



Body, health and nutrition in the Brazilian Navy in the post-abolition period, 1890-1910

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Abstract

Based on reports of the ministers of the Navy and the correspondence among officers, this paper analyzes labor relations in daily life, as well as the nutrition and health of sailors in the first twenty years after abolition. The racial question arises related to the modernization of nutrition practices and treatment, and new ways of understanding the bodies of sailors. By focusing the analysis on the years before the major 1910 mariners' revolt, judging from reports and records of the officers it is seen how the transition from slavery to a new system on a national scale within the Brazilian Navy corresponds with the arrival of new ideas about health to be applied in the path towards progress.

Keywords: Navy; health; nutrition; race; Brazil.

Various studies have already concentrated on the important presence of slaves, free blacks and enfranchised slaves as enlisted sailors in the Brazilian Navy (Almeida, 2009; Nascimento, 2001, 2008; Samet, 2011) or as sailors in the Merchant Marine, working in the slave traffic itself (Rodrigues, 2005). For anyone still subject to the rules of slavery, becoming a sailor or soldier could be a way of achieving one's liberty (Nascimento, 2000; Bernard, Stella, 2006). In the period following abolition, wearing a naval uniform or entering one of the country's apprentice schools could either be the result of police coercion – a campaign against the 'unemployed' population who might fill the ranks of the Fleet – or a chance for the poorer sections of the population to acquire training, wages, access to medical treatment, regular meals and a bed, in a world in which none of this was guaranteed (Venâncio, 2006). In addition, the Brazilian Navy had a certain seductive power, confirmed by a number of witnesses, because it offered the chance of movement, of seeing other countries, or of migrating to the city of Rio de Janeiro (Almeida, 2009, 2010).

In 1895, the former naval officer and writer Adolfo Caminha published a naturalist novel entitled *The Good Creole* which tells the story of the relationship between two sailors, the young Aleixo, white and blue eyed, and the older Amaro, nicknamed the Good Creole, a fugitive ex-slave. In the text, the narrator describes the living conditions of a sailor as much better than those of the slaves on the great estates: "Military discipline, with all its excesses, could not be compared to the punishing work on the farms, to the terrible regime of the stocks and the lash. There were many differences... There at least, in the fort, he had his hammock, his pillow, his clean clothes, and he ate his fill like anyone else, today it was good meat stew, tomorrow a tasty pork and beans dish, and on Fridays, salted cod with hot peppers and Christ's blood"¹ (Caminha, 2002, p.40).

Though there were sailors of other origins in the Navy, whites, half-castes (Indians, whites and blacks) and even foreigners, many sources indicate the presence of a large number of blacks. In 1911, as a result of a mutiny of the sailors against corporal punishment and in favor of better working conditions, which occurred in November and December 1910, the so called Revolt of the Whip, the former Navy lieutenant Macedo Soares published a work in Paris, which was banned in Brazil, under the pen-name "An Officer of the Fleet." In the text, after making some personal observations, he gave some figures for the color of crews as follows: "50% blacks, 30% mulattos [black/white racial mixture], 10% caboclos [native American/white racial mixture], 10% white or nearly white" (Um oficial..., 1911, 85, note 1).

Foreign observers were also meticulous in pointing out the racial make-up of Brazilian Navy sailors in the decade after 1910. Soon after the November revolt, a French diplomat in Brazil sent a letter to the French minister of foreign affairs which referred to the "mutineer blacks" who had taken control of the ships (Correspondance..., 24 nov. 1910). Even before they were thought of as sailors, they were seen as 'blacks.' The French politician Georges Clemenceau wrote in his *Notes de voyage dans l'Amérique du Sud* (*Notes on travels in South America*) that the mixing of races in Brazil produced harmful effects and explained the mutiny of the sailors in 1910 as the result of the "impulsiveness of African blood" (Clemenceau, 1911, p.216). From a Brazilian viewpoint, however, the racial question appeared

as something a little more complex and was combined, in some reports, with professional matters, the slavery of the past and the conditions of the sailors, as shown in the following speech of Rui Barbosa made in 1910, defending the rebel sailors and criticizing the legacy of slavery in Brazil:

Slavery begins by perverting and debasing the master, before it perverts and debases the slave. ... I am convinced that a large part, perhaps the greatest part, of the social evils from which Brazil still suffers today, are due to the moral influence of slavery, which was abolished amongst us so many years ago.

We ended the slavery of the black race; but we continue the slavery of the white race in the Army and the Navy, among the servants of the Fatherland, whose situation is so dear to all Brazilians (Brasil, 1910b, p.136).

Almeida (2009) gives some interesting details on naval personnel in 1908: according to the breakdown in book 1 of the Office of Naval Personnel, set up the same year, sailors were classified as 56.4% 'pardos', 20% white, 11.6% black, 10.4% brown, 1.2% as "whites of color" and 0.4% as "light mulattos" (Gabinete..., 1908). 'Pardos' and blacks made up 68% of the total, in other words, almost 70% were seen as non-white. The term 'pardo', as other works have shown, meant, during an earlier period, a relative description denoting slave origin, and referred to a black person who was free. Later, during the post-abolition period, it could also indicate other relative descriptions and euphemisms, and did not necessarily denote mixed blood (Mattos, 2004, 1998).

