



Mosquitoes

Impact on

Florida Mail in the

19th Century

The tiny insect is not only mankind's scourge, it has had widespread and dramatic effects on the mails—especially during the Civil War.

By Thomas Lera

The *Oxford English Dictionary* traced the origin of the word “mosquito” to the Spanish and Portuguese in the late 16th century from the Latin word *mosca* for fly. In 1859, an English traveler to America wrote¹ “we were oftentimes greatly annoyed with a kind of fly the Spaniards called *Museketas*.”²

By the late 1600s, European mapmakers, paying tribute to the insect, named a stretch of Florida’s east coast the Bay de Mosquitos (Figure 1).

The European explorers arriving in Florida noted three things: it was flat, watery, and populated with exceptionally large numbers of mosquitoes. They soon discovered Florida’s 8,426 miles of tidal shoreline offered the ideal habitat for mosquitoes. By the 1800s



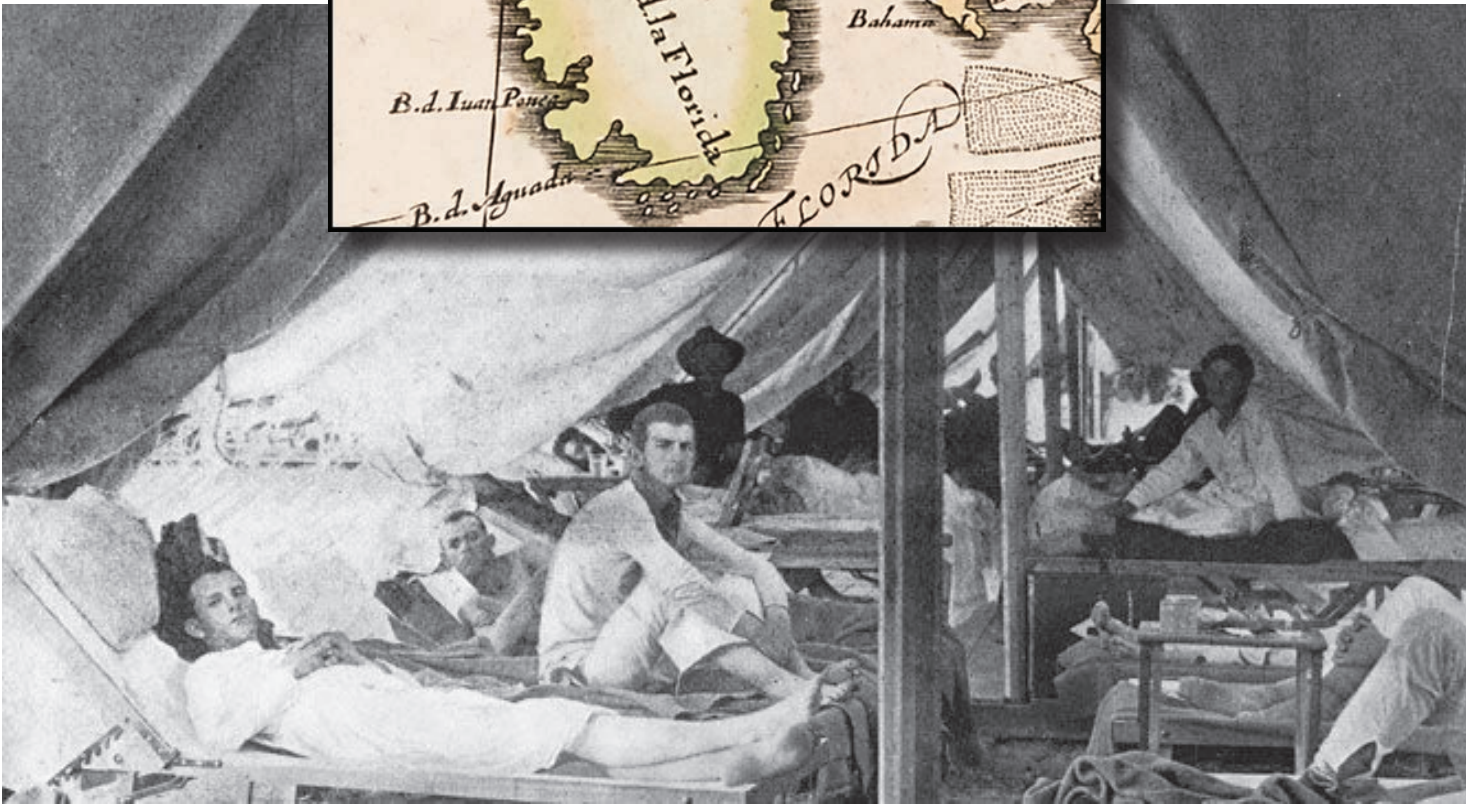
malaria and yellow fever were two of the major diseases affecting Europeans in the Western Hemisphere.

