

## Phthiriasis: the riddle of the lousy disease

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Of all the legendary and fantastic diseases of ancient times, phthiriasis, or the lousy disease, was the most intriguing and bizarre. In the corrupted humours of the sufferers of this disease, lice were believed to develop by spontaneous generation, and tumours full of these insects rose on the skin. When such a louse tumour burst or was incised, a stream of insects swarmed out. The flesh of the sufferer was slowly eaten away and transubstantiated into lice, and he perished miserably in this 'most horrible of diseases'. Another singular characteristic for phthiriasis was that it was firmly believed to be a divine punishment to tyrants, desecrators and enemies of religion.

### PHTHIRIASIS IN ANTIQUITY

The annals of phthiriasis stretch far back into time<sup>1,2</sup>. One of the earliest descriptions of the disease was given by Aristotle in his *History of Animals*: lice were produced from the flesh of the human body, and gathered in small eruptions on the skin. When these eruptions were opened, a mass of lice emerged, but no purulent fluid. About 100 years later, in 240 BC, the geographer and historian Antigonos Carystius described a similar disease: lice were formed in the flesh, and when the insect-filled nodules under the skin were opened, they swarmed out.

Another curious account of phthiriasis is given by the historian Diodorus Siculus about 50 BC. A North African tribe of locust eaters very often died of phthiriasis, breeding in their bodies a peculiar type of savage, winged lice. Itching skin eruptions first appeared on the breast and stomach but soon spread all over the body. When such an eruption was scratched, a multitude of these insects burst forth. The tissues of the sufferer were slowly eaten away, the insects coming out from numerous small holes in the skin. Diodorus speculated whether the people's strange diet or the hot climate might be the cause of this endemic disease. Hippocrates never mentioned the lousy disease, but it is discussed several times in the works of Galen. Lice were formed deep within the skin, and could form rather large boils; like Aristotle, he considered the disease to be caused by too much warm moisture in the body. The elder Pliny

also discussed phthiriasis in his *Natural History*: insects were formed in the blood of the patient and ate up his flesh. As a treatment, he recommended rubbing the whole body with juice of the Taminian grape, or with hellebore juice and oil.

In his *History of Animals*, Aristotle mentioned two famous men who had died of phthiriasis—the Greek poet Alkman and the Syrian philosopher Pherecydes. Pherecydes was the teacher of Pythagoras, and it is said that when the latter looked into the sickroom and inquired how he was doing, the lousy philosopher thrust his finger, swarming with vermin, through the doorway, and exclaimed 'My skin tells its own tale', a saying that passed into the language as the equivalent of 'getting worse'. Pherecydes was by no means the only philosopher to perish by phthiriasis. According to Diogenes Laertius, some lurid proverbs about 'Plato's lice' soon began to circulate after the great philosopher's death, and Plato's nephew Speusippos was also said by some to be a victim of phthiriasis. Probably these accounts were invented by enemies of the Academy. Even Socrates and Democritus were accused of having been 'eaten by vermin', certainly with even less foundation.

Although Aristotle and Galen do not appear to have considered the lousy disease as a punishment for transgressors, it is obvious from these highly dubious accounts of the lousy Greek philosophers of antiquity that dying in phthiriasis implied a moral stain on the deceased<sup>2–5</sup>. This is even more apparent from the accounts of the deaths from phthiriasis of Herod the Great and Herod Agrippa in Flavius Josephus's *Antiquitatum Judaicarum* and the *Acts of the Apostles*. After Herod Agrippa had been hailed as a god, 'an angel of the Lord smote him because he did not give God the glory, and he was eaten by worms and died'. Another victim of the curse of the lousy disease was the Syrian King Antiochus IV Epiphanes. According to the second *Maccabees*, the body of King Antiochus swarmed with vermin while he was alive, and his flesh rotted away. The stench was such that all his army felt revolted. The king promised to enrich Jerusalem and convert to Judaism, but to no avail, and he expired miserably. In his *Canterbury Tales*, Geoffrey Chaucer describes his death with the following lines:

The wreche of god him smoot so cruelly  
That thurgh his body wikked wormes crepte;  
And therwithal he stank so horribly . . .  
No man be myght hum bere to ne fro,

And in this stynk and this horrible peyne,  
He starf ful wrecchedly in a monteyne.