Additionally, the same figures reveal that the majority of sailors (65.6%) came from the North and North East regions of Brazil and were aged between 17 and 22 (74%), with 67% being under 20 (Almeida, 2009). The majority of sailors would therefore have been born after the final abolition of slavery in 1888, and many of them may not have been children or even grandchildren of slaves, as there were many freedmen in various parts of Brazil at the end of the nineteenth century (Mattos, 2004, 1998; Silva, 2003). However, slavery still made its presence felt in many reports, as a personal experience or as a collective memory, being recalled in the actual manifesto of the sailors of November 22, 1910, where they refer to themselves as: "We, sailors, citizens of Brazil and republicans, being unable any longer to support slavery in the Brazilian Navy..." (Morel, 2009, p.84-85).

This article deals with the health and diet of these sailors in the Brazilian Navy at the beginning of the twentieth century. From the letters of officers and the reports made between 1888 and 1911 by Navy ministers, we consider the working conditions and, particularly, the living conditions of these men during the second decade following the final abolition of slavery in Brazil. On the one hand, the facts reveal certain peculiarities in the maritime and military environment, such as the need for a specific type of nutrition which sought to achieve a balanced diet and the alternation of non-perishable foods. They also show the recurrence of certain diseases caused by vitamin deficiencies, a variety of injuries and wounds, and the venereal diseases which it was imagined were caused by sexual promiscuity. On the other hand, we see dietary and medical practices in the wider context of the beliefs and thinking of the period, which established new ways of viewing the body, for example, with the introduction of gymnastics as a healthy practice. As we

shall see, in such an environment of heavy and sometimes disagreeable work, there was also an important difference between the way the officers thought and the values of the sailors, which indicated not only forms of resistance but also an attachment to another kind of culture of popular origin.

Work and daily life in Brazilian warships at the beginning of the twentieth century

The modernization which the Brazilian Navy desired at the end of the nineteenth and the beginning of the twentieth century came into conflict with reality and with certain conceptions that prevailed at the time. Many of the poor men who were available were not interested in joining the Navy, because living and working conditions were precarious, marked by low pay and long periods of compulsory service – which could extend to 15 years for those from the apprentice schools and 10 years for volunteers (in accordance with decree no. 7124 of September 24, 1908) – and also by excessive work, physical punishments², prejudice and difficult daily relationships. In turn, there were naval authorities who maintained that these poor conditions continued owing to the fact that the Brazilian Navy and individual naval battalions were frequently understrength and lacked the material and human resources for improvement, as well as being composed, in the words of ministers, of individuals whose education was “very lacking, because of the background from which they are drawn” (Brasil, 1902, p.39).

The piece by the ex-officer Macedo Soares, published secretly in Europe in 1911, condemned the 1910 mutiny of the sailors against corporal punishment and in favor of better working conditions. It also condemned the organization of the Brazilian Navy at that time, and vehemently criticized the gulf created by the overvaluation of equipment at the expense of the selection of non-commissioned personnel. In fact, between 1908 and 1910, the Brazilian Navy received a number of modern warships, most of them built in Newcastle, England, among which were the Dreadnought class battleships *Minas Gerais* and *São Paulo* and the scout *Bahia*. This had formed part of the project for the modernization of the fleet which had been planned since 1903, but only put into practice by the minister Alexandrino de Alencar (1906-1910), under the title Forward to the Sea (Almeida, 2009, 2010; Martins Filho, 2010). In the ex-officer’s book, the argument as to the racial degeneracy of the sailors is presented as a reason for the revolt, in contrast to the new equipment acquired in Europe.³ From this perspective, the author describes some of the daily habits of the sailors:

Profoundly alienated from any notion of comfort, our sailors dress badly, and do not know how to eat or to sleep. Imprudently lazy, they have the incapacity of their race to make progress. Payday on board the warships is depressing. Having paid their gambling debts, all their money disappears in the boats: tobacco, Minas cheese, sardines, mirrors, almanacs.... The crews are sad. The entertainments rarely requested are samba dances and more frequently by the cabin boys games such as dominoes and lotto. In one or two large ships, aided and encouraged by the officers, there are theatrical performances.... Violence involving blood is admired; macho ideals are imposed by force and a vast intrigue plotted on the decks results in persecutions, outrages, acts of incomparable cowardice, which not infrequently come to the knowledge of officers through informers. Illiterate and without

the strict but tender restraining influence of religion, the mass of sailors exhibit a culture which is predisposed to vice and crime (Um oficial..., 1911, p.85-86).

Life on board a ship such as the *São Paulo*, the *Minas Gerais* or the *Bahia* followed an organized pattern. Officers were supposed to note the most important events in the "Books of Fours," because the day was divided into six four-hour periods, the so-called 'fours.' In Bahia in 1910, for example, the garrison had three meals a day and woke up at around 6:30 a.m. (Livro..., 1910-1911). The flag was usually hoisted at 8:00 a.m., following which the working day began. Crews could work alternate shifts, in 'fours' during the day or night. Between 6 p.m. and 9 p.m. was a period of free time for the sailors, during which they could talk, play the guitar or indulge in other leisure activities (Nascimento, 2008). Curfew was sounded at 9 p.m., and the sailors slept for about 8 hours per night.

