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"They . . . exalt humbug at the expense of science and truth:" Dr. John P. Wall and the Fight Against Yellow Fever in Late-Nineteenth Century Florida

Larry Omar Rivers

Instances in which an individual researcher's breakthrough discovery was ridiculed by his or her contemporaries prior to being generally accepted as fact fill the history of science. The experiences of John P. Wall, a late-nineteenth century medical doctor in Tampa, Florida, offer an excellent example of this recurring scenario in the area of scientific discovery. This study examines the motivations behind and impact of Wall's efforts to reform Florida's epidemic disease control methods. As will be seen, his work in 1873 and again from 1887 to 1895 constituted a crusade that centered around advancing his theory, not accredited, yet scientifically accurate, explaining how an extremely lethal disease entered the human body.

The illness in question was yellow fever. Most scholarly texts credit Dr. Walter Reed and the members of his 1900 United States Army commission as the first Americans to pinpoint mosquitoes as its principal carriers and transmitters.¹ Florida sources, on the other hand, prove that at least one other American, Wall, advanced this theory twenty-seven years earlier. Unlike Reed and his co-workers, Wall's proposal of the mosquito-transmission theory merited him only an inundation of scoffs and criticism from medical contemporaries, who adamantly believed that dirt and filth were responsible for yellow fever's spread.

John Perry Wall's background hinted little at his future medical genius. He was born on September 17, 1836 in north Florida's Hamilton County during the state's Territorial Period (1821-1845). His parents, Perry G. and Nancy H. Wall were frontier settlers. From his birth until the age of nine, Wall resided with them, along with his two brothers and four sisters in Hamilton.²

The year of 1845 brought several tremendous changes to not only the boy's family life, but also to the surrounding territory. The forced exodus of Indians and their black allies from much of South Florida at the conclusion of the Second Seminole War (1835-1842) provided an attractive opportunity for hundreds of families in Hamilton and other North Florida counties along the Suwanne River to migrate from their war ravaged communities into a new, promising, and unsettled frontier. During this year, Wall's father joined the southward migration by moving his family to Benton County (now Hernando) in South Florida. In February, the first Mrs. Wall died; in December, Perry married another woman, Barbara Baisden. During the same year, Florida's Territorial Period came to an end as Florida achieved Union statehood.

Although these changes in young Wall's family life and surrounding state were very rapid, the boy still enjoyed one important constant during this transitional stage in his youth: his father. Indeed, many traits characteristic of Wall's adult personality--namely his focus on helping others and serving his community--directly reflected his father Perry. Described as a man of "hardy and cheerful disposition," Perry Wall stood out as a respected leader in Hamilton and Benton. He served in numerous elected and
appointed offices in these two communities, including deputy marshall, county clerk, and probate judge. During the frequent violent clashes with local Indians in Benton, his home became a hospitable source of refuge for many white settlers.\(^3\)

Not surprisingly, it was John Wall's father who steered him toward a career in medicine. After receiving an education in local schools, John desired to study law, but the elder Wall objected, claiming that a medical career would be "more congenial and profitable." Honoring his father's wishes, Wall attended the Medical College of South Carolina from 1856 to 1858. Upon his graduation and return to Florida, he practiced medicine in two other towns in partnerships with other doctors.\(^4\)

With the Civil War's beginning in 1861, Wall's medical training took a military turn, while his life saw other important changes. He enlisted as a surgeon for the Confederacy. Assigned to Richmond's Chimborazo Hospital, he served Florida troops in the Virginia area. In 1864, he requested and was assigned duty as a combat soldier. He served initially in the Eighth Florida Battalion near Brooksville and subsequently rose to the rank of major as a member of the Fifth Florida Battalion. The next year, he married Pressie Eubanks, the nineteen-year-old daughter of a wealthy Brooksville planter. She would bear him five children. Following the 1865 Confederate surrender, he returned and practiced medicine in Brooksville. Then, in 1871 he moved his family to Tampa, an isolated south Florida cattle-shipping port of 800 inhabitants, where he continued practicing medicine.\(^5\)

Like many south Florida towns, Tampa--a steadily growing commercial trade center in its pre-Civil War days--emerged from the war in a very devastated state. It struggled to recover from the damage inflicted upon its central industry, the cattle trade, as well as from wartime seizures and naval blockades. Other barriers hindered its efforts to get back on its feet economically. The most formidable of them were epidemic diseases. Malaria, dengue, and yellow fever regularly plagued the community. During such outbreaks, practically every able-bodied citizen fled and took refuge in a neighboring town or woodland area.\(^6\)

