



“Sick and unable to march:” life and death in the army of the Dutch West India Company in the Northeast of Brazil, 1630-1654

Bruno Romero Ferreira Miranda

Professor, Departamento de História da
Universidade Federal Rural de Pernambuco.
Rua Dom Manoel de Medeiros, s/n, Dois Irmãos
52171-900 – Recife – PE – Brasil
bruno.miranda@dehist.ufrpe.br

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Abstract

Of the many evils that were inflicted upon the army of the West India Company in its years of activity in Brazil, few could be compared to diseases. However, there is little quantitative data in the field of historiography regarding the impact of disease on these troops. Apart from the limited amount of information about the diseases that affected many soldiers, little is known about the medical treatments that were available, the main diseases that affected the troops, and what were the causes. This article provides information to understand aspects that have been little studied in quantitative and systematic terms in the field of historiography, and demonstrates how the diseases afflicted the Company and affected its actions in the territory.

Keywords: daily life; diseases; soldiers; Dutch Brazil; Dutch West India Company.

Among the many difficulties that affected the army of the Dutch West India Company (West-Indische Compagnie, or WIC) in the years of its activity in the Northeast of Brazil (1630-1654), few were worse than disease. In the seventeenth century there was an assumption, with which some historians agree, that most of the casualties among the military during the war were caused by disease rather than in conflict (Hale, 1985, p.120; Lindemann, 2010, p.39; Tallett, 1992, p.106). Although this idea partly influenced some studies of the WIC (Guerra, 1979; Mello, 2001; Wätjen, 2004), there has been little quantitative data presented in the area of historiography to prove this conjecture. Furthermore, studies of the WIC have only superficially treated the issue of disease, with the exception of Guerra (1979). However, Guerra's article lacks quantitative information and is based on war chronicles that do not offer methodical information such as listings produced by the WIC administration. In addition to the issue of the rates of the diseases that affected many WIC soldiers, there has been little discussion about the medical treatments that were available to deal with such diseases, or about those in charge of caring for the sick. Despite the permanent damage caused to its army, information about the main diseases that raged among the troops, and their causes, is still quite fragmented within the main studies of the WIC. The purpose of this article is to contribute to the historiography regarding the presence of the WIC in Brazil, as well as to show, in a systematic manner, how sickness affected the daily lives of the military and hindered the actions of the army.

Sickness due to illness, wounds and death

"Sick and unable to march:" these words were commonly used in some of the WIC troop lists to describe those who were sick and unable to provide service. There were also variations such as "unable to work," "incapable" or simply "sick" (Inventário 49, 1630-1632, documento 138E; Inventário 50, 1633-1635, documento 100; Inventário 54, 1639, documento 13; Inventário 12564.20, 1647-1648, documento 15; Inventário 12564.29, 1649-1650, documentos 5, 6; Inventário 12564.33, 1649-1651, documento 17; Inventário 12564.34, 1649-1651, documentos 12, 85). All these terms are vague, and usually the listings do not contain specific information about the reason for incapacity. However, casualty figures which were recorded in lists that were made to know the numbers of available troops, demonstrate how the army was affected by diseases, as well as the numbers of casualties resulting from injury and death in clashes.

When the WIC fleet reached the coast of Pernambuco in January 1630 it already had troop casualties of about 33.85%. Of the 3,780 sailors and 3,500 soldiers that were sent, those who were still available for action, because they had not yet been affected by disease, were about 2,515 sailors and 2,300 soldiers (Laet, 1916, p.222-232), i.e. only 66.15% of those who had been sent to fight were able to participate in the invasion. In late February 1630, when the army commander Colonel Diederick van Waerdenburgh was still trying to take the city of Recife, he had no more than two thousand men "in good health" at his disposal out of the original 3,500 troops who were dispatched in 1629. At that time, the army had had about 550 men killed in the conquest or by disease either during the journey to Brazil or after arrival. There were also another 896 soldiers who lay sick, which approximately amounted

to a total number of casualties of 41.31% of the troops who had been sent, including those who were temporarily incapacitated and the dead, not to mention those who were mutilated (Missiva..., 1945d). However, these numbers fluctuated and just days later Waerdenburgh stated that he could not count on 2,500 healthy men, due to the many deaths, illnesses and injuries. Furthermore, he expected that the numbers of his troops would diminish daily (Inventário 49, 1630-1632, documento 3). Waerdenburgh received reinforcements numbering 665 troops; however, 200 of them (30.07%) were sick by the time they reached Pernambuco (Missiva..., 1945c). The arrival of reinforcements increased the number of troops, but losses due to sickness resulting in men being unfit for combat were 16.66% in July and 11.42% in December, when the army mustered, 3,600 and 3,500 men, respectively (Missiva..., 1945b, 1945a). It is almost certain that the diseases which affected the troops in these first months of activity partly developed during the long journey from Europe to Pernambuco, not including the waiting periods before they set off from ports in the United Provinces. Apart from the crowded conditions in the boats, which increased the spread of viruses onboard, there was also a lack of water and fresh food. Once on dry land and surrounded by enemies, the soldiers' conditions were not much better. The majority of the troops were in the city of Recife in 1631, where there was no safe drinking water and the orchards in neighboring villages were well protected by enemies.