Work consisted essentially in the maintenance of the ship, the machinery and the armaments, together with general cleaning and organization on board. Pay for non-commissioned sailors was about twenty thousand 'réis', which was about one hundred thousand 'réis' less than pay in the Merchant Marine service, according to the frigate commander Miranda Correa (25 jun. 1910, f.3). Apart from low pay, crews faced other problems, such as the shortage of fresh food, coal and drinking water, especially during the long months of ocean voyages in vessels propelled by a mixture of sail and steam – the majority of them made in the period up to the end of the first decade of the twentieth century.

The water supply problem was also experienced in the French Navy. In the early nineteenth century, water was kept in barrels which were supplied by rainwater. By the middle of the century, there had been a progressive development of distillation devices which produced drinking water from seawater. However, the distillation processes were criticized by doctors in the light of research into a number of problems with the health of sailors, who suffered from various kinds of fever and diarrhea as a result of drinking impure water. By the start of the twentieth century, distillation had become more reliable in the navies of the world, while at the same time new hygienic practices were introduced, such as baths with hot water and soap, a weekly change of bedclothes and the washing of hands before meals, although drinking water continued to be rationed on board (Gay, 1993).

Despite the transformation that took place with the change exclusively to steam, the problems resulting from the shortage of drinking water persisted; crews were very sensitive to this situation, as commander Miranda Correa (25 jun. 1910, f.3) tells us in his report of the voyage of the *Bahia* from Newcastle to Rio de Janeiro in April and May 1910: "The machinery and all the equipment functioned properly, except for the vaporizers, which never gave enough water for the boilers and all the other uses on board, so that orders had to be given for the strict supervision of the distribution of the ship's water, even refusing water for the stokers to wash in, despite the justified complaints that were received on various occasions."

Similar disturbances also occurred on board the battleship *Minas Gerais*, during the Voyage from Newcastle to Rio de Janeiro, between February 4 and April 17, 1910. Even

though lack of water was not recorded, under-manning and a lack of coal were constant problems, as well as dissatisfaction among the sailors expressed by protests and desertions. The report from the commander of the ship, captain Batista das Neves, reveals a number of interesting facts about working relationships on board and his personal view of Brazilian and foreign workers. During a stay in the port of Hampton Roads, in the American state of South Virginia, in March 1910, he reported the occurrence of a strike among machine operators recruited in England, as well as the desertion of 17 men. In addition, he criticized the slowness of the bunkering of coal because of the “poor quality” of black American labor. In his words (Batista das Neves, 2 maio 1910): “Despite great activity by the management of the arsenal, bringing the coal barges alongside the following day, it was only three days later that it was possible to start loading, owing to the difficulty in obtaining port labor for this purpose and it being impossible to employ the understrength and exhausted crew for the task. The work was performed very sluggishly, ‘because the people employed in it were all black, with the indolence and other characteristics of their race.’” (our emphasis).

Racial prejudice is the central explanation for the poor services carried out by the Americans. It is interesting to note that this prejudiced view of the workers in American ports is not repeated, in the same document, when the commander refers to his own crew. He mentions that the personnel on board the *Minas Gerais* were “understrength and exhausted” and, in other passages, he praises the crew and his subordinate officers, who “behaved well on board and left a good impression in the ports en route” (Batista das Neves, 2 maio 1910).

However, although he mentions the state of exhaustion of the crew, captain Batista das Neves did not forget to order a novelty in terms of physical activity, ‘Swedish gymnastics,’ introduced a short time before on that type of warship. He explains the practice thus: “Swedish gymnastic exercises were done in the morning, following the crew’s bath time, and lasted a quarter of an hour, and again at sunset for one hour. During this second period the exercises were accompanied by music, as they do in the English Navy, whose rules were fully observed on board this ship” (Batista das Neves, 2 maio 1910).

The Swedish gymnastics were met with resistance from the sailors. In November 1910, captain Batista das Neves was killed in a confrontation with the sailors who rebelled on board the *Minas Gerais*, in the context of the “Revolt of the whip”. It is reported that, in the heat of the moment, some sailors used the captain’s body to simulate gymnastic exercises similar to those they had been unwillingly forced to perform, shouting “down with the whip,” “long live freedom” and “down with gymnastics” (Martins, 1988, p.31-34). The report from Batista das Neves himself explains the repugnance which the activity aroused among the sailors: “Direction of the Swedish gymnastic exercises was entrusted to the officer in charge of the detachment, Captain-Lieutenant Amphilóquio Reis. This brilliant officer, whose love and devotion to the Navy are unsurpassable, had the ability to overcome the resistance arising from the natural reserve of our sailors, who very often could not even perform without embarrassment a simple salute for fear of ridicule” (Batista das Neves, 2 maio 1910).

Eating and drinking in the Navy: measures by the officers to ration the sailors

Eating habits were also transformed in the quest to modernize the Navy. In 1890, Decree no. 181 of January 24 established a new regime for eating habits, which made different provisions for the times when the ship was docked in port and when it was on the high seas, and was based on three meals per day: breakfast, dinner and supper. An extra coffee could be served in cases of rain, cold or heavy work. Table 1 shows a breakdown of the food and rations supplied when the ship was in port.

With different requirements, a similar table was produced for crew rations on vessels at sea (Table 2).