Malaria. There are about 3,500 mosquito species; around 200 can be found in the United States, and 80 of these live in Florida – more than any other state. Eight of the 80 are *Anopheles* species, all potentially capable of transmitting malaria; however only one, *Anopheles quadrimaculatus*, is a major malaria vector (Figure 2, left).

Malaria is a disease caused by the protozoan parasite *Plasmodium*, with five species known to infect humans. Believed to have been brought to the Americas by Europeans in the late 1600s, it primarily impacted those in the Southeast and port cities but later extended as far north as the Dakotas. During the Civil War, the presence of malaria in the United States increased



Figure 1. A New Map of the English Plantations in America both Continents and Islands showing the Bay de Mosquitos.²



Soldiers suffering from malaria and Yellow fever. During the Civil War, malaria epidemics were common, caused by the soldiers and sailors suffering from malaria and Yellow fever. During the Civil War, malaria epidemics were common, caused by the stagnant swamps, teeming with infected mosquitoes.

dramatically, killing some 10,000 Union soldiers annually. The war brought men into the swampy areas of the coastal south and along the major rivers who were bitten then took the parasite home with them.

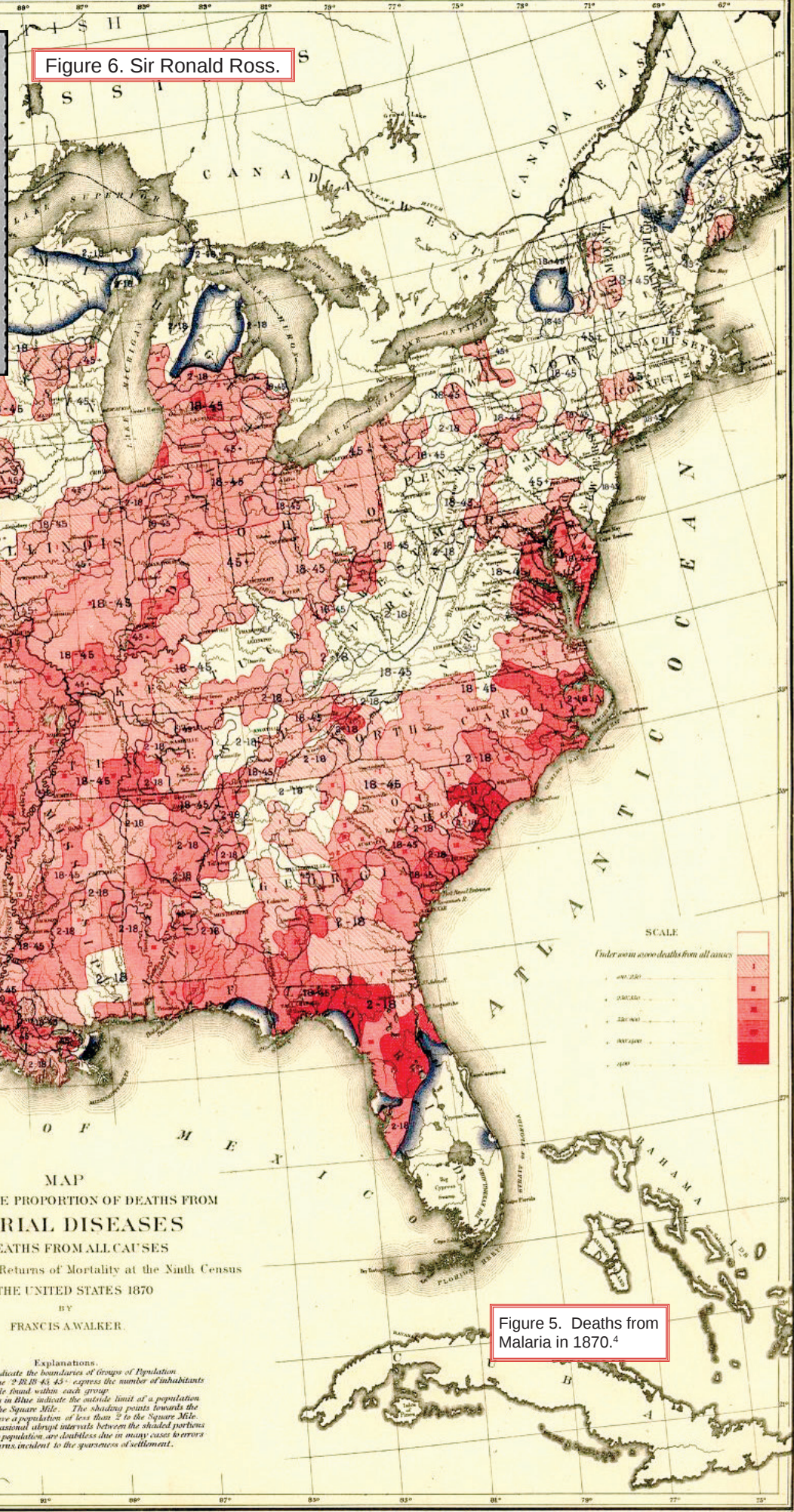
Dr. James Cook Ayer graduated from the University of Pennsylvania with a medical degree in 1860. He was more interested in selling rather than in practicing medicine. When he was 22, he bought and operated an apothecary shop. He spent \$140,000 a year on advertisements promoting the benefits of his medicines with charming, whimsical illustrations, and distributed

