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The Illnesses of King Richard and King Philippe on the Third Crusade: An Understanding of *arnaldia* and *leonardie*

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Introduction

The crusade of King Richard I of England and Philippe Augustus II of France was ill-fated. In 1191, after just a few days of intense fighting before the walls of Acre, both kings fell ill from an enigmatic illness known in Latin as *arnaldia* and in French as *leonardie*. For weeks both Richard and Philippe were close to the brink of death, before they finally recovered. In the summer of 1192 another epidemic struck the crusader army and Richard again became dangerously ill – this time with a malady referred to as *febris emitritea*. For nearly three months his condition was so serious that once again his men feared for his life. At this point Richard had to abandon his plan to capture the Christian holy sites, for Jerusalem was out of the reach of a king lying on a sickbed. After he had made peace with Saladin, Richard immediately returned to Haifa to receive medical treatment. He left the Holy Land in October 1192 and it is likely that his impaired health had been a major factor influencing his return to Europe at that time. The present article describes Richard and Philippe's crusade in terms of the diseases and the medical treatment received. This approach shows how campaigning, especially during long sieges, predisposed the crusaders to sickness. In particular, the illness known as *arnaldia* or *leonardie* is investigated in an attempt to identify its place in twelfth-century medical thought. These two terms have intrigued historians, who have been attempting to identify their meaning for over three hundred years.[1]

The chronicles and the poetry of the Third Crusade (1189–92) record the repeated episodes of disease that befell the army and its leaders. There are two main approaches that might be employed in their modern interpretation.[2] One technique is to interpret what they might have meant to people living at the time of the event – for example, by determining the views of medieval medical practitioners and other scholars. This may be referred to as the social diagnosis.

[1] Joannes Georgius Koenig, *Disquisitio medica de Arnaldia, quam sub praesidio viri praenobilissimi, amplissimi, excellentissimi atque experientissimi domini Jacobi Pancratii Brunonis ... publicae placidaeque philiatrorum censurae subjiciet Johannes Georgius Koenig* (Altdorf, 1706).

[2] Piers D. Mitchell, "The Use of Historical Texts for Investigating Disease in the Past," *International Journal of Paleopathology* (DOI: 10.1016/j.ijpp.2011.04.002).

Another technique is to attempt to identify the cause of the disease from a modern perspective, sometimes referred to as the modern biological diagnosis. The degree to which either of these approaches will be successful depends upon whether the authors were eyewitnesses, the details recorded by the chroniclers, and whether they mention specific symptoms of the disease. This process is often difficult as the detailed symptoms of epidemics are seldom described in medieval sources. In many cases those brief statements follow stereotypical descriptions that do not allow for an accurate modern biological diagnosis. For these reasons, a retrospective analysis can often only suggest possibilities and estimate their plausibility.[3]

Bearing this in mind, the study of diseases in the past can nevertheless highlight hitherto neglected aspects of medieval life on campaign. The long siege of Acre (1189–91) shows quite plainly the logistical problems, particularly in terms of food supplies and the unhygienic conditions in the crowded encampment. In the light of these circumstances it is no wonder that crusaders of any social rank became victims of disease. Past analysis of mortality in the Third Crusade suggests that about 16 per cent of clergy named in the sources died during the campaign, and about 30 per cent of named nobles.[4] This is despite the innovative work of the mobile army field hospital of the Order of St. John, and the hospitals formed spontaneously at the siege of Acre by both English and German troops.[5] It is presumed that infectious diseases and malnutrition might have been the main causes of death among the clergy, while the knights would have died from weapon injuries as well, explaining the higher mortality. A good deal of supportive archaeological research is now available that has demonstrated evidence for infectious diseases, parasites, malnutrition and weapon injuries in the Latin East at the time of the crusades.[6] Military expeditions

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[3] Thomas G. Wagner, *Die Seuchen der Kreuzzüge. Krankheit und Krankenpflege auf den bewaffneten Pilgerfahrten ins Heilige Land*, Würzburger medizinhistorische Untersuchungen Beiheft 7 (Würzburg, 2009), pp. 9–13; see also Susan Edgington, "Medical Knowledge in the Crusading Armies: The Evidence of Albert of Aachen and Others," in *MO, 1*, p. 321; Karl-Heinz Leven, *Die Geschichte der Infektionskrankheiten. Von der Antike bis ins 20. Jahrhundert*, in *Fortschritte in der Präventiv- und Arbeitsmedizin*, ed. F. Hofmann (Landsberg and Lech, 1997), p. 14.

[4] Piers D. Mitchell, *Medicine in the Crusades: Warfare, Wounds and the Medieval Surgeon* (Cambridge, 2004), p. 143.

[5] Susan Edgington, "Medical Care in the Hospital of St. John in Jerusalem," in *MO, 2*, pp. 27–33; Benjamin Z. Kedar, "A Twelfth-Century Description of the Jerusalem Hospital," in *MO, 2*, pp. 3–26; Mitchell, *Medicine in the Crusades*, pp. 90–95.

[6] Piers D. Mitchell, "Child Health in the Crusader Period Inhabitants of Tel Jezreel, Israel," *Levant* 38 (2006), 37–44; Piers D. Mitchell, Yossi Nagar and Ronnie Ellenblum, "Weapon Injuries in the 12th century Crusader Garrison of Vadum Iacob Castle, Galilee," *International Journal of Osteoarchaeology* 16 (2006), 145–55; Piers D. Mitchell and Yotam Tepper, "Intestinal Parasitic Worm Eggs from a Crusader Period Cesspool in the City of Acre (Israel)," *Levant* 39 (2007), 91–95; Piers D. Mitchell, Eliezer Stern and Yotam Tepper, "Dysentery in the Crusader Kingdom of Jerusalem: An ELISA Analysis of Two Medieval Latrines in the City of Acre (Israel)," *Journal of Archaeological Science* 35 (2008), 1849–53.

such as crusades also had the potential to spread disease, on both the outward and return journeys.[7]

Analysis of medieval epidemics also provides insight into the medical terminology used in the contemporary chronicles. Examining the disease that the English and the French kings contracted, we encounter the terms *arnaldia*, *leonardie* and *l'ennaudie*.[8] In the medieval period, these terms appear to be unique to chronicles that describe the Third Crusade. In each medieval language dictionary we have been able to consult that includes these terms, the only examples are from the Third Crusade.[9] Other terms applied to illness in the Third Crusade such as *doble terceine*[10] and *major hemitritaeus*,[11] were well attested to in the medical literature of the age.

The Siege of Acre

The story of the severe illnesses of Richard and Philippe begins almost two years before their arrival in the Holy Land, in the summer of 1189, when the titular king of Jerusalem, Guy de Lusignan, laid siege to the city of Acre.[12] Initially commanding only about 600 men, his army was gradually reinforced by crusaders from the West: Frisians, Flemings, Germans and Bretons. However, the Christians were not strong enough to take the well-fortified city by storm. Advancing with a strong relieving force, Saladin was blocking their lines of communication. All the signs indicated that a long-lasting siege would take place, along with famine and epidemics. Enclosed by Saladin's nearby encampment, the crusaders were running out of supplies, particularly in the winter when sea travel in the Mediterranean stopped

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[7] Piers D. Mitchell, "Spread of Disease with the Crusades," in *Between Text and Patient: The Medical Enterprise in Medieval and Early Modern Europe*, ed. Brian Nance and Florence Eliza Glaze (Florence, 2011), pp. 309–30.

[8] Roger of Howden, *Chronica*, ed. William Stubbs, RS 51 (London, 1870), p. 113; see Thomas G. Wagner, "Rex incidit in aegritudinem, quam Arnaldiam vocant. Untersuchungen zur '*aegritudo Arnaldia*' – der rätselhaften Erkrankung, welche die Könige Richard Löwenherz und Philipp II. August während der Belagerung von Akkon im Jahre 1191 befiel," *Fachprosaforschung – Grenzüberschreitungen* 2/3 (2006/2007), 45–57; Ambroise, *The History of the Holy War: Ambroise's Estoire de la Guerre Sainte*, ed. Marianne Ailes and Malcolm Barber, 2 vols. (Woodbridge, 2003), 1:155 and 2:162.

