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## **Miraculous fish therapy for leprosy ('elephant disease') and other skin diseases in Byzantium\***

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*This article discusses a unique case of a miraculous fish therapy used for a variety of skin diseases, which seems to have been practised in the mid-fifth century at the shrine of St. Michael in the city of Germia (mod. Gümüşkonak). It aims to enhance our knowledge of Byzantine therapeutic approaches to 'elephant disease' and contribute to debates on modern fish spa therapy.*

Leprosy, also known as Hansen's disease, is a chronic infection caused by *Mycobacterium leprae*, along with the recently discovered *Mycobacterium lepromatosis*,<sup>1</sup> and affecting the skin, peripheral nerves, and mucous membranes. It is characterised by flat, red lesions, which may progress and cause severe skin disfigurements. Palaeopathological evidence attests its existence in the Mediterranean area from the Hellenistic period.<sup>2</sup> Ancient and medieval societies did not share the modern scientific understanding of the disease and in most cases there were no clear boundaries or differentiation between a variety of skin ailments. The Greek term *elephas/elephantiasis*, which is literally translated as 'elephant disease', is nowadays likely to be identified with various types of leprosy and has nothing to do with the modern use of the term elephantiasis, while the word *lepra* was used for a similar, but much less serious and not life-threatening skin disease.<sup>3</sup> The latter term may be

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<sup>1</sup> X. Y. Han et al., 'A New Mycobacterium Species Causing Diffuse Lepromatous Leprosy', *American Journal of Clinical Pathology* 130 (2008) 856-64.

<sup>2</sup> T. Dzierżykraj-Rogalski, 'Paleopathology of Ptolemaic Inhabitants of Dakhleh Oasis (Egypt)', *Journal of Human Evolution* 9 (1980) 71-4.

<sup>3</sup> For a brief account of the various terms used in ancient and medieval medical literature, see K.-H. Leven, 'Lepra', in K.-H. Leven (ed.), *Antike Medizin: Ein Lexikon* (Munich 2005) 565-7; and V. Nutton, 'Leprosy', in H. Cancik and H. Schneider (eds), *Brill's New Pauly* (Leiden 2006) available online at:

associated with a variety of skin disorders that turned the skin scaly or flaky, comparable to today's eczema or psoriasis.<sup>4</sup> It is important to note the lack of any comprehensive palaeopathological study on leprosy in the Byzantine Empire, which seriously limits our understanding of how widespread the disease actually was.<sup>5</sup>

It is mainly through literary sources that we get any information about the disease, which *inter alia* entails the risk of retrospective identification based on modern knowledge, methods, and terminology.<sup>6</sup> For example, the healing of those suffering from elephant disease was quite a popular topic in the works of the early Church Fathers. When combined with related evidence from a variety of other more or less contemporary literary sources, this might signal a considerable increase in the number of elephant disease cases between the fourth and sixth centuries AD.<sup>7</sup> Subsequently, a special home for the care of lepers, the 'leprosarium' of St. Zotikos, was set up on the outskirts of Constantinople. Although the construction of this institution cannot be dated with complete certainty, it seems to have been in continuous function at least between the tenth and thirteenth century.<sup>8</sup> In Byzantine therapeutic approaches to elephant disease we can discern two distinct pathways. Byzantine medical authors, such as the seventh-century, practising physician Paul of

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<http://referenceworks.brillonline.com/entries/brill-s-new-pauily/leprosy-e701780>

(accessed September 27, 2015).

<sup>4</sup> L. Demaitre, *Leprosy in Premodern Medicine: A Malady of the Whole Body* (Baltimore 2007) 75-102, provides a long discussion of the various terms that were used in sources to denote leprosy and other skin diseases in the Middle Ages. See also the examination of terminology in the light of the English medieval evidence by C. Rawcliffe, *Leprosy in Medieval England* (Woodbridge 2006) 72-8.