millions of free copies of an almanac that pushed his cures. Physicians happily prescribed Ayer's medicines.

He built a state-of-the-art factory in Lowell, Massachusetts, employing up to 150 people, to produce vast quantities of medicines. His products were sold around the world, and the factory continued to produce drugs until the 1940s.³

Ayer's Ague Cure for all malarial disorders was a bitter vegetable tonic. His advertisements for this cure depicted tropical scenes with palm trees framing the picture. A young woman is administering medicine to

Figure 6. Sir Ronald Ross.



MAP
SHOWING THE PROPORTION OF DEATHS FROM
MALARIAL DISEASES
TO DEATHS FROM ALL CAUSES
compiled from the Returns of Mortality at the Ninth Census
OF THE UNITED STATES 1870
BY
FRANCIS AWALKER.

Explanations.
The Blue Lines indicate the boundaries of Groups of Population.
The Figures in Blue "2-18 45-45" express the number of inhabitants to the Square Mile found within each group.
The Shaded Lines in Blue indicate the outside limit of a population of 2 or more to the Square Mile. The shading points towards the regions which have a population of less than 2 to the Square Mile.
Note: The occasional abrupt intervals between the shaded portions and the line of no population, are doubtless due in many cases to errors in the Census returns incident to the sparseness of settlement.

Figure 5. Deaths from Malaria in 1870.⁴



Figure 2. Mosquitoes: left, *Anopheles*; right, *Aedes Aegypti*.



Figure 4. Private Die Proprietary Medicine Stamp RS4D Type 2 on watermarked paper. (Courtesy of Forrest Smith Collection)

an elderly man (Figure 3, left) and a frog gives medicine to an alligator (Figure 4, right).

The caption on the front: "Ayer's Ague Cure is warranted to cure fever & ague and all malarial disorders." The reverse of the card states: "Ayer's Ague Cure is a purely vegetable bitter and powerful tonic, and is, ... cure for all malarial disorders. It neutralizes and expels malarial poison, contains no quinine or any mineral ingredients, and is safe and harmless. It is also an excellent remedy for liver complaints. Prepared by Dr. J.C. Ayer & Co., Lowell, Mass." Actually, it contained bark from the cinchona tree, that later became known as quinine, which was very effective in fighting malaria.

The medicine bottles had Private Die Proprietary "Match and Medicine Revenue Stamps" affixed to them. J.C. Ayer & Co. had six different revenue stamps. Figure 4 shows their 1¢ revenue stamp.



Figure 3a. One of two advertising cards for Ayer's Ague Cure for Malaria.