The most famous of all chronicles of phthiriasis from antiquity is that in Plutarch's *Life of Sulla*. He listed a fair number of victims of this disease, the earliest being Acastos, an enemy of the father of Achilles. This legendary figure was said to have lived as early as in the 11th century BC, but some historians have doubted his existence altogether; yet, it is apparent that the tradition of phthiriasis existed long before Herodotus and Aristotle gave their accounts of the disease. According to Plutarch, the jurist Mucius Scaevola and Alexander the Great's treacherous henchman Calisthenes both died of phthiriasis, as did Eunus, the leader of a slave rebellion. The *historia morborum* of Sulla, the best-known of all historical victims of the lousy disease, was described in hideous detail. The tyrant's corrupted flesh became one mass of lice, and although many men were employed to remove and wipe away the vermin, they still multiplied and his clothes, bath, furniture and food were full of them. He bathed frequently and every day washed and rubbed his body, but to no avail: the transformation of his body into lice was so rapid that all attempts at cleansing were frustrated. Pausanias also gloated over this suitable death for the Roman tyrant, and Pliny made an ironic comment on Sulla's unsuitable epithet *felix*: were not his victims more fortunate in dying than him, asked Pliny, 'when his body ate itself away and bred its own torments'.

### THE CURSE OF THE LOUSY DISEASE

In Plutarch's time, most writers agreed that phthiriasis was a punishment from the gods against highly placed men who had offended them: for example, Quintus Pleminius, the legate of Scipio Africanus, who had plundered the temple of Proserpine, was struck down by this disease. The early Christians eagerly took over the myth of phthiriasis, often using it to denigrate fallen enemies. When one of the last great Roman persecutors of their faith, the Emperor Galerius, had died in 311 AD, the Christian apologists Lactantius and Eusebius spread the rumour that he had perished from the lousy disease. The pious Lactantius described the Emperor's grisly end with gusto: the tyrant was rotting from within, and this generated vermin which ate the flesh from his bones; his legs and lower body were swollen and putrid, while his upper torso was withered and mummified. The emperor was tormented in this way for more than a year before he acknowledged God. The Apologists also exulted in the horrible fate of the Emperor Maximinus Daia: his eyes popped out from their sockets, he went mad and his body was desiccated to little more than skin and bones; the most bloodthirsty of them added that he finally perished with the lousy disease.

How much can these astounding tales of the lousy great men of antiquity be relied on? Until about 1850, they were doubted by neither medical men nor historians, but in later years they have been questioned by several classical scholars<sup>2,4-5</sup>. A closer study of the sources and the historical background certainly gives rise to doubts concerning this bizarre epidemy of phthiriasis among the tyrants of classical history. In the case of Antiochus IV, both the author of the second *Maccabees* and Flavius Josephus got their details about the tyrant's death from a no longer existing source, the chronicles of Jason of Cyrene. His dark portrait of Antiochus was probably inspired by Herodotus's stories of the megalomaniac King Xerxes and the lousy Queen Pheretima of Cyrenaica. More realistic historians mentioned neither the fatal hubris of Antiochus, which called down the wrath of the gods, nor his lousy death. Plutarch got his gruesome details of Sulla's deathbed from the *Populares*, a contemporary polemic chronicle of gossip, which was more remarkable for sensationalism than for reliability in details; it suited his own theories of moral and divine retribution, and he preferred it to more authentic reports from the tyrant's last days<sup>2</sup>. According to the chronicler Appian, Sulla died of a stroke after previously being in good health. The credibility of Plutarch's account is further diminished in that, while he gives the most grisly details about the lousy dictator's agony, he also writes that Sulla received his friends and took care of his correspondence during this time, and that Sulla finished his memoirs two days before his death. The case of Herod the Great was built up in a similar way: his opponents depicted him as a rotting monster, swarming with vermin, ordering rabbis to be burnt alive from his deathbed, and executing his son Antipater; the court historian Nicolaus of Damascus, who was in a position to know, said nothing of these excesses<sup>2</sup>.