[9] *Arnaldia*: W.-H. Maigne D'Armis, *Lexicon Manuale ad Scriptores Mediae et Infimae Latinitatis* (Paris, 1858), col. 207; Charles Du Fresne, *Glossarium Mediae et Infimae Latinitatis*, 2 vols. (Niort, 1883), 1:396; R. E. Latham, *Revised Medieval Latin Wordlist from British and Irish Sources* (London, 1965), p. 31. *Leonardie*: Alan Hindley, Frederick W. Langley and Brian J. Levy, *Old French–English Dictionary* (Cambridge, 2000), p. 392.

[10] *L'estoire de Eracles empereur et la conqueste de la terre d'outremer*, *RHC Oc* 2:179.

[11] Richard of Devizes, *Chronicon*, ed. Richard Howlett, RS 82 (London, 1882–86), p. 444.

[12] *L'estoire de Eracles*, pp. 128–29; Peter W. Edbury, *The Conquest of Jerusalem and the Third Crusade* (Aldershot, 1996), pp. 80–82; Ibn al-Athīr, *RHC Or* 2:6–8; Bahā al-Dīn, *RHC Or* 3:134; Abū Shāmah, *RHC Or* 4:408; Imād al-Dīn, *Conquête de la Syrie et de la Palestine par Saladin*, trans. Henri Massé, Documents relatifs à l'histoire des croisades publiés par l'Académie des Inscriptions et Belles-Lettres 10 (Paris, 1972), pp. 168–70.

due to the bad weather. The price of food rose immensely in the Christian camp. Knights had to eat their horses and other beasts of burden.[13] Foot soldiers were said to have gnawed on the rotting bones of dogs.[14] In the search for sustenance, starving crusaders attacked the Muslim camp several times, but were repulsed sustaining heavy casualties.

The ditches beneath the city walls were repeatedly filled with new corpses. Similarly the nearby river was said to have turned red with the blood of the dead. The stench of rotting bodies was in the air, and there were so many flies that "nobody in the camp could stand it."[15] In the Muslim camp the sultan's advisers became worried about the hygienic conditions too. Referring to the smell of the corpses and corruption of the air, known in Europe as *miasma*,[16] Saladin's entourage advised him to withdraw with his baggage train to the healthier site of Kharruba.[17]

The accounts in western medieval chronicles discussed above record a number of predisposing factors associated with disease during wartime. First, malnutrition leads to weakness, vitamin deficiency diseases, and suppression of the immune system.[18] Second, overcrowding and poor hygiene was present, which would be particularly relevant to sanitation. Third, the water supplies were contaminated with corpses and there was a large number of flies, which play an important role as vectors of gastrointestinal diseases.[19]

In the late summer of 1190, a year before Richard or Philippe Augustus arrived, a severe illness developed among the crusader troops. Ambroise gave a detailed account of this in his *Estoire de la guerre sainte*:

> Then a disease ran through the army – wait while I tell you about it – it was the result of rains that poured down such as have never been before, so that the whole army was half-drowned. Everyone coughed and sounded hoarse; their legs and faces swelled up. On one day there were a thousand [men on] biers; they had such swelling in their faces that the teeth fell from their mouths.[20]

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[13] *L'estoire de Eracles*, p. 150.

[14] *De expugnatione Terrae Sanctae per Saladinum libellus*, ed. Joseph Stevenson, RS 66 (London, 1875), p. 256.

[15] *L'estoire de Eracles*, p. 151.

[16] For the classical Greek Hippocratic view of contagion, namely through the medium of air by so-called *miasma*, a kind of foul-smelling mist or vapours that ascend out of swampland, corpses or even sick people, see Gundolf Keil, "Miasma," in *Lexikon des Mittelalters*, 9 vols. (Munich, 2002), 6:593.

[17] Ibn al-Athīr, *The Chronicle of Ibn al-Athir for the Crusading Period from al-Kamil fi'l-ta'rikh. Part 2. The Years 541–589/1146–1193*, ed. and trans. D. S. Richards (Aldershot, 2007), p. 369; Abū Shāmah, *The Rare and Excellent History of Saladin*, ed. and trans. D. S. Richards (Aldershot, 2001), p. 105.

[18] R. K. Chandra, "Nutritional Regulation of Immunity and Infection," *Journal of Pediatric Gastroenterology and Nutrition* 5 (1986), 844–52; R. L. Gross and P. M. Newberne, "Role of Nutrition and Immunologic Function," *Physiological Reviews* 60 (1980), 188–251; R. R. Watson, ed., *Nutrition, Disease Resistance and Immune Function* (New York, 1984).

[19] Valerie Curtis, Sandy Cairncross and Raymond Yonli, "Domestic Hygiene and Diarrhoea – Pinpointing the Problem," *Tropical Medicine and International Health* 5 (2000), 22–32.

[20] Ambroise, *The History of the Holy War*, 1:69 and 2:90.

Due to the mention of distinctive symptoms such as the loss of teeth, the illness can be given the modern biological diagnosis of scurvy, which is a deficiency of vitamin C.[21] In this condition the legs may swell, bruising develops in the skin, gum tissue proliferates and overgrows, teeth fall out.[22] Regarding his explanation for the illness, Ambroise opts for secular medical reasoning, following the philosophy of the classical Greek physician Hippocrates,[23] rather than religious theory such as punishment for sin.[24] The wording Ambroise chose suggests he felt the heavy rain was literally absorbed by the soldiers' bodies, hence leading to their swelling up. In modern times the effects of wet weather and flooding on siege-stressed armies are known to have a significant impact upon health, even in the recent past.[25]

However, while malnutrition was clearly present it may well not have been the worst killer. Haymar the Monk indicates this when he uses the words "various illnesses" in his description.[26] The mortality in the host peaked in the autumn and winter of 1190–91, after the crusaders had been reinforced in summer by English and French troops. Muslim historians suspected the humid winter[27] and frequent variations in temperature[28] to be the cause of ill health. Crusaders of high nobility fell victim to the diseases in the camp, among them Frederick of Swabia, son of Emperor Frederick Barbarossa.[29] Uncountable nobles (*alii innummerabiles*) perished "due to the all too corrupted air" (*ex aeris nimia corruptione*), as Matthew Paris states,[30] referring to the abovementioned *miasma* theory. The situation in both the city of Acre and Saladin's camp was similar. The sultan suffered from a "bilious fever" and again he retreated towards Kharruba.[31] Even though the chroniclers may have guessed or exaggerated the figures, the casualties appear to have been significant. The Latin sources wrote of 200,000 to 400,000 deceased,[32] whereas the Arabic-written accounts provide a more modest calculation of about 100–200

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[21] Mitchell, *Medicine in the Crusades*, p. 2; Wagner, *Die Seuchen der Kreuzzüge*, pp. 220–26.

[22] Laura Pimentel, "Scurvy: Historical Review and Current Diagnostic Approach," *American Journal of Emergency Medicine* 21 (2003), 328–32.

[23] Hippocrates, *Περί άερων ύδάτων τοπων* [On airs, waters, places], ed. T. E. Page, trans. W. H. S. Jones, The Loeb Classical Library 147 (London, 1962), pp. 99–101; he considered weather conditions and climate to be the cause of illness.

[24] And so did others, for instance Haymarus Monachus, *De expugnata Accone. Liber tetrastichus seu Rithmus de expeditione Ierosolimitana*, ed. Paul E. Riant (Paris, 1866), p. 12: "Imbris, torrens validus, terram inundabat ..."

[25] John Haller, "Trench Foot – A Study in Military-Medical Responsiveness in the Great War, 1914–1918," *The Western Journal of Medicine* 152 (1990), 729–33.

[26] Haymarus Monachus, *De expugnata Accone*, p. 14: "Qui praesentes aderant, poterant videre variis languoribus homines tabere."

[27] Imād al-Dīn, p. 271.

[28] Bahā al-Dīn, p. 208.

[29] Ibid.

[30] Matthew Paris, *Chronica Maiora*, ed. Henry Luard, RS 57 (London, 1874), p. 370.

[31] Bahā al-Dīn, p. 208.

[32] Reinhold Röhricht, *Die Geschichte des Königreiches Jerusalem, 1100–1291* (Innsbruck, 1898), p. 553.

every day.[33] These were the challenging conditions which the two western kings faced upon their arrival at Acre.

