

## ALEXANDRE YERSIN'S EXPLORATIONS (1892-1894) IN FRENCH INDOCHINA BEFORE THE DISCOVERY OF THE PLAGUE BACILLUS

### ISTRAŽIVANJA ALEXANDREA YERSINA (1892.–1894.) U FRANCUSKOJ INDOKINI PRIJE OTKRIĆA BACILA KUGE

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#### SUMMARY

*Alexandre Yersin, the great French discoverer of Yersinia pestis, was a keen explorer of unknown lands. At the age of 30, a member of the French Colonial Health Service, he set off to fulfil his intimate dream and explore other continents. For almost two years and three long expeditions, he journeyed through widely unknown regions in the province of the French Indochina, in Southeast Asia, territories of Vietnam, Cambodia and Laos. This article presents vignettes from his explorations. During his difficult travels, he carefully planned and noted his itineraries; designed new routes, but also observed and recorded sociodemographic and environmental data and unidentified diseases. The immature science of late 19<sup>th</sup> century geography had the strength to allure such an influential medical figure and place him among the early medical geographers. His journeys, observations and recordings brought to Yersin great experience, and he made his most important scientific contributions after he had concluded his explorations.*

**Key words:** Alexandre Yersin; plague; Yersinia pestis; geography; Hong Kong

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Alexandre Yersin (1863-1943) was born in Aubonne, Switzerland, but later took French nationality. During his studies in medicine he discovered the exotoxin produced by the diphtheria bacillus, while working in Paris with Emile Roux (1853-1933). As a member of the French Colonial Health Service he went to Hong Kong in 1894 to investigate the outbreak of bubonic plague. From buboes he managed to isolate a bacillus that caused the disease and that later became known as *Yersinia pestis*, after him. Among his other important contributions, he developed vaccines and antisera for both humans and animals and introduced quinine obtained from the Brazilian rubber tree and the Peruvian cinchona tree. In Vietnam, he established the Pasteur Institute at the coastal village of Nha Trang and spent the rest of his life there [1,2].

Finding the causative agent of plague must rank among medicine's greater discoveries, since *Yersinia pestis* had caused dreadful pandemics [3], which affected many parts of the world through ages, taking lives by thousands and seriously disturbing society and medicine [4-7].

However, it seems that Alexandre Yersin would not have made his incredible contribution if he had not been a keen explorer of unknown lands. Since 1890, he was in French Indochina as a physician for the Messageries Maritimes company on the Saigon-Manila line and later on the Saigon-Haiphong line. At that point, French Indochina was a part of the French colonial empire in the Southeast Asia, formed in 1887 as a federation of three Vietnamese regions: Tonkin (North), Annam (Central), and Cochinchina (South), as well as Cambodia, with Laos being annexed in 1893 [8]. At the age of 30, Yersin sought to discover what he most desired, his independence and his freedom. Without obligations, a lone master of his time, he set off to fulfil his intimate dream: to follow in the steps of David Livingstone (1813-1873) and explore other continents [9].

In this context, the aim of this essay is to summarise Yersin's expeditions through interesting vignettes depicting Yersin as an explorer and to make a connection between his early explorations and discovery of the plague bacillus.

## FROM NHA TRANG TO PNOM PENH

On 28 March 1892, Alexandre Yersin left Nha Trang, Vietnam, in order to cross the Annamite chain and reach the Mekong River. A year earlier, captain Cupet had attempted to reach Kratié, Cambodia, but could not cross the mountains. Since the coast of Annam, including the Cochinchina

and Tonkin, was widely charted, but the Vietnamese hinterland was more or less unknown, this exploration was essential, and Yersin could well understand the importance of the project. In the company of a few local men, he started visiting the villages of the area, each named after its chief, and getting acquainted with indigenous inhabitants. By 1892 Yersin was a member of the French Colonial Health Service, a division of the French Army, and the Colonial Government supported his desire to explore their uncharted territories until plague broke out in Hong Kong. This is how Yersin started to carefully plan the itinerary of his expedition [10].

The first stop was the village of M'Siao. There, chief M'Siao, old, obese and cunning, lived with his wives, servants and soldiers, and welcomed visitors in houses which resembled boxes, all standing on stilts because of the fear of tigers. In B Doï, Yersin's next station, the chief observed the tradition somewhat indifferently; without making an eye contact, he brought out mats, spread them in front of his visitors, and placed water and jars of rice wine on top.

