ARLINGTON NATIONAL CEMETERY WALKING TOUR

MILITARY MEDICINE

Tip: *This tour is long. To make it more manageable, consider completing it across two visits (Stops 1-7 & Stops 8-18) and/or taking the tram.*

Tram tickets may be purchased inside the Welcome Center at the box office and outside in the tram circle at the marked podium. They may also be purchased online at www.arlingtontours.com.

★ **Tram stop** (daily)

★ **Tram stop** (weekends only)

ENGAGE

We love hearing about your visit! Share your pictures, questions, and favorite parts of the tour on Facebook, Twitter, and Instagram.

@ArlingtonNatl #ANCEducation

ARLINGTON NATIONAL CEMETERY WALKING TOUR

MILITARY MEDICINE

Length: ~4 miles | **Starting Point: Section 2 (0.5 miles from Welcome Center)** | **Exertion Level: High**

There are three types of stops on this walking tour:

HONOR stops mark the gravesites of specific individuals.

REMEMBER stops commemorate events, ideas, or groups of people.

EXPLORE stops invite you to discover what this history means to you.

NORTH STOPS

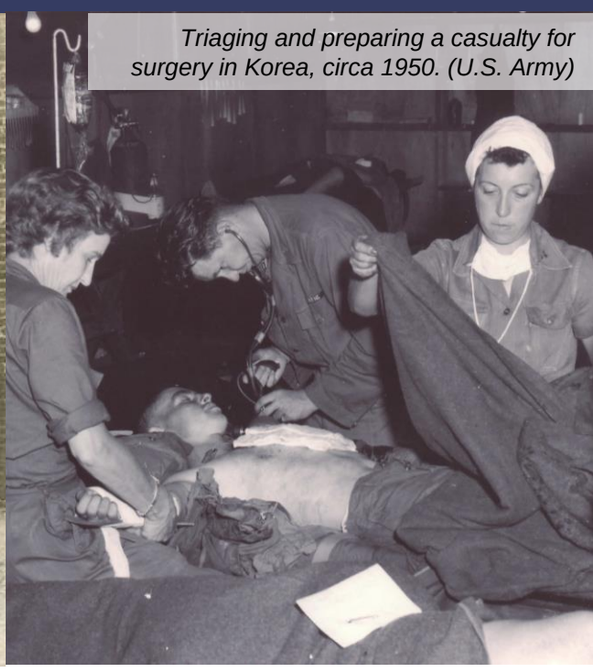
1	William Gorgas	*Section 2, Grave 1039*	HONOR
2	George Sternberg	*Section 2, Grave 994*	HONOR
3	James Tanner	*Section 2, Grave 8777*	HONOR
4	Alexander Augusta	*Section 1, Grave 124-C*	HONOR
5	Civil War Nurses	*Section 1*	HONOR
6	Anita McGee	*Section 1, Grave 526-B*	HONOR, EXPLORE
7	William Hammond	*Section 1, Grave 465-468*	HONOR

SOUTH/CENTRAL STOPS

8	Lawrence Joel	*Section 46, Grave 15-1*	HONOR, REMEMBER
9	Vietnam Helicopter Pilots & Crew	*Section 35*	HONOR
10	Jane Delano	*Section 21, Grave 6*	HONOR
11	Ruby Bradley	*Section 21, Grave 318*	HONOR
12	Lenah Higbee	*Section 3, Grave 1797-WS*	HONOR
13	Jonathan Letterman	*Section 3, Grave 1869*	HONOR, EXPLORE
14	Walter Reed	*Section 3, Grave 1869*	HONOR, EXPLORE
15	Albert Sabin	*Section 3, Grave 1885-RH*	HONOR
16	Michael DeBakey	*Section 34, Grave 399-A*	HONOR
17	Emma Vogel	*Columbarium 1/M/7/1*	HONOR
18	Hazel Johnson Brown	*Section 60, Grave 9836*	HONOR

HISTORICAL BACKGROUND

U.S. Army X-ray ambulance in Paris, France during World War I. (NMHM)



Triaging and preparing a casualty for surgery in Korea, circa 1950. (U.S. Army)

The history of military medicine, and medicine, generally, is a history of eras. In each era, nurses, doctors, and scientists built on the knowledge and research of those who came before them, all united in their goal to prepare and protect service members — whether on or off the battlefield.

During the Civil War, twice as many service members died from disease than battle injuries, and, at the time, the scientific community did not understand how diseases worked. The prevailing theory was that miasma, or "bad air," caused disease to spread and that there was little doctors could do to prevent or cure diseases beyond improving the air quality. Despite their inability to fight disease, military medical professionals continued to innovate, especially around the structure of care. During the war, the military established hospital and ambulance systems and began documenting the care they provided patients, laying the foundation for the continuum of care that we see today.

Throughout the late 19th Century, as the United States ventured into Central America and the Pacific, service members started dying at alarming rates from tropical diseases like yellow fever and malaria. As a result, military doctors turned their attention to the emerging field of germ theory and the existence of bacteria, viruses, and vector-borne diseases to develop vaccines and sanitation policies. During this period, the 1900 Yellow Fever Commission, headed by Major Walter Reed (Stop 14), marked the first recorded instance of researchers obtaining informed consent from their human research participants.