At Tampa, Wall encountered the ravages of yellow fever first hand. During the town's 1871 epidemic, Wall successfully treated a boy for the disease, only to be critically stricken himself by the fever. Pressie stayed by his side and nursed him. But just as he was recovering, she herself fell ill. On September 6, 1871, Wall's wife died of the fever; two days later, his fourteen-month old daughter, Julia, suffered the same fate.\(^7\)

Following these tragedies, the grief-stricken doctor's life and career took another sharp turn. The deaths of his wife and daughter prompted Wall to search out new paths beyond simply guiding patients through the fever's various stages. He now devoted his life to researching and studying how it could be prevented and destroyed more effectively.

Like all late-nineteenth century American physicians, Wall faced limitations in helping yellow fever victims. A physician's options were essentially two-fold: (1) to diagnose yellow fever, and (2) to subdue painful and deadly symptoms as the illness ran its course. The challenge loomed as no easy task. Caused by an arbovirus, symptoms in individual cases ranged from mild and flu-like to excruciating. Violent shaking, fever, muscle aches, liver failure, jaundice,
hemorrhaging, and blood vomiting marked classic cases. A doctor succeeded if he kept a patient alive and minimally comfortable until his or her body produced an immunity.8

Some pre-Civil War insights corresponded with Wall’s quest. Specifically, the germ theory had been applied increasingly to the fight against yellow fever in America. Most physicians now believed that it was caused by some sort of transportable germ. Some believed this germ was indigenous to America, being produced from a concurrence of heat, filth, and moisture. The majority maintained that this germ was of exotic origin and had to be introduced to the country in order to become an epidemic (generally by means of ships arriving from tropical locales). Such a germ would be carried in and spread through the "unhealthy" vapors, or miasma, arising from garbage and swamps; humans were thought to be infected when germ-carrying miasma was breathed into the body.9

As Wall pressed his research in the 1870s, Southern leaders attempted to prevent the spread of yellow fever with three principal methods: (1) quarantining against infected locations, (2) denying the suspected germ its external support system of miasmatic mists by intensely cleaning public areas and draining swamps, and (3) disinfecting the suspected germ on ships, baggage, and passengers entering America with agents that halted fermentation and extinguished foul odors. Accepted disinfectants included chloride of lead, steam, and gas from burning sulphur.10

Wall, contrary to the accepted methods, devised a new approach in 1873. He advocated destroying mosquitoes and isolating citizens from them. From an intensive two-year study, he concluded that the fever was carried and transmitted by the "treetop mosquito" (later classified as the Aedes aegypti). He supported his findings with three principal observations:

"(1) Both the mosquito and the disease were prevalent in the summer months and both disappeared before the first frost. (2) Adults whose work did not take them out at night, when mosquitoes were most numerous, were rarely infected. (3) Children, who were generally kept in at night, with the exception of children of doctors and nurses, were usually spared."11

Wall’s theory hit the target. Yellow fever–carrying mosquitoes regularly entered the port town of Tampa aboard ships from the tropical islands and coastal areas, where the insects abounded year-round due to mild winters. Lurking and breeding in the damp holds and bilge water of sea vessels, these unwanted passengers posed a particularly dangerous threat during Tampa’s summer and rainy seasons. Then, the town’s own mosquito population reached its peak.12

The transmission-ides had found an earlier advocate. Venezuelan Daniel Beuperthuy had focused on mosquitoes in 1854. Because of a basic error as to whether yellow fever was a form of malaria, Beuperthuy’s work received little attention. Whether Wall even knew about Beuperthuy’s findings is questionable. It is known that Wall never acknowledged Beuperthuy’s work in his writings on yellow fever, although he was characteristically generous in recognizing the work of his contemporaries world wide.13

As they had in Beuperthuy’s case, fellow doctors rejected Wall’s theory as pure nonsense. The lay press also ridiculed Wall’s discovery.14 Even Tampans, who generally held Wall’s medical knowledge in high esteem, shrugged off his suggestion. This would remain the norm in Florida and across
the country until the 1900 Reed Commission report. Even when Scottish-French doctor Carlos Finlay reached the same conclusion in 1881, experts ignored his findings.15

Why did it take almost three decades for American doctors to accept Wall’s theory First, the concept of insects transmitting diseases was not proven by experimentation until the 1890s. In 1893, bacteriologist Theobald Smith determined that ticks infected Texas cattle with plasmodium. Ronald Ross proved in 1897 that mosquitoes transmitted malaria. Then, the relationship between mosquitoes and human malarial infection was developed conclusively only about 1899.16