After B Doï, Yersin visited the village of Kheung, whose chief was young and timid. There, he was asked to mediate in a tax dispute between two neighbouring but hostile villages. In every village he visited, Yersin and the objects he carried were treated with curiosity. When he set off again towards the Mekong, following a long Southern route, he took with him a local tax collector to act as his interpreter. On his next stop, the village of Knieng, the chief held a party in his almost dilapidated hut [9,11].

On 16 May 1892, Yersin embarked on the twisty river of Mekong on two canoes which attracted river crocodiles. The villages were no longer situated on the river banks, and they had to disembark and walk through the woods to reach them. Every village chief along Yersin's way gave him a copper bracelet. The area was infested by mosquitoes and every evening conversations were frequently interrupted by slapping sounds. Every morning, the canoes would enter the river and navigate towards a new village, always away from the shore. When the stream would become dangerous, the journey would continue on foot.

On 9 June 1892, Yersin reached Stung-Streng, a town at the Mekong bank with a French consulate. After two weeks of sailing on a river boat he arrived at Pnom Penh and dined with a noble Frenchman residing in Cambodia, Louis Huyn de Verneville. He then returned to Saigon by boat through the gulf of Siam and wrote his reports to the General Governor of Indochina, to the inhabitants of the villages he visited, and to two

Parisian societies. After a two-and-a-half-month journey, Yersin had fully accomplished his mission; apart from recording many ethnological observations and taking 140 interesting photographs, he had precisely mapped the area around the Mekong River [9,10].

### PREPARING FOR THE SECOND JOURNEY

Once Alexandre Yersin returned from his first lengthy exploration to Vietnam, he gave a lecture at the French Geographical Society (*Société de géographie*, the world's oldest of its kind). In 1892 the Society published proceedings with his itinerary from the coast of Annam to the Mekong river. The proceedings also included Yersin's mapping of various geographical positions in Annam [12,13].

In October 1892, Alexandre Yersin returned to Paris not only to present the results of the mission to Captain Cupet but also to obtain funding for a new exploration. His meeting with Prince Henri d'Orléans was decisive, as was his activity within the *Société de géographie commerciale* de Paris. In Morges he bought a timekeeper, an electrometer, and some thermometers and shotguns and on 24 December 1892 he set off from Marseille back to Indochina [14].

When he arrived in Saigon, Yersin met with the general governor of Indochina, Jean-Marie de Lanessan, who asked him to visit *les pays moïs*, the neighbouring regions of Cochinchina, and design a route which, starting from the north towards the inner parts of the country, would discover the most favourable areas for settlement [9].

### LES PAYS MOÏS

Alexandre Yersin started his excursion by recording the important ports of the area; Saigon, Phan Tiet, Phan Ry, Phan Rang, and Nha Trang. Up to the Biên Hoa River the route was accessible. He moved on to visit many villages in the greater area which he chose as a crossroads, including Don Nai, Ben Nom, La Nah, and Tan Linh. On 25 April 1893, he reached Ta La, situated on a hill plateau planted with pine trees.

After recording many adjacent villages on the slopes, Yersin returned to Tan Linh only to take a different route to the south of Nha Trang, and later in the spring he headed north in an attempt to locate the source of the Don Nai River. In the summer he discovered the Lang Bian plateau.



Alexandre Yersin in 1892 during his first exploration. Self Portrait.<sup>8</sup>

*Autoportret Alexandrea Yersina za vrijeme njegove prve ekspedicije 1892.*

His new excursion in August was no longer a government-funded mission, but Yersin decided to fulfil a promise to return and see the villagers of M'Siao. Travelling from village to village, he was trying to convince the chiefs of his peaceful intentions and was asking aid to advance through the forest [9,11].

At the end of 1893, Yersin met governor Lanessan again, who entrusted him with supervising the construction of a road to Phan Thiêt. When he left Saigon on 22 January 1894, Yersin accepted an invitation of the French National Museum of Natural History, Department of Anthropology, and once again embarked for Nha Trang, this time as a passenger [15].

### FROM NHA TRANG TO TOURANE

On 12 February 1894, he left Nha Trang on his way to the east to find the sea of China. The last of his expeditions was the journey from Attopeu to Tourane (now Da Nang). Wherever he was recognised from his previous travels, Yersin was welcomed. Where he was not recognised, he had to convince the chief of a village of his friendly intentions and that his party used guns only to scare off tigers. If the chiefs denied their welcome, Yersin and his men had to set camps and light big fires to keep wild animals away [9,16].