During the early years of the occupation the number of casualties due to diseases continued to have a very negative effect on the progress of the WIC and also, of course, on the local resistance movement. As opposition to the WIC was defeated, between 1632 and 1633, and more territories were conquered, the number of casualties due to sickness decreased compared to the first months of 1630. This decrease was possibly related to the increased access of troops to food-producing areas in newly conquered regions and the consequent improvement in diet. Although reduced in number, casualties caused by disease continued to reach levels above 10% until the end of the occupation. The percentages of casualties due to disease or incapacity were as follows: 1634 (26.04%), 1635 (20.14%), 1639 (13.08%), 1649 (10.22%), 1650 (10.48%) and 1651 (18.42%) (Código 2, 12 ago. 1634; Inventário 50, 1633-1635, documento 100; Inventário 54, 1639, documento 13; Inventário 12564.29, 1649-1650, documentos 5, 6; Inventário 12564.33, 1649-1651, documento 17).

Continuing with the theme of casualty rates, it is worth mentioning the comment made in the Estates-General by Hendrik Haecxs (1950, p.92), of the Brazilian High Council, when he was discussing the composition of the fleet to be sent to contain the rebels in 1645. For him, "ordinarily one should calculate that a third of [the troops] cannot provide services".¹ Although this was a high rate, given that it included losses due to desertion and death, it shows how the WIC expected losses that were due, in part, to disease. In 1635, on the island of Antônio Vaz (now part of Recife), when the WIC was still struggling to expand its territory but had only partial access to food, Commander Sigismund von Schoppe mentioned a similar number of casualties. Every company had between twenty and thirty sick troops, in addition to many wounded (Inventário 50, 1633-1635, documento 69). A contemporary listing indicates that a good number of these companies (10-23) had a similar number of casualties due to sickness as that mentioned by Schoppe, which shows the large number of troops who were incapacitated. Schoppe's garrison included

one of the highest number of such casualties, with 114 healthy troops and 24 suffering from sickness, i.e. 17.39% of casualties. Some of the companies in Antônio Vaz had even higher percentages, such as Captain Maulpas's company, which had 24.34% sick troops, and Captain Christiaens, with 20.16%. The companies stationed in the Waerdenburgh and Amelia forts had 21.87% and 22.13% such casualties, respectively (Mello, 2000, p.106-107).

Some of those who were sick or wounded may have effectively stopped working, and could therefore have been sent back to Europe. In 1631, 62 troops were sent home because they could not be cured of their illnesses or because of mutilations (Inventário 49, 1630-1632, documentos 138A, 138B). The following year, 120 troops returned to Europe on the grounds that they were "incurable" (Inventário 49, 1630-1632, documento 186). In March 1637, when the territory was relatively stable, 148 of those who were sick and incapacitated left for home, and on 16 April, 120 "mutilated and incapacitated" troops had to go to Recife to be evaluated (Inventário 68, 1635-1641, documentos de 18 mar. 1637, 16 abr. 1637). On 22 April, a listing indicated the departure of 130 people, including civilian and military officials, all of whom were sick, injured or incapacitated (Inventário 68, 1635-1641, documento de 22 abr. 1637). Such evidence also demonstrates the limitations of the medical treatment that was administered, although this problem was not unique to the WIC or any other force during this period.

Occasionally, the negative impact caused by disease was felt on the battlefield, which shows that it could be even more harmful than conflict. In 1637, during the WIC offensive in southern Alagoas, the troops commanded by Johan Maurits van Nassau-Siegen had their advances blocked because of serious logistical problems, climate and dysentery (Wätjen, 2004, p.147). The following year, during the siege of Salvador, it was not slaughter that devastated the army but bacillary dysentery. With about two thousand men hit by the epidemic, the troops eventually retreated (Piso, 1957, p.112-113). Years later, in 1648, with the military situation completely unfavorable for the WIC due to the war against the Portuguese-Brazilians, a force of 650 men commanded by Colonel Guillaume de Hauthain had to return about 160 men from Alagoas to Recife due to non-specified diseases (Guerra, 1979, p.474).

Obviously, the major armed confrontations also inflicted heavy casualties, even though they only occurred infrequently. Although these large-scale battles did not affect troops continually, as disease did, they were very damaging, especially if the numbers of deaths in battle in relation to the time it took to take soldiers out of action is taken into consideration. Two of the biggest battles encountered by the WIC (the battles of Guararapes) are extreme examples of this. During the first battle in April 1648, 4,500 soldiers were raised to counter the rebel troops. This force lost 501 men through death and another 556 were injured, resulting in a loss of 23.48% in just a few hours of battle. If deserters and soldiers who became lost are also considered, the casualty figures rise to 1,500 men, which gives a percentage of 33.33% (Inventário 12564.20, 1647-1648, documento 3). In February 1649, further heavy losses were observed among the troops. Of the 3,510 men put into combat, there were 1,046 casualties, i.e. 29.80% of the total number of troops assigned to the operation (Inventário 65, 1649, documentos 12, 22-27). This figure does not include those who subsequently died of their injuries, which would certainly raise the figure higher. However, battles of this magnitude did not happen with the same frequency as the continuous skirmishes that characterized

the early years and the end of the occupation. Soon after the taking of Olinda and Recife in 1630 there were frequent guerrilla attacks that claimed the lives of about 500 men out of a force of approximately four thousand (Guerra, 1979, p.473).