Additionally, Wall, unlike Reed, failed to convert his theory into a nationally recognized demonstration. His findings relied mainly on observational evidence. Reed, on the other hand, enjoyed the money, volunteers, and national government consent to experiment with human beings. In 1900 in Cuba, Reed isolated one set of army volunteers in a hut with furniture and clothing soaked in the bodily discharges of yellow fever patients. He isolated a second set in a clean hut and exposed them to the bites of mosquitoes that had recently bitten fever patients. The first group remained healthy while several of the second group became infected.17

One can only imagine how many lives would have been saved had Wall’s theory been accepted in 1873 or what future insights the innovation might have developed. Unfortunately, his suggestion remained a misfit among scientific thinkers of the 1870s and 1880s; he subsequently abandoned the idea altogether. Instead, Wall soon after emerged as a leading proponent of the prevailing epidemic control methods, many of which directly contradicted his previous mosquito theory. Beginning in 1875, he attained widespread medical acclaim for an article that appeared in the Florida journal *Semi-Tropical*, in which he eloquently advanced quarantining and strict municipal cleanliness as tools for preventing yellow fever epidemics.18 As editor of Tampa’s *Sunland Tribune* newspaper from 1876 to 1882, he reiterated these views to a statewide audience.19

Even then, the impact of Wall’s advocacy experienced delays. Not until 1878 was he able to take an active role in putting such epidemic disease control methods into practice. During that year he achieved election as Tampa mayor and also accepted the presidency of Tampa’s Board of Health.20 Immediately, Wall established sanitation and quarantining as city-wide priorities. As he proclaimed in an 1879 ordinance:

"All vessels arriving . . . from any port in the West Indies, Central America, South America, or any other port where contagious diseases are prevailing, shall be placed in quarantine . . . and all intercourse between the vessel and shore, or the landing of any goods, clothing, bedding or other textile goods and fabrics is hereby strictly prohibited."21

Any ship suspected of carrying yellow fever was to be "disinfected" with chemicals. Also, Wall enforced a strict code of hygiene outlawing filth and decomposing matter that could produce the "miasmic" vapors that carried the suspected yellow fever germ. He appointed a health marshall to inspect the town for violations.22

During this period, Wall also emerged as a leading voice urging reform throughout Florida’s entire medical profession. As a member of the Florida Medical Association
(FMA) in 1875, he used the meetings of this organization as opportunities to hold forums for medical debate, hoping to inspire others to adopt more responsible and scientifically based methods of practice.

While delivering the FMA’s annual address in 1877, for example, he articulated very frank and grave concerns about what he viewed as the lack of scientific approach in medical "cures" of the day:

"Our stock of positive knowledge . . . is really much smaller than our professional vanity may be willing to confess. Is there any evidence that the average duration of life has been lengthened by our superior skill in the treatment of disease? On the other hand, is there not considerable ground for the belief that thousands of lives have been sacrificed by the exhibition of our remedies?"

Instead, he favored a focus on preventing diseases rather than treating them, stating "we are much better prepared to exercise our knowledge in their prevention than their cure."

While many of his suggested reforms remained controversial among Florida’s doctors, Wall’s energetic leadership did merit him widespread respect within the FMA. He was elected to several terms as the organization’s president. Also, Wall launched a career in state politics during this period. By 1885, he had resigned from his duties as Tampa Health Officer and devoted the majority of his time to being president of the FMA and roles in the state government. During this year, he was elected a representative to the state legislature and a delegate to the Florida’s Third Constitutional Convention. However, success in the political arena did not hinder Wall’s focus on medical reform. During this time he concentrated on bringing to life one of his most cherished dreams, the creation of a statewide board of health.

By 1885, Wall had been fighting for the adoption of a state board of health for over ten years. When he first proposed this idea in 1874, however, it was during the midst of Reconstruction, a political environment far too chaotic for Florida’s or any other state’s government to embark on such a costly and time-consuming endeavor. The 1880s, however, marked a return a semblance of normalcy across the South. Revived commerce, tax revenues, and stable governments in this "New South" era set the stage for southern legislatures to organize numerous public health reforms. By the middle of the decade, Louisiana, Mississippi, Alabama, Tennessee, and South Carolina had all established state boards of health to battle against disease epidemics.