Table 1: Rations in port

| Type of food | Amount per day per sailor | Number of times per week |
|----------------------|---------------------------|--------------------------|
| Butter | 15g | 7 |
| Coffee | 30g | 1 |
| Manioc flour | 0,30L | 6 |
| Black beans | 0,10L | 5 |
| Olive oil | 0,02L | 1 |
| Bacon | 40g | 6 |
| Vegetables and fruit | 60g | 7 |
| Cod or fish | 200g | 1 |
| Bread | 450g | 7 |
| Potatoes | 120g | 3 |
| Rice | 50g | 2 |
| Salt | 0,01 | 6 |
| Sugar | 90g | 7 |
| Fresh meat | 600g | 6 |
| Wine | 0,15L | 7 |
| Vinegar | 0,010L | 6 |

Source: Brasil, 1891, p.A-11.

Table 2: Rations at sea

| Type of food | Amount per day per sailor | Number of times per week |
|---------------------------------------|---------------------------|--------------------------|
| Butter | 15g | 3 |
| Biscuits | 300g | 7 |
| Coffee | 60g | 7 |
| Manioc flour | 0,30L | 7 |
| Black beans | 0,10L | 4 |
| Olive oil | 0,04L | 1 |
| Bacon | 40g | 6 |
| Pickled vegetables (pickles) | 14g | 7 |
| Dried vegetables (<i>juliennes</i>) | 30g | 7 |
| Cod | 350g | 1 |
| Dried onion | 1/2 | 6 |
| Potatoes | 120g | 4 |
| Rice | 50g | 3 |
| Salt | 0,01 | 7 |
| Sugar | 130g | 7 |
| Canned meat | 200g | 3 |
| Dried meat | 200g | 3 |
| Wine | 0,15 | 7 |
| Vinegar | 0,01 | 6 |

Source: Brasil, 1891, p.A-12.

In the table for food at sea, some kinds of port food were maintained – such as rice, potatoes, flour, beans, salt and butter – while the quantities of others were increased – such as cod, sugar and coffee. Other types of food were in turn introduced as a substitute

for fresh products, with a view to a balanced diet: biscuits, onions, pickles, dried vegetables, canned or dried meat. The main concern of the new regime was to prevent the outbreak of certain diseases, among them scurvy, caused by vitamin C deficiency, which was discovered at the beginning of the nineteenth century.⁴ So it was also provided that the crew should be served acid fruit juice with sugar. However, it will be noted that the main ingredient of on-board diet, whether in port or at sea, was protein, as in meat, or carbohydrates, as in bread, biscuits, rice, potatoes and sugar.

This dietary regime would be questioned a few years later. Following the example of countries considered to be the 'most advanced' – France, England, Germany, Austria and the United States – a commission composed of doctors and officers drew up advisory report 137 of February 3, 1903, which proposed establishing new rations for the Brazilian Navy (Brasil, 1904, p.A2-1). Until then, breakfast had been served at 9:30 a.m., dinner at midday and supper at 6 p.m. (a coffee ration was handed out at wake-up time), and the first two meals were based on meat and supper on bread and coffee; now the commission recommended changes in the times of meals and the food served. It was suggested that breakfast should be served at 8 a.m., dinner at midday and supper at 5:30 p.m. in winter, or at 6 p.m., at other times of the year. As for the food at each meal, it was suggested that the first should consist of bread, butter and coffee, while the other two meals should be based on meat and vegetables. The changes were also justified, according to the reports of ministers, as recorded by Júlio César de Noronha (Brasil, 1904, p.A2-5), by the fact that there was an on-board supply problem, seeing that fresh meat could hardly arrive before 7:30 a.m. In addition, the new intervals between meals allowed an old practice of the Navy, which had fallen into disuse, to be revived: sea bathing or swimming in salt water, as the report of the commission reveals:

As supper is a long time after dinner, there could be a re-establishment, before the last meal, of the old practice of sea bathing, a custom of the navy in other times, which always had a beneficial effect for the health of the crews and which has been completely forgotten in recent times. Bathing in salt water, before supper, is recommended by naval health specialists and is practiced by various ships, particularly during the warm seasons. Such ablutions have a valuable function in fighting infectious illnesses, tone up the system, keep the skin healthy and restrict the opportunities for microbes to develop. (Brasil, 1904, p.A2-5).

The practice of sea bathing was also encouraged by the health thinking of the time. In Rio de Janeiro, for example, the habit developed of going to the beach to swim in the salt water, as we see from articles in the press. A period was beginning in which people started to think about a new relationship with the body and to value the playing of sports as something which was beneficial to health, along with other beliefs and superstitions. The advertisements of the time offered the readers of illustrated magazines miraculous tonics and medicines, while doctors attested to the beneficial qualities of salt water and mountain air for the human organism (Sevcenko, 2002). The reports of the Brazilian Navy ministers tended to follow the trends of the time.

The quality of the food was also questioned and a direct relationship was established between the products served and the physical condition of the sailors, returning here to

arguments typical of racially determinist thought, according to which the improvement of the race was directly linked to progress (Strauss, 1987; Arendt, 1982). The commission criticizes the replacement of wholemeal bread by white bread, using arguments that were in vogue in France at the time, where there was a belief in the decadence of the 'French race' and in the need for regeneration, one of the forces behind the popular cohesion at the beginning of the First World War (Le Naour, 2002). In an appendix to the report of 1903, the commission recorded: "A large number of well known health specialists have protested against these demands of the palate which have proved harmful to human nutrition, many believe that the physical decadence of the French race is due principally to the abuse of diet through bread made with white flour or without bran and by the abuse of absinthe" (Brasil, 1904, p.A2-6).