Clearly, the partisan historians and chroniclers of antiquity were inclined to relate sadistic accounts of the death-agonies of the tyrants, often without much foundation. It seems to have been a commonly used trick in political and religious propaganda to spread the rumour of a fallen enemy's death in phthiriasis, thereby implying that higher powers had been against him and his cause. Judas Iscariot was one of those to be assigned a suitable death: according to *Matthew*, he hanged himself, but in the *Acts of the Apostles*, 'he fell headlong, and his body was shattered so that his entrails poured out'. Bishop Papias of Hierapolis considered even this death too mild for the wretched Judas: he wrote that the traitor's body bloated to such enormous size that it could not even be brought through a gate for waggons. His eyes were swollen shut, and his genitals were the most disgusting sight imaginable; from every part of the body oozed a stream of pus and vermin. In conclusion, the pious Bishop added that the stench from Judas' body was

such that no one to this day could pass the spot where he died without holding his nose<sup>2</sup>.

From the middle ages, there are few reliable medical records of phthiriasis, but the legend of the cures of the lousy disease was very widespread during this time, as evidenced by many historical chronicles<sup>1,6</sup>. The Saxon nobleman Radbertus, who had treacherously slain Bishop Praejectus of Clermont, and an uncle of the Emperor Julian the Apostate, who had desecrated the high altar in Antioch by urinating on it, were two prominent victims of this royal malady, as were the excessively vain Emperor Arnulphus of Franconia and the villainous Medicéan Counter-pope Clement VII. The curse of the lousy disease also smote two sinful bishops guilty of simony: Lambertus of Constanz and Fulcherus of Nymwegen both paid for their crimes in this way, the latter being said to be so full of vermin that he had to be buried sewn into a deerskin sack. The Vandal king Huneric, who had exiled 444 Christian bishops, was another victim of phthiriasis; his many crimes made the Christian historians excel in cruel accounts of his death. According to Isidorus's chronicle of the Goths his entrails poured out, while Gregory of Tours claimed that he tore himself to shreds by his own teeth; Theodor Zwinger got the story about his lousy death from the chronicler Sigebertus.

The British medieval chronicles contain several notable cases of phthiriasis<sup>1,6</sup>. The nobleman Leostanus, who doubted that the dead King Edmund's hair and nails had grown after death, and demanded that the corpse was shown to him, went mad at the sight of it and subsequently died of phthiriasis. After the death of Elfhre, ealdorman of the Mercians, in 983, the character of this enemy of the monks was blackened by various Latin writers. William of Malmesbury accused him of involvement in the murder of King Edward the Martyr, whose body he buried, and also of having been consumed by vermin as a divine punishment. According to the *Annals of the Four Masters*, Diarmaid MacMurchada, King of Leinster, also died in the lousy disease, his body becoming putrid while living 'through the miracle of God and the Saints of Ireland whose churches he had profaned and burnt'. King Fairchair (or Ferchardus) II of Scottish Dalriada also died of this royal malady, according to George Buchanan, who painted a dark portrait of this monarch.

### A ROYAL MALADY

The earliest reliable cases of phthiriasis are from the 16th century<sup>1</sup>. In 1556, the Portuguese physician Amatus Lusitanus described the death of the nobleman Tabora, who had many swellings all over his body from which small insects streamed out incessantly; two of his Ethiopian slaves were employed in emptying small baskets full of them into

the sea. After some weeks, he was devoured by these 'lice' engendered under his own skin. Three more patients were presented by Petrus Forestus in his *Observationes et Curationes Medicinales*; one of them, a young painter's apprentice, had got a large, itching boil on his back. When it was opened, a huge quantity of insects streamed out, but no pus or fluid; the man was cured of his phthiriasis. This was the first case of phthiriasis with only one large insect-filled tumour. Forestus himself, who had seen several cases, wrote that death usually ensued when lice gathered in swellings all over the body, but that the disease could be cured by opening an insect-tumour such as this one.

In the 17th century, phthiriasis was regularly mentioned in medical textbooks and collections of case reports. The medical men of this time were quite aware that ordinary *phthiriasis vulgaris*, of which almost all of them had had personal experience, was very different from *phthiriasis rara et horrenda species*, the horrible lousy disease. Although it was believed that lice were engendered spontaneously from human sweat, some people were presumed to have a specially diseased state of the blood that enabled the insects to burrow into the skin and live there in great number. In 1678, the first of several doctoral theses on phthiriasis was written, by Georg Franck von Franckenau, of Heidelberg<sup>7</sup>. He defined phthiriasis as the dissolution of some part of the body due to the formation of a copious amount of lice therein, accompanied by a persistent fever and other symptoms. The cause for the formation of lice in phthiriasis could be corrupted blood and flesh, but supernatural causes could not be ignored. He made a long list of all the historical cases, and tried to penetrate the Almighty's reasons for striking them down with the 'most loathsome of diseases'. The historical annals of the 16th century had added several new cases. One of them was a controversial French statesman, the Chancellor Duprat; another, King Philip IV of Spain. The case of the latter is of particular interest, since several details in his *historia morborum* bear some resemblance to the descriptions of phthiriasis in the medical literature, without the gloating exaggerations. It was told that the ageing King, who was already *in extremis* from severe dropsy and gout, developed several abscesses on the chest and knee; when these were opened, insects streamed out instead of pus<sup>1,8</sup>.

