

Jacques Cartier witnesses a treatment for scurvy

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Summary

In 1535, when Jacques Cartier landed in Canada for the second time, he sailed up the Saint-Lawrence, and spent the winter at Stadacone. His ships were frozen in the ice for five months. A strange disease attacked the indigenous population, and then the French sailors. In a two month period, almost all Cartier's men became sick. Facing such a tragic situation, the explorer carried out an examination on a dead sailor and described what would later be called scurvy.

The Indians were able to extract a medicine from a tree called Anneda. This medicine worked quickly and allowed the sailors to leave Canada in May. However, 25 of the 112 sailors had died during that icy winter.

Résumé

Lorsque, en 1535, Jacques Cartier aborde le Canada pour la deuxième fois, il navigue sur le Saint-Laurent et passe un hiver glacial à Stadaconé. Ses bateaux sont emprisonnés dans la glace pendant cinq longs mois. Une maladie, inconnue du capitaine malouin et de ses matelots, apparaît chez les Indiens, puis, rapidement chez les Français. En deux mois, presque tout l'équipage est atteint. Devant la gravité de la situation, Cartier procède à la dissection d'un marin décédé et fournit la première description de la maladie qui prendra, plus tard, le nom de scorbut.

Mais, les Indiens découvrent qu'une décoction d'un certain arbre, l'Anneda, peut soulager les malades. L'effet est rapide : les marins survivants peuvent quitter le Canada au mois de mai. 25 des 112 matelots ont néanmoins péri pendant cet hiver.

As the European maritime exploration of the world began at the very end of the 15th century, a surprising new disease put all the boat crews at risk. This disease was unknown, even to hardened sailors.

Christopher Columbus did not encounter the disease because he only sailed for a maximum of 35 days at a stretch. Vasco da Gama, in 1498, on his way back from India, was the first sailor to record this hitherto unknown disease and to observe the effectiveness of oranges. Twenty years later, after they entered the Pacific Ocean, the

sailors led by Magellan also encountered scurvy. No treatment could be found for the disease.

Jacques Cartier left Saint-Malo in 1535 to cross the Atlantic Ocean for the second time. While spending the winter ashore, when his ships were trapped in the ice, he encountered the disease, which, surprisingly seems to have also affected the indigenous population. The third recorded outbreak of scurvy therefore took place on land.

Although the locals demonstrated a cure for scurvy - from the leaves and buds of a certain tree - and passed it on to Cartier, the disease would continue to kill sailors for the next two centuries.

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- **1. Jacques Cartier**
Lithograph by Devignon : Jacques Cartier (1491-1557) decouvre le Canada en mai 1534
(© Musee de la Marine, Paris, France)

the object of his exploration, a western passage to the Orient. So, Cartier planned to go further up the river that flows from the Gulf of Saint-Lawrence. The voyage was due to last 15 months.

The two Indians who had been captured during the first trip, were now speaking French and could act as interpreters during this second trip.

Three ships had been fitted out. By order of the King, a crew had been recruited from among the sailors of Saint-Malo. Local shipowners were hostile to the project, because they had to sacrifice their men during a time in which lives were being lost in a plague epidemic. However, on May 19th 1535, Cartier set sail from Saint-Malo with 112 men. Because of the terrible weather, the crossing of the Atlantic was very difficult. The three ships were dispersed, and 50 long days after putting to sea, the first vessel dropped anchor off the shores of Newfoundland. On July the 26th, the convoy was reunited on the mainland where the sailors stocked up with fresh food. Cartier wanted to go further than he did during his first trip. He sailed up into the Saint-Lawrence, with the help of the two Indians and, at the beginning of September, stopped at Stadacone (which would later be called Quebec city).

The two Indians who were accompanying Cartier came from Stadacone and, upon arrival, they were released. A meeting was organized with the chief Donnacona and many local tribesmen. Wholly dependant upon the intercessions of the interpreters, the initial relationship with the Indians seemed good. The Indians shared their knowledge of their country, which allowed Cartier to learn about Hochelaga (which would become Montreal), the city on the way to the Orient.

However, the locals became upset when they realised that the French navigator planned to go on to Hochelaga. They tried to dissuade him from sailing further by means of a symbolic gift and a macabre play. Indeed, the Indians offered a young girl and two young boys with this justifica-

The adventure of Jacques Cartier merits attention for several reasons :

- the published account provided a detailed description of the circumstances surrounding the disease
- Cartier drew a detailed clinical description when carrying out an examination on a dead sailor
- the Hurons, the Indians whom the sailors met, were able to demonstrate a cure for the disease.

The identity of the author of the published account of Cartier's trip remains an enigma. The story of the expedition was published 10 years after the journey. On the admission of the publishers, it was a brief, sensational account. The accuracy of the text remains uncertain, an important point when considering the surprising appearance of scurvy in the local population. This account is the only available document. Unfortunately, no Indian account is available as this population communicated only orally.