In the 19th century, malaria was extremely common within the United States, with over 1 million cases reported during the Civil War alone. The map below depicts deaths from malaria in 1870, before the parasite which caused malaria (Figure 5) was discovered by Sir Ronald Ross.

On 20 August 1897, in Secunderabad, India, doctor Sir Ronald Ross (Figure 6) discovered the malaria parasite, while dissecting the stomach tissue of an *Anopheles* mosquito which had fed for four days on a patient with malaria. He went on to prove the role of *Anopheles* mosquitoes in the transmission of malaria parasites in humans.

Yellow Fever Yellow fever is an acute viral hemorrhagic disease transmitted by infected *Aedes aegypti* mosquitoes (fig 2, right) that can kill within 4 to 8 days of the onset of the disease. It is characterized by a severely high fever, head and backaches, and often jaundice. The "yellow" in the name refers to the jaundice which results from the destruction of liver cells, resulting in the accumulation of yellow bile pigments in the skin.

For nearly two centuries, yellow fever was one of the most feared diseases in the New World. The

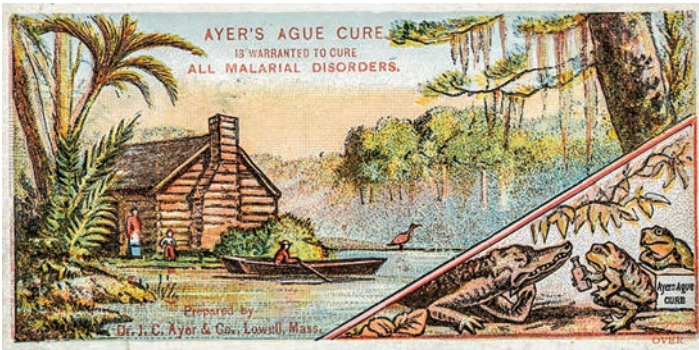


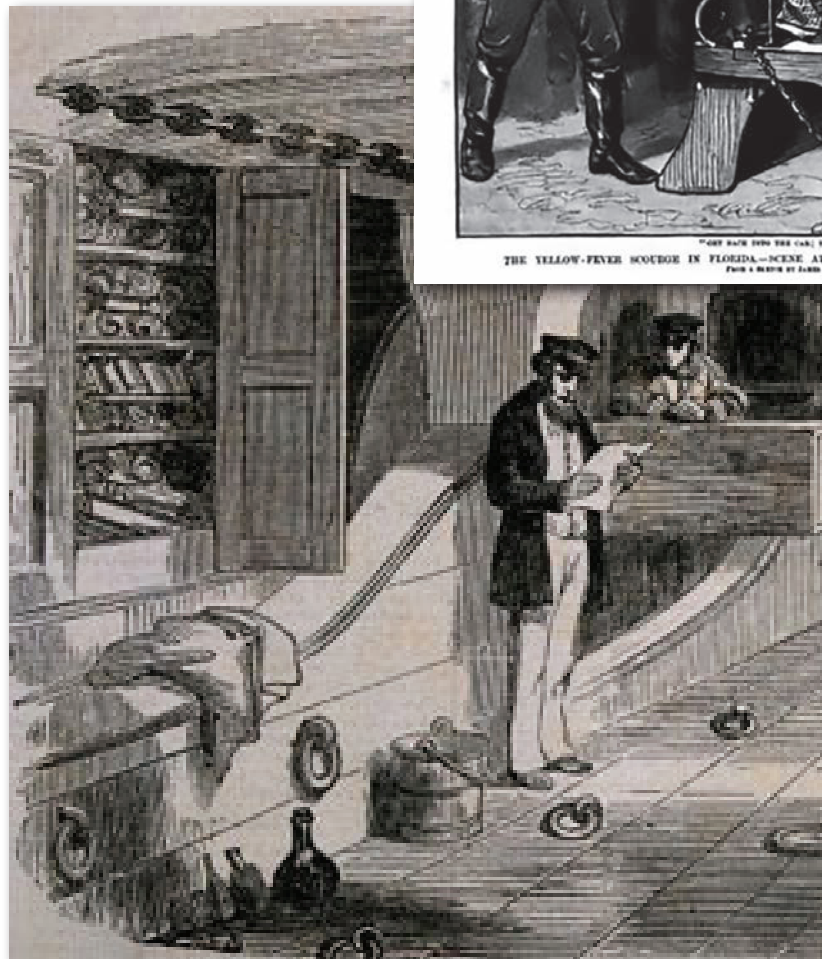
Figure 3b. Second of two advertising cards for Ayer's Ague Cure for Malaria



