources all repeat that a single unit (drachm) in wine would induce a state of euphoria or pleasurable hallucinations, but a dose as strong as four units would be lethal. This is regularly taken to be thorn apple or jimsonweed (Datura stramonium), but Baumann (1993:215, 111-14)

38 Cf. Tritle 2003: esp. 140.
39 Tritle does not mention the campaign against the Cossaeans which Alexander launched after Hephaestion’s death, when he put to death all the adult males he tracked down. Only Plut. Alex. 72.4 mentions a massacre, but as Ptolemy was very much in action there, it may not be surprising that Arrian, following Ptolemy, and Cleitarchus, following the Alexandrian line, passed over this atrocity.
40 The popular notion was that the alcohol passed into the lungs (phrenes), the seat of consciousness and intelligence; cf. Onians 1954: esp. 34-36.
41 The imagined scenario may arouse the suspicion that we are using the story of Stalin’s demise as a model for describing the death of Alexander the Great. Admittedly, the temptation is there.
43 Diosc. 4.73; Plin. HN 21.178; Galen 12, pp. 145-46. Hippoc. Diseases 3.1 recommends strychnon juice (nightshade?) as an external application for an extreme headache. A drachm on the Attic scale might be about 4.3 g.
considers this an anachronism, and would rather identify it as deadly nightshade (*Atropa belladonna*). Perhaps some such drug was administered to Alexander, as a sedative, or with more sinister motive, and it caused a deterioration in his condition leading to his death.45

With or without any drug or poison, the officers in Alexander's court had the opportunity to work on his mind and undermine his will to survive. From the start, there were the unfavourable omens that confronted him from when he began his final approach to Babylon, first with the warning from the Chaldean seers (A. 7.16.5). His initial stay in Babylon gave him a false sense of security (A. 7.22.1). Then, while he was sailing in the marshes, his diadem fell off into the stream (A. 7.22.2); and then a Persian slipped through the circle of eunuchs and sat on Alexander's throne (A. 7.24.2).46 Such omens would have assumed greater significance as the fever persisted and intensified. The officers went through the motions of discussing with him the plans for mobilising the infantry, and then moving out with the ships on 23rd Daisios. But that was not going to happen. The day for the departure came and went. He had effectively now lost control, and within two days he had lost the power of speech. The troops took their leave of him by filing past his sick-bed. The incubation in the temple of Sarapis47 by Peithon and others only served to confirm that he was on his way out. Furthermore, at some point he must have been told that the prognosis was imminent death, for the mark of a good doctor was his skill in prognosis, since that depended on his ability to interpret the range and sequence of the patient's symptoms.48 He decided, or perhaps was persuaded, to hand over his signet ring to Perdiccas (D.S. 17.117.3, 18.2.4; Curtius 10.5.4; J.

45 Cf. the conclusion of Bosworth 1988a:173.
46 Cf. Baynham 2000:254. Baynham goes on to analyse the omen of a male baby still-born, apart from the five wild animals that made up the lower half of the body (*Liber de Mort 90* and Ps.-Call. 3.36.1-5). She explains its relevance to the political scene at the date of composition of the *Liber*, 309/8. Worthington 2004:189 suggests that the Chaldaeans had their own reasons for deterring Alexander from entering Babylon.47 As the cult of Sarapis seems to have postdated Alexander, it is argued that the temple in Babylon was rather dedicated to the hybrid Egyptian deity Oserapis (Osiris-Apis), perhaps popularly dubbed the Sarapion: so Goukowsky 1978:199-200, followed by Bosworth 1988b:168-70.
Maybe he reached the point of believing that the only heroic thing left for him to do was to die.