Had Franck von Franckenau been better informed, he could have obtained several other sixteenth and seventeenth century instances of great men being accused of perishing by phthiriasis. The most famous was Jean Calvin<sup>9</sup>; others were Ivan the Terrible of Russia, Gustavus Vasa's chancellor Conrad von Pyhy, and the Swedish Archbishop Abraham Angermannus<sup>10</sup>. After the death of the Parliamentary leader John Pym in 1643, the Royalists delighted in spreading the rumour that, as a punishment for his disrespect towards King Charles I, God had struck him with 'that loathsome

and ignominious disease, called by Physicians, *Morbus pedicularis*<sup>11</sup>. Already during Pym's lifetime it had been rumoured that he had been struck by the curse of lice: John Dunne wrote to Lady Graham that 'Pym is most desperately sick, and they say of the louse disease'<sup>12</sup>. In order to scotch these rumours, his political allies had a necropsy performed, and it is apparent that Pym died of gastrointestinal cancer. The corpse of 'King Pym' was also publicly shown in Westminster Abbey, and seen by many hundred people, but without preventing the Cavaliers' propagation of the vile rumours that he had perished in the 'foul disease of Herod'<sup>11</sup>; they even had a cartoon printed in which the politician was pictured full of vermin, with the caption 'Les pouls ont mangé Maistre Pin'!

Not the least curious of the many cases of phthiriasis in the seventeenth and early eighteenth centuries was presented by Michael Valentin in 1730<sup>13</sup>: a 40-year-old man had a number of small itchy swellings dispersed over his body. After futile attempts at medication, one of the swellings was cut open at the patient's request, and the man almost fainted from fear when countless lice burst forth. The treatment was continued in this way: the tubercles were all opened and emptied of insects, and the man recovered completely from his phthiriasis. An interesting Swedish case from the same time was described by Professor Johan Lindestöple of the Nosocomium in Uppsala<sup>14</sup>. A sailor had been admitted to this hospital in a cachectic state, with wounds and insect-filled swellings all over his body. Through treatment with mercurial ointment, Lindestöple managed to cure the man completely, and he returned to his ship 'blessing the hospital and the advances of modern medicine'. Carl Linnaeus probably studied this case since, in his *Lectures on the Animal Kingdom*, he wrote that the worst kind of physical impurity is when the lice build nests for themselves between the skin and the flesh; in order to cure this phthiriasis or 'louse-fever', as he called it, Linnaeus also recommended mercurial ointment with an addition of Sabadill seeds.

#### DR ALT'S THESIS ON PHTHIRIASIS

From 1730 to 1802, no new case of phthiriasis was published, and at the end of this period several men of observation questioned the existence of the disease. The entomologists now knew a good deal about the anatomy and physiology of lice, and they doubted the capacity of these aerobic insects to live under the skin and lay eggs there. Although some medical men still advocated the theory of spontaneous generation, it had little support from the entomologists and men of science of this time. In Britain, the existence of lice beneath the skin was denied by both Robert Willan, in his *Description and Treatment of Cutaneous Diseases*, and by Kirby and Spence, in their

*Introduction to Entomology*. Neither of these works doubts the existence of the disease, however, and Kirby and Spence were amongst the first to propose that it might be caused by some unknown species of mite. They quoted a case from William Heberden's *Commentaries on the History and Cure of Diseases*, which he had in turn obtained from Sir Edward Wilmot, who had examined a man afflicted with phthiriasis. Small, itching tumours were dispersed over his skin. Remarkably enough, there was a very perceptible motion in them. When opened with a needle, they proved to contain insects resembling common lice, except that they were whiter. When an alleged case of 'morbus pedicularis' was discussed before the Medical Society of London in January 1838, one of those present said that one of the kings of England had fallen a victim to this disease, as had, according to report, one of the late royal duchesses<sup>15</sup>.