At the state constitutional convention of 1885, Wall seized the opportunity to emphasize Florida’s need for a state agency to battle disease outbreaks. At the time, Florida still operated under a system in which each individual county established its own board of health that was responsible for maintaining the safety of citizens against epidemics. Communication between boards was difficult. Furthermore separate county boards often did not trust each other, making a collective effort against the spread of epidemics practically impossible. Wall implored: "The duty of preserving the health and lives of its citizens from the causes of disease is as incumbent on the state as that of suppressing rapine and murder... One has no adequate conception of how much sickness and consequently death, are preventable."

Wall’s fellow convention delegates agreed; the Florida Board of Health was authorized
as part of the state’s new 1885 constitution. However, it was not immediately created. Supplying money to finance this new agency was not prioritized by leading state officials. Disappointed, but not discouraged, Wall continued pleading for a state board of health. Events during the years of 1887 and 1888 would finally set the stage for this feat to be accomplished.

As transportation, especially that of railroads, improved across Florida in the late 1880s, yellow fever steadily emerged as the state’s largest health problem and roadblock to economic growth. Largely because of Wall’s quarantines, which prevented yellow fever-carrying mosquitoes from entering Tampa on ships, the town lived free of yellow fever for nine years. Yet, in 1887, the disease again managed to sneak into what, by then, had become a city. Charlie Turk, a tropical fruit importer who frequently visited Key West while yellow fever was there, fell sick in September. By October, a full blown epidemic had begun. Panicky and disorderly conditions quickly prevailed. Individuals and families fled from the city so hastily that they left lamps burning and meals cooking on their stoves. Many evacuated to nearby woods and camped there until late fall. "Our city is desolate and distressfully quiet," lamented one remaining citizen. Several "remedies" were used to battle the epidemic, including burning barrels of tar and frantically cleaning streets. Nothing seemed to work.

In the meanwhile, Wall resumed his research on yellow fever’s spread. Tampan C.C. Whitaker, writing in 1947, recalled the results of Wall’s 1887 yellow fever study:

"Dr. Wall was not only my physician, he was my friend... During the last yellow fever epidemic in Tampa [1887], Dr. Wall told me he was convinced that a certain type of mosquito was the carrier of the yellow fever germ. This was long before any other authority had advanced this theory. I recall he cited in support of the theory that none of the persons having business or employment in the city but who left town before sunset and did not come back in the morning until the sun was high had contracted the disease--most mosquitoes going into hiding when the sun is shining. His theory proved correct and I feel he should be given credit as the discover."31

Thereafter, Wall fought the disease by shielding victims from mosquitoes. The fever quickly abated. Out of the hundreds who had fallen ill, only seventy-nine died.32

The subsequent winter of mild temperature did little to kill the yellow fever carrying mosquitoes. The vectors lingered throughout this season and then climbed their way to North Florida in a series of smaller sporadic outbreaks. This culminated in a severe epidemic in Jacksonville in August of 1888. Out of the total 4,704 cases here, 430 died and many others were left with permanent disabilities. Still ignoring Wall’s theory, the doctors fighting this epidemic used a number of different "remedies," including: intense sanitation efforts, burning pine trees and tar, and firing cannons. It was the subsequent freezing cold winter that eventually killed the majority of mosquitoes and thus, ended the epidemic.33

The epidemic in Jacksonville, Florida’s "commercial metropolis," had a very severe impact on state commerce. Millions of dollars were lost as businesses closed and the trade and transportation lines running through the city halted. The epidemic, cited as the worst yellow fever outbreak in ten years, was also a national embarrassment for Florida. Virtually every southern state quarantined against Jacksonville.
Neighboring states began placing pressure on Florida's government to create a state board of health. Calling the state legislature into a special session in February of 1889, newly elected Florida Governor Francis P. Flemming finally signed the law founding the Florida State Board of Health.34

Across the state, Wall became known as the "father of the State Board of Health" for his insistence for this provision be included in the state constitution. Joseph Porter, Wall's close friend and the first doctor appointed to head the agency claimed that the Board "stands as a lasting memorial to a man [Wall] of superior mental attainments and who, far ahead of his times, was looking forward to the future welfare and commercial prosperity of his native state..."35

While praising Wall for his ability as a legislator, prominent doctors across the state still rejected his theory on the transmission of yellow fever. In fairness to the "medical experts" who blamed filth as the cause of yellow fever, the experiences of Benjamin F Butler, the Civil War general placed in charge of New Orleans after Union forces captured and occupied it, should be considered. Under Butler's control from 1862 to 1865, no yellow fever epidemics occurred in New Orleans, which had an infamous history of such outbreaks. Butler's straitlaced code of municipal hygiene generally received credit for the medical miracle.36

Courageously, Wall disputed this line of reasoning in his writings and lectures. He noted the transient nature of yellow fever outbreaks in New Orleans and questioned why filth, if the cause, produced them so inconsistently. In 1895, the FMA once again invited Wall to deliver the annual address. In what would become the most definitive and remembered point of his career, the doctor decided to use this honor as yet another opportunity to speak against what he now whole-heartedly believed was the fallacious "medical" connection between yellow fever and filth.