These examples confirm the pattern perceived by Francisco Guerra (1979) regarding troop casualties. In Guerra's view, until the armistice with Portugal in 1641 there were few victims arising from regular warfare. Guerrilla activity led to a considerable number of casualties, although it is difficult to establish exact figures. However, diseases were responsible for the highest casualty rates during the years of occupation (p.472-473). The reasons why the troops suffered so much from disease were related to a lack of regular supplies, which resulted in a precarious food situation and a lack of medicines, as well as poor hygiene conditions and the inability of physicians, surgeons and barbers to deal with some of the diseases (Mello, 1998, p.254-259; Mello, 2001, p.132-133; Wätjen, 2004, p.106, 126). An analysis of the diseases identified among the troops shows that most of them were common in America and Europe. This means that assumptions that north Europeans, and those from the Iberian Peninsula and Naples who were under the service of Castile against the WIC, were not able to adapt to life in the tropics should be viewed with caution. Smallpox, local fevers and other "diseases of the land," which were not always identified caused a negative impact on the activity of the WIC and also on its Spanish-Neapolitan opponents, but they were not the only diseases that hindered the armies, as will be subsequently discussed.

Diseases that affected the WIC troops

When Willem Piso, the personal physician to Earl Johan Maurits van Nassau-Siegen, wrote about "the nature and cure of diseases familiar to Western India" he emphasized the many diseases that afflicted the flow of blood (Piso, 1957, p.112-113). This was a disease that was as well known in Europe as the other diseases that were commonly recorded as the cause of problems among the soldiers: scurvy and blindness. Far from being typical of the tropics, all these diseases were related to the unhealthy living conditions of the soldiers, the weakening caused by malnutrition, and the hardships of military life. They were not the only diseases that plagued the troops, even though they were responsible for many casualties. Smallpox, dropsy, syphilis and tuberculosis also claimed the lives of many troops during the years of occupation.

Among the diseases associated with deficiencies in diet, two appear very frequently in the relevant documentation; scurvy and blindness (both day and night) (Guerra, 1979, p.489-490). References to scurvy were common, especially in the logbooks of ships and during the first years of occupation (1630-1633), when troops depended almost exclusively on provisions sent from Europe. Letters sent during the early years of the conquest are full of references to the disease (Mello, 2001, p.45-47). Long periods without eating fresh fruits and vegetables directly influenced the development of scurvy and it resulted in paralysis, inflammation of the gums, loss of teeth and fainting. These symptoms were aggravated by the lack of water. Consequently, it was very common for soldiers and sailors to develop the disease on journeys to and from Europe due to the lack of fresh food during these long sea voyages. Living conditions in the period before voyages could also be decisive in the development of the

ailment. Periods of prolonged waiting in unhealthy housing, or even in vessels, contributed to the fact that many troops were either sick or debilitated even before they travelled (Boxer, 1977, p.82; Bruijn, Lucassen, 1980, p.85-86; Ketting, 2002, p.92-93).

According to Haecxs (1950, p.121-123), many members of the relief fleet sent to fight the Luso-Brazilian rebels in 1647 waited in crowded boats, suffering “extreme cold” for several weeks until sailing. Because of these pre-embarkation conditions it is not surprising that several months before arriving in Pernambuco in 1629, a soldier named Ambrosius Richshoffer stated that the captains of vessels carrying troops to Pernambuco decided to make a stopover in the Canary Islands because many of the crew were sick and suffering from scurvy (Richshoffer, 1930, p.15, 36). In the same year, the general in charge of the expedition to attack Pernambuco, Hendrick Corneliszoon Lonck, also stated that some of his crew were affected by scurvy and other diseases (Missiva..., 1945e).

Because the conquered areas were deprived of fresh food for much of the early years of occupation, many people were affected by scurvy on a daily basis, as Waerdenburgh indicated in July 1630, five months after the landing of the troops. To get an idea of how the disease affected the troops, it should be mentioned that out of 600 patients, 150 were suffering from scurvy (Inventário 49, 1630-1632, documento 17). In December, Waerdenburgh complained to the Estates-General about the lack of men and stated: “I have here at most 3,500 and of those more than 400 have scurvy” (Missiva..., 1945a).

The number of cases of scurvy decreased as the WIC went on to conquer more territories, and therefore had access to fresh food, which occurred from 1633 onwards. Nevertheless, the troops were still subject to scurvy during the sea voyages, and also during long periods of siege or supply crises, events that were fairly common throughout the occupation. However, it is necessary to be cautious regarding the diagnosis of scurvy found in documentation and reproduced in the historiography, as well as regarding the recording of other diseases of the past (Bray, 1996, p.14, 91, 108, 194; Lindemann, 2010, p.31-32, 79-83). The reason for such caution is because scurvy, which is generally associated with the disease brought about by lack of fresh food and has the symptoms of tumors and bleeding of the gums, was a term employed in the Low Countries at the time for both “plague” and also for other diseases caused by vitamin deficiency (Bruijn, Lucassen, 1980, p.81; Graaf, 2002, p.67).

In his comments on the diseases that were “common” for the inhabitants of the southern colonies, Piso (1957, p.89) highlights “eye diseases,” which caused the loss of vision. Blindness became such a commonplace problem that it was even included among the provisions set out by the WIC in order to financially reward troops who suffered mutilation or other ailments during service. The problem, far from being endemic, was due to a deficient diet, one that specifically lacked vitamin A, which is present in some vegetables, fruits and foods such as milk, eggs and fish (Articul-Brief, 1640, artigo 44; Guerra, 1979, p.489-490). During the attack on the Cabedelo fort in Paraíba in 1632, 40 soldiers were affected by the disease according to Waerdenburgh’s report to the Nineteen Lords (Inventário 49, 1630-1632, documento 97A). In October 1630, 120 soldiers, in particular those who were no longer able to see at night, were sent back to Europe (Richshoffer, 1930, p.64).