Figure 7. 1856 Map showing areas of Yellow Fever and Intermittent Fever (Malaria).⁶

exact origin of the disease is unclear, but historians generally believe yellow fever originated in Africa and was introduced to the Western Hemisphere as a result of European contact. The disease is transmitted by the female *Aedes aegypti* mosquito, who prefer to live and breed in shaded areas. In the 19th century, house cisterns were one of the prime breeding locations for *Aedes aegypti* mosquitoes, along with water barrels and holds of ships. The mosquito could remain on board ships in a comfortable area for months feeding on passengers and ship hands who could not escape.⁵

Between 1793 and 1905 yellow fever was responsible for the most severe epidemic outbreak of disease in the United States. Probably the best documented epidemic struck Philadelphia in 1793. Between 4 and 5 thousand



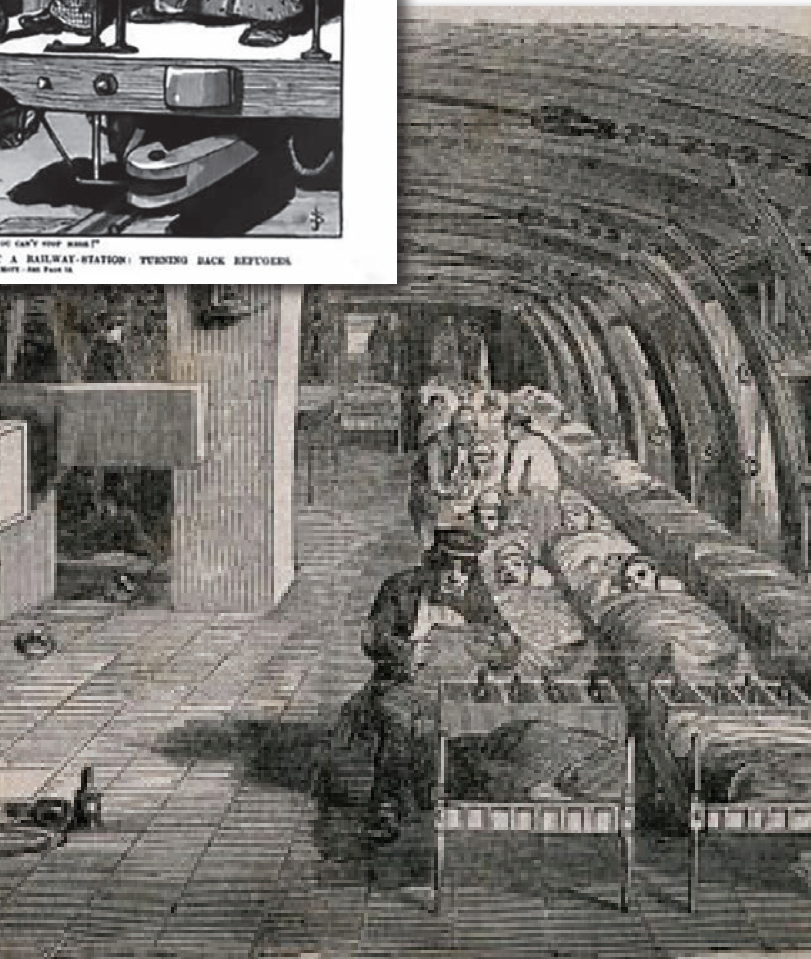
Pencil sketch of a lower deck of a sailing vessel being used as an isolation level for yellow fever patients around the time of the Civil War.



Figure 9. Refugees Stopped from Leaving Jacksonville.⁹



Figure 8. Memphis in 1878.⁷



AT THE GATES.

Our safety depends upon official vigilance.

This warning poster appeared in many southern newspapers during the Civil War. This one in the *New Orleans Picayune*.

residents, or 8 to 9% of the city's population, died. By 1840s, yellow fever had migrated from northern port cities to southern ones. The 1853 New Orleans epidemic claimed the lives of 8 to 9 thousand people, or 9 % of the population.