The annual FMA meeting was held in the East Florida Seminary in Gainesville, with Wall scheduled to speak at around 9:30 in the morning. Wall and a life-long friend, Dr. Sheldon Stringer, took up lodging with adjoining rooms in the on-campus Brown House. The night before the address, Wall and Stringer attended a reception at Odd Fellows Hall, sponsored by the host Alachua Medical Association. Returning to Brown House a little after eleven o'clock, Wall and his friend engaged in a long and lively conversation before finally retiring at midnight.38

Wall was described as being in high spirits the morning of his oration. "Cheerful as ever" he rose, ate breakfast, and then walked down to the local office of another close friend, one Dr. Lancaster. The two spent part of the morning visiting several patients. Consequently, Wall arrived a few minutes late to his speaking engagement at the Seminary, where the association's sessions were being held in the second floor lecture hall.

Upon his entrance, the present order of business was suspended and the chair announced the reading of Wall's paper: "Public Hygiene in the Light of Recent Observations and Experiments." Wall walked forward and assumed his reading position at the left end of the secretary's table. Facing the audience, which sat to his west, he began his presentation, reading from "a proof sheet printed by a publishing concern."40 An excerpt from this address follows:
"As to yellow fever, an epidemic disease only in the warm season, there is no evidence to show that filth or so-called sanitary conditions have any relation to its spread.

"To prove the filth and fecal origin of yellow fever, the sanitarians call attention to the exploits of General Butler, in New Orleans, who they loudly declare 'stamped out' yellow fever in the city in 1862 by removing the filth. To those who listen merely to the assertions of the sanitarians and General Butler himself, who told exactly how he did it, it appears that either by revelation or by intuition, he actually possessed some sanitary provision not vouchsafed to the rest of mankind.

"Dr. Chaille says he will not contest the general's claim as a warrior, a Democrat, a Republican, and again a Democratic statesman; but he protests against the validity of his fame as a great sanitarian. Dr. Chaille says that in 1861, when General Lovell was in command of New Orleans, many of the civilian and military inhabitants were unacclimated yet no death occurred from yellow fever, and, so far as is known, there was no case of the disease in the city during that year. Dr. Chaille cannot understand why General Butler should be so honored by men of science as a sanitarian, while better sanitary results of General Lovell are ignored altogether. The fact is that during both years there was no opportunity for the disease to arise from imported cases. But there have been many other years when New Orleans was nearly as exempt as 1861-62.

"Is it logical to assume that fecal matter in New Orleans caused only one death in 1877, and suddenly became so active that the next year it caused 4,000 deaths, or that in 1851 it caused 17 deaths and two years later it became so operative as to destroy 7,849 people

"... Any amount of evidence, all of the same tenor, showing that filth has no connection with yellow fever, might be adduced. It is now universally conceded that yellow fever is an exotic disease of an infectious nature and has to be introduced to be an epidemic in this country; and it would be about as logical to assume that the spread of measles was dependent on filth as that of yellow fever is ..."

"In conclusion it may not be amiss to say that because I deem it due to truth and the scientific advancement of medicine to point out the fallacious teachings of hygienists and sanitarians, it is not to be inferred that filth is to be preferred to cleanliness; or that as physicians we are not to encourage all the means necessary to keep our houses well swept and garnished. A sense of decency and self respect can never fail to make us stand with the mass of the community in advancement of decorum and refinements of life. But we should protest against the use of these false teachings as both unscientific and harmful, whose effects is to needlessly excite and alarm the public mind. It is urged by the sanitarians that to insure the carrying out of their proposed sanitation method it is necessary to frighten the people.

"This is no justification at all. For the simple reason that they have failed, so far, to demonstrate the necessity of any sanitary measures in the promotion of cleanliness as a preservation of health or averting epidemic diseases. The sanitarians offer no experimental evidence of the truth of their assertions, but having come across a case of sickness, they at once set out to hunt up a cause for it, and finding something a little unusual, or perhaps offensive in the locality or environments, they at once claim
"Eureka!"; and thus exalt humbug at the expense of science and truth."