Dense concentrations of people in camps, hospitals, ships and barracks were ideal conditions for the transmission of several diseases such as typhus and smallpox, as well

as diseases associated with poor hygiene such as typhoid and dysentery. Poor diet and the distribution of contaminated food also contributed to the spread of diseases. For example, ships were particularly harmful environments and were ideal for spreading diseases, given the large numbers of people in confined spaces and the lack of adequate drinking water and food (Boxer, 1977, p.76-77; Bruijn, Lucassen, 1980, p.83-87; Parker, Parker, 2000, p.60; Tallett, 1992, p.106-107). In order to prevent outbreaks of disease, recommendations were made regarding the maintenance of good order and cleanliness on board ships. The new title of the WIC's circular, "About patients, barbers and the like," devotes two articles to the issue of cleanliness (Articul-Brief, 1640). For example, article 89 states that the quartermaster in charge of stewardship should clean the ship every morning, inside and out. The subsequent article also states that nobody was allowed to defecate or urinate inside the ship, except where permitted, or they would be financially punished (Articul-Brief, 1640, artigos 89, 90). These rules were probably not always complied with, as indicated by Haecx (1950) in his diary when he reports on the preparation of the rescue fleet in 1647. According to him, the dirt and the stench of the ships were so great that orders were given to all commanders and officers to wash the vessels "every three days, purifying them with a little vinegar" (p.121-123). Haecx comments further that because of negligence in cleaning, diseases and ailments had arisen that had already caused the deaths of many men. Haecx and all the ships' officers complained that the dire state of living quarters, bad water, foul food and severe overcrowding were all decisive in the deterioration of hygiene onboard the vessels.

This type of environment was ideal for the spread of dysentery, a disease that was so commonplace among soldiers stationed in Europe that it was known as "camp fever" (Ketting, 2002, p.93; Parker, Parker, 2000, p.60). Dysentery is caused by poor sanitation, a lack of clean water and contaminated food, and the disease was mainly present in camps, fortifications, cities and ships, i.e. places that were usually densely inhabited. Piso (1957, p.96-114) reported some medical cases of people within the WIC as being endemic (with features of parasitic dysentery) or epidemic (with blood flow), which, for Francisco Guerra (1979, p.478), was undoubtedly of bacterial origin.

Non-endemic diseases, such as bloody dysentery, which were referred to as "rood loope" in a letter dated 1630, "root melesoen" in a letter dated 1646, and *ventris fluxus* (diarrhea) by Piso, killed a large number of soldiers, civilians and private employees (Mello, 2001, p.133). There are various records of the devastation caused by the disease over the period of the occupation, such as the epidemic that hit about two thousand troops participating in the siege of Salvador in 1638, and the problems caused to Nassau's troops who were advancing against the army of the Earl of Bagnuoli in 1637 (Piso, 1957, p.112-113; Wätjen, 2004, p.147). Casualties caused by the disease date back to the first months of occupation of the territory. In July 1630, Waerdenburgh complained that most of his 600 sick troops were suffering from bloody dysentery, and a few months earlier, Lt. Col. Van Els claimed that a third of his troops were ill, the majority of whom were suffering from the same illness (Inventário 49, 1630-1632, documentos 4, 17).

Some of the aforementioned personnel lists sent back to Europe also provide information about other diseases that attacked troops. However, lack of knowledge about many diseases generated vague diagnoses such as "incurable disease," "long illness" or, more often,

“incapacitated by illness.” Sometimes symptoms were cited, such as “contraction of nerves,” “stiffness of the limbs,” “paralysis” or “falling to the floor” – literally, “falling sickness.” The last symptom was used to refer to what is now known as epilepsy (Temkin, 1994, p.85-86). Recognized non-endemic diseases were also recorded, as in the case of dropsy and tuberculosis, the onset of which Piso attributed to the “lifestyle” of sailors (Inventário 49, 1630-1632, documentos 138A, 138B, 219; Bontius, Markgraef, Piso, 1694, p.210-213). This assertion refers to two other diseases associated with the lifestyle of soldiers and sailors, i.e. syphilis and alcoholism.

The first of these had long been associated with troops serving in various European armies. In Recife, those mainly responsible for carrying and spreading the disease were the soldiers and prostitutes who worked in the vicinity of the port (Wätjen, 2004, p.394). Piso (1957) treated many troops with this disease and also noted another disease with similar symptoms, which he called “Lues Índica.” According to him, this was a disease transmitted through “sexual intercourse” or “by hereditary evil” from father to son and it caused “devastation not only between Africans and Americans, but also between the Lusitanians and Flemish” (p.118). Regarding alcoholism, Piso also referred to the problems caused by excessive consumption of alcoholic beverages in the tropics and reported finding several cases of cirrhosis of the liver in post-mortem examinations (Guerra, 1979, p.476). It is known that the government and the Church Council complained about “public scandals” caused by drunken civilians and military personnel. These warnings were also intended to prevent the high consumption of wine and “spirits” that “people with few resources consumed in taverns and hostels in the town” (Wätjen, 2004, p.396). However, the problem did not only affect the poor, as this “sin affected some pastors and civil authorities” and it was continually opposed by the Reformed Church, although these reprimands achieved little success (Schalkwijk, 1998, p.51).