By the mid-19th century, an understanding of the fever's mobility had not yet been fully explained. The earliest cases in east coast cities during the 1850s could all be traced to ships arriving from yellow fever-infest-



Figure 10. Fumigation Building at Key West Florida.¹⁰

ed Caribbean ports. Several outbreaks during the 1870s reached further inland to cities connected through a growing rail system. Adult mosquitoes in an infected area could be closed in the cars of a train and transported inland to begin breeding new colonies.

The trains and steamboats that had brought thousands into Memphis for Mardi Gras in the spring, transported over 25,000 Memphians, more than half of the population, out of the city in a mass exodus in a span of just five days. Traffic clogged the roads, and platforms were piled high with trunks, suitcases and furniture. In July of that year, the city boasted a population of 47,000. By September, 19,000 remained, 17,000 of which had yellow fever. Once free of the city, Memphians did not fare much better. Thinking the fever spread person to person, nearby farmers locked their gates and doors, with shotguns at the ready. Public roads were wrecked and bridges burned to prevent travel. Many cities and towns refused admittance in fear of the dreaded fever.⁸

Yellow Fever Outbreaks in Florida

Originating in Cuba, an epidemic raged through Key West in 1887, before moving up Florida's west coast to Tampa, then across to Jacksonville. During the winter of 1887-88, Jacksonville reported 4,656 cases with 427 deaths. In the summer of 1888, the Jacksonville area experienced another devastating epidemic with 858 deaths, effectively shutting down the city. With Jacksonville becoming the unofficial "gateway to Florida" the plague caused the population to flee, scared tourists away for several seasons and cost the city thousands of dollars in commercial losses.

Traveling from areas with yellow fever, refugees were not allowed to leave the trains for fear of spreading the disease. Figure 9 shows a guard saying, "Get back into the car, you can't stop here!" When citizens from Jacksonville tried to exit the city by train, the in-

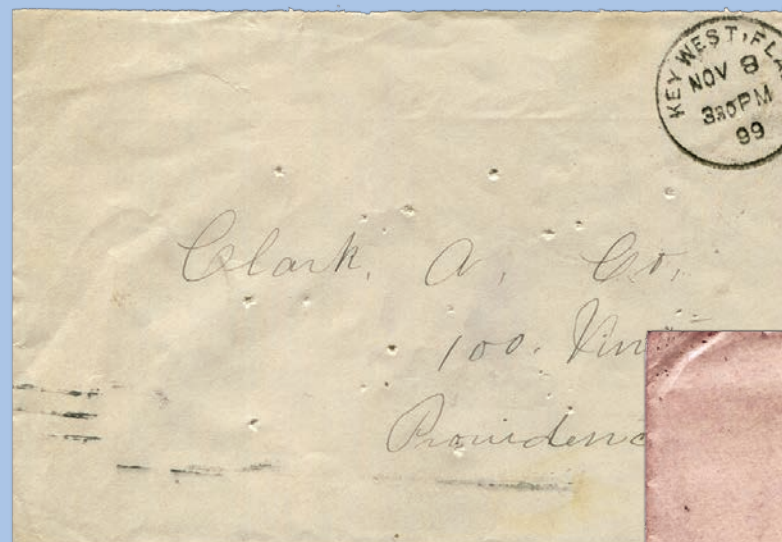


Figure 14. (Above and to the right) The Manatee, Fla cover was fumigated at Flomaton, AL. (Note, paddle pattern.)



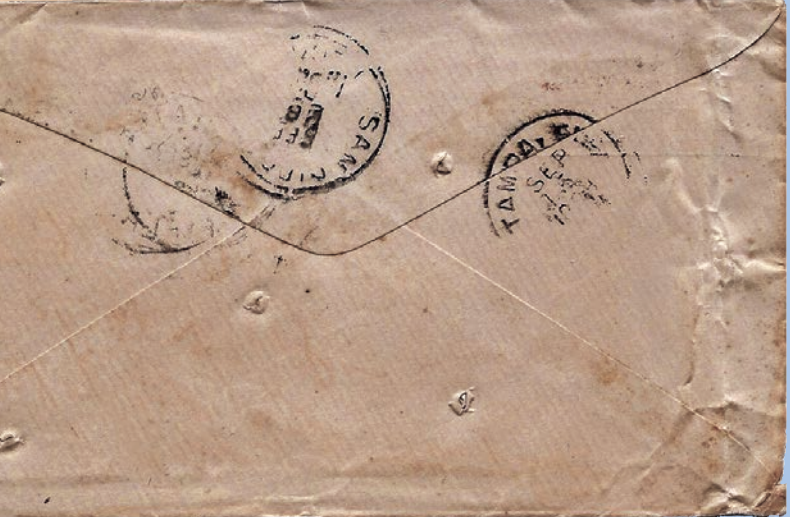
Figure 11. Fumigation paddle used to puncture a letter prior to fumigation.¹¹