The aftermath

With the death of Alexander, the immediate problem was what to do with the corpse. The tradition that he was left alone for at least several days may indicate some lack of decision about how it was to be treated. Indeed, any common purpose that the officers may have shared before his death was more generally not enough to provide cohesive leadership after he died. In the immediate case it was presently decided to hand Alexander over to be embalmed by Chaldaeans and Egyptians (Curtius 10.10.13). Embalming was not a Macedonian tradition, and for that matter, it was also not Persian practice. He could have been cremated like his father Philip, or his friend Hephaestion, though the officers may have been wary of the risk of appearing keen to burn the evidence. But, more seriously, if he was not to be interred in Babylon, it was the obvious solution to have the body embalmed in preparation for its transport to its final resting-place. At a more symbolic level, it may be argued that Philip’s cremation invoked association with Homeric practice; and although Alexander had promoted that association when he first landed in Asia and visited Troy; and when he played on his descent on his mother’s side from Achilles; yet, he moved on to signal a greater ambition when he symbolically crossed the Halys, the traditional boundary between east and west, and then laid claim to the Persian empire or to be liberating the Persians from the rule of a usurper. He had outgrown the limitations of the kingship of Macedon, and was the successor in Asia to the Achaemenids and the son of Ammon. Those who were

49 A. 7.26.3 implies that this story was not given by Ptolemy and Aristobulus, but Badian 1968:185-86 argues that the detail given by the other sources probably was in Hieronymus’s account, whether or not it was historical. Cf. Badian 1987: esp. 607-09.

50 Problems arose because of the absence of a clear succession plan and the competing ambitions of the ‘successors’. The lack of cohesive leadership manifested itself in the sequence of settlement proposals, the compromises that had to be made, the split between the infantry and the cavalry, and the role that certain Greeks had to play as mediators (Curtius 10.8.15 with Atkinson & Yardley 2009 ad loc).

51 A point rightly emphasised by Saunders 2006:30; cf. Hammond 1988:105-06, but he adds, ‘presumably in accordance with the known wishes of Alexander.’ This last point is not the view adopted here.

disturbed by his adoption of oriental trappings may have felt that he had forfeited the entitlement to be prepared for burial in the traditional royal Macedonian way. But a more positive interpretation may be offered because of the hearse that took nearly two years to build, and which ‘included Asian, Greek, and Macedonian elements in artful and varied combination’ (Stewart 1993:216-21, quotation from p. 216). Still, the body was destined never to reach Macedon.

What is missing from our accounts of his death is virtually any reference to some grand ritual to mark his passing, though A. 7.14.10 refers to 3,000 performers re-enacting the athletic and musical games which had been staged after the death of Hephaestion, and the sources dwell on the outpouring of grief (A. 7.26.1; Curtius 10.5.1-16, 6.5; cf. J. 12.15.2-5). To detach the troops from futile respect for Alexander’s declared or assumed intentions, Perdiccas had to play on the men’s sense of bereavement, hence the piece of theatre, when, at a mass meeting of the Macedonians, he displayed the king’s empty throne with his diadem, robes and armour, and then began by pulling off from his finger the signet ring that Alexander had given him, and placing it on the empty throne. The immediate problem was to decide the succession issue and to establish a command structure. As soon as a settlement was finally reached, the army assembly was asked to review the list of what Perdiccas presented as Alexander’s ‘last plans’, and at the same time Alexander’s mind-bogglingly extravagant plan for a mausoleum for Hephaestion (D.S. 18.4.2-3; cf. Plut. Alex. 72.4-5). Not surprisingly, the assembly decided to abort the scheme. Thus with the troops’ decision not to waste resources on the mausoleum for Hephaestion, the question arose as to what would be appropriate for Alexander. This bought time for Perdiccas, and headed off any competition in extravagant proposals.