Descriptions of *arnaldia* and *leonardie* in 1191

A number of sources describe the illnesses sustained by Richard and Philippe shortly after their arrival at Acre. Some describe the symptoms of each king, and some write about both. In understanding the relative reliability of each source regarding the personal disease symptoms of the king, it is important to bear in mind the likelihood whether this evidence was from the direct experience of the author, from others who were eyewitnesses but written at the same time or shortly after events, or written much later when eyewitnesses were unlikely to have been alive to comment.

Richard I of England landed on 8 June 1191. Not even a week after his arrival he fell ill. Ambroise was a jongleur in the English army camp, but is not thought to have been part of the royal entourage. However, since Richard was recorded as being carried about the army camp on a stretcher while ill, it is quite possible that the author would have seen him. Ambroise wrote: "But the king was ill, his mouth and lips pale, because of an illness – may God curse it – called leonardie."[34] Ambroise also mentioned that within a few days King Phillippe also fell ill and could not ride.[35] No symptoms were given for the French king, and this may reflect the fact that Ambroise may well not have had the opportunity to see him close-up. A few days later King Richard's illness was recorded as making him tremble.[36] Ambroise also recorded that King Philippe recovered from his illness before the English king.[37] Ambroise refers back to the disease later on in the expedition, this time spelling it *l'ennaudie*.[38] These are all the symptoms of *leonardie* recorded by Ambroise, who only uses the term to refer to Richard.

On 6 August 1191, King Richard dictated a letter in the camp at Acre to William Longchamp, the bishop of Ely. In this he referred to his recent illness: "You know that we have suffered much from illness since we undertook our journey, but by the mercy of God, we are restored to full health."[39] Since he arrived at Acre on 8 June and became ill about a week later, this would place the onset of illness in mid-June. It is not clear exactly when Richard regarded himself as fully recovered, but he does appear to have been better by the beginning of August. This suggests an illness duration of several weeks, and perhaps as long as seven weeks.

[33] Bahā al-Dīn, p. 208.

[34] Ambroise, *The History of the Holy War*, 1:74 and 2:95: "Mais li reis [Richardz] iert malades e aveit boche e levres fades d'un enfermeté que Deu maudie ou'en apele leonardie."

[35] Ibid., 1:76 and 2:96.

[36] Ibid., 1:77 and 2:99: "que li mals qui li feseit trembler."

[37] Ibid., 1:76 and 2:98.

[38] Ibid., 1:155 and 2:162.

[39] *Epistolae Cantuarienses*, ed. William Stubbs, RS 38, 2 vols. (London, 1865), 2:347.

A French source of the Third Crusade provides much more information about the illness of King Philippe. William the Breton was the French king's chaplain, so we have good reason to assume his description of the symptoms was accurate. William thought that the illness was a result of an attempted assassination with poison. He wrote: "For, as some say, he [Philippe] had drunk the poisoned chalice handed to him by the traitors, by which he was so badly afflicted with illness, so that he lost the nails of his hands and feet as well as the hair and most of the surface of the skin."[40] In his poem about the Third Crusade called *Philippeis* the same author added more symptoms such as fever, sweating and shivering.[41] In order to explain the cause William asserted that poison made the French king sick in the first place by unbalancing the humours. According to Galen's humoural pathology the human body was imagined as a closed system of fluids containing four humours of antithetic qualities: blood, phlegm, yellow and black bile. An imbalance of these humors resulted in illness, as did their corruption by other elements such as unnatural black bile.[42] William the Breton demonstrates that he believed humoural imbalance led to the consequences such as loss of hair, nails and skin because he refers to the hot quality (*calor*) of the king's body. William the Breton does not give a label to this illness in the way Ambroise referred to King Richard's disease as *leonardie*, nor does he comment as to whether it was the same illness as Richard suffered.

Roger of Howden was a royal clerk in the English court who accompanied King Richard on the crusade.[43] He returned to Europe with King Phillippe in August 1191, so would have had access to those in the French court as well as his own. As an eyewitness writing contemporaneously, he noted at the siege of Acre that "the kings were affected by an illness, which is commonly called *arnaldia*; they suffered to the brink of death and lost in the course of the illness all their hair. But by God's grace it happened that both recovered from that illness and that they were made even stronger and more dauntless in the service of God."[44] Roger seems to have been the first to use the term *arnaldia*. Since he wrote in Latin and not French, he could not have used Ambroise's term *leonardie*, even if he had heard the word

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[40] William the Breton, *De Gestis Philippi Augusti*, ed. Michel-Jean Joseph Brial, RHGF 17 (Paris, 1878), p. 70: "Nam, ut quidam dicunt, venenum a proditoribus porrectum hauserat, unde et tanta infirmitate gravatus est, quod et ungues manum et pedum et capillos et fere omnem cutis superficiem amisit"; T. A. Archer, *The Crusade of Richard I* (London, 1889; repr. 1978), pp. 84, 117.

[41] William the Breton, *Philippeis*, ed. Michel-Jean Joseph Brial, RHGF 17 (Paris, 1878), p. 165: "Solus cum paucis haec inter agenda Philippus, febre gravi tactus, cebroque tremore fatiscens, infirmabatur, Acharonque iacebat in urbe; tantaque scaturies, tantus calor illius ossa totaque membra fuit ita depopulatus, ut omnes a digitis ungues caderent, a fronte capilli. Unde putabatur, et nondum fama quiescit illum mortiferi gustum sensisse veneni ..."

[42] Erich Schöner, *Das Viererschema in der antiken Humoralpathologie* (Wiesbaden, 1964); Rudolph E. Siegel, *Galen's System of Physiology and Medicine: An Analysis of his Doctrines and Observations on Bloodflow, Respiration, Humors and Internal Diseases* (Basel/New York, 1968).

[43] John Gillingham, "Roger of Howden on Crusade," in *Medieval Historical Writing in the Christian and Islamic Worlds*, ed. D. O. Morgan (London, 1982), pp. 60–75.

[44] Roger of Howden, *Chronica*, p. 113.

spoken or seen the jongleur's text. Describing the illness, Roger applies the same term and the same symptoms to both kings. It is clear that Roger believed they suffered from the same condition.

The *Lyon Eracles* version of the continuation of William of Tyre's chronicle was written in French and belongs to a group of manuscripts probably copied in Acre in the second half of the thirteenth century.[45] The section covering the time of the Third Crusade mentions the French king's illness. After the supposed conspiracy had been revealed to King Philippe, we again hear that his physical condition changed for the worse: "The king took the words to heart and became anxious and annoyed, so that he severely fell from double tertian (*doble terceine*)."[46] This text does not give symptoms, but does allocate a medieval diagnostic label to the illness.

Richard de Templo wrote the *Itinerarium Peregrinorum* in England, possibly between 1217 and 1222.[47] Writing in Latin, he followed Roger of Howden's lead and refers to King Richard's illness as *arnaldia*: "When he had been there some days he contracted a very serious illness, commonly called Arnoldia. This was due to the climate of that unfamiliar region, which did not agree with his natural constitution."[48] From the *Itinerarium Peregrinorum* we know that Richard was confined to his bed also suffering from bouts of severe fever.[49]

Later English chroniclers that cover the crusade continue to use the term *arnaldia*. For example, in the early fourteenth century Nicolaus Triveth wrote his annals of six kings of England covering 1136–1307. Clearly not an eyewitness, and with all eyewitnesses long deceased by then, he used earlier sources to recreate the story of the Third Crusade. The marked similarity of his wording for Richard's illness suggests that he relied heavily on Richard de Templo's account.[50]

Major hemitritaeus in 1192

Unlike his cousin Philippe, Richard I of England remained in the Holy Land for another year. The campaign of 1191–92 was directed towards Jerusalem, which Richard approached and saw at a distance of several miles. However, he never reached it, in part due to his ill health. Autumn and winter had been extremely

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[45] Peter W. Edbury, "The French Translation of William of Tyre's *Historia*: The Manuscript Tradition," *Crusades* 6 (2007), 69–105, at pp. 86, 93; Edbury, *The Conquest of Jerusalem*, pp. 3–7.

[46] *L'estoire de Eracles*, p. 179: "une maladie grant de doble terceine"; the term had already been used by WT, 22.17, p. 1030, to describe the illness of Raymond III of Tripoli. For a more detailed description of this illness, see Wagner, *Die Seuchen der Kreuzzüge*, pp. 227–34.