Figure 12. Fumigated at Key West, Florida. (Courtesy of Todd Hirn Collection)



Figure 13. Fumigated at Waycross, Georgia. (Courtesy of Deane R. Briggs Collection)



habitants of Waycross threatened to tear up the tracks if they were permitted to get off. At the same time, armed locals surrounded nearly every community and village in Florida and southern Georgia, effectively shutting down travel and imprisoning the citizens in their homes.

Fumigation Stations

The U.S. Marine and Hospital Service ordered the establishment of fumigation stations, with the Railway Mail Service (RMS) designated to handle the job. Fumigation stations in Florida were either buildings, railroad cars, ships or docks next to a fumigation ship (Figure 10). Mail was quarantined, disinfected, and fumigated with 40 percent formaldehyde or sulfur dioxide fumes.

To contain the yellow fever epidemic in Florida in 1888, the Supervisory Surgeon General asked that all outgoing people, baggage and mail be subject to inspection. The Postmaster General agreed to fumigate all mail leaving the state. Letters were perforated with paddles (Figure 11), newspapers loosened, and the mail scattered on wire netting shelves in a railway mail car. After placing sulfur in iron kettles in the car and igniting it, RMS employees closed the mail car doors, sealing the fumes in to do their work.

Fumigated Covers

Figures 12 – 16 show fumigation covers; note different paddle types from the hole patterns.

Major R. E. Mansfield, Chief Clerk on the Railway Mail Service at Charleston, oversaw the Waycross Fumigation Station. Seven mail clerks labored around the clock to expose all mail to four-hour doses of the sulphur cleansing fumes. The crews worked so diligently that the mail was not delayed more than one day in Waycross. Between August and November approximately 3 million pieces of mail and newspapers were fumigated (Figure 13).

Pensacola complained sending mail to Waycross delayed its passage to New Orleans by several days so, on August 20, 1888, a fumigation station was set up at Flomaton, AL, some 40 miles north on the Louisville & Nashville Railroad. Figure 14 shows another different paddle pattern.

Jacksonville Postmaster H.W. Clark obtained permission from the U.S.P.O.D. to establish a fumigation station at La Villa Junction (Figure 15) and began operation August 20, 1888. It was done in a Florida Central & Pensacola Railroad box car three times a day six hours each. Clark, a member of the Jacksonville Sanitary Association, also established a baggage fumigation box car next to the one fumigating the mail.

answered.



Arthur B. Vance Esq

Atlanta

50 N. Broad St.

Ga

Holly Ridge 10/23/88

My dear Boy.

Your long letter reached me some time ago & I thought I would answer it right off, but I am so perfectly tired when night comes, that I have put it off from day to day. I am glad you are in a steady place till Christmas, & you must try & keep it. Don't be too particular in the matter of wages, if you are in a place where you can learn. Remember you are young & have not had much experience yet, & you must not expect a skilled workman's wages yet. I wish I



Figure 16. Fumigated at La Villa Junction. This is the only known intrastate fumigated letter.

Figure 17. Carlos Finley and Dr. Walter Reed



Figure 16 is a Monticello Nov 6, 1888 cover addressed to Madison, Florida some 30 miles east. The towns were connected by the Florida Railway & Navigation Company Railroad, which also connected them to Jacksonville. The letter was carried to Jacksonville, fumigated at La Villa Junction Station, then received in Madison on November 10 for delivery.

Frost proved to be the greatest agent in combating the fever. The occurrence of the first frost was often celebrated because it signaled a sharp decline in the death toll. Even the anticipation of it became major news with newspapers in other parts of the country reporting specifically on cold weather in the South.

In 1900, The U.S. Army Yellow Fever Commission sent Dr. Walter Reed to Cuba to study the fever based largely on the work of Carlos Finlay (Figure 17). He confirmed it was *Aedes aegypti* mosquitoes that spread the disease, not by contact with those who were sick with the disease. Reed's findings helped develop a treatment and reduce the number of cases.