In addition to the non-endemic diseases caused by dietary problems and lack of hygiene, or arising out of “lifestyles,” other local diseases were also harmful, such as the fever that attacked European and indigenous troops in São Tomé, and whose characteristics resembled yellow fever (Guerra, 1979, p.477). In the opinion of B.N. Teensma (2009, p.172-174), the fever that killed members of the WIC in Africa was malaria, which was referred to in contemporary documentation as a “disease of the land.” This “disease of the land” also struck Nassau and was responsible for the death of many soldiers stationed inside the occupied captaincies in Brazil, mainly in “swampy” areas where the type of mosquito that transmits the disease found suitable conditions for breeding (Mello, 2001, p.49). According to the political adviser Servaes Carpentier, it may have been this “disease of the land” that affected WIC troops stationed at Afogados in 1634. He reported that the “disease raged so much” that the garrison had to be changed three times. A company of 150 men was reduced to sixty in less than a month (Inventário 50, 1633-1635, documento 61).

A little over a year later, Colonel Arciszewski, who was involved in the siege of Arraial do Bom Jesus during the rainy season, stated that he, his officers, and his soldiers had felt the effects of torrential rain. Many men became sick and others made themselves ill in order to escape (Inventário 68, 1635-1641, documento de 12 maio). Also during this siege, an officer in charge of the equipment of the troops involved in the battle reported to his political advisers about the ill effects of daily rain on the troops. He mentioned the need to transfer the troops’

lodgings to higher ground because the area where they were stationed was flooded and the men were sickening (Inventário 68, 1635-1641, documento de 16 maio 1635). However, it is unknown if the troops were suffering from malaria. In June 1641, the "disease of the land" affected the troops so seriously that many of them were sent to be treated by a Portuguese doctor in the interior who was used to treating the victims of this ailment. The following year, soldiers affected by the disease were referred to a certain "Portuguese surgeon" (Inventário 69, 1641-1643, documentos de 28 jun. 1641, 2 abr. 1642, 19 abr. 1642).

Despite the information contained in contemporary reports, the exact numbers of troops affected by malaria or yellow fever in the northeast of Brazil are virtually unknown. Although he does not provide any quantitative data, McNeill (2010, p.96) states that the disease made the life of the invaders difficult, but not enough to prevent their military progress. He counters Guerra's (1979, p.478) claim that malaria was not prominent in the Northeast of Brazil. Episodes such as those that occurred in April 1634, June 1641 and April 1642 give credence to McNeill's criticism, if the "disease of the land," defined by him as malaria, affected the troops. In Guerra's view, this "disease of the land" was actually yellow fever. However, the absence of accurate information about this disease makes it impossible to know who is right in this debate, because neither of these authors has provided sufficient documentary evidence to prove their positions. As previously mentioned, confusion about the designations of diseases in the past is common, as well as the use of similar terms for different illnesses, but which had similar symptoms. Also in regard to this problem, one can see that this "disease of the land" started to affect troops during the beginning of the conquest of the interior of the territory, from 1634-1635, a period in which the WIC defeated the last of the local outbreaks of resistance in Paraíba and in the floodplains of the River Capibaribe.

There were also other diseases and parasites that affected the troops. The epidemics of smallpox that killed many indigenous people and slaves in 1642 - 1643 (Inventário 69, 1641-1643, documentos de 16 jan. 1642, 6 fev. 1642, 7 fev. 1642, 4 dez. 1642, 5 mar. 1643, 13 mar. 1643) may have also accounted for some troops. Problems arising from trypanosomiasis, which was endemic in American lands long before European colonization, were described by Piso, and he himself was infected (Guerra, 1979, p.478). However, these diseases did not need to be totally debilitating in order to remove troops from service. Foot problems during the military campaign in the south of Pernambuco in October 1635 were sufficient to disable 200 men according to Governor Schoppe. He reported that the troops had their feet eaten by "insects" (Inventário 68, 1635-1641, documento de 29 out. 1635). Perhaps Schoppe was referring to an attack of *Tunga penetrans*, popularly known in Brazil as *bicho-do-pé* (chigoe flea or jigger), which attacked barefooted troops in the territory (Piso, 1957, p.601-602).

Despite the various certified references relating to local diseases and common ailments in both continents, it is difficult to specify which of them most affected the troops because accurate diagnoses were often not made. For the bureaucrats and commanders who recorded the casualty lists it was not always possible, or important, to clarify the exact nature of illnesses. They only needed to register that they had fewer men under their command and that they therefore needed replacements. However, the constant references to non-endemic diseases in the documentation of the WIC allow us to suppose that they played a more pronounced role in casualty levels. With regard to the periods in which they most affected troops, it can

be said that mentions of non-endemic diseases were common throughout the whole period. Of these diseases, those that were caused by vitamin deficiency were more often registered in the stages of the conquest (1630-1633) and the siege (1645-1654), which were times of food scarcity and inability to obtain local food, while “diseases of the land” were registered during the conquest of the interior of the country (1634-1644). However, the available documentation does not allow us to know much more regarding this issue.