Another remarkable case was reported by the Prussian military surgeon Professor Rust<sup>16</sup>. When he visited Wolhinia in 1808, he was consulted by the town surgeon, Dr Müller, who wanted him to see a 13-year-old Jewish boy with a large head tumour. The growth was found to be neither inflamed nor fluctuating. Eight days later, he saw the boy again; he seemed to be dying, and the tumour was quite enormous. It was considered prudent to cut into the tumour to find out what its contents were; to the horror of all present, it was found to contain a mass of solidly packed insects, but not a droplet of pus or moisture. After the insects had been scraped out, the boy's head was rubbed with Neapolitan ointment and the cavity of the growth was injected with mercury; after a while, he recovered completely.

In 1824, a new theory was brought forth by the German Dr Henric Christian Alt in his doctoral dissertation on phthiriasis<sup>17</sup>. He believed that a previously unknown species of louse, *Pediculus tabescentium*, or the phthiriasis-louse, caused this disease, and that it was not developed from nits like the other lice but by spontaneous generation. Alt's theories were accepted throughout Europe, and they were generally considered a better explanation of the many curious features of the disease than those previously essayed. A bizarre opinion of the disease was held by Dr Stegmann, a German general practitioner and a supporter of Alt, who declared that pederasts and other morally inferior individuals had an inherent tendency to phthiriasis; as a result of their immoral practices, the particles of their blood melted together into lice<sup>18</sup>. These speculations were harshly criticized by his contemporaries. Among others, the German dermatologist Dr Kurtz objected that he had once seen a young pauper woman with large insect-filled boils all over her body; the disease was progressive, and she soon died; at the necropsy she proved to be *virgo intacta*, thereby disproving Stegmann's theory that the disease depended on sexual excesses<sup>19</sup>. In addition to the theses of Franck von

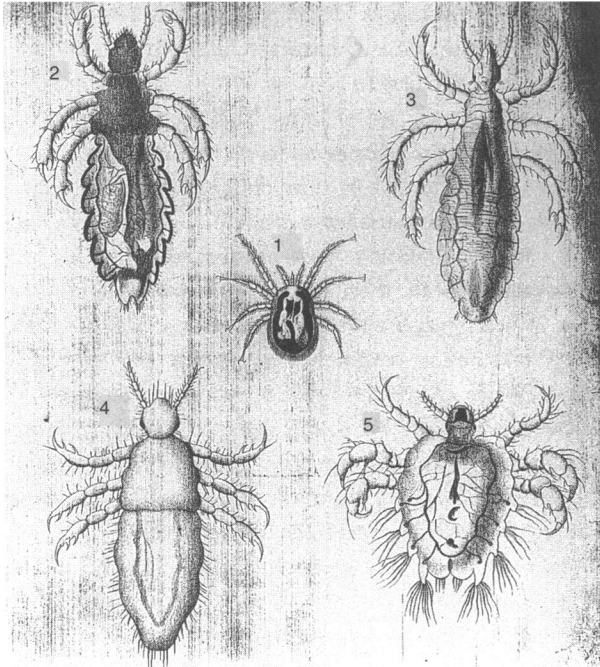


Figure 1 Showing: (1) some kinds of mite, (2) a head-lice, (3) a cloth-lice, (4) a phthiriasis-lice and (5) a crab-lice. Illustration from Dr Alt's thesis on phthiriasis

Franckenau and Alt, there were two French doctoral theses on phthiriasis published in the early nineteenth century<sup>6</sup> and also a valuable work by the German Sichel, who provided a lengthy review of all aspects on the disease, with some new cases<sup>20</sup>.

Several interesting Swedish cases were published about this time—one by the celebrated Dr Magnus Huss, who had seen a middle-aged woman with 50 insect-filled tubercles on the chest and loins. The tubercles burst by themselves and the phthiriasis did not recur<sup>21</sup>. The country practitioner Dr Ekman published two cases with all the classic manifestations; in one of them, the patient's neighbours gossiped about the disease being a divine punishment for excessive cleanliness. He gave a very good description of the insects: they were white with round bodies and a black dot on the back; they moved very vigorously. Since lice can hardly be said to move vigorously, this speaks in favour of the insects belonging to some subgroup of mite<sup>22</sup>.