On 9 April 1894, Yersin set off to Attopeu, an important village of Laos, and reached it after a painful journey through the forests in which they had to clear paths and endure heavy rains and leeches. They crossed many rivers and used, and carefully noted, waterways to finally reach the confluence of two rivers and the large village of Attopeu on the slopes of the Annamite Range, looking towards the Mekong. The last leg of the journey was from

Map of Alexandre Yersin's explorations, 1892-1894.<sup>9</sup>

*Karta s prikazom Yersinovih ekspedicija od 1892. do 1894.*

Attopeu to Tourane, which he reached on 5 May 1884, after traveling for 17 days on an altitude between 300 and 1,300 m [10,16].

From there, Yersin returned to Saigon aboard a ship of Messageries Maritimes. He recorded many different pathways, the tribes he met, their idioms and customs, and their disputes. His report also mentions the wealth of these lands and explains their political situation. On 27 May 1894, he left Saigon to return to Hanoi [16].



## CONCLUSION

Alexandre Yersin concluded his last Asian voyage in 1894, and this was the last year when the exploration of unknown regions was the primary goal of his travels. During his journeys through difficult terrains and jungle conditions, not only did he design new routes, but also observed and recorded sociodemographic and environmental data. This experience would prove invaluable to his research, and he made his most important scientific contributions after he had concluded his explorations.

The attraction of late 19<sup>th</sup> century geography in this case is clear. Up until the early years of the 20<sup>th</sup> century, the science of geography was still unorganised, its frontiers were not demarcated, and the dividing lines of its branches were not yet known.<sup>17</sup> However, this immature science of geography, though not yet specifically defined, had the strength to allure an influential medical.

The relationship between medicine and geography is an existent fact and it originated, as *medical geography*, during the first half of the nineteenth century at the crossroads of reformist medical science with the new

physical geography. Early medical geographers were concerned with the global distribution of human diseases as a function of large-scale, environmental conditions [18]. Given his interests and work, we have to place Yersin among these medical geographers, perhaps within the context of the co-evolution of the 19<sup>th</sup> century French colonial science and various disciplines?, including medicine and geography [19]. In recent years, medical geography has regained popularity, as have our concerns about the relationship between health and the environment. But as early as the late 19<sup>th</sup> century, Yersin had to be an insightful and restless physician, as he kept one constant purpose of his explorations: identifying diseases in Indochina, including endemic malaria and smallpox, in order to understand how to prevent them and protect the new French colony.

In this context, one of the oldest known threats, the plague, had gradually reached some provinces of southern China and started to directly threaten Tonkin [20]. Yersin was sent to Hong Kong by request of the French government and the Pasteur Institute to investigate the Manchurian Pneumonic Plague epidemic, and discovered the pathogen which caused the disease. He was also able to demonstrate that the same bacillus was present in both rodents and humans, thus pointing to the possible route of transmission [21]. His journeys, explorations, observations, and recordings would emerge as an eminent ally in his groundbreaking research [22].

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#### SAŽETAK

*Alexandre Yersin, veliki francuski istraživač koji je otkrio Yersiniju pestis, strastveno je istraživao nepoznate zemlje. U dobi od trideset godina, kao član francuske kolonijalne zdravstvene službe, krenuo je u ostvarenje svoga intimnoga sna – istražiti druge kontinente. U gotovo dvije godine i tri duge ekspedicije proputovao je golema nepoznata prostranstva jugoistočne Azije: Francusku Indokinu, Vijetnam, Kambodžu i Laos. Ovaj članak donosi skice s njegovih istraživanja. Tijekom tih zahtjevnih putovanja pažljivo je planirao i ucrtavao itinerare, smišljao nove rute i pratio i bilježio sociodemografske i ekološke podatke te nepoznate bolesti. Geografija XIX. stoljeća, koja je još bila u povojima, privukla je ovu u medicinskim krugovima utjecajnu ličnost te ga svrstala među prve medicinske geografe. Yersinu su putovanja, opažanja i bilješke donijela golemo iskustvo, a do svojih je najvažnijih znanstvenih otkrića došao nakon što je prestao putovati.*

**Ključne riječi:** Alexandre Yersin, kuga, Yersinia pestis, geografija, Hong Kong, Nha Trang