[47] Helen J. Nicholson, trans., *The Chronicle of the Third Crusade* (Aldershot, 1997), p. 10.

[48] *Itinerarium Peregrinorum et Gesta Regis Ricardi*, ed. William Stubbs, RS 38 (London, 1864), p. 214: "Cum autem per aliquot dies ibi moram fecisset, gravissimam incurrit aegritudinem, quae vulgo Arnoldia vocatur, ex ignotae regionis constitutione, cum eius naturali complexioni minus concordante."

[49] *Itinerarium Peregrinorum*, p. 220.

[50] Nicolaus Triveth, *Annales sex regum Angliae*, ed. Antonius Hall (Oxford, 1719), p. 106: "quae vulgo arvoldia vocatur."

cold and rainy. Moreover, the provisions were meagre. For eight days no supplies reached the army so that the weakest fell behind and were killed by the Saracens, who were constantly pressing and attacking. In spring there was a menace of biting insects.[51] Again an epidemic was about to emerge. It came in the summer of 1192 after a major battle with Saladin at Jaffa.

The king's biographer, Ralph of Coggeshall, wrote shortly after the crusade, but in England. He described the disease very generally:

> After this unbelievable victory of King Richard, while the same was resting at Jaffa for six weeks, a deadly disease arose by reason of polluted air; that illness afflicted the king himself and almost all of his men; and whoever was seized with infection of this illness died quickly, except for the king, for God accorded his protection to him.[52]

This quote does not provide a medieval diagnostic term, but again the *miasma* theory is applied to explain the spread of disease. Here, it is combined with a positive religious thought. God did not send this scourge; instead he provided the power to recover from it.

Richard de Templo wrote in a similar manner in his *Itinerarium Peregrinorum*: "Moreover, for King Richard and our host were battered by reason of the hardship of that day, he contracted a disease, due to both the ferocity of combat and to the stench of the corpses the camp was polluted with, so that almost everybody died."[53] Here, in addition to the *miasma* theory, the author refers to physical factors as causing disease.

Bahā al-Dīn was a Muslim nobleman who recorded the views of Richard's illness from the perspective of the Muslim camp. Saladin was informed about Richard's condition, even though the Arabic historiography did not hand down symptoms or contemporary diagnostic labels. Bahā al-Dīn wrote of a "very serious illness," which confined the king to his bed.[54] Stressing the chivalry of his master on the one hand and the helplessness of the English king on the other, we are given an account of several English legations to Saladin applying for fruits and rose-snow.[55]

A more specific account of Richard's suffering at Jaffa, in terms of terminology and symptoms, was handed down by Richard of Devizes. Richard wrote in England shortly after the crusade, "it was a continuous, undulating fever, and the physicians suspected it to be a major hemitritean fever."[56]

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[51] *Itinerarium Peregrinorum*, pp. 304, 313, 361: "ut universi quos punxissent, viderentur leprosi ..."

[52] Ralph of Coggeshall, *Chronicon Anglicanum*, ed. Joseph Stevenson, RS 66 (London, 1875), p. 51.

[53] *Itinerarium Peregrinorum*, p. 425.

[54] Bahā al-Dīn, p. 224.

[55] Ibid., p. 341.

[56] Richard of Devizes, *Chronicon*, p. 444: "typhus erat continuus, medici majorem hemitritaeum mussitabant ..."; see Wagner, *Die Seuchen der Kreuzzüge*, pp. 234–39.

The Medieval Diagnosis for the King's Illness

Since in medieval times the terms *arnaldia* and *leonardie* appear to have been used only in the context of the Third Crusade, it is helpful to assess what this collection of symptoms might have meant to a twelfth-century physician on that crusade. A study of medical texts written around the time of the Third Crusade allows an assessment to see which disease descriptions most closely matched those of King Richard and King Philippe. In the eleventh century, Constantinus Africanus translated a number of Arabic medical texts into Latin at the monastery of Montecassino. Perhaps his most famous translation was entitled *Liber Pantegni*, from the medical text entitled *Complete Book of the Medical Art* (*kitab al-malaki*) by the tenth-century Persian physician Ali ibn al-ʿAbbas al-Majusi.[57] The *Liber Pantegni* is divided into two parts, the *Practica* and the *Theorica*. There is an important section on skin diseases in the half of the book known as the *Practica*, entitled *De cura lepre et eius significatione*.[58] The term did not translate as leprosy as we understand it today, although one subsection of *De cura lepre* probably did include leprosy. Skin diseases were divided into four main types depending upon their symptoms, the perceived underlying humoural imbalance causing the disease, and the animal felt to most closely resemble the type. One type was termed *alopicia*, and the disease was believed to be due to corruption of the blood by unnatural black bile. The term alopecia comes from the Greek for a fox (*alopex*). The signs of the disease were red, hot swellings that were corrupt. It was probably the disease of the lion (*leonina*) that Kühn referred to as a suggestive interpretation of *leonardie*.[59] However, the symptoms of the disease of the lion were completely different to those of the kings, as the patient went yellow.[60] The later section specifically on alopecia in the *Theorica* half of the book specifically refers to alopecia as the fox disease (*allopicia id est vulpes*).[61] The fox disease shares many of the key symptoms recorded for the two kings (loss of hair, red skin, fever). Copies of the *Liber Pantegni* had plenty of time to circulate in Europe before the time of the Third Crusade a century later, so it is quite likely that the highly educated doctors in the royal court of the two kings would have had access to read the content during their training. Furthermore,

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[57] *Constantine the African and ʿAli ibn al-ʾAbbas al-Maǧusi: The Pantegni and Related Texts*, ed. Charles Burnett and Danielle Jacquart (Leiden, 1994).

[58] Constantine the African, *Liber Pantegni*, *Practica* 4.2 (London, 1515), fol. 93r. We are grateful to Michael McVaugh, University of North Carolina, for sharing his expertise on these early surgical texts.

[59] Oscar Kühn, *Medizinisches aus der altfranzösischen Dichtung*, Abhandlungen zur Geschichte der Medizin 8 (Breslau, 1904), pp. 130–32.

[60] Constantine the African, *Liber Pantegni*, *Practica* 4.2, fol. 93r.

[61] Constantine the African, *Liber Pantegni*, *Theorica* 8.24, fol. 39r: "Allopicia et tyria sunt due passiones, capillos a capite et pilos a barba et superciliis evellentes; suntque hec nomina a simili sumpta. Allopicia id est vulpes plurimum patiuntur ut pili sibi cadant et cutis vulneretur"; Stephen of Antioch, *Liber regalis*, *Practica* 4.12 (Venice, 1492), fol. 117r, covers alopecia as alopitie and recommends bloodletting, pills and purges to treat the condition. His *Theorica* 8.18, fol. 57r, equates to Constantine the African, *Liber Pantegni*, *Theorica* 8.24, fol. 39r. It discusses alopitia and the fox disease vulpi.

in 1127 Stephen of Pisa also translated the *Complete Book of the Medical Art* into Latin in Antioch, giving it the title *Regalis Dispositio* ("the royal arrangement").[62]

A century after Constantinus, Roger Frugard (ca. 1140–ca. 1195) was teaching medicine in Parma, Italy. His ideas were written down in 1180 by Guido of Arezzo the Younger.[63] In consequence, they were disseminated just before the Third Crusade. This late twelfth-century text shows influence from the *Pantegni* of Constantinus Africanus, with a section devoted to lepra.[64] Here the section on lepra states that the alopecia form was known as the fox disease (*vulpibus*). He again described how hair falling out (*cilia depilant*) was an important symptom of the alopecia form of lepra. The treatment recommended by Roger of Parma for alopecia was electuaries (sweet, sticky medicines), bloodletting, scarification and cautery. This book by Roger Frugard was written a decade before the Third Crusade. However, it is not entirely clear whether the doctors in the royal entourage of the kings participating on the Third Crusade would have read it before the crusade began, as new books would have taken time to circulate around Europe. Similar descriptions written after the Third Crusade, referring to alopecia as the fox disease, are given by Bartholomaeus Anglicus (ca. 1203–72) in *De proprietatibus rerum* ("On the properties of things")[65] and the surgical work of Guy de Chauliac (1300–68).[66]

Modern veterinary research has noted that all members of the dog family are known to suffer with hair loss and mange, but the European red fox is particularly prone to this. The cause is sarcoptic mange, an infestation by the skin parasite *Sarcoptes scabei*.[67] This is a burrowing mite that lives on species of the dog family, and is easily spread from one to another during any kind of physical contact. Clinical signs of the disease are intense itching, red crusty skin and hair loss. In longstanding cases large patches of the skin become thickened, scarred and hairless. A significant proportion of infected animals can die from the infestation. The propensity of foxes to lose their hair and develop red peeling skin may well explain why the collection

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[62] Charles Burnett, "Antioch as a Link between Arabic and Latin Culture in the Twelfth and Thirteenth Centuries," in *Occident et Proche-Orient: Contacts Scientifiques au Temps des Croisades*, ed. Isabelle Draelants, Anne Tihon and Baudouin van den Abeele (Louvain, 2000), pp. 1–78; Charles Burnett, "Stephen, the Disciple of Philosophy, and the Exchange of Medieval Learning in Antioch," *Crusades* 5 (2006), 113–29.