The next major military medicine era was World War I. World War I was the first U.S. war where battle injuries killed more servicemembers than disease. It was also an era of professionalization for the various medical arms of the U.S. military. Both the Army and the Navy had recently formed permanent nurse corps, and the Army established a veterinary corps in 1916. Finally, as in most wars, the advancements in technology — motorized ambulances, new weapons, x-rays — forced the medical community to adapt and find new ways to treat the men under their care, ultimately improving patient care.

During World War II and the Korean War, military medicine practitioners continued to innovate. These wars were defined by MASH units, conceived by Michael DeBakey (Stop 16), the general availability of blood and plasma for transfusions, the use of antibiotics, especially penicillin, and the increased number of trained, specialty surgeons. During the Vietnam War, helicopters changed everything. With helicopters serving as airborne ambulances, service members could receive care for critical injuries within one hour, which drastically increased survivability.

Since the Vietnam War, the military medical community has focused on perfecting the continuum of care — from battlefield injury to rehabilitation to reintegration into civilian life. During the wars in Iraq and Afghanistan, the U.S. military transformed combat casualty care, creating the highest rate of survival in the world. Today, the various U.S. military medical corps — from research medicine and behavioral sciences to dietitians and dental care — are dedicated to continuing to innovate and advance clinical practices and technological capabilities to save lives — both within military and civilian life.

On this walking tour, you'll visit the gravesites of some of these innovators — men and women who dedicated their lives to saving the lives of service members and improving medical care for all.

MAJOR GENERAL WILLIAM CRAWFORD GORGAS

HONOR

WALKING TOUR STOP 1
Section 2, Grave 1039S

William Crawford Gorgas, undated. (The University of Alabama Libraries Special Collections)

BIRTH: October 3, 1854, Mobile, AL

DEATH: July 3, 1920, London, England

BACKGROUND: Without Dr. William Crawford Gorgas' research into sanitation and disease, the United States could not have completed the Panama Canal, at least not without many more casualties. Son of a Civil War Confederate general, Gorgas' early childhood and education were disrupted by the war. However, this did not stop him from pursuing a future as a doctor, and in 1875 he earned a Bachelor of Arts degree from the University of the South in Sewanee, Tennessee. He then attended Bellevue Medical College in New York City. Following his graduation, Gorgas joined the Medical Corps of the U.S. Army in June 1880.

While stationed at Fort Brown in Texas, during one of his first assignments as a medical officer, Gorgas contracted yellow fever. While many people at the Fort perished from this deadly disease, Gorgas recovered. His recovery resulted in two important milestones in his life: First, he met his wife, Marie Doughty, who was a yellow fever patient with whom he would have one child, and second, he gained immunity from yellow fever. This immunity would allow him the protection to further study yellow fever and work towards practicing preventative medicine techniques around areas infected with the yellow fever.

MILITARY MEDICINE
WALKING TOUR

From the Welcome Center, take Roosevelt Drive into the cemetery. Turn right on Weeks Dr and left on Sheridan Dr. When Sheridan curves right, walk up the hill on your right into Section 2. Gorgas' headstone is two rows back from the obelisk at the top of the hill.

"Yellow fever is an acute specific, very fatal, febrile disease, lasting about a week, and characterized by fever, vomiting, muscular pains and albuminuria, and in the graver cases by black vomit and hematogenous jaundice. It is transmitted from person to person by the female stegomyia mosquito."

– William Crawford Gorgas

In the 1800s, physicians treated yellow fever by trying to restore a person's humors. At the time, scientists believed that the human body was made up of four humors — blood, phlegm, black bile and yellow bile — and that diseases were caused by an imbalance of one or more humors. As a result, they gave patients medicines to induce vomiting and sweating and practiced bloodletting to try and relieve symptoms and realign the four humors.

CAREER: Before Gorgas began his research into sanitation and disease prevention, the medical community believed that "bad air," or miasma, as well as an unbalance of humors in the body, caused illnesses to spread. However, a new idea was beginning to emerge from the U.S. Army's operations in the jungle-like, mosquito-rich environments of Cuba and Panama. Major Walter Reed (STOP 14) had recently proven Cuban national Dr. Carlos Finlay's theory that mosquitos were carriers of disease. Stationed in Havana, Cuba, where yellow fever was prevalent, Gorgas became determined to apply this new research to stop both the disease and the mosquitos from spreading it.

The first part of Gorgas' plan was a quarantine: In Havana Harbor, he separated the immune local populace from the non-immune tourists and visitors and transported infected individuals to a separate location where they would not infect the non-immune populace. With everyone quarantined, Gorgas turned to fumigation to directly attack the mosquitos before they could spread the disease any further. His sanitation efforts of quarantining and fumigation prevented the spread of diseases like yellow fever and malaria in Havana during the Spanish-American War.