Assistance for the sick

In April 1639, after a year and a half without news of Stephan Carl Behaim, who landed in Pernambuco in 1636, his family wrote to the man responsible for his recruitment to the WIC. They were informed by him that an acquaintance of Behaim had last seen him in November 1637 in a fort in Alagoas. According to the account of this contact, named Caspar Stör, Behaim had become a broken man. When Stör saw Behaim, the latter was dirty and feverish, wearing a tattered coat and walking without socks and shoes. He had a purulent toe, which was partially rotten and about to fall off and which caused him constant pain. Stör tried to warn Behaim to wash and take care of himself, but Behaim seemed beyond hope. Soon after, Behaim was transferred from the fort in São Francisco to a hospital in Recife, where Stör promised to visit him soon. More than fourteen months passed before Stör was able to fulfil his promise. At that time, he discovered that Behaim had died a year earlier because of blood poisoning, just two months after seeing him in the fort. According to Stör, conditions in the hospital were such that even a healthy man could not survive there for long (Ozment, 1990, p.283).

Behaim’s personal drama, as narrated by Stör, shows some of the problems faced by many of the soldiers who fell ill, such as the poor quality of medical service offered by the WIC and the lack of facilities for the care of those who served in the garrisons furthest from Recife. In addition to these difficulties, the lack of medical personnel, insufficient funding and other shortcomings appear to have been constant features. The following paragraphs will deal with these matters and also discuss the medical treatment provided by WIC staff.

The transfer of Behaim from the fort in São Francisco to Recife, where the WIC had a hospital, was common for sick or wounded troops during various stages of the conquest because the WIC did not have field hospitals or sufficient staff to attend the needs of all the military stationed in the various garrisons scattered throughout the territory. Some of these transfers were recorded in the WIC official minutes, such as the transport of injured and sick troops at various times during the military campaigns south of Pernambuco (Inventário 68, 1635-1641, documentos de 21 maio 1636, 1 dez. 1637, 29 maio 1638, 28 set. 1640). Although the WIC did not have field hospitals, the comforters of the sick, barbers, surgeons and physicians who worked for the WIC had to accompany troops on routine missions, in addition to their routine work in the garrisons and hospitals (Inventário 49, 1630-1632, documento 138E; Inventário 68, 1635-1641, documento de 16 abr. 1637; Inventário 53, 1638, documento 146; Inventário 69, 1641-1643, documentos de 17 out. 1641, 30 dez. 1641, 2 abr. 1642, 28 ago. 1642).

Listings dated 1631, 1638 and 1642 enable us to know some of the locations where local officials who were responsible for dealing with the health of troops operated and, equally important, the number of staff employed to deal with the medical care of the troops. It is important to mention that troops were not housed in an exclusive hospital.

Before discussing the medical staffing of the WIC, it is necessary to explain the functions of these employees. The comforters of the sick were not ordained by the church and initially, in the Low Countries during the sixteenth century, they worked with the sick; however, in Brazil their functions were expanded, probably due to a lack of staff to attend to the sick. In addition to providing spiritual assistance in hospitals, they worked in ships, forts and on the battlefield. They also helped the poor, orphans, and attended to the last requests of those who were dying, as well as taking care of those condemned to death during their last hours (Niet, 2006, p.39-41). Two other functions that are continuously mentioned in the records are those of barber and surgeon. In the Low Countries, England and France during the seventeenth century, these trades were organized through a guild system that did not involve much formal training. Despite their inability to treat many conditions, barbers and surgeons incorporated local practices when treating patients. They could do little to counter epidemics, except prescribe rest, recommend an improvement in diet and hope for an improvement in the health of the patient. Their activities were more directed towards minor surgery; they applied sutures, prescribed medications, performed amputations and bled their patients (Bruijn, Lucassen, 1980, p.25; Snelders, 2005, p.2933-2935).

During the enrolment of the forces of all the companies, which occurred in October 1631 when WIC control was restricted to Recife, Olinda, Antônio Vaz and Fort Orange in Itamaracá, a total of seven people were recorded as being designated as "surgeon and helper", without quantitative individual specifications, and another five were working with Servaes Carpentier, a physician who graduated in Utrecht, as well as his pharmacist brother, Gerard (Inventário 49, 1630-1632, documento 138E).

According to the list of weekly salaries and victuals distributed to WIC employees in 1638, Master Abraham Duurcoop and another chief surgeon worked in Recife with five other people; a pharmacist and two comforters of the sick. In the hospital two barbers were supervised by a type of director of health care, while there were three barbers working in Antônio Vaz. In the Bruijn and Prins Willem forts there were a chief barber with a helper, and a barber with three apprentice barbers, respectively. In the south of Pernambuco, the garrisons of Sirinhaém and Cabo de Santo Agostinho were served by two barbers, although the latter fort also had the support of two comforters of the sick. In the north of Pernambuco, each of the garrisons of Goiana and Fort Orange had the services of a barber, while the village of Schoppe, where there was another hospital, had three apprentice barbers and a comforter of the sick, all coordinated by a director. Further north, in Frederickstadt, Paraíba there was also a hospital where the administrator had at his disposal a barber and a comforter of the sick (Inventário 53, 1638, documento 146).

