Alexandre Yersin: Discoverer of the Plague Bacillus

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Historians of public health estimate that throughout human history malaria, tuberculosis, and smallpox have killed more people than the plague. But discussion of plague often evokes a deep visceral fear, since plague has taken the lives of hundreds of millions over the centuries, usually in dramatic and socially disruptive pandemics linked to international trade.

DNA analysis has demonstrated sequences from the plague bacillus in Neolithic human populations, but the first recorded plague pandemic was the Plague of Justinian (541-740 A.D.), which killed at least 20% of the population in the then-known world of Asia, Europe, and Africa. The second plague pandemic, the Black Death, which began in the 1330s and swept across Europe and Asia in successive waves until the 1665 Great Plague of London, killed at least one-third of all Europeans. Populations declined by more than 50% in some European cities and countries in the 14th century due to this plague pandemic, contributing to great socioeconomic upheaval, including the final collapse of the feudal system. Finally, at least 10 million people died in China and India during a third plague pandemic that began in the 1850s, reaching San Francisco aboard rat-infested ships in 1900 to make a first appearance in North America. Only through extraordinary efforts coordinated by public health official Dr Rupert Blue (1865-1948) was the plague contained and eliminated in San Francisco, preventing it from spreading across the region and to other cities in the United States. Thousands of cases of plague continue to be reported to the World Health Organization each year, emerging periodically from animal reservoirs such as prairie dogs and squirrels.

The microbiologic cause of the “Black Death” remained unknown until the 1890s, when Alexandre Emil Jean Yersin (1863-1943), then working in Hong Kong, isolated the responsible bacterium. Kitasato Shibasaburō of Japan (1853-1931), who had studied in Berlin with Robert Koch and developed a serum therapy for tetanus together with Emil von Behring, independently described the plague bacillus in Hong Kong, but his initial reports were so vague that Yersin has often been given primary credit for the discovery. First known as Bacterium pestis and then as Pasteurella pestis, the Gram-negative rod-shaped bacillus that Yersin and Shibasaburo cultured in 1894 was renamed Yersinia pestis in 1967 when it was reclassified in a new genus distinct from other Pasteurella species.

Alexandre Yersin was born on September 22, 1863, in Aubonne, Switzerland, to a French family. His father, a schoolteacher, died a few weeks before Alexandre was born. After studying medicine in Lausanne, Marburg, and Paris, young Yersin joined Louis Pasteur’s research laboratory in Paris in 1886. There, he contributed to development of a serum against rabies, which was used to save his own life after he cut himself during a dissection of the cadaver of a patient who had died of rabies. In 1888, Yersin was awarded a doctorate with a dissertation on tuberculosis. Only through extraordinary efforts coordinated by public health official Dr Rupert Blue (1865-1948) was the plague contained and eliminated in San Francisco, preventing it from spreading across the region and to other cities in the United States. Thousands of cases of plague continue to be reported to the World Health Organization each year, emerging periodically from animal reservoirs such as prairie dogs and squirrels.
to study an ongoing pneumonic plague epidemic. As a French national, he was not permitted entry to English hospitals, so he worked in a small hut, where despite limited equipment he was able to grow the bacterium that would later be named after him. In 1895, he returned to French Indochina and settled in the small fishing village of Nha Trang in present-day Vietnam, where he founded what is now known as The Pasteur Institute of Nha Trang—initially just a small farm with sheep and cattle for research and basic laboratory facilities. In subsequent years, he moved back and forth between France and Southeast Asia, collaborating with French microbiologists to develop an anti-plague serum that unfortunately proved ineffective in clinical trials. In 1902, Yersin elected to stay in Asia permanently and contributed to founding a medical school in Hanoi, serving as its first director.

Yersin made several subsequent contributions to his adopted country, including cultivation of rubber and quinine trees imported from South America and selection of the site of the hill station of Dalat, which remains a popular tourist destination in Vietnam. He never married or had children, considering his “family” to be the Vietnamese villagers among whom he lived and to whom he regularly provided free medical care. He acquired an affectionate nickname among the villagers, “Ông Năm,” which meant “Mister Five” — an allusion to the five bars on the epaulette of his colonial medical service uniform. In 1943, he died at his home in Nha Trang, which continues to be maintained as the Yersin Museum.

In 2013, France (Scott #4480-1) and Vietnam (Scott #3488-9) simultaneously issued a pair of stamps in honor of the 150th anniversary of Yersin’s birth. On one stamp, a young Yersin is depicted in front of the Pasteur Institute in Paris where he began his career. On the other, an older Yersin is shown with the Pasteur Institute in Nha Trang and a vista of the Đà Lạt / Lam Vien Plateau. Vietnam granted Yersin “honorary citizenship” in 2014.

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