In the aftermath of the clash between the infantrymen and the cavalrymen over the succession arrangements, it might be said that some closure was sought through the parade which Perdiccas organised, featuring a traditional purificatory rite whereby the troops – presumably all Macedonians –

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53 The celebrations of Hephaestion’s life cost 12,000 talents and some 10,000 sacrificial victims: D.S. 17.114.4-115.6; cf. A. 7.14.8-10; J. 12.12.12; and Plut. Alex. 72.5 for the plans to build a mausoleum to cost 10,000 talents.
54 But J. 13.1.7-8 and 2.1 presents a different picture – of the Macedonians’ jubilation at his death.
56 Key discussion in Badian 1968.
57 But the hearse that was built (as described by Athenaeus 5.40.206d-e; cf. D.S. 18.26.3-27.5) was a monstrous extravaganza and must have cost a small fortune, though D.S. 18.26.2 puts it at a modest ‘many talents’.

38
processed between two piles of entrails of a dog that had been cut in two, and lined up, cavalry to one side and the phalanx on the other (Curtius 10.9.12).\(^5\) Supposedly, this was to mark the reconciliation of the two sections of the army, but it was used to trap the infantrymen who were identified as the ringleaders in the preceding disorder. Some 300 may have been put to death in front of their comrades.\(^6\) Thus, it was made very clear that Alexander was dead and the army was under new leadership.

Then there was the issue of where Alexander was to be interred. In the event, his remains were kept in Babylon for nearly two years, notionally because it took that long to construct the monumental hearse to transport him to his final resting-place. But while he was still in Babylon, so was a substantial Macedonian military and administrative presence. The occupation was not over. More generally, the delay in removing Alexander's remains from Babylon symbolised the continuation of Alexander’s Asian empire even though the Successors had abandoned his plans and were engaged in a different deadly game. Presumably, the symbol of continuity was not unintentional. And another aspect of this problem would have been the attitude of the Macedonian troops. At Opis they had clamoured to be demobilised and allowed to return to Macedon. If his remains had been promptly prepared to be conveyed back to Macedon, the troops might well have renewed the clamour to be allowed to return home. As it turned out, the outbreak of the Lamian War permitted the orderly return of 10,000 troops with Craterus, of whom at least 6,000 had been with Alexander since the invasion of Asia in 334 (D.S. 18.16.4).\(^6\) Perdiccas, meanwhile, moved off to engage with his section of the army in a war against Ariarathes of Cappadocia, and was content to leave Alexander's remains in Babylon, guarded by Arrhidaeus (i.e. not Philip III Arrhidaeus). When Arrhidaeus set off with the hearse from Babylon, he did so against Perdiccas’s will (A. Succ. 25). The sarcophagus was taken, or hijacked, by Ptolemy's men to Egypt where it was deposited in Memphis. Badian (1968:187-88) argues that Perdiccas had thought of moving the body to Aegae after a pact with Antipater was sealed

\(^5\) One may reasonably assume that as this was a traditional Macedonian rite, the parade was for Macedonians only. As noted above, by now the Macedonian *pezhetairoi* were all NCOs, four to each platoon of sixteen, the rest being men from the old Persian empire (A. 7.23.3-4).

\(^6\) Curtius 10.9.18, D.S. 18.4.7, giving the number as 30; A. Succ. 1.4; J. 13.4.7.

39
early in 321 by his marriage to Antipater’s daughter Nicaea, but changed his mind later that spring when the deal with Antipater broke down. Thus Arrhidaeus left Babylon without orders. Badian (185-87), further argues that one should accept that Alexander had expressed the wish to be buried ‘with Ammon’, thus at Siwah (D.S. 18.3.5, cf. 28.3; Curtius 10.5.4; A. Sve. 1.25; J. 12.15.7; Paus. 1.6.3; Strabo 17.1.8.794), or at least that that was the version which Hieronymus adopted.61 The story shows that the choice of site for the interment of Alexander was a problem, whatever he might have wished. There was no rush to have him returned to Macedonia; and indeed, there was no rush to have him moved anywhere, until Ptolemy saw advantage in acquiring the corpse — not to honour Alexander’s wishes, but to serve his own political advantage.