Finally, an extract that lists details about auxiliary staff in 1642 provides further information about the size and the location of the medical staff in the colony. In Sergipe, the southernmost point of action of the forces of the WIC, a surgeon and his assistant worked with the troops, as well as a comforter of the sick. Both Alagoas and Porto Calvo had the services of a surgeon

and a comforter of the sick, while Una and Sirinhaém each had a barber. The area of Ipojuca was served by a comforter of the sick, as was Cabo de Santo Agostinho, where there were also a barber and a surgeon. Approaching Recife, the Prins Willem, Vijfhoek and Ernestus forts had a barber, as did the island of Antônio Vaz. In Recife and the garrisons of its surrounding forts there were pharmacists, barbers and comforters of the sick, as well as the personal physicians of Nassau, Piso and Master Duurcoop, all of whom also worked in the hospital. To the north, Itamaracá and Igarassu had two comforters of the sick, while only one surgeon provided services to Frederickstadt and the bar of Rio Paraíba fort. In Rio Grande, a barber worked at Fort Ceulen (Inventário 69, 1641-1643, documento de 28 ago. 1642).

Compared with the total number of men in the service of the WIC in Brazil, the medical staff was insufficient to meet the needs of its troops. For example, in October 1631 and July 1638 the number of troops were respectively 3,819 and 2,728, not including the civil servants and sailors working in the port or in the fleet, while the personnel tasked with the care of the sick and wounded was 12 people in 1631 and 36 in 1638, including the hospital administrators and the comforters of the sick, who in principle did not take care of patients. These figures seem to indicate that the WIC had difficulties in coping with possible patients, especially in periods of continuous military operations because the wounded were then added to the regular amounts of sick people (Inventário 49, 1630-1632, documento 138E; Inventário 53, 1638, documento 114; Inventário 57, 1642, documento 38). The lack of staff was not only perceived in the listings above, but it was also directly referred to in complaints made by employees, as was the case in July 1630 when the political advisers Pieter van der Hagen and Pieter de Vroe wrote a letter to the Nineteen Lords that alluded to the lack of surgeons to provide patient care (Inventário 49, 1630-1632, documento 19). This problem may also have led to people having to work in more than one location, as happened in 1642 when the surgeon at the hospital in Recife was also appointed to serve at Fort Bruijn (Inventário 69, 1641-1643, documento de 2 abr. 1642).

But the shortage of surgeons and barbers was not the only problem in the care homes of the WIC; other deficiencies were identified during various times of the occupation. For example, in 1637 there was a lack of beds in the hospital in Recife to receive the sick and wounded coming from the military campaigns in the south of Pernambuco, and in 1642 many soldiers, who were probably suffering from malaria, were housed in an old warehouse in Recife for lack of space in the hospital (Inventário 68, 1635-1641, documento de 2 mar. 1637; Inventário 69, 1641-1643, documento de 2 abr. 1642). Recife was apparently unable to receive large amounts of patients. In 1647 the overcrowding in the hospital in Recife interfered with the operation of the medical centre in Paraíba, which ended up receiving “ten, twenty and even thirty patients” from Recife (Schalkwijk, 1993). The shortage of food, medicines and other materials to care for the sick were routine grievances for WIC employees or hospital administrators (Inventário 49, 1630-1632, documento 19; Inventário 68, 1635-1641, documentos de 18 mar. 1636, 23 fev. 1638; Wätjen, 2004, p.393). There was a particular lack of medicines between 1641 and 1644, which led the WIC to buy medicines from local free traders (Inventário 69, 1641-1643, documentos de 20 nov. 1641, 21 nov. 1641, 25 nov. 1641, 14 fev. 1642, 20 mar. 1642; Inventário 70, 1643-1645, documentos de 2 jun. 1643, 7 jul. 1643). The problem was so severe that the order was given to the doctor and the hospital

surgeons in Recife not to distribute medicine to the women and children of WIC employees, except for employees themselves or those who were undergoing treatment at the hospital, as well as some wives and children of poor soldiers "who could not afford to buy the medicines needed for their treatment" (Inventário 70, 1643-1645, documento de 2 jun. 1643).

In addition to these shortcomings, historian Hermann Wätjen (2004, p.392) has observed that there were frequent changes in the medical staff, which is an indication that the services were not up to standard. In Wätjen's opinion, by hiring "medical practitioners" on lower salaries the WIC chose not to employ good professionals who commanded "reasonable fees." This observation may be supported by a complaint filed by a former WIC soldier with a notary in Amsterdam. The soldier returned to Europe after being injured and was forced to seek medical help in Amsterdam. The two surgeons who examined him found that some of his injuries, which had been treated by a WIC surgeon named Jeronimus, were not healed and that others were only superficially cured. They claimed that the soldier, whose name was Albert Dirckx, had six deep, serious wounds and that he was tormented and would probably be unable to lead a healthy life (Inventário 852, 11 ago. 1631).

However, even with adequate facilities, sufficient medical staff and regular supplies, which were not the case of the WIC in Brazil, the medicines of that period did not offer solutions for many of the diseases that raged among the troops and the microscopic dangers that existed; they were only able to provide troops with minimal relief for most diseases and ailments. Therefore, infectious conditions such as those that afflicted the soldiers Behaim and Albert Dirckx could not be contained (Lindemann, 2010, p.279). The total or partial lack of knowledge about certain diseases, particularly local, from which many troops were not immune, also generated vague diagnoses such as "long illness," "incurable illness" or as was frequently cited, "incapacitated by illness." When the medical staff of the WIC did not know how to proceed with certain diseases in the region the solution was to seek help in the locality. Several soldiers affected with the "disease of the land" were sent to the interior in order to be treated by a Portuguese named Rodrigo Gonsalves, who was subsequently hired by the WIC (Inventário 69, 1641-1643, documentos de 28 jun. 1641, 2 abr. 1642, 19 abr. 1642). Gonsalves was not the only person living locally to treat WIC troops. In January 1641 Geraldo de Montel received 120 florins from the WIC for healing soldiers (Inventário 69, 1641-1643, documentos de 30, 31 jan. 1641) and during the following two months George Gonsalves received 297 florins for curing many soldiers (Inventário 69, 1641-1643, documentos de 29 fev. 1641, 29 mar. 1641). Another attempted solution was to send the sick troops home to Europe, as indicated in the aforementioned letters.