<sup>5</sup> A brief survey of the scarce palaeopathological evidence from Byzantine sites is provided by J. Zias, 'New evidence for the history of leprosy in the Ancient Near East: an overview', in C. Roberts et al. (eds), *The Past and Present of Leprosy* (Oxford 2002) 259-68, esp. 263-5. See also a recent study, M. Rubini et al., 'Paleopathological and Molecular Study on Two Cases of Ancient Childhood Leprosy from the Roman and Byzantine Empires', *International Journal of Osteoarchaeology* 24 (2014) 570-82, which reports a case of infantile leprosy from a burial at Kovuklukaya, which is located close to the major Byzantine Black Sea port of Sinope, and seems to date to somewhere between the eighth and the tenth c.

<sup>6</sup> On retrospective diagnosis, see K.-H. Leven, "'At times these ancient facts seem to lie before me like a patient on a hospital bed"—Retrospective diagnosis and ancient medical history', in H. F. J. Horstmanshoff and M. Stol (eds), *Magic and rationality in ancient near Eastern and Graeco-Roman medicine* (Leiden 2004) 369-86; and P. D. Mitchell, 'Retrospective diagnosis and the use of historical texts for investigating disease in the past', *International Journal of Paleopathology* 1 (2011) 81-8.

<sup>7</sup> For a recent treatment of the early Byzantine period with references to a variety of sources, see T. S. Miller and J. W. Nesbitt, *Walking Corpses: Leprosy in Byzantium and the Medieval West* (Ithaca; London 2014) 27-47.

<sup>8</sup> On Byzantine leper houses, see E. Kislinger, 'Leprosenhäuser (Byzanz)', in R. Auty et al. (eds), *Lexikon des Mittelalters*, V (Munich 1991) 1903-4.

Aegina, emphasised the incurable nature of the disease and recommended various techniques of venesection in association with strong purgatives, which might help alleviate some symptoms.<sup>9</sup> On the other hand, the power of miraculous healing, which enjoyed significant popularity and to which great importance was attached by medieval Christians, was often attributed to holy springs associated with the cults of particular saints. In the case of elephant disease, the late thirteenth-century Byzantine poet Manuel Philes, for example, recounts the story of a male patient in an advanced stage of the disease, who was healed after venerating the miraculous icon of the Mother of God of the Life-giving Spring (*Zōodochos Pēgē*).<sup>10</sup>

In what follows, I would like to draw attention to a unique case of fish therapy for elephant disease and other skin diseases in Byzantium, which has hitherto been overlooked by medical historians and specialists working on Byzantine and Medieval history.<sup>11</sup> This case study may also add to the current widespread debates on modern fish spa therapy, a practice which has enjoyed considerable popularity during the last few years across a large number of countries.

Among other places mentioned in an as yet unpublished Byzantine collection of miracles of St. Michael composed by a certain deacon Pantoleon,<sup>12</sup> most probably shortly after the second half of the ninth century,<sup>13</sup> there are a couple of paragraphs

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<sup>9</sup> Paul of Aegina, *Paulus Aegineta*, ed. J. L. Heiberg, I (Leipzig 1921) 317-21.

<sup>10</sup> Manuel Philes, *Manuelis Philae Carmina*, ed. E. Miller, II (Paris 1857) 25-6.

<sup>11</sup> The case is mentioned neither by Miller and Nesbitt, *Leprosy in Byzantium and the Medieval West*, nor by Demaitre, *Leprosy in Premodern Medicine*.

<sup>12</sup> There is an incomplete Latin translation available by J.-P. Migne, *Patrologiae Series Graeca*, CXL (Paris 1865) 573-92. Some fragments in Greek have been published by M. Gedeon, *Ἐγγραφοὶ λίθοι καὶ κεράμια* (Istanbul 1892) 17-8, and by F. Halkin, *Inédits byzantins d'Ochrida, Candie et Moscou* (Brussels 1963) 147-52. The text survives in a large number of manuscripts. See a survey by Halkin, *Inédits*, 147-8; a list of witnesses is provided at <http://pinakes.irht.cnrs.fr/notices/oeuvre/id/9360> (accessed September 27, 2015).