#### THE VIENNA PHTHIRIASIS DEBATE

In 1856, the first serious attack on the legend of the lousy disease was launched by the German practitioner Dr Husemann, who had never seen a case but reviewed the considerable literature on this ancient disease. He concluded that there was not and never had been any lousy disease, and found it absurd that it was still included

in many respected dermatological and pathological textbooks (often with a list of some of the historical victims of the disease appended)<sup>23</sup>.

Two new cases of the lousy disease were presented by the German country practitioner Dr Gaulke in 1863<sup>24</sup>. One of them, a vagabond, was taken into Insterburg Hospital full of lice; on his belly and chest were about 100 reddish swellings the size of a pea or a hazelnut. Some of them were open and reached down into the subcutaneous tissues; they contained a mass of living insects but were completely dry. Gaulke cured the man with petrol baths but this treatment did not avail with another sufferer of the lousy disease—an old woman who was 'literally devoured by the lice' as in the stories of Sulla and Herod. Dr Gaulke believed that *Pediculi vestimenti* could lay eggs under the skin, especially in very unclean individuals, and was seconded by the Griefswald anatomist Leonard Landois, who mistook some chitinous bars for mandibles and claimed that lice could gnaw a hollow into the skin<sup>25</sup>.

Professor Ferdinand von Hebra in Vienna, one of the leading dermatologists of the nineteenth century, was fascinated by the riddle of phthiriasis. He told many of his colleagues to watch out for a case and show it to him. After 15 years of practice he had seen none, although having treated some 11 000 cases of ordinary lousiness. After the papers of Gaulke and Landois had been published, Hebra reacted strongly to their upholding of the ancient myth of phthiriasis. In 1865, he published a lengthy article<sup>26</sup> in which the literature on phthiriasis was again reviewed and tales of the old victims of the disease were ridiculed. Hebra believed that the old stories of lice under the skin were works of superstition and excited imagery. Both Gaulke and Landois took great exception to Hebra's views<sup>27</sup>. Gaulke could even present a new case of phthiriasis, a 65-year-old sickly shoe-maker who was taken into Insterburg Hospital swarming with vermin<sup>28</sup>. The man had many small tumours all over the body, from which the insects poured forth incessantly; these swellings itched violently, and he sweated excessively. The largest louse-tumour was on the back; it was large as a walnut, full of insects and quite dry. Dr Gaulke managed to cure the man with the method used in the earlier case; before he was free of vermin, three experienced practitioners were invited to see him, and they all marvelled at this strange disease, of which they had never seen the like.

The result of the Vienna phthiriasis debate was a complete victory for Professor Hebra<sup>29</sup>, and the lousy disease was expelled from the pathology books for good. An extensive search has demonstrated that only one case, reported by the French surgeon Bertulus in 1870, was published subsequent to Hebra's final paper<sup>30</sup>. The last thorough review of the legend of the lousy disease occurred in the German *Real-Encyclopedie der gesammten Heilkunde* of

1882; the writer of this section seemed to be quite unconvinced by Hebra's arguments.

### DID THE LOUSY DISEASE EXIST?

In 1940, Professor A C Oudemans published a thorough study of phthiriasis and its history<sup>1</sup>. His studies of a species of mites known as *Harpyrynchus* made him inclined to believe that the lousy disease had really existed and that it was caused by a subspecies called *H. tabescentium*. Although no modern case of *Harpyrynchus* infestation on man has been recorded, there is a good deal of evidence for this hypothesis. Modern descriptions of *Harpyrynchus* infestation of birds much resemble the classical reports of phthiriasis. These insects are the only mites capable of burrowing under the entire skin, where they live in large clusters of individuals of varying age and size<sup>31,32</sup>. *Harpyrynchus* usually infest birds, and through excessive growth of the mite-tumour and development of hyperkeratosis they may even kill their wretched victims. When the insect-tumour, which is the size of a hazel-nut, is opened, thousands of mites stream out. Microscopic investigation shows that the



Figure 2 The only known illustration of a patient with phthiriasis, from Baron Alibert's *Clinique de l'Hôpital de Saint-Louis*

tumour resembles an encapsulated cyst with septa of collagen; transduction through the capsule nourishes the parasites. Only a small quantity of serous fluid accompanies the innumerable mites when the cyst is opened; no immune reaction or formation of pus occurs, a phenomenon which puzzled the old phthiriologists<sup>33</sup>. Later acarologists have considered that *Harpyrynchus* infestation of man may well be possible, but not a single case has ever been observed. Professor J R Busvine accepted Oudemans' hypothesis<sup>34</sup> but deplored that no good description or proper drawing of these killer mites existed; his conclusion was that 'nothing remotely like the descriptions I have quoted has been actually encountered; so the ancient curse of the lousy disease remains a mystery'.