Back to the new found land

Jacques Cartier spent nine months in Saint-Malo (Brittany) after he came back from his first trip to the new found land. He had been told by the Indians about a land beyond Canada, the kingdom of the Saguenay, which might prove to be

2. Cartier second trip

Modified from "Dominion of Canada" in the Comparative Atlas of Physical and Political Geography, founded by the late J. G. Bartholomew. London, Meiklejohn & Son. 1922 (Michigan State University Libraries).
Stadacone : Quebec city. Hochelaga : Montreal

tion : "we give them to you with the intention of stopping you from going to Hochelaga". Then, in order to scare the "invaders", the Indians told them that their god had prophesied that "there will be so much ice and snow that they will all die". The French paid no heed to the Indian warning. That winter, the prophecy proved true; the French experienced freezing cold and suffered a "new" disease.

Cartier had therefore to continue without the help of the Indians. Because upstream the river became very narrow, he left most of his crew in Stadacone and went on to Hochelaga in a boat with a small group of his men. On October the 2nd he arrived there, and received a warm welcome from the locals.

Cartier's hosts spoke to him of the riches of the west, and again of the kingdom of the Saguenay. He was well nourished during his stay and, after a while, returned to Stadacone in good health.

Cartier was back in Stadacone on October the 11th. During his absence, his men had surprisingly built a fort. They told him they had done so, because their relationship with the locals had deteriorated. Cartier however had many opportunities to meet Donnacona and his people. As winter began, he discovered that the Hurons had stored a lot of food and were ready to face the cold season. But it seems that they refused to provide food for the French who would therefore have to survive on their own.

Without adequate supplies for the winter, Cartier decided to make overtures to the Indians. A peace was agreed, and the Indians provided the sailors with fresh food, including meat and fish.

Imprisoned in the ice

An icy winter began when Cartier came back from Hochelaga. The temperature was so cold that, from mid-November until mid-April, the ships were frozen in the ice. In December - the



winter had begun only two months before - the Indians claimed to be affected by a new disease; they admitted to having lost 50 men.

No more information was given to the French captain, who, fearing an infectious disease, decided to quarantine the ships. However, although the boats had been isolated, the disease, unknown to the crew, started to affect the men :
"But, notwithstanding these defences, the disease begun inside our group, in an unknown manner, as some of us were getting weak, their legs were becoming big and swollen, the nerves as black as coal. The sailors were dotted with drops of blood, and then the disease went to their hips, thighs, shoulders, arms and neck. Their mouths were so infected and rotten that all the flesh fell to the level of the roots of the teeth which had fallen out."

In a two-month period, almost all of the sailors had become sick. In February, only 10 men, out of 112, looked healthy, among them Jacques Cartier. Eight died, 50 others knew that they were destined to die.

Facing such a tragic situation, Cartier decided to carry out an examination on a dead sailor. The body was dissected and the captain reported:

- the heart all white and shrivelled
- the lung all blackened and mortified
- the spleen eaten away, about two fingers, as if it had been rubbed against a rough stone

- the legs swollen and dotted with drops of blood
- the mouth infected and rotten with a receding of gums.

The examination, however, didn't provide any lead for a treatment, and the disease was spreading. By mid-February, 25 sailors had died from the disease, 40 were going to die; three men only were spared, including Jacques Cartier. Because he was afraid that the Indians would take advantage of the sailors' weakness, Cartier decided to hide the disease from the Hurons. He therefore resorted to a stratagem; the men would make noise in the ship when the Indians would be nearby:

"The sick were given an order to knock and to make a noise with sticks and stones, pretending to caulk."

The crew would suffer from scurvy for another two months and wait until April for the disease to be cured. Indeed, Cartier, hoping for a miracle, met one of Donnacona's sons, who was in good health. The explorer was flabbergasted; 10 days before, he had seen the chief tragically ill "with the same disease as his men; one of his knees was as big as a two-year old child, and all the nerves were out; the teeth were lost and ruined, the gums rotten and foul". Cartier understood that this unexpected encounter was providential :

"But God, in his holy grace, took pity on us and sent the knowledge of medicine for recovery".

The Huron told Cartier that he had cured himself with the juice of the leaf and the bark of a certain tree called Annedda. It was probably the spruce tree; the infusion of the buds and the leaves of this tree would become the "spruce beer" of the Canadians.

The locals showed Cartier how to extract the miraculous medicine from the tree bark and leaves were to be ground and then boiled in water. The water would then be drunk every other day, and the sap would be applied to the swollen legs. Although the preparation was very simple, few men were eager to try the strange medicine.