The observations of the commission took notice of the eating habits and practices of other countries which were considered as examples to be followed. However, national and local realities were not ignored. As indicated in the report (Brasil, 1904, p.A2-7), coffee, used in "almost all navies," was seen as particularly important in Brazil: "[Coffee] represents an indispensable drink for our sailors; it awakens the organic energy drugged by the high temperatures of a tropical climate, satisfies the palate and is a habit with almost the entire Brazilian population."

We cannot overlook the fact that coffee was, at the time, the main product among Brazilian exports (Bueno, 2003). The commission suggested an increase in the coffee ration, which not only accorded with the traditions of the Brazilian people, but also met the economic expectations of the major producers. As had also been happening in the United States, coffee was seen as an alternative to alcoholic drinks, especially because the wine served was of very poor quality and mixed with Brazilian 'cachaça' (sugarcane rum) which, despite being a national product, was not viewed favorably by the commission (Brasil, 1904, p.A2-13-19). According to the report, the wines served on board ship were "acid decoctions, the most extravagant mixtures of drugs, very often toxic, which upset gastro-intestinal functions and contained added quantities of impure alcohol" (Brasil, 1904, p.A2-13).

The commission also proposed to increase the sugar ration to 180g per sailor per day, and the beef ration to 700g per person per day, both being important national products (Brasil, 1904, p.A2-8). As for manioc flour and black beans, the commission noted that, even though it might be interesting to alternate them with other kinds of flour and with lentils, peas or broad beans, for example, the presence of these two products was inevitable, given the habits and tastes of the sailors:

This flour is not used in other navies, it is our own indigenous food; however, despite its lack of nutritional value, it is impossible to deprive our sailors of its use, such is the force of habit. The sailor cannot go without it, he uses it as a mush, or mixes it with his cooked black beans or his meat in gravy. And as it is not possible to stop the use of manioc flour in on-board rations, the commission proposes that it should be alternated with corn flour, which is much more substantial (Brasil, 1904, p.A2-9).

The proposed rations should therefore meet a combination of three main requirements: the observations of the health specialists of the time, who generally drew on the experiences

of countries considered to be 'advanced'; the ease of access to a particular product in Brazil; and the habits and prejudices of Brazilian sailors. In these circumstances, the commission advised in its report that during voyages, dried meat should be replaced by jerked beef, which was produced in the south of Brazil, whilst cod, served on Fridays, could be exchanged for canned sardines, as in the French navy. However, the same group of officers was skeptical as to the use of canned food on board, because it would meet resistance from the sailors, as the report spelled out: "The commission recognizes that it would be very difficult to deprive our sailors of dried meat during a voyage, to which they have been accustomed since they were children; however, a compromise could be adopted; canned meats could be served on alternate days with dried meat" (Brasil, 1904, p.A2-15). Even more drastic was the resistance to pickled vegetables, which should be excluded from sea rations, because: "Our crews generally refuse English pickled vegetables... almost the whole ration is despised and thrown into the sea" (Brasil, 1904, p.A2-16).

However, despite the existence of these food tables, we cannot say with certainty that the rations actually served corresponded with the prescribed amounts. We know that quantities and varieties could be changed by the officers and doctors in charge of a ship. Apart from this, the continuance of certain diseases related to poor diet, such as beriberi, leads us to believe that sailors' food could still sometimes be insufficient.

Suffering bodies: the health of Brazilian sailors

The Navy ministers, in addition to their efforts to improve the diet of sailors, also showed their concern with certain diseases common amongst crews, among them tuberculosis and beriberi. In 1892, the minister Custódio de Mello recorded in his report only 22 cases of yellow fever⁵, whose causes and prevention were still not understood in Brazil in the 1890s, against 346 cases of beriberi (Brasil, 1893, p.96).

Beriberi is characterized by a deficiency of vitamin B1 (thiamin). The name of the disease originates in the word for tired (*biri* in the language of Sri Lanka), and its main symptoms are motor problems in the nervous system; the disease can cause muscular paralysis (dry beriberi) or heart failure (wet beriberi) (Meade, 2003). Various cases had been diagnosed in Navies throughout the world, particularly in Asian countries, by the beginning of the twentieth century. It was noted that it occurred with more frequency among populations accustomed to a diet based on white rice without the husk, while in communities used to eating brown rice the risk was lower.

However, at the end of the nineteenth and the beginning of the twentieth century, the causes of the disease were still not known, even because little or no reliance was placed on the benefits of a balanced diet. Thus, in the report of the commission which proposed a review of the rations for naval crews in 1903, there was advice to consume more vegetables and there was criticism of a diet based exclusively on rice (Brasil, 1904, p.A2-9-10), but conditions of hygiene and conservation were still identified as the principal causes of disease. In 1897, the number of victims of beriberi reached a figure of 586, representing a mortality rate of 22% (Brasil, 1898, p.61). The minister Manoel José Alves Barbosa wrote in a report in 1897 (Brasil, 1898, p.60):

Beriberi has taken such a firm hold on the health of Navy personnel, that I believe it to be of the greatest urgency and worthy of the closest attention by the government to take steps to alleviate this evil. The statistics show that, in addition to the influence of other unhealthy conditions, the spread of this arbitrary disease is more easily attained in ships whose internal construction affords incomplete ventilation and where the sunlight cannot freely enter... It is necessary to have recourse to precautionary measures, such as: a periodic change of personnel, scrupulous cleanliness, good nutrition and an appropriate regime of physical exercise and agreeable diversions.