<sup>13</sup> This may be deduced from a reference to a reportedly recent incident involving a certain candle-bearer (*kērophoros*) called Markianos, which according to the narration took place during the reign of Michael III and Theodora (842–56). The passage has been published by Halkin, *Inédits*, 148.5-7: 'θαύματος πρόσφατον γεγονότος [...] ἐν τοῖς χρόνοις Μιχαὴλ τοῦ εὐσεβεστάτου βασιλέως καὶ Θεοδώρας τῆς τούτου μητρὸς'. The earliest manuscripts of the work date to the 10<sup>th</sup>/11<sup>th</sup> c. For example, Parisinus gr. 1510 (10<sup>th</sup> c.), ff. 74v-108v, F. Halkin, *Manuscrits grecs de Paris; inventaire hagiographique* (Paris 1968) 190-1; Sinaiticus gr. 497 (10<sup>th</sup>/11<sup>th</sup> c.), ff. 259v-267v, M. Kamil, *Catalogue of all manuscripts in the Monastery of St. Catherine on Mount Sinai* (Wiesbaden 1970) 90; Vindobonensis Phil. gr. 158 (first half of eleventh c.), ff. 99r-106v, 115r-122v, 213r-220v, J. Grusková, *Untersuchungen zu den griechischen Palimpsesten der Österreichischen Nationalbibliothek: codices historici, codices philosophici et philologici, codices iuridici* (Vienna 2010) 73-4; and Vaticanus gr. 821, (11<sup>th</sup> c.), ff. 5r-53v, R. Devreesse, *Codices Vaticani Graeci: Codices 604-866* (Vatican City 1950) 357-9. On the dating of the collection, see also the corresponding discussion by C.

recounting cases of miraculous healing at Germia (mod. Gümüşkonak). The city is located in Western Galatia below Mount Dindymon (mod. Arayit Dağı) and lies 120km southwest of Ankara.<sup>14</sup> According to the story, when Studios,<sup>15</sup> consul in 454, was treated there, he restored the Church of St. Michael (probably identifiable with the most obvious extant early church, a five-aisled basilica), and erected homes for the sick (*xenodocheia*) and aged (*gērokomeia*). Germia subsequently became an important healing centre and pilgrimage site. Interestingly, it is attested that even Justinian visited the shrine in 563 at the age of 81, although we have no details to confirm whether or not he sought healing.<sup>16</sup>

Great emphasis is laid on the miracle accounts of the holy water (*hagiasma*) found in the city of Germia, with which patients anointed the affected parts of their bodies. In the case under examination, visitors seeking healing are referred to as *leproi* (those suffering from *lepra*), *elephantiōntes* (those suffering from elephant disease), people with withered hands and feet (*xēras cheiras kai podas*), and those suffering from a great many other ailments of all sorts (*pleista kai pantodapa pathē*). According to the story, at God's command the fish (*ichthyes*) in the waters licked the patients' bodies all over. Instantly cured of chronic and more recent diseases (*chroniōn te kai nearōn*), both hidden and visible ones (*kryphiōn kai fanerōn nosēmatōn*), the pilgrims then glorified God and St. Michael.<sup>17</sup> Although the author attempts to include all possible diseases, there is significant emphasis on chronic skin diseases, including elephant disease. At the end of the narration there is a reference to

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Mango, 'The Date of the Studius Basilica at Istanbul', *Byzantine and Modern Greek Studies* 4 (1978) 115-22, esp. 117-18.

<sup>14</sup> On Byzantine Germia, see C. Mango, 'The Pilgrimage Centre of St. Michael at Germia', *Jahrbuch der Österreichischen Byzantinistik* 36 (1986) 117-32.

<sup>15</sup> J. R. Martindale et al., *The Prosopography of the Later Roman Empire*, II, s.v. Studios 2 (Cambridge: 1980) 1037.

<sup>16</sup> Theophanes, *Chronographia*, ed. C. de Boor, I (Leipzig 1883) 240.10-2.