As Wall went on, one observer noted that "he read with great difficulty and under suppressed excitement, under which he seemed to labor being so great at times as to cause him repeatedly to pause and sip water." Even while experiencing such obvious discomfort and difficulty, Wall's sense of humor did not fail. Remarking "high tones and toney meals do not seem to agree with me," he attempted to continue.

He resumed reading for a few minutes more when he again appeared very nervous and sickly. This time, it looked as if "he did not know what to do with his hands. He would put them up to his breast and then thrust them into his pocket, first one and then the other." The doctor then started turning pale.

Finally, a delegate, Dr. Caldwell, suggested that Wall sit down. Wall reached around with his hand to grasp the chair that sat behind him and started to move his body down in it. Without noticing, he accidentally sat on the chair's arm, which caused him to tumble down to the floor. The presiding officer and others rushed to his aid, but it was too late, Dr. John P. Wall had died in front of their very eyes.

John Perry Wall lived his entire life in a state that was constantly vulnerable to outbreaks of yellow fever. Born to a supportive family that taught him to take education seriously, he had also been fostered to accept a commitment to helping others. As an adult, he lost a wife and child to yellow fever, which resulted in his unrelenting dedication to freeing his state from the scourge of this deadly disease. Unfortunately, Wall could not convince fellow doctors of his theory that mosquitoes were the carriers and transmitters of yellow fever. Not until five years after his death, when Walter Reed vindicated Wall's unaccredited theory, did most Floridians finally accept the fact that mosquitoes carried and transmitted yellow fever. Only after this did Florida truly find itself on the path that Wall had set out toward eliminating yellow fever outbreaks.

ENDNOTES

1 For secondary works that profile Reed and his work, see: William B. Bean, Walter Reed: A Biography (Charlottesville, 1982) and Howard A. Kelly, Walter Reed and Yellow Fever (New York, 1906).


7. Daniels, Florida State Archives Survey Sketch, 153; *Tampa Florida Peninsular* 9 September, 11 November 1871.

8. Margaret Humphreys, *Yellow Fever And The South* (New Brunswick, 1992), 5-6.


10. Humphreys, *Yellow Fever And The South*, 41-42.


13. Ingram, "John Perry Wall: A Man for All Seasons" 710.

14. Ibid.


16. Humphreys, *Yellow Fever And The South* 35.


19. See: John P. Wall and Charles N. Hawkins, (Editorial Section) *Tampa Sunland Tribune* 2 June 1877; Wall and Hawkins, "No Danger" *Tampa Sunland Tribune* 1 December 1877; Wall, "A Simple Disinfectant" *Tampa Sunland Tribune* 10 August 1878; Wall, "Communicability of Yellow Fever" *Tampa Sunland Tribune* 31 August 1878; Wall, (Editorial Section) *Tampa Sunland Tribune* 31 August 1878; Wall, "Hygienic Measures" *Tampa Sunland Tribune* 3 August 1878; Wall, "Keep Cool and Serene" *Tampa Sunland Tribune* 31 August 1878; Wall, "Public Hygiene" *Tampa Sunland Tribune* 22 March 1879; Wall, "Sanitary" *Tampa Sunland Tribune* 23 July 1881; Wall, "Sanitary" *Tampa Sunland Tribune* 28 September 1878; Wall, "The Lesson of the Epidemic" *Tampa Sunland Tribune* 28 September 1878; Wall, "The Yellow Fever Question" *Tampa Sunland Tribune* 4 January 1879; Wall, (Editorial Section) *Tampa Sunland Tribune* 19 February 1881; Wall, "Valedictory" *Tampa Sunland Tribune* 21 September 1882.


23. Ingram, 712.

24. Ibid.

25. Ibid, 713.

26. See Humphreys, 40-46.


28. Burnett, "Dr. Wall Corrals Yellow Fever" in *Florida's Past*, 12.


30. 185; Burnett, "Dr. Wall Corrals Yellow Fever" in *Florida's Past*, 11-12

31. C.C. Whitaker, quoted in McKay, *Pioneer Florida*, 437

32. Burnett, "Dr. Wall Corrals Yellow Fever" 12.


34. Ingram, 713-4.

There was a difference of opinion among doctors as to the cause of Wall’s sudden death. Some believed that it was heart failure; others thought that it was a cerebral hemorrhage.