Some years earlier, a notice published on February 22, 1890, authorized the opening of an infirmary in the Copacabana hospital dedicated exclusively to the treatment of beriberi. A few years afterwards, conditions in the hospital had been criticized, because it was a long way from the sea bathing facilities, perched on a hill, in a hot and humid location isolated from the sun's rays, bringing together, according to the thinking of the time, "all the conditions which favored the development of beriberi" (Brasil, 1899, p.52). All Navy ranks, including officers, were treated in the health centers or hospitals of the Navy (infirmary, Central Hospital, Copacabana Hospital, the Our Lady of Health Hospital). Officers and other ranks, however, were treated in different areas. A report from the Navy minister in 1893 noted that the facilities in the Copacabana Hospital, where cases of beriberi were treated, were not sufficient, because there was no separation between the rooms for the treatment of officers and other ranks (Brasil, 1894, p.68).

In 1898, the report from the Navy minister contained figures for deaths in the Copacabana Hospital during the preceding three years. The numbers are not negligible: in 1896, there were 101 deaths (26.98%), in 1897, 133 (22.6%) and in 1898, 103 (20%). Between 1890 and 1898, 468 persons died in the hospital from beriberi, an average of 54 deaths per year (Brasil, 1899, p.52).

In 1904, the doctor and anthropologist Nina Rodrigues made a study of the conditions which had led to an 'epidemic of beriberi' in the São João de Deus asylum for mental patients in Salvador. In this study, he established a relationship between hygienic and dietary conditions at the hospital and the development of the disease. He criticized the theories that held that beriberi originated in micro-organisms, when noticing an increase in the number of cases during periods when the asylum had too many patients or was short of materials. He showed also that the disease was only found in patients, there being no cases of the contamination of nurses, employees or residents of the surrounding area.

Other cases of a 'beriberi epidemic' had been verified in other institutions of the same type (prisons, hospices, hospitals, army barracks, warships), which indicated that the cause of the disease must be connected either with dietary deficiencies or with hygienic conditions in these institutions (Jacobina, Carvalho, 2001; Meade, 2003). According to the ideas of the time, hygienic conditions meant the proper circulation of air and of water.

Additionally, the disease was also common in alcoholics and, in Brazil at the end of the nineteenth century, it came to be viewed as endemic in Minas Gerais, São Paulo and Bahia, being also noted in the slave population (Meade, 2003). However, the true causes of beriberi were only discovered following the publication in 1907 of a study of a hospice in

Kuala Lumpur which clarified the relationship between the disease and poor diet. It was only in 1933 that the existence of vitamin B1 was discovered (Jacobina, Carvalho, 2001; Meade, 2003).

With regard to the incidence of beriberi among the ranks of the Navy, the minister J. Pinto da Luz, in his report of 1901, commented not only on hygienic conditions in the barracks and ships of the Navy, but also in other places frequented by the sailors:

The rapid progress in the art of war has obliged us to sacrifice conditions of hygiene in modern ships to the need to ensure the best conditions of combat... Apart from light and air, which in many ships are not supplied in any great quantity, there is also the unhealthiness which comes from heat, humidity and the crowding together of personnel. The ailments with which our sailors are inflicted are various, chief among which are tuberculosis and beriberi, the former being more damaging than the latter. Among preventative measures it was necessary to forbid the sailors to stay on land overnight, because their preferred choice of places to sleep are the places reputed to be the most unhealthy in the whole capital (Brasil, 1902, p.82-83).

In the same year, a record was made of the causes of death of Navy personnel: 17 from tuberculosis, four from beriberi, two from arteriosclerosis, five from cirrhosis of the liver, one from stomach cancer, one from diabetes, two from pernicious fever, two from typhoid fever, one from cerebral hemorrhage, one from cardiac hypertrophy, two from mitral insufficiency, two from aortic insufficiency, one of malaria and three of nephritis, making a total of 44 deaths recorded (Brasil, 1902, p.85).

A few years later, in a report of 1905, the minister Júlio César de Noronha spoke in very different terms from his predecessor about the Copacabana Hospital. From being hazardous, badly located and badly equipped, the Hospital was now considered suitable, "meeting the purposes for which it was established" (Brasil, 1906, p.179). The mortality rate was 1% (five persons had died of beriberi, three of whom had been in a serious condition on admission to hospital) (p.179). Shortly afterwards, under decree no. 5882 of February 6, 1906, the infirmary lost its exclusive status for beriberi patients and became a branch of the Central Hospital, where the extra patients from the Navy were transferred (Brasil, 1908, p.56).

Illnesses of sailors in 1909

One year before the introduction of modern warships and the mutiny of the sailors, a statistical table classifying diseases, attached to the report of minister Alexandrino Faria de Alencar of 1909, listed all hospital admissions among the Brazilian Marine Corps during that year. A part of this table is set out below.