<sup>17</sup> The short excerpt was published in C. Mango, 'St. Michael and Attis', *Δελτίον τῆς Χριστιανικῆς Ἀρχαιολογικῆς Ἐταιρείας* 4.12 (1984) 39-62, esp. 47: 'Ἐν γὰρ τοῖς θαυμαστοῖς ἐκείνοις τῶν Γερμίων ὕδασιν ὁ μετὰ πίστεως θερμῆς καὶ ἐξαγορεύσεως τῶν αὐτοῦ ἀμαρτημάτων κατερχόμενος ἀσθενῆς καὶ καταδύμενος ἕως πάγωνος ἵσταται ἐκεῖσε ὀλοσχερῶς ἰκετεύων τὸν παντοδύναμον θεὸν καὶ τὸν ἅγιον αὐτοῦ Μιχαὴλ τὸν ἀρχιστράτηγον, καὶ εὐθέως θεοῦ προστάξει συνάγονται ὁμοῦ οἱ ἐν τοῖς ἐκεῖσε ὕδασιν ἰχθύες καὶ περιλείχουσι διόλου ὅλον τὸ σῶμα τοῦ ἀσθενοῦς, καὶ παραυτίκα ἀνέρχεται ὑγιῆς ψυχῆ τε καὶ σώματι, θεραπευόμενος χρονίων τε καὶ νεαρῶν καὶ κρυφίων καὶ φανερῶν νοσημάτων, δοξάζων τὸν θεὸν καὶ τὸν ταξίαρχην αὐτοῦ Μιχαήλ. πολλοὶ γὰρ ἐκεῖσε λεπροὶ καὶ ἔλεφαντιῶντες ἐκαθαρίσθησαν καὶ ξηρὰς ἔχοντες τὰς χεῖρας καὶ τοὺς πόδας ἰάθησαν καὶ ἄλλα πλεῖστα καὶ παντοδαπὰ πάθη παραδόξως ἐθεραπεύθησαν· τὴν δὲ τῶν ῥηθέντων θαυμάτων πιστοῦται ἀλήθειαν καὶ ὁ θεοσεβῆς ἀνὴρ καὶ περίβλεπτος ὕπατος Στούδιος'.

the aforementioned consul Studios, who personally testifies to the truth of the miracle, which seems to date to the mid-fifth century.

The account implies the existence of a fishpond, with the water probably supplied by a nearby spring, where a process of balneotherapy took place. What is extraordinary is that, in contrast to other Byzantine miracle stories, the healing power of the holy water is here reinforced by the use of a living agent, i.e. the fish. Although we are aware of other sacred springs with fish in the ancient and medieval world, there is no available evidence to attest their direct use for healing purposes as in the case of Germia.<sup>18</sup> In the absence of any archaeological excavation in the area or any further literary sources reporting this case of fish therapy, it has not been possible to cross-check the veracity of the account. It is, however, noteworthy that the so-called doctor fish, *Cyprinion macrostomum* Heckel, is nowadays native to the wider area of Anatolia. Furthermore, in a recent substantial study, based on three survey campaigns in the area in 2009–2011 directed by Philipp Niewöhner, archaeologists using geomagnetic measurement techniques revealed the plan of a large enclosure above some ancient walls, which consists of a central square (35m x 35m) that is empty and a surrounding group of buildings; several architectural elements point to a Byzantine date. According to one interpretation, this structure could be the location of the healing fishpond, something which is substantiated by the existence of a nearby thermal spring.<sup>19</sup> Moreover, the chemical analysis of the thermal waters of the area has emphasised the extremely high concentration of hydrogen sulphide, which has traditionally been considered to have therapeutic value for skin diseases.<sup>20</sup>

This case of Byzantine fish therapy assumes even greater importance in the light of recent discussions on the rapid expansion of fish spa resorts in various countries over the last decade, including Japan, China, Belgium, Spain, the U.K., Finland, and the U.S.A. Many people who visit these places are not suffering from any disease, but simply look on it as an alternative form of pedicure in which doctor

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<sup>18</sup> For a discussion of sacred places with fish, including fish worship, see F. W. Halsuck, *Christianity and Islam under the Sultans*, I (Oxford 1929) 244-9; É. Dermenghem, *Le culte des saints dans l'Islam maghrébin* (Paris 1954) 145-8; and P. Horden and N. Purcell, *The corrupting sea: a study of Mediterranean history* (Oxford 2000) 408-9.