A thorough search of the published work has revealed that 42 cases of genuine phthiriasis, in which the insects are directly stated to have caused swellings or tumours by occurring in clusters under the skin, were reported between 1540 and 1870<sup>35</sup>. Of these 42 cases, 38 were tabulated in an earlier paper of mine<sup>6</sup>; another 4<sup>14,15,20,36</sup> have been added since. In nine instances, the insects were recognized as mites, and in several of the others it was noted that they were unlike ordinary lice, being small, white and very agile; some observers also described a black dot on their backs, possibly corresponding to the *Harpyrynchus* mite's dorsal shield. It has been proposed by some historians that phthiriasis was much more common during classical antiquity, and it is true that the frequent mention of the disease in both medical and non-medical literature would point in this direction, but the widespread legend of phthiriasis as a divine punishment makes it difficult to assess what role it really played during this time. Phthiriasis was often mentioned during the sixteenth and seventeenth centuries, while, for some reason, the number of genuine cases decreased during the 1700s. In contrast, no fewer than 24 well-described cases were published between 1813 and 1870; this explains why this fabulous disease, although made 'impossible' when the doctrine of spontaneous generation of insects had been disproved, remained adhered to by many practitioners and was the topic of sometimes virulent debate. Phthiriasis was most common in Germany, Scandinavia and France; only a few reliable British cases were ever reported, and not a single American one. The lousy disease was by no means unknown to German dermatologists and general practitioners in the early and middle 1800s, and when this disease was discussed before the Swedish Society of Medicine in 1849, several of those present claimed to have encountered it themselves, without publishing the cases<sup>21</sup>.

Although few would miss such a loathsome disease, it is an unsolved mystery why phthiriasis disappeared so suddenly in the 1870s. The advances in hygiene and general living conditions probably played a part, but during its

heyday phthiriasis also claimed victims among the wealthy, young and well nourished. Perhaps the species of mite causing the disease died out at about this time. It must be doubted, however, that the disease was really such a formidable one. In several nineteenth century textbooks, it was described as incurable. This highly pessimistic view of the natural course of phthiriasis, which had its origin in the legend that it was a divine punishment, did not reflect reality, since 22 of the 42 patients were completely cured. In one case, the disease even went into spontaneous remission, while in others, treatment with petrol baths, mercurial ointment, sulphuric baths or other regimens was successful. The prognosis was much better when only one louse tumour existed, and all but one of the 8 patients with this form of the disease were totally cured. It is interesting to speculate whether different species of mites may have caused these two forms of the disease.

**Acknowledgments** This is an annotated version of a longer chapter in a book<sup>35</sup> published in the US by the Cornell University Press (ISBN 0-8014-3431-9) and in the UK by IB Tauris (ISBN 1-86064-228-04), with some added material. Full bibliographies of phthiriasis victims and cases have been given in some older works<sup>7,20</sup> and more comprehensively by later writers<sup>1,6</sup>. Financial support from the Crafoord Foundation (Lund, Sweden) is gratefully acknowledged.

**REFERENCES**

- 1 Oudemans AC. Über Läuse such und über ihren Erzeuger, Harpyrynychus Tabescensium (Berthold 1845). *Z Parasitenkunde* 1940;11:145-98
- 2 Africa T. Worms and the death of kings: a cautionary note on disease and history. *Classical Antiquity* 1982;1:1-17
- 3 Nestle W. Legenden vom Tod der Gottesverächter. *Arch Religionswissenschaft* 1936;33:246-69
- 4 Keaveney A, Madden JA. Phthiriasis and its victims. *Symbolae Osloenses* 1982;57:87-99
- 5 Schamp J. La mort en fleurs. *L'Antiquité Classique* 1991;50:139-70
- 6 Bondeson J. Den fruktansvärda lussjukan. *Sydsvenska Medicinhistoriska Sällskapets Årsskrift* 1989;26:197-236
- 7 Franck von Franckenau G. Diss. *Historico-medical inauguralis de Phthiriasi*. Heidelberg 1678
- 8 Anon. Briefe and true declaration of the sickness, last wordes, and death of the King of Spaine. *Harleian Miscellany* 1809;ii:284-7
- 9 Bondeson J. Reformatorn Calvin och den elake doktor Bolsec. *Medicinsk Magasin* 1994;5:29-33
- 10 Bondeson J. Abraham Andreae Angermannus. Den lussjuka ärkebiskopen. *Draco pro Medico* 1990;30:14-22
- 11 Brett SR. *John Pym*. London: Abrahams, 1940