The first observation to be made on the figures in Table 3 concerns the large number of diseases treated in one Navy hospital in 1909: 12,145 cases, involving 54 different pathologies. These figures become even more significant if they are compared with the full complement of the Navy and the average age of the majority of the sailors: the Brazilian Marine Corps comprised 4,097 individuals in 1909, and data for 1908 shows that the majority of sailors were young, aged between 17 and 22 (Almeida, 2009). However, minister Alexandrino de

**Table 3: List of the principal illnesses treated in 1909
(Brazilian Marine Corps)**

| Illness order | Total number of patients in descending |
|--------------------------------|---|
| Wounds | 1.537 |
| Rheumatism | 1.181 |
| Bronchitis | 1.024 |
| Injuries | 809 |
| Venereal ulcers | 779 |
| Scabies | 763 |
| Blennorrhagia | 666 |
| Transpiration suppression | 627 |
| Influenza | 434 |
| Fistula | 427 |
| Inguinal adenitis | 394 |
| Angina | 317 |
| Gastric fever | 308 |
| Eczema | 277 |
| Ganglia | 251 |
| Facial neuralgia | 206 |
| Lumbago | 185 |
| Ulcers | 180 |
| Beriberi | 152 |
| Erysipelas | 145 |
| Orchiepididymitis | 144 |
| Syphilitic eruptions | 143 |
| Malaria | 140 |
| Otitis | 122 |
| Anemia | 108 |
| Traumatism | 94 |
| Syphilis | 89 |
| Lymphatitis | 83 |
| Orchitis | 83 |
| Hepatitis | 63 |
| Jaundice | 60 |
| Otorrhea | 42 |
| Conjunctivitis | 39 |
| Laryngitis | 37 |
| Pneumonia | 33 |
| Scrofula | 33 |
| Fractures | 26 |
| Strictures | 26 |
| Chicken pox | 20 |
| Epilepsy | 18 |
| Rectitis | 15 |
| Condyloma | 12 |
| Asthmatic bronchitis | 11 |
| Boils | 10 |
| Intestinal flux | 9 |
| Balanitis | 7 |
| Hemorrhoids | 6 |
| Hernias | 3 |
| Ozaena | 2 |
| Tuberculosis | 2 |
| Dislocations | 2 |
| Arteriosclerosis | 1 |
| Varicocele | 0 |
| Total diseases recorded | 12.145 |

Source: adapted from Brasil, 1910a, p.A-298-300.

Alencar notes in his report that “their state of health was highly satisfactory. Only 20 cases of chicken pox were recorded” (Brasil, 1910a, p.A-300).

Many of the diseases of Brazilian sailors in 1909 were common in European navies in previous periods. Even though scurvy, one of the main diseases of crews in the seventeenth and eighteenth centuries, and other vitamin deficiency conditions such as hemeralopia, characterized by a significant loss of vision caused by the lack of vitamin A, were not listed in the report of 1909, other ailments such as malaria, rheumatism, lung diseases (for example, bronchitis), scabies, syphilis and blennorrhagia – diseases which figured among the most common pathologies in warships of the European *Ancien Regime* – still affected Brazilian sailors at the beginning of the twentieth century, as can be seen in Table 3. The causes of these diseases were frequently the lack of hygiene and of safe drinking water, as well as dietary deficiencies, the humidity on board ships and sexual practices during visits to ports. Under the *Ancien Regime*, the spread of fleas and lice was common (especially during the cold seasons), and thus typhus and bubonic plague, illnesses caused by these factors. Visits to ports were in part responsible for venereal diseases, and assisted the transmission of new pathologies between different countries and continents (Romieux, 1996).

If in the first decades of the twentieth century, cases of beriberi seem less common than during the 1890s, they were however still present: 152 cases and 11 deaths were recorded in the Brazilian Marine Corps in Rio de Janeiro in 1909 (Brasil, 1910a, p.A-298). In his report of 1908, minister Alexandrino de Alencar also recorded that the most common diseases in the Copacabana infirmary were beriberi – responsible for 43% of admissions – and tuberculosis, which represented 8.3% of admissions during the year (Brasil, 1909, p.91). Malnutrition can also be noted in 108 cases of anemia recorded in 1909 (Brasil, 1910a, p.298). According to the records for 1909, among the infectious diseases known at the time, malaria claimed 140 victims⁶, while tuberculosis affected two people. Nevertheless, we should treat these figures with caution, because some pathologies could be diagnosed as something else, such as scrofula (33 cases), an infection of the superficial lymphatic ganglia, especially in the neck, generally associated with tuberculosis (French, 2003, p.292-294).

In fact, by the end of the twentieth century, cases of tuberculosis had fallen in the developed countries, following better living and working conditions in the great cities. However, the disease was not eradicated and various cases were overlooked owing to incorrect diagnoses (Johnson, Kiple, 2003).

Other infectious diseases and pathological symptoms, such as bronchitis, flu, angina, some cases of gastritis, and cases of ganglia, otitis, pneumonia and conjunctivitis, amount together to about three thousand cases recorded in Navy hospitals. Altogether such cases number 5,726, or 47.15% of the total (Brasil, 1910a).