Several diseases that were known in Europe were recognized and treated, where possible, in accordance with European standards or influenced by the standards of the region. Piso reports the use of procedures to cure, or at least relieve the effects of, many of the diseases that afflicted the occupying forces. For example, Piso cited the advice of "the Lusitanians and the Barbarians" and recommended the consumption of "fresh shark's liver" for those who were blind. For ulcers and gangrene he recommended tobacco juice and certain gums. To assist in the treatment of "hepatic flux" he advised the swallowing of certain "fresh cold seeds" from fruits and roots, and for the treatment of gonorrhoea, he recommended the root of a certain tree and a wild sugarcane, as well as the use of the jaborandi (*Pilocarpus jaborandi*)

root, which was often used by him in the treatment of several other diseases. It is clear that many of his observations were based on the practices of indigenous people, as well as local doctors and surgeons (Piso, 1957, p.75-76, 91, 113-114, 120).

Traditional treatments like bloodletting and purging were also part of the therapeutic repertoire of the WIC's physicians, surgeons and barbers, which demonstrates, in part, how the healing practices of the period were influenced by Greek thought, especially that of the philosopher Hippocrates. According to his theory, the primary constituent elements of the body were water, fire, air and earth, which contained wet, hot, cold and dry features. These characteristics, arranged in pairs, gave rise to the four humors, which when mixed corresponded to the liquid and solid parts of the body. Imbalance in the natural composition of these humors generated diseases. In the seventeenth century two treatments were widely used to balance these bodily elements: bloodletting and purging (Bruijn, 2009, p.25-27, 69; Lindemann, 2010, p.13-14, 86-90, 112; Rebollo, mar. 2006, p.56). Thus, Piso's writings serve once again as a reference for the medical practices that were adopted in Brazil; purging and bloodletting were commonly cited by him as treatments for certain diseases. However, Piso (1957) recommended caution in the practice of bloodletting for recently arrived patients who were sick, due to "the rigors of the climate" although he considered the practice of bloodletting for patients with "hepatic flux" to be "commendable", albeit with caution. Fever, catarrh and boils were also treated with bleeding, although the latter two diseases were normally treated with purging (p.80-87, 113-124).

Piso (1957) was influenced by the theory of humors and he also associated many illnesses with the consumption of contaminated food or the excessive intake of alcohol, which were capable of disrupting bodily fluids. Consequently, he recommended moderation in eating and drinking as well as the use of certain herbs, roots and fruits (p.97, 118). Changes in diet were commonly prescribed for treating or helping to cure diseases. The recommendation of additional portions of certain foods for sick troops was current practice at several different times. Fresh meat, sugar and wine were among the most recommended foods for the restoration of the health of patients (Inventário 68, 1635-1641, documentos de 29 mar. 1637, 6 abr. 1637, 27 nov. 1637, 5 dez. 1639, 22 dez. 1639; Inventário 69, 1641-1643, documentos de 15 mar. 1641, 16 set. 1641; Inventário 70, 1643-1645, documento de 19 maio 1643).

Final considerations

The risky occupation of being at war seems to have been, at certain times, less harmful to troops than the various diseases that plagued them over the years of the occupation. As well as there being some truth in the theory that the armies of the period lost more men from diseases than through combat, such assumptions about the health of the WIC troops goes to show that most of the physical problems that they faced were related to the inabilities of the WIC to deal with such problems. In other words, in addition to problems generated by clashes and local diseases, to which they had no immunity, the troops often became sick because the WIC failed to provide its troops with basic necessities, i.e. sufficient food and adequate lodgings. These problems were common throughout the occupation, from

the invasion and conquest of the territory (1630-1637) to the rebellion of locals against the WIC and surrender (1645-1654), through the period of government of Nassau (1637-1644). To make matters worse, the WIC also had difficulty in providing its troops with enough hospital beds, medicine and a satisfactory number of surgeons and barbers to administer treatment. However, it is important to remember the limitations in relation to medicine that existed during this period; there was an inability to cope with a wide variety of diseases, even the simplest, which caused far more problems in the past than they do today.

The long years of siege, difficulties in obtaining food locally in satisfactory quantities, and the continued reliance on food shipments from Europe, which were only sent irregularly, greatly contributed to the development of illnesses, some of which could have been quite simple to treat, yet they were responsible for many WIC troop casualties. Losses of 10%-33% were high enough to hinder many of the military activities of the WIC because all organized warfare operations required a specific number of troops who were engaged in combat, as well as reserve troops to maintain positions that were already occupied in camps, forts or cities. It also seems certain that during the occupation of the WIC in Brazil the disruption caused by diseases was not something that was isolated; it formed part of the daily routine of the conquest, affecting, with greater or lesser intensity, those who passed through the region at all times. Therefore, it constituted one of the many factors that help to explain the collapse of the WIC, although it cannot be disconnected from logistical problems, given the types of diseases mentioned in the literature i.e. those caused by malnutrition and poor health.

NOTE

¹ In this and other citations of texts from non-English languages, a free translation has been provided.

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