[63] Tony Hunt, *Anglo-Norman Medicine: Roger Frugard's Chirurgia and the Practica Brevis of Platearius* (Cambridge, 1994), p. 5.

[64] Roger of Parma, *Incipit Practica Magistri Rogerii*, in *Cyrurgia Guidonis de Cauliaco et Cyrurgia Bruni, Theodorici, Rogerii, Rolandi, Bertopalie, Lanfranc*, ed. Bernardus Locatellus (Venice, 1498), fol. 226v.

[65] Bartholomaeus Anglicus, *De proprietatibus rerum* 7.64, ed. Anthonius Koburger (Nuremberg, 1492).

[66] Guy de Chauliac, *Inventarium sive chirurgica magna* 2.1.6, ed. Michael McVaugh, 2 vols. (Leiden, 1997) 1:313: "Allopicia enim dicitur secundum Galienum a vulpibus ..."

[67] Suzanne Kennedy-Stoskopf, "Canidae," in *Zoo and Wild Animal Medicine*, ed. Murray E. Fowler and R. Eric Miller, 5th ed. (St. Louis, 2003), pp. 482–90.

of symptoms known in the medieval period as alopecia was linked with foxes rather than any other animal.

The Medieval Meaning of *arnaldia*

In 1706, Johannes Koenig published a short book on the meaning of *arnaldia*.[68] He was unable to find any examples outside the context of the Third Crusade. In view of the symptoms given by English chroniclers covering this expedition, he suggested the term might just be an English word for hair loss. Peter Herde pointed out the similarity of the *arnaldia* to another historical disease called *febris Romana*, Roman fever.[69] Abbot Wibald of Stablo had written about the Roman fever from his own experience, as he fell ill with it in the summer of 1156. Wibald stated that it was associated with fever, hair loss and pale complexion.[70] However, the modern biological diagnosis for Roman fever has never been identified. Stefan Winkle suggested typhoid/enteric fever as a possible interpretation for *arnaldia*.[71]

While the Latin medical texts of Constantinus Africanus and Roger Frugard use the term for fox, neither Constantinus, Roger, nor other medical texts of the time use the Latin term *arnaldia* as found in English histories of the crusade.[72] If the term *arnaldia* was not borrowed from medieval medical texts, where did it come from? In fact, the term *arnaldia* does not seem to have any roots in Anglo-Saxon, Anglo-Norman, or Middle English that might explain the unique use of the term in English texts.[73] Rather than looking for English or Latin origins for this word, one possibility is that we should look to the Greek. In 1809, Bartholomew Parr published a medical dictionary that mentions *arnaldia*. He seems unaware of the use of the word in Third Crusade texts, as these are not mentioned in his entry. The entry states how the word originates from the Greek words *arnos*, for a lamb, and *algia*, for pain: "It is so called because lambs are subject to it. A malignant slow disease of the chronical kind, attended with alopecia; it was formerly very common in England."[74] Here we may have the missing link. Bearing in mind the medieval

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[68] Koenig, *Disquisitio medica de Arnaldia*.

[69] Peter Herde, "*Mortalis Pestilentia*: Some Observations on Epidemics in Medieval Italy," in *Gesammelte Abhandlungen und Aufsätze, II/1. Studien zur Papst- und Reichsgeschichte, zur Geschichte des Mittelmeerraumes und zum kanonischen Recht im Mittelalter* (Stuttgart, 2002), p. 51.

[70] *Monumenta Corbeiensia*, ed. Philipp Jaffé, *Bibliotheca rerum Germanicarum* 1 (Berlin, 1864), p. 233: "quoniam febre Romana quinque ebdomanibus apud Viterbum decubueramus et, vi non naturalis caloris cute et omnibus piliis amissis, fauces mortis vix evaseramus."

[71] Stefan Winkle, *Kulturgeschichte der Seuchen* (Düsseldorf, 1997), p. 442.

[72] Roger of Parma, *Incipit Practica Magistri Rogerii*, fol. 226v.

[73] We are most grateful to the following for sharing their linguistic expertise on this point: Debbie Banham, University of Cambridge; Luke Demaitre, University of Virginia; Juhani Norri, University of Tampere, Finland; Linda Voights, University of Kansas-Missouri.

[74] Bartholomew Parr, *The London Medical Dictionary. Including under Distinct Heads Every Branch of Medicine*, 3 vols. (London, 1809), 1:180. We are much indebted to Juhanni Norri for bringing this reference to our attention.

propensity for variable spelling, the minor variation between the Greek *arnalgia* and the Third Crusade term *arnaldia* is quite understandable. It is appreciated that there is a considerable time gap between 1809 and 1191, and it would be reassuring for this argument to find some other examples of arnaldia referring to sheep during that intervening period. However, since this dictionary entry does not mention the Third Crusade at all, and does describe the same hair loss in sheep as occurred in the two kings, we do have some evidence for this potential interpretation. At this point we still need to determine whether there were any diseases of sheep in medieval England that caused loss of hair similar to the king's on the Third Crusade, and why a chronicler might choose to compare his king to a sheep.

A number of sheep diseases of which hair loss and peeling skin are the main symptoms are currently present in Europe and known to modern veterinary medicine.[75] Sheep scab (psoroptic mange) is caused by the mite *Psoroptes ovis*, which makes the skin intensely itchy. An infected sheep then rubs its body against posts, the wool falls out, and the skin becomes pink and peels due to the inflammation. Occasionally such infestations can lead to the death of the sheep. Another disease to consider is cutaneous myiasis (fly strike). Diptera flies lay eggs on soiled areas of fleece. The eggs hatch out and the larvae eat the faeces, wool and skin, especially around the anus. This can lead to marked fleece loss at the back of the sheep and a proportion of sheep can die. Lice (*pediculosis*) cause itching which triggers rubbing against posts but generally leads to less fleece loss than does sheep scab. Sheep keds (*Melophagus ovinus*) is a wingless sucking fly. This ectoparasite also causes itchy skin, which again is rubbed against posts. Clearly, there are several diseases that can cause a sheep to lose patches of its fleece, develop red, peeling skin, and look mangy and unhealthy.

It has been suggested that there may have been about seven million sheep in Britain in 1100,[76] and by the thirteenth century over ten million sheep were being reared for their wool.[77] Indeed, Hurst has argued that the intensification of wool production at that time contributed to an increase in disease. Sheep scab and superficially similar diseases affecting the fleece of sheep apparently became a widespread problem in thirteenth- and fourteenth-century England.[78] England was a major sheep-farming nation during the medieval period, and it is likely that most people would have been familiar with sheep. In this context, it would not be so surprising for a twelfth-century English author to use the term for a disease of mangy sheep to describe the hair loss of the English king, rather than allude to foxes which would not have been as socially important to the population.

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[75] Philip R. Scott, *Sheep Medicine* (London, 2007), p. 253–62; I. D. Aitken, *Diseases of Sheep*, 4th ed. (Oxford, 2007), pp. 321–37.

[76] W. G. Hoskins, *Sheep Farming in Saxon and Medieval England* (London, 1955), p. 6.

[77] Derek Hurst, *Sheep in the Cotswolds: The Medieval Wool Trade* (Stroud, 2005), p. 57.

[78] T. H. Lloyd, "Husbandry Practices and Disease in Medieval Sheep Flocks," *Veterinary History* 10 (1977–78), 3–14; Hurst, *Sheep in the Cotswolds*, p. 62.