Two other elements deserve to be considered, even though they are not often present in the reports of ministers: the significant number of wounds and other injuries and the different and numerous cases of venereal disease, included in the cases of infection referred to earlier. There was a total of 2,653 cases of wounds, injuries, fractures, contusions, dislocations and traumatism, corresponding to 21.84% or almost a quarter of hospital admissions (Brasil, 1910a). Even though the data does not allow us to be certain, these occurrences could be linked to accidents at work, fights, assaults and corporal punishment,

as noted in the French Navy under the *Ancien Regime*. By way of comparison, in this other world, there was evidence that not only fights and brawls but also the “brutality of the punishments” could give rise to wounds, hematomas, broken teeth, sometimes localized fractures or dislocations and multiple traumatisms (Romieux, 1993, p.30-31).

As for the diseases transmissible through sexual relations, we can include venereal ulcers, scabies (transmitted by humans in certain cases), blennorrhagia, inguinal adenitis, syphilis and orchitis, among others, which totaled 1,711 admissions, or 29.88% of diseases recorded in 1909 (Brasil, 1910a). These high numbers draw our attention to another important aspect in the lives of Brazilian sailors, which deserves further study: sexuality. The vast bulk of them being single men – 97.5% of 1,908, according to the figures from the Office for Naval Personnel, analyzed by Almeida (2009) – Brazilian sailors lived their sexuality on board ship, but even more in the ports and cities where they stayed for some time. There is a great deal of evidence regarding the presence of prostitutes and some records of homosexual relationships (pederasty or sodomy, in the terminology of the time), which were prohibited under military law.⁷ Some contemporary accounts and more recent studies talk of protective relationships between more experienced sailors and younger men, but it cannot be claimed that sexual relationships between sailors were predominant. Above all, it was in the twentieth century, in particular, that an important international myth grew up relating to sailors and homosexual conduct (Almeida, 2009; Tamagne, 2001; Revenin, 2005).

Final considerations

The modernization of the Brazilian Navy, with all its contradictions and limitations, also involved new ways of thinking about health, diet and daily relationships. The arrival of new equipment and technical innovations required changes in working habits. Additionally, the results of medical progress and these new ways of thinking at the end of the nineteenth and the beginning of the twentieth centuries combined to bring about new methods of treatment and patterns of diet. However, it should not be thought that these new procedures took effect immediately. There were differences, doubts and limits to action.

The idea of ‘progress’ was linked to a search for the ‘regeneration of the race.’ Although it was not stated in so many words by officers in the Navy, it was clear to them that there was a relationship between disease, bad behavior and even resistance to innovation and the notion of the ‘decadence of the race’ in Brazilian sailors. The legacy left by slavery on Brazilian society, combined with racial ways of thinking which gained ground and modified even the conclusions of science (Schwarcz, 2005, 1996), left their mark on the ways of thinking about Brazilian sailors at the beginning of the republican period.

NOTES

¹ Expression used in this context to designate cheap wine. In this and other quotations of texts in other languages, a free translation has been provided.

² Corporal punishments were common and included beatings with the cane, often more than 100 strokes, carried out in front of the whole crew, with the intention of creating a form of punishment to serve as an example (Nascimento, 2001). On the eve of the mutiny by the sailors, the midshipman Marcelino Rodrigues was given more than 250 strokes in front of his colleagues, one of the incidents which led to the outbreak of the revolt (Almeida, 2009).

³ A critical analysis of this approach appears in Almeida, 2010; Simet, 2011.

⁴ Scurvy was known as the plague of the sea, even though it can also occur on land. In the *Dictionnaire d'histoire maritime* (Verge-Franceschi, 2002, p.1314-1315), we read that this shortage of vitamin C "is due to the lack of fresh food, particularly fruit and vegetables. The first signs of scurvy appear in sailors after 68 days of sailing without putting into port for supplies. The disease is characterized initially by loss of weight and weakness, followed by an inflammation of the gums, which start to bleed, leading to loss of teeth. 'The sailor's world is very often a toothless world' (J. Meyer). Then painful lesions appear in the skin and muscle tissue, particularly in the lower limbs. The skin turns black, leading to necrosis. Finally, more general symptoms (breathing difficulties and bleeding from the nose and mouth) lead to death. For a long time, the seafaring world remained ignorant of the causes of scurvy ... If fresh fruit seemed to be a rapid cure for the disease, which explains its voracious consumption during calls at ports ..., it was necessary to wait for Nelson for lemon juice to be recognized as a genuine remedy for scurvy. The Royal Navy made regular consumption compulsory from 1795, and the American Navy followed in 1812 ... [In France], lemonade was included in navy rations in 1860, but only on medical prescription. It was only finally adopted on December 16, 1874.

⁵ For yellow fever in Brazil, see Benchimol, 1994; for the history of the disease, see also Delaporte, 1989.

⁶ In the case of yellow fever, a campaign to eradicate the disease through action against places where the mosquitos reproduced in big cities and the isolation of people with the disease was undertaken by Oswaldo Cruz from 1903, in the context of the policies for the re-planning of the city of Rio de Janeiro. Yellow fever disappeared from the city for a time, but new epidemics broke out at the end of the 1920s (Benchimol, 1990). Isolated cases were diagnosed among sailors in 1908 and 1909, and some cases of gastric or gastro-intestinal fever could also have masked the disease. The latter terms may have been used as a euphemism in order to cover up cases of yellow fever which might harm the image of a city or region attacked by the disease (Figueiredo, 1996).

⁷ See Almeida, 2009; on the Brazilian army, see Beattie, 2004, 2001.

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