<sup>19</sup> P. Niewöhner, D. Gülseren, E. Ercan, et al., 'Bronze Age Höyüks, Iron Age Hilltop Forts, Roman Poleis and Byzantine Pilgrimage in Germia and its Vicinity. "Connectivity" and a Lack of "Definite Place" on the Central Anatolian High Plateau', *Anatolian Studies* 63 (2013) 97-136, esp. 127.

<sup>20</sup> Niewöhner et al., 'Pilgrimage in Germia', 108-10.

fish are used to clean and exfoliate the skin. The method has been banned in several US states and Canadian provinces on sanitary grounds.<sup>21</sup> More specifically, in the United Kingdom a group of experts under the aegis of the Health Protection Agency published guidance in 2011, which, although it acknowledged the reported risk of infections to be very low, made several reference to the potential spread of hepatitis B and C and even HIV, where good hygiene was not maintained. Furthermore, fish spas were not recommended for patients with weakened immune systems or underlying medical conditions such as diabetes and psoriasis.<sup>22</sup> Subsequently, the British media reproduced parts of these guidelines, putting great emphasis on the health risks, which led to a substantial reduction in the use of fish spas in the UK.

Perhaps the most famous fish health spa in the world is situated in the Kangal district of Sivas in Turkey, which lies about 500 km east of Germia, and has been officially recognised as a treatment centre by the Ministry of Health of the Turkish Republic since 2004. It consists of five pools with two species of healing fish, *Cyprinion macrostomum* Heckel and *Garra rufa obtusa* Heckel, where the average water temperature is 35°C (95°F). In a recent study involving 87 patients, who were diagnosed with psoriasis vulgaris by a dermatologist, 8 out of 14 patients (57.14%) who spent 7.4 hours a day in the spa for the maximum recommended period of 21 days recovered completely. It was observed that, from the very first day, the squamae were totally removed from the patients' bodies by the fish.<sup>23</sup> Another later study by some members of the same research group concluded that the treatment of psoriasis in the spa was not achieved solely by the fish, but rather that the entire process should be considered a method of balneotherapy-climatotherapy in which other factors such as the high concentration of selenium in the thermal waters and the effect of natural UV light also play an important role.<sup>24</sup> Although the therapeutic effects of fish therapy are

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<sup>21</sup> Ontario Ministry of Health and Long-Term Care, 'Technical Note on Fish Pedicures Services', July 5, 2010, available online at: [http://www.ciphi.on.ca/images/stories/pdf/resources/technical\\_note\\_fish\\_pedicures\\_2010.pdf](http://www.ciphi.on.ca/images/stories/pdf/resources/technical_note_fish_pedicures_2010.pdf) (accessed September 27, 2015).

<sup>22</sup> Health Protection Agency, 'Health Protection Agency Fish Spa Working Group Guidance on the Management of the Public Health Risks from Fish Pedicures: Draft for Consultation', Aug 31, 2011, available online at: [http://www.hpa.org.uk/webc/HPAwebFile/HPAweb\\_C/1317131045549](http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317131045549) (accessed September 27, 2015).

<sup>23</sup> S. Özçelik, H. H. Polat, M. Akyol, et al., 'Kangal Hot Spring with Fish and Psoriasis Treatment', *The Journal of Dermatology* 27 (2000) 386-90.

<sup>24</sup> S. Özçelik and M. Akyol, 'Kangal Hot Spring with Fish & Psoriasis Treatment', *La Presse Thermale et Climatologique* 148 (2011) 141-7.

still controversial among the modern medical community, our Byzantine example is a testimony to the fact that therapeutic methods in premodern societies were not as restricted as one might assume, but people sought out alternative methods and even sought to combat severe skin diseases.