It appears that the origins and meaning of the enigmatic word *arnaldia* can tentatively now be proposed. It does not have its origins in medical texts, but the term may instead have been constructed from the Greek, used in a veterinary rather than medical context. It remains unclear whether Roger of Howden created the word *arnaldia* himself, or if it was already in use but never written down prior to his chronicle. However, the fact that it was a term still in use in England in 1809 to describe sheep mange is highly illuminating.

The Medieval Meaning of *leonardie* and *l'ennaudie*

A considerable number of past authors have attempted an interpretation of the term *leonardie*. Some have based their suggestions on the symptoms, and others on the structure of the word itself.

At the beginning of the twentieth century, historians from Germany and France tended to interpret it as *Schweißfieber* – presumably allusion to the fifteenth-century sweating sickness (*sudor anglicus*).[79] A special form called *Frieselfieber*, *suette miliaire* or *trousse-galant* resulted in hair loss and a peeling skin similar to the description of William the Breton.[80] Gillingham proposed that *leonardie* was either scurvy or trench mouth,[81] perhaps due to the changes to the mouth and lips described by Ambroise.[82] The crusading army at Acre does appear to have suffered with scurvy, but the term *leonardie* is never applied to describe the disease of 1190 widespread in the Christian army; instead, it is used exclusively for the febrile disease of King Richard. Moreover, it seems highly unlikely that the two rulers came down with a vitamin deficiency almost simultaneously so soon after arriving. Kühn interpreted the Old French *leonardie* as *facies leonina* ("face like a lion") and called it "an affliction that cannot be qualified."[83]

In contrast to those attempting to match the symptoms of *leonardie* with other diseases with better-known names, Gaston Paris employed an etymological approach. He suggested that *leonardie* might be a contracted form of the words *le renardie*.[84] He had looked in Godefroy's medieval French dictionary, which mentions that *renardie* was a word for alopecia in the fourteenth century.[85] The source

[79] Auguste Brachet, *Pathologie mentale des rois de France: Louis XI et ses ascendants. Une vie humaine etudiée à travers six siècles d'hérédité, 852–1483* (Paris, 1903), pp. 243–47; Alexander Cartellieri, *Philipp II. August. König von Frankreich. Band 2: Der Kreuzzug* (Leipzig/Paris, 1906), pp. 203–8.

[80] J. F. C. Hecker, *Die grossen Volkskrankheiten des Mittelalters. Historisch-pathologische Untersuchungen* (Berlin, 1865), pp. 193–98.

[81] John Gillingham, *Richard I* (London, 1999), p. 160.

[82] Ambroise, *The History of the Holy War*, 1:74 and 2:95.

[83] Kühn, *Medizinisches aus der altfranzösischen Dichtung*, pp. 130–32.

[84] Gaston Paris, *L'Estoire de la guerre sainte. Histoire en vers de la troisième croisade (1190–92) par Ambroise*, Collection de documents inédits sur l'histoire de France 11 (Paris, 1897), p. LXXIII.

[85] Frédéric Godefroy, *Dictionnaire de l'ancienne langue française et de tous ses dialectes du IXe au XVe siècle*, 20 vols. (Paris, 1890–92), 7/1:18.

was actually Corbichon, who translated the Latin medical text of Bartholomaeus Anglicus into French in 1372.[86] Modern dictionaries of medieval French interpret *renart* as a medieval term for the fox, following from the eponymous hero of the popular beast epic *Roman de Renart*.[87] However, since the epic was only started in 1174 it could be argued that there was not enough time for this term to become the dominant word for a fox, instead of *goupil*, by the time of the Third Crusade.[88]

Another possibility is based on a philological argument. From a philological viewpoint, the French terms *l'ennaudie* and *leonardie* could potentially be vernacular forms of *arnaldia*. In medieval French "al" and "au" could be interchangeable (diphthongization), and "r" and "l" are sometimes interchangeable. In such circumstances, it could be that the words *l'ennaudie* and *leonardie* were derived from the Latin word used in England by other crusaders on the same expedition, including Roger of Howden. The different spelling for *leonardie* and *l'ennaudie* may just reflect the variability in spelling many words that was commonplace at that time. Some scribes might spell the same word differently even on the same page, for example. It may also be that, since the word would quite probably have been new to the scribe (it has not been noted in manuscripts that pre-date the Third Crusade), they may have just reinterpreted the *le* at the beginning of *leonardie* as an article, leading to *l'ennaudie*.[89]

One might wonder whether *leonardie* might stem from the medieval French word for a lion, which could be spelt either as *lion* or *leon*. Richard I was already known as the Lionheart by this time. For example, Ambroise describes Richard as *le quor de lion* when he first sees the coast of the Holy Land from his ship.[90] This might explain why the term was not used for other people with similar symptoms,

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[86] Jean Corbichon, *Cestuy livre des proprietez des choses fut translate de latin [of Bartholomaeus Anglicus] en frencois* (Lyon, 1482). In book 7, chapter 64, *De lepra*, Corbichon actually uses the word "renardine."

[87] *Old French–English Dictionary*, ed. Alan Hindly, Frederick W. Langley and Brian Levy (Cambridge, 2000), p. 524.

[88] Early written monuments of the *Renart*-cycle stem from the middle of the twelfth century; the first episodes of the Roman de Renart were composed from 1174–77. See John Flinn, *Le Roman de Renart dans la littérature francaise et dans les littératures étrangères au moyen âge*, 6th ed. (Paris, 1963), pp. 1–6; Lucien Foulet, *Le Roman de Renard*, Bibliothèque de l'école des hautes études 211, 2nd ed. (Paris, 1968), pp. 1–17. In a folkloristic approach Gaston Paris, *La poésie au moyen âge* (Paris, 1885), p. 245, assumed that literary antagonism of the wolf and the fox was anticipated long before in oral tradition. As a jongleur Ambroise might have known stories and tales such as Renard. With that in mind, it is possible that he knew one particular episode, which deals with the "illness of the lion" (written down presumably between 1180 and 1190). This branch is called "Renard médicin" and tells the story of the fox curing the lion, who is ill with fever – according to the poem a *fièvre quartaine*. One might wonder if Ambroise's leonardie/l'ennaudie could allude to this animal legend of a sick king.

[89] We are grateful to those French historians and romance philologists who shared their thoughts on those possibilities with us, including Sophie Marnette and Tony Hunt, both University of Oxford, and Sylvia Huot, University of Cambridge. However, we should stress that not all experts consulted for this article shared the same viewpoint, and all agreed that this is a complex issue with more than one possible interpretation.

[90] Ambroise, *The History of the Holy War*, 1:37 and 2:65.

such as King Philippe. The Ambroise text has the spelling *quor de lion*, but has *leonardie* rather than *lionardie* as we might expect if this were the explanation. However, this might be accounted for by the variability in spelling at that time. Similarly, *leonardie* might potentially reflect the name Leonard, being Leonard's disease. However, there were no renowned medical authors of the time with the name Leonard writing on alopecia, which might explain the disease being named after them. In consequence, we think such a suggestion unlikely.

A further option to consider that would explain the unique occurrence of this word is that *leonardie* and *l'ennaudie* might be ghost words that do not really exist. It is theoretically possible that the term *leonardie* was created by a scribe struggling to read an earlier version of the manuscript. A word that is only found in one document is sometimes referred to as a *hapax legomenon*. Such words can be very difficult to interpret, as it may be unclear whether they are genuine words that were just used occasionally, or ghost words that were mistranscribed from a poorly written or illegible original. If the latter was the case for *leonardie*, then it would be futile to try to find out what the word meant. Only if an earlier manuscript can be found that uses the true word for that disease can the genuine meaning be identified.

A Modern Biological Diagnosis for *arnaldia* and *leonardie*

Having now explored the possible origins and meaning for *arnaldia* and *leonardie* to people in the medieval period, it is tempting to attempt a modern biological diagnosis of the disease. Others have already made suggestions, such as when Gillingham proposed scurvy or trench mouth.[91] In modern times, loss of hair, nails and peeling skin are known to occur in a range of severe illnesses, including febrile infectious diseases.[92] In some cases this occurrence is due to toxins produced by the infective micro-organism. However, in most cases the body appears to focus all its efforts on fighting the life-threatening illness at the expense of maintaining nonessential tissues, such as hair and nails, which can grow back in due course. The medical term used to describe hair loss in this manner is *anagen effluvium*.[93] In our opinion there is not enough information in the sources to allow any kind of guess as to which infectious disease caused the two kings to develop fever and become so ill that their hair and nails fell out. However, at least modern medicine can explain why the hair and nails were lost.