Egyptian revisionist history had it that while the Macedonians wanted to take Alexander back to Macedonia, Ptolemy consulted the oracle of Bel in Babylon and received the instruction to take Alexander to Memphis; but, when this was accomplished, the high-priest in Memphis declared that he should be moved to Rhacotis, where he had founded a city (Alexandria). Ptolemy duly built what became known as Alexander’s Sema.62 The Egyptian line behind this tradition clearly was that Alexander was an unwelcome tenant in the necropolis of Pharaohs.

The source implies that Ptolemy did not long delay in moving Alexander’s remains from Memphis to Alexandria, and D.S. 18.28.3 and Strabo 17.1.8.794 likewise attribute the relocation to Ptolemy I. But there was another tradition that it was Ptolemy II Philadelphus who effected the transfer.63 It seems probable that the transfer happened at least ‘a few years’ later (Curtius

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61 But at 18.26.1 D.S. says that the hearse was prepared for the return journey (epi ten komiden), and this phrase would seem to mean that Alexander was to be taken home to Macedon, but the phrase could also mean that it was to travel from Babylon down to the coast. If the latter is meant, it is still not clear whether the sarcophagus was then going to be transferred to a ship heading for Macedon or for Egypt. But as Ptolemy demonstrated, transfer to a boat was not required for the hearse to travel to Egypt. Thus D.S. would seem to imply that the hearse (or at least the sarcophagus) was intended to be heading for Aegae. This is consistent with the tradition that the corpse was to be taken to Macedonia, but was hijacked to Egypt (A. Sve. 24.1f.; Paus. 1.6.3; Strabo 17.1.8.794; Aelian, V.H. 12.64).

62 Ps.-Call. 3.34.1-6 recension L. For a discussion of related problems and variants in the tradition see Dillery 2004; cf. Erskine 2002.

63 Paus. 1.7.3: there is no obvious reason why he should have switched the credit from Ptolemy I to his son. Curtius’s formulation that the body was moved ‘a few years later’ does not preclude the possibility that Curtius was aware that the move was organised by Ptolemy II.
10.10.20), a gap long enough to allow for the construction of a mausoleum, and to secure a military and political situation that would make any further bid to abduct the body futile. The gap presumably also allowed time for people to forget Alexander’s supposed wish to be buried at Siwah.

Meanwhile in Memphis, as Schmidt-Colinet (1996) suggests, Alexander’s tomb was associated with the complex at Saqqara featuring a lengthy dromos leading eastwards to a temple of Nectanebo II, who was the last of the Pharaohs, and, in the revisionist version of The Alexander Romance, was also Alexander’s biological father. Chugg (2002) makes a powerful argument for believing that the mummified Alexander was deposited in the sarcophagus that had been sculpted to house the remains of Nectanebo II, but which stood empty because Nectanebo died in exile. One assumes that it had not been Alexander’s express wish to end up in a vacant sarcophagus in Saqqara.

In fine, events before, and immediately after, Alexander’s death down to his being housed in a vacant sarcophagus in the Memphite necropolis do not suggest that his officers were too desolate about his demise. There is no good reason to disbelieve the story that he was poisoned by Iollas at the behest of Antipater. The versions we have of the Ephemerides, if not purely fictional, are still inadequate to permit the certain identification of the illness. By a nice irony a key detail seems to be Plutarch’s reference to Alexander’s feeling a sharp stabbing pain in the back. The pattern of events from 324 may justify the lingering suspicion that members of his court might have hastened his death, whether by playing on his mind, or by some more physical intervention, which the generous-spirited might label euthanasia.