But, two sailors, courageous enough to drink the mixture, immediately got better. The efficacy of the medicine was dramatic, quick, "almost miraculous". If Jacques Cartier had discovered the way to Saguenay, he would not have been happier. He considered the cure as a miracle and the Indians as unknowing intermediaries of God. The author claimed that the treatment cured all the sailors.

"From all the diseases they had been suffering, they recovered health ; isn't it marvelous to see a sailor who had been suffering from the pox for five years, immediately cured by this tree?"

All the sailors then rushed for the medicine. The locals must have been most surprised by the reaction of these sailors who claimed to be in excellent shape ! The enthusiasm of the writer is at its height:

"If all the physicians from Louvain and Montpellier had been involved with all the medicines from Alexandria, they would have done no better in a year than this tree in eight days."

The spread of the disease was immediately stopped. The crew, however, was still dramatically weakened and had to prepare the return journey with a reduced number of sailors. Cartier therefore decided to leave a ship at Sainte-Croix and to group the remaining men on the other two boats.

On May the 3rd, Cartier planted a cross on the site where he had just wintered. The same day, he seized about ten Hurons, one of them Donnacona, the only one who would be able to "relate to the King the marvels he had seen in the western lands".

The men who had rapidly recovered their health, were able to set sail on May the 6th. They had been trapped in ice for 5 months. 25 of the 112 sailors died during that winter. On July 16th, 1536, Cartier was again in Saint-Malo.

Conclusion

Although the appearance of scurvy during such an icy and long winter is quite understandable, some features of the disease are surprising :

- the period of time that separated the beginning of the winter and the appearance of scurvy; the French sailors encountered scurvy only two months after they had no access to fresh vegetables, in contrast with the usual 4 months
- the illness of the locals; they had braved icy winters since their birth. Why did they first encounter the disease when the French sailors were present. It is somewhat surprising that the Indians decided to inform the French of the epidemic, and therefore admitted their weakness to their enemy. The evolution of the disease raises the question of the veracity of the Indians' confession: only 2 months later, the locals found a treatment for the new disease
- the appearance of scurvy: dramatic and rapid in both groups. It contrasted with the fact that the French didn't suffer from a lack of fresh food before the winter.

The diagnosis of scurvy seems however certain, and it can be assumed that Cartier had been able to find a medicine, which, alone, would have justified the trip. The information however didn't spread through the sailing community. The French physicians and the other captains did not pay attention to the recommendations of the captain, that sailors should sail with a beverage prepared from the Anneda tree. Scurvy would result in the death of thousands of sailors during a further two centuries. These unfortunate sailors would have to wait until 1753 for James Lind to prove that lemon juice would cure any man with scurvy. And, what is more, the application of this treatment would take yet another 100 years.

Bibliography

- Cartier Jacques. *Voyages de decouverte au Canada, entre les annees 1534 et 1542*. W. Cowan et fils, Quebec, 1843.
- Hoffman BG. *Jacques Cartier and scurvy: victim and victor*. Hoffman La Roche. Montreal, 195-?.

Hue Bernard. *Jacques Cartier*. Armine-Ediculture. Saint-Romain-en-Gal, 1997.

Kendrick J. Spruce beer and the Battle against Scurvy. *Argonauta* 1989 ; VI, 4 : 3-6.

Stephens HB. *Jacques Cartier and his four voyages to Canada, an essay*. W. Dryslale, Montreal 1890.

Notes

Scurvy has many different manifestations, most of them being inconstant:

- extraordinary lassitude of the body;
- pains in joints and bones;swollen legs;
- rottenness of the gums with ulceration, swelling and proliferation of the periodontal mucosa; receding of gums; bad breath. But, of course, old toothless sailors didn't suffer from gingivitis;
- bruising;
- diarrhoea, fever, collapse;
- exhaustion and, finally, death.

It was therefore not always understood that what appeared as many different diseases afflicting the crew of a ship was, in fact, just one disease.

Furthermore, the period of time, usually 4 months, before scurvy developed actually varied because of associated diseases and because of the quality of the food eaten before and during the voyage.

Scurvy was often associated with other vitamin deficiencies. It appeared during the same century as syphilis for which mercury treatment would sometimes lead to mouth lesions which thus mimicked certain symptoms of scurvy.

Ships were damp and soon became filthy because they were hard to clean. There were many rats on board. Men therefore often fell ill.

Biography

Eric Martini qualified as a Medical Doctor. He is currently Director of the publishing house Glyphe & Biotem Editions which specializes in medical publications including the collection "Histoire, medecine et societe" (History, Medicine and Society).

He is a Member of the Societe frangaise d 'histoire de la medecine and of the International Society for the History of Medicine. He has been working on the subject of scurvy for two years and gave an oral presentation at the 37th International Congress on the History of Medicine : "Scurvy, the Sea Plague".