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[91] Gillingham, *Richard I*, p. 160.

[92] Marcia Ramos-e-Silva, Melissa Azevedo-e-Silva and Sueli Coelho-Carneiro, "Hair, Nail and Pigment Changes in Major Systemic Disease," *Clinics in Dermatology* 26 (2008), 296–305.

[93] L. C. Sperling, "Hair and Systemic Disease," *Dermatology Clinics* 19 (2001), 711–26; Hans R. Eichelbaum, "Über Veränderungen des Blutbilds beim Haarausfall nach allgemeinen Krankheiten," *Archiv für Dermatologie* 139 (1922), 235–59; M. Amagai, "Toxin in Bullous Impetigo and Staphylococcal Scalded-Skin Syndrome Targets Desmoglein," *Nature Medicine* 6 (2000), 1275–77.

The Meaning of *major hemitritaeus*

Richard of Devizes used this term to refer to the illness of King Richard at Jaffa.[94] Unlike *leonardie* and *arnaldia*, this *major hemitritaeus* was employed in many other medieval writings. The term hemitritean had been in medical use for fevers since classical times, and understandably over the next thousand years its meaning was refined and evolved.[95] By the twelfth century teachings of those associated with Salerno in Italy, such as Archimatheus Salernitanus, described hemitritean as a composite fever, which combined elements of a continuous and an intermittent fever.[96] If the fever was preceded by the adjective *major*, that characterized a sub group of the hemitritean fevers with eighteen hours of fever *in summo labore* and a six-hour afebrile phase *in falsa quiete*.[97] In between, there were stages of continuous fever lasting several days. In his *Glossae in Isagogas Johannitii*, Archimatheus Salernitanus stated that "hemitritean (fever) is called the double of a tertian (fever)."[98] A double tertian fever is also the phrase used in the continuation of William of Tyre to describe the febrile illness experienced by King Philippe during the siege of Acre.[99]

A precise description of a *medius hemitritaeus* was handed down by Peter of Blois, a twelfth-century physician, who studied in Tours, Bologna and Paris. About 1170–75 he had a written medical dialogue with his friend Peter Medicus concerning the case of a French knight called Geldewin. Peter of Blois states that, if the fever were a major hemitritean, "the patient would suffer non-remittent prostration because of the putrefaction of the black bile, inside and outside, in the movement of the interior matter, and his teeth would chatter."[100] In agreement with the Salernitan text composed by Archimatheus (*maior comparatus quartane habeat*

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[94] Richard of Devizes, *Chronicon*, p. 444.

[95] Hippocrates, *Επιδημιων* [Epidemics], ed. T. E. Page, trans. W. H. S. Jones, The Loeb Classical Library 147 (London, 1962), p. 149, classifies the hemitritean for the first time stressing the continuous element: "*πυρετοί συνεχέες* (...) *ὁ δέ τρόπος ἡμιτριταῖος* ..."; however, Celsus, *De medicina* 1–4, ed. E. H. Warmington, trans. W. G. Spencer, The Loeb Classical Library 292 (London, 1971), p. 226, describes it as a special, fatal form of the tertian fever: "Alterum longe perniciosius, quod tertio quidem die revertitur, ex quadraginta autem et octo horis fere triginta et sex per accessionem occupat (interdum etiam vel minus vel plus), neque ex toto in remissione desistit, sed tantum levius est. Id genus plerique medici ἡμιτριταῖον appellant."

[96] Archimatheus Salernitanus, *Glossae in Isagogas Johannitii*, ed. Hermann Grensemann (Hamburg, 2004), p. 63: "Emitriteus dicitur ab emi, quod est medium, et triteus tertiana eo, quod omnis emitriteus habet unam materiam sui, materiam tertiane et iterum aliam."

[97] Ibid., p. 64: "Emitritei tres sunt species, minor, medius et maior ..."; he also states, upon the authority of Galen, that the affliction results from an abundance of black bile.

[98] Ibid., p. 63: "Vel emitriteus dicitur duplum tritei."

[99] *L'estoire de Eracles*, p. 179.

[100] Urban T. Holmes and Frederick R. Weedon, "Peter of Blois as a Physician," *Speculum* 37 (1962), 252–56. For a collection of Peter of Blois's letters see PL 207:2–560. PL 207:126: "Quod si major hemitritaeus esset, propter putrefactionem melancholiae intus et extra in motu materiae interioris, aeger enim motum et aptitudinem membrorum amitteret: dentes etiam ipsius ad se invicem clauderentur."

melancoliam extra),[101] Peter ascribes an abundance of black bile to the *major* form. His patient, however, showed these symptoms "to a very small degree" and was therefore diagnosed as having *medius hemitritaeus*.[102]

A number of suggestions have been proposed for the modern biological diagnosis of hemitritean, double tertian, or semitertian fever.[103] However, this is a very complicated issue to interpret. The periodic nature of some fevers described in medieval medical texts does suggest a modern biological diagnosis of malaria to be plausible. For example, quartan fever (peaking every third day) and tertian fever (peaking on alternate days),[104] do sound compatible with a modern biological diagnosis of quartan malaria (*Plasmodium malariae*) and tertian malaria (*Plasmodium vivax*) as it is extremely rare for any other diseases to cause fevers with such periodicity. In contrast, it is the more complex, more frequent and often unpredictable nature of hemitritean or semitertian fever that fails to have a character unique to any one disease known today. It is quite possible that some cases were due to a mixed infection by different species of malaria, while others were caused by any of a wide range of other infectious diseases.

While such discussion highlights the difficulty in attributing a modern diagnostic label to the medieval social diagnosis of hemitritean and double tertian fever as found in the medical texts of the time, we must be very careful not to assume that every individual documented as having one of these fevers really did so. Even discounting incorrect diagnoses by those actually attending a case, if the author of a text was not one of those medical attendants it is quite possible that he simply guessed what the disease might be. Since so many infectious diseases, and a few non-infectious ones, cause a fever, we do not believe it is wise to label King Richard's illness at Jaffa with a modern biological diagnosis. As no symptoms were given, it may be wise to restrict comment to the medieval social diagnosis of hemitritean fever and leave it at that.

Social Consequences of Disease on Crusade

The sources for the Third Crusade that we have studied here generally propose secular, rather than religious, explanations for the cause of disease. In the twelfth and thirteenth centuries, medical science drew attention to the body and humoural balance, despite the idea that its flesh and blood were the creation of God (*homo*

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[101] Archimatheus Salernitanus, *Glossae in Isagogas Johannitii*, p. 64, also writes: "Item maior est afflictio, quando uterque humor putrefit cotidie quam si de tertio in tertium putrefit, unde in medio debet colera putrefieri intus et flegmate [*sic*] extra, ut cotidie de utroque affligantur."

[102] PL 207:126: "Quae omnia quia in hac febre minime accident, constat medium esse hemitritaeum ..."

[103] Saul Jarcho, "A History of Semitertian Fever," *Bulletin of the History of Medicine* 61 (1984), 411–30; Holmes and Weedon, "Peter of Blois," p. 255.

[104] In classical and therefore medieval fever terminology, today counts as day one.

omnis creatura est).[105] Due to that demystification of the human body, illness had lost a great part of its negativism, and suffering and death are less frequently described as a punishment from an avenging God.[106] In fact, physical disease and its symptoms were generally considered to be caused by an unhealthy environment, by foul-smelling vapours, by hunger, stress, anger and grief; reasons which all related to classical medical humoural theory. But still illness was deemed an ordeal that had to be endured, particularly in the era of the crusades.

In the holy wars against non-Christians, casualties were declared by the clergy to be martyrs, even though death might be caused by epidemics or starvation. Therefore, illness was sometimes depicted by religious authors as a joyful experience, the hour of death as a moment of "praying and rejoicing" (*orans et exsultans*).[107] For Gunther of Pairis, a Cistercian monk who described an epidemic in Acre in 1203, dying from disease was a short cut to heavenly salvation. The afterlife is eternal, he writes; on the other hand, illness is only a "brief calamity that quickly passes."[108] In this perception, illness was understood as a form of mental cleansing or "a spiritual purgative" – it meant suffering for the sake of God. In this context, it is not difficult to understand that bodily distress could not be used as an excuse for retreat from a holy war, even though an excuse on grounds of ill health was used in other areas of life.