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64 Dillery 2004:256 gives references for the idea that in Demotic ‘Rhacotis’ connoted a building site.
65 Saunders 2006:177-89 sketches the history of the modern quest for the supposed burial place of Alexander at Siwah and reviews the political motives at work.
66 Meeus 2009 would argue that whatever their personal feelings, the Successors had to accept that the Macedonian rank and file remained loyal to Alexander’s memory long after his death.
Appendix

A rationalised summary of the *Ephemerides*’s account might run:67

<table>
<thead>
<tr>
<th>Day</th>
<th>Date given by Plutarch</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>After an all-night drinking session with Medeus,</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Alexander spent day drinking with Medeus; began to be feverish; sudden stabbing pain in the back (ἐπεθερμάτησε μεθυσάμενος, μέγας χωρίς τάσαι) (P. Afr. 75.4-5; A. 7.25.1);</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>18th Daisios</td>
<td>Parted with Medeus, drank till late, spent night in bathing room because of the fever (P. 76.1; A. 7.25.1);</td>
</tr>
<tr>
<td>03</td>
<td>19th Daisios</td>
<td>Either carried out on litter to offer sacrifice; spent day in the men’s quarters (A. 7.25.2); or: spent day playing dice with Medeus, then bathed and sacrificed (P. 76.2);</td>
</tr>
<tr>
<td>04</td>
<td>20th Daisios</td>
<td>Bathed; offered sacrifices; spent day with Medeus (A. 7.25.3);* or bathed; offered sacrifices; lay down in bathing room, listening to Nearchus (P. 76.3); in high fever whole night (A. 7.25.3);</td>
</tr>
<tr>
<td>05</td>
<td>21st Daisios</td>
<td>Bathed and sacrificed; briefing session with Nearchus and the officers re sailing of the fleet on the 3rd day (μεταδόθη τὸ ναύλος τοῖς στρατιώτοις) (A. 7.25.4). Fever intensified (P. 76.4);</td>
</tr>
<tr>
<td>06</td>
<td>22nd Daisios</td>
<td>Fever bad (P. 76.4). Some discussion with officers ahead of the sailing;</td>
</tr>
<tr>
<td>07</td>
<td>23rd Daisios</td>
<td>Carried out to the house near the diving pool (A. 7.25.3; P. 76.5). Carried out for the sacrifices. In bad way; held meeting with key officers re vacant posts (P. 76.5) and mobilisation (A. 7.25.5). [Thus the day planned for sailing from Babylon passed without action.]</td>
</tr>
<tr>
<td>08</td>
<td>24th Daisios</td>
<td>Fever bad; carried out to perform sacrifices; meeting with officers (A. 7.25.6);</td>
</tr>
<tr>
<td>09</td>
<td>25th Daisios</td>
<td>Carried back (οὗτος ἀπὸ τοῦ Γαγασᾶς) to the palace on the other side of the river, slept; in a fever (P. 76.7; A. 7.25.6); officers found him speechless (P. 76.7);</td>
</tr>
<tr>
<td>10</td>
<td>26th Daisios</td>
<td>Still speechless (p. 76.7); condition worsened; in continuous high fever (A. 7.25.6). Troops demanded to</td>
</tr>
</tbody>
</table>

67 This summary differs on several points from Bosworth’s scheme (1988b:160-61).

68 There seems to be some confusion with what Plutarch records for the previous day.
be allowed to file past (P. 76.8; A. 7.26.1) Peithon et al.
spent night in the temple of Sarapis (A. 7.26.2); and then they asked the god whether Alexander should be brought to the temple. Alexander to remain in the palace (P. 76.9; A. 7.26.2).

27th Daisios

28th Daisios

Alexander died in the evening (P. 76.9).

Bibliography

Badian, E. 1968. 'A king's notebooks.' HSCP 72:183-204.
Borza, E.N. 1979. 'Some observations on malaria and the ecology of Central Macedonia in antiquity.' AJAH 4:102-124.


Dility, J. 2004. 'Alexander’s tomb at “Rhacotis”: Ps.Callisth. 3.34.5 and the Oracle of the Potter.' *ZPE* 148:253-258.


Onians, R.B. 1954. *The Origins of European Thought about the Body, the Mind, the Soul, the World, Time and Fate.* Cambridge.


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Acta Classica is published annually by the Classical Association of South Africa. The journal has been in production since 1958. It is listed on both the ISI and the SAPSE list of approved publications.

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