Timothy C. Winegard in his 2019 book *The Mosquito: A Human History of Our Deadliest Predator* said, "The mosquito has no other purpose than to propagate and perhaps kill humans. Through our existence, the mos-

quitoes toxic twins of malaria and yellow fever have been the prevailing agents of death."¹²

In a future issue of *Kelleher's Stamp Collector's Quarterly*, Part Two will discuss the mosquito's little known impact on life insurance policies and their revenue stamps.

Acknowledgements

Deane R. Briggs and Todd Hirn for several images of fumigation covers; Forest Smith for information on revenue stamps; Baasil Wilder for information on the fumigation paddle; and, *Harper's Weekly Newspaper* and *Frank Leslie's Illustrated Newspaper* for several images.

About the Author

Thomas Lera received the 2019 Luff Award for distinguished philatelic research, is emeritus Winton M. Blount Research Chair at the Smithsonian National Postal Museum, was inducted into the American Philatelic Society's Writer Unit Hall of Fame in 2015; in 2016 received the Distinguished Philatelic Texas Award and in 2019 the Florida Postal History Award.

Footnotes

¹<https://www.oxfordlearnersdictionaries.com/us/definition/english/mosquito>. Accessed November 15, 2019.; Spielman, Andrew and Michael D'Antonio. 2001. *Mosquitoes: A Natural History of Man's Most Persistent and Deadly Foe*. New York: Hyperion Press.

²*A New Map of the English Plantations in America Both Continents and Islands*. by Robert Morden and William Berry, London in Black, J.D., ed. 1673. Blathwayt Atlas, Vol. II, p. 43-45. <https://jcb.lunaimaging.com/luna/servlet/detail/JCBMAPS~1~1~1450~100860002>. Accessed November 3, 2019.

³<http://www.newenglandhistoricalsociety.com/james-cook-ayer>. Accessed November 5, 2019.

⁴United States Census Office. 9th Census, 1870, and Francis Amasa Walker. *Statistical Atlas of the United States based on the results of the ninth census with contributions from many eminent men of science and several departments of the government*. [New York J. Bien, 1874] Map. <https://www.loc.gov/item/05019329/>. Accessed November 2, 2019.

⁵<https://mississippiencyclopedia.org/entries/yellow-fever/> Accessed November 14, 2019.

⁶The geographical distribution of health & disease, in connection chiefly with natural phenomena, with Fever Districts of United States & W. Indies, on an enlarged scale. By A. Keith Johnston, F.R.S.E. &c. Engraved by W. & A.K. Johnston, Edinburgh. William Blackwood & Sons, Edinburgh & London. (1856). <http://purl.stanford.edu/xw164sp5789>. Accessed November 25, 2019.

⁷Davis, Louise. "In Memphis Alone, It Killed 5000 in 1878" *The Nashville Tennessean Magazine*, Jan. 12, 1956, p. 8.

⁸Davis, Louise. *The Nashville Tennessean Magazine*, Jan. 12, 1956; 8-9. <https://teva.contentdm.oclc.org/digital/collection/p15138coll18/id/265/> Accessed November 15, 2019.

⁹Illustration by unknown creator, published by *Frank Leslie's Illustrated Newspaper*. Sept. 8, 1888. Courtesy of the General Reference collection, Florida Memory website, The State Archives of Florida. Accessed November 22, 2019. Frank Leslie's frequently published reports on the epidemic between August & October 1888 fueled the panic & sold more newspapers. ("Yellow Fever in Florida"; "The Yellow-Fever Ravages"; "The Plague-Stricken South"; "Memphis Under Quarantine Rule"; "Under the Shadow of the Plague"; "Ancient and Modern Plagues".)

¹⁰Courtesy of the General Reference collection, Florida Memory website, The State Archives of Florida. Accessed November 28, 2019.

¹¹<https://postalmuseum.si.edu/collections/object-spotlight/perforation-paddle.html> Accessed November 16, 2019.

¹²Winegard, T.C. 2019. *The Mosquito: A Human History of Our Deadliest Predator*. New York: Dutton Penguin Random House LLC, p.19-23. These are only two of over fifteen diseases mosquitoes give to humans.