In the service of God disease was no excuse to retreat. During the First Crusade, for instance, Count Stephen of Blois, even though elected a commander of the crusader army, left the siege of Antioch on grounds of illness. He might indeed have been ill. However, he was criticized harshly by his contemporaries for what was perceived as dishonourable behaviour.[109] When King Philippe left the Holy Land, setting sail for his homelands in August 1191, there was even more disapproval. While the French chroniclers try to exculpate their king by referring to his "very severe illness,"[110] the English *Itinerarium Peregrinorum* states that he was "cursed instead of blessed" by those who were left behind.[111] In satirical songs (for instance *Maugré tous sainz et maugré Dieu aussi*), even those who followed Philippe back to France were sneered at.[112] The Norman poet Ambroise broached the issue of Philippe's half-hearted commitment in great detail, complaining:

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[105] Hildegard of Bingen, *Causae et curae*, ed. Laurence Moulinier (Berlin, 2003), p. 76.

[106] Wolf von Siebenthal, *Krankheit als Folge der Sünde* (Hanover, 1950), pp. 42–58.

[107] Jacques de Vitry, *Epistolae*, ed. R. B. C. Huygens, CCCM 171 (Turnhout, 2000), pp. 491–652, at p. 578.

[108] Gunther of Pairis, *Hystoria Constantinopolitana*, ed. Peter Orth (Hildesheim and Zürich, 1994), p. 132: "brevis illa et cito transitura calamitas ..."

[109] *GF*, p. 63. See also James A. Brundage, "An Errant Crusader: Stephen of Blois," *Traditio* 16 (1960), 380–95.

[110] Rigordus, *Gesta Philippi II. Augusti*, MGH SS 26:292: "Gravabatur enim rex tunc morbo gravissimo ..."; Radulph Niger, *Chronica*, MGH SS 27:339: "Capta Acaron dedicione facta, metu infirmitatis rediit rex Francie in terram suam ..."; Wilhelm of Andres, *Chronica*, MGH SS 24:720: "intemperiem transmarine aeris sustinere non valens, quia valde infirmabatur ..."

[111] *Itinerarium Peregrinorum*, p. 238.

[112] Cartellieri, *Philipp II. August*, pp. 238–39.

> He was going back because of his illness, so the king said, whatever is said about him, but there is no witness that illness gives a dispensation from going with the army of the Almighty King, who directs the paths of all kings. I do not say that he was never there, nor that he had not spent iron and wood, lead and pewter, gold and silver, and helped many people, as the greatest of earthly kings among the Christians, but for this reason he should have remained to do what he could, without failing, in the poor, lost land that has cost us so dear.[113]

As Philippe's example shows, the religious ideas behind a crusade did contrast with those secular concepts about the body, for to the pope a crusade was a spiritual experience. Ideally, campaigning in divine service demanded a steadfast, saint-like leader, an almost supernatural figure, willing to sacrifice himself if necessary. In contrast, the physical perception of illness reduced the idealized image of a crusading prince to its very core, as merely human. As life (in our cultural perception) is the final and most valuable possession of all individuals, the desire to save it is a natural one. The same can be assumed for Richard I. It is plain to see, especially in the second year of his campaign (1192), that his bellicosity towards Saladin was dependent upon his actual state of health. Even in negotiations with Saladin, when the Angevin felt better, he firmly insisted on his conditions and he did not accept the final terms until he was too weak to read the treaty word by word.[114]

The difference between Richard and Philippe, in terms of a historiographical judgment, was simply that Richard was seen quite clearly to act in the sense of the crusading spirit demanded by Ambroise and others. Regardless of his fevers, he put his suffering body to work. In July 1191, for instance, he was carried to the front line in his litter made of silk (*in culcitra serica*), in order to strengthen and motivate his fighting men with his presence.[115] Later, during the march toward Jerusalem at the end of May 1192, he heard rumours concerning a conspiracy allegedly conducted by Richard's brother John and Philippe Augustus, threatening to throw his kingdom into confusion. Deeply worried, the king of England took to his bed. He had already decided to return home, when a chaplain, William by name, refreshed his fighting spirit stating that, if he would return to England now, he would lose all his fame and show a lack of faith in God.[116] Finally in 1192, he was struck by illness again and suffered together with his men.[117] Despite these setbacks, he was willing to go on to the brink of death. Not least the approval of exactly this crusading spirit made him the "Lionheart" and Philippe August the "cursed one."

It might be argued that King Richard's eventual withdrawal from the kingdom of Jerusalem was a combination of many factors, including dwindling manpower and finances, a military stalemate with a skilful military tactician (Saladin), a

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[113] Ambroise, *The History of the Holy War*, 1:85 and 2:105.

[114] Bahā al-Dīn, pp. 346–48.

[115] *Itinerarium Peregrinorum*, p. 224.

[116] Ibid., pp. 362–63.

[117] Ibid., p. 425. Röhricht, *Die Geschichte des Königreiches Jerusalem*, pp. 606–54, covers most of the sources for this episode of his campaign.

disloyal brother in England, as well as his poor health. However, his first action on concluding a truce with Saladin was to travel directly to Haifa in order to receive medical treatment there.[118] This does suggest that he had accepted that his physical health would not allow further campaigning. The ever-presence of illness during his military campaign is an important factor that should not be underestimated. The contemporary chroniclers knew the justification of retreat on grounds of ill health, but they did not accept this excuse during a crusade. To plead illness was not a suitable excuse for release from a crusader's vow. It was rather perceived as desertion, not from an ordinary army, but from the army of Christ. If death from illness on crusade led the soul to heaven, then there was no need to leave that crusade to seek medical attention for the physical body.

Conclusion

This study of disease on the Third Crusade has highlighted a number of important points relevant to the wider crusading movement and medieval warfare as a whole. There was a significant mortality on military expeditions, due not only to weapon injuries but also to infectious disease and malnutrition. Unlike other military campaigns, the special nature of a crusade meant that becoming sick was no excuse to retreat. Death in the service of God was perceived to have been a great honour. To bring medical care to the troops was perfectly acceptable, but for a soldier to return to Europe in order to receive medical care before the crusade was over was regarded as desertion.

The disease suffered by both kings at the siege of Acre seems to closely match descriptions of alopecia in medical texts of the time, the fox disease. This medieval diagnostic label is distinct from the modern use of the word. In the medieval period the term alopecia implied not just hair loss, but also fever and red peeling skin, with the patient often becoming very unwell. The origins of the words *arnaldia* and *leonardie* have been investigated in order to improve our understanding of social attitudes to the illness of the two kings leading the Third Crusade. These neologisms, perhaps created around the time of that crusade, have been fascinating scholars for at least three centuries. The suggestions here are merely that, possible explanations for their meaning. The variability in spelling at the time means that more than one interpretation can always be argued, and in the future experts in medieval French and Latin philology may highlight parallels of which we are currently unaware that may modify this interpretation. The Latin term *arnaldia* could well have originated from the Greek for the sheep disease. It appears to be found only in English chronicles and that of Roger of Howden is the earliest surviving manuscript to use the term. Sheep mange with hair loss and red skin was well attested to in medieval Europe, and the importance of sheep and wool to medieval English life may explain why

[118] Ambroise, *The History of the Holy War*, 1:191 and 2:187.

the English chroniclers used the term for sheep mange to describe the illness of the kings.The origins of *l'ennaudie* and *leonardie* are not entirely clear. Possibilities include that they were French versions of the Latin *arnaldia*, that they were derived from the French term for the fox, that *leonardie* came from Richard's nickname as the Lionheart, or were merely ghost words created by a scribe struggling with difficult handwriting in an earlier manuscript that no longer survives.

The modern biological interpretation of *leonardie* and *arnaldia* is that both kings suffered with a severe febrile illness, quite possibly an infectious disease, which then resulted in the loss of hair, nails and superficial layers of skin. Regardless of the microbiological cause, the diseases these kings suffered had major implications for their actions, the outcome of the crusade, and the manner in which they were subsequently regarded back in Europe.