- 12 MacDonald W. *The Making of an English Revolutionary*. Rutherford, Fairleigh Dickenson V. 1982.
- 13 Valentin M. De phthiriasis insulita. *Acta Phys.-Med. Academiae Caesaria Leopoldinum Naturalis Curiosae* 1730;2:396
- 14 Lindestolpe J. Phthiriasis eodem curata modo. *Acta Literariis Sueciae* 1723;1:478-9
- 15 Bryant Mr. Morbus pedicularis. *Lancet* 1837-8;i:614-15
- 16 Bremser JG. *Über Lebende würmer in lebenden Menschen*. Vienna, 1819:54-5
- 17 Alt HC. *Diss. de Phthiriasi*. Bonn, 1824
- 18 Stegmann D. Läuse such. *Archiv für medizinischer Erfahrung* 1829;2:1104-5
- 19 Kurtz Dr. Ueber Phthiriasis. *Magazin für die gesamte Heilkunde* 1832;36:97-110
- 20 Sichel J. *Historiae Phthiriasis Internae Verae Fragmentum*. *Diss Med Inaug*. Berlin, 1826
- 21 Huss M. Phthiriasis. *Förhandlingar vid Svenska Läkare-sällskapets sammankomst* 1849-50:60-1
- 22 Ekman OC. Phthiriasis. *Förhandlingar vid Svenska Läkare-sällskapets sammankomst* 1852:26-8
- 23 Husemann T. Ein Beitrag zur Lehre der sogenannten Phthiriasis. *Z Gesellschaft der Aerzte in Wien* 1856;12:497-533
- 24 Gaulke Dr. Ueber Läuse und Läuse such (Phthiriasis) in therapeutischer und medicinal-polizeilicher Beziehung. *Vierteljahrsschrift für Gerichtliche Medizin* 1863;23:315-29
- 25 Landois L. Untersuchungen über die auf dem Menschen schmarotzenden Pediculinen. *Z Wissenschaftliche Zoologie* 1864; 14: 27-41
- 26 Hebra F. Ueber die sogenannte Phthiriasis (Läusesucht). *Wiener Medizinische Presse* 1865;6:745-8,777-80,801-5,849-53,876-7
- 27 Landois L. Ueber die Existenz der echten Läuse such. *Wiener Medizinische Wochenschrift* 1866;16:265-7,281-3,297-300
- 28 Gaulke Dr. Ueber die Läuse such (Phthiriasis). *Wiener Medizinische Wochenschrift* 1866;16:380-2,398-400
- 29 Hebra F. Noch ein Wort ueber die sogenannte Läuse such (Phthiriasis). *Wiener Medizinische Wochenschrift* 1866;16:425-7,441-5, 457-60
- 30 Bertulus E. L'école moderne et le phthiriasi ou maladie pediculaire spontanée. *Gaz Méd Paris* 1871;26:352-4,367-9,396-8
- 31 Fritsch W. Die Milbengattung *Harpyrynychus* Megnin 1878. *Zoologischer Anzeiger* 1954;152:177-98
- 32 Moss WW, Wojcik JF. Numerical taxonomic studies of the mite family Harpyrynychidae (Acari: Cheyletoidea): the higher taxa. *Ann Entomol Soc Am* 1978;71:247-52
- 33 Jeleva M. On the skin reaction of the host to *Harpyrynychus nidulans* (Acari, Cheyletoidea: Harpyrynychidae). *Godishnik na Sofijskya Univ. Biologitjeskija Fakultet—Zoologia* 1970;63:63-7
- 34 Busvine JR. *Insects, Hygiene and History*. London: Athlone Press, 1976:102-106,195-203
- 35 Bondeson J. The riddle of the lousy disease. In: *Cabinet of Medical Curiosities*. New York: Cornell University Press, 1997:51-71
- 36 Casal Dr. Einge neuere Biespiele der Läuse such (Phthiriasis). *J Praktischen Heilkunde* 1813;3:122-7