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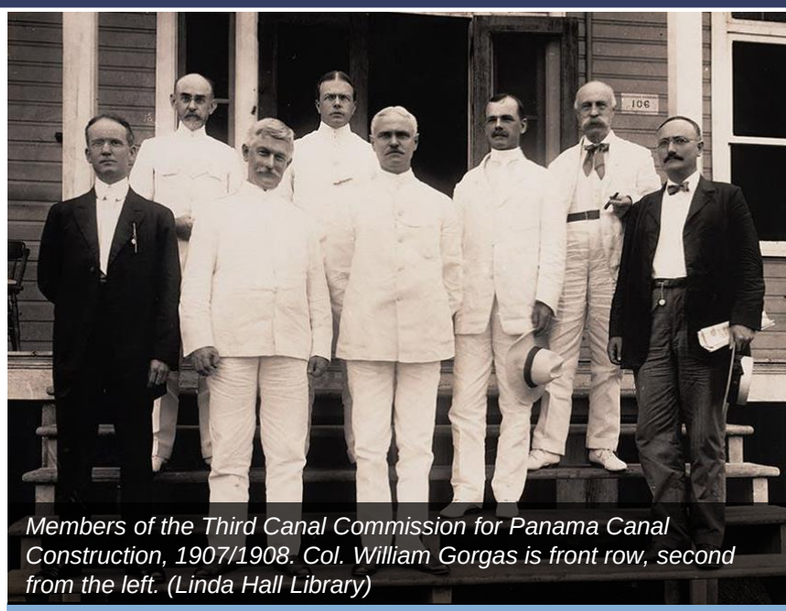
MAJOR GENERAL WILLIAM CRAWFORD GORGAS



Members of the Third Canal Commission for Panama Canal Construction, 1907/1908. Col. William Gorgas is front row, second from the left. (Linda Hall Library)

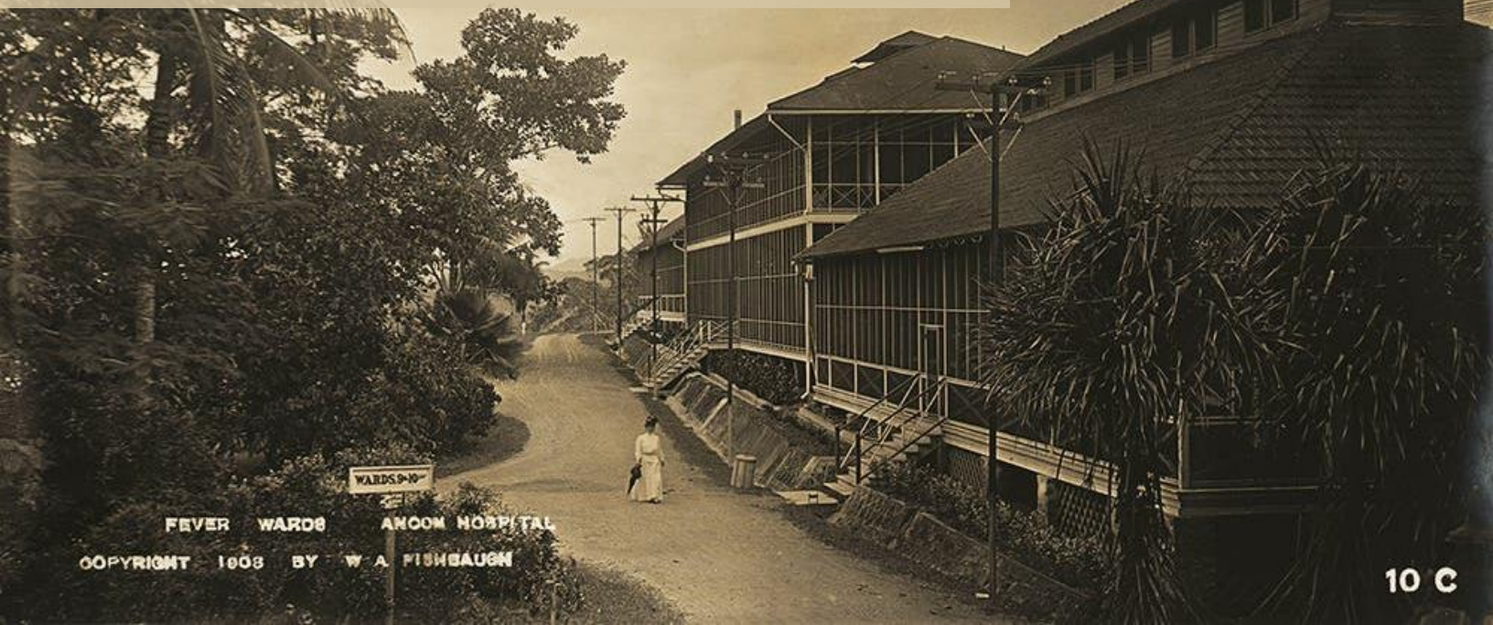
In 1904, after proving his effectiveness in Cuba, the U.S. Army assigned Gorgas to Panama as the chief sanitation officer. The United States had recently taken control of the 10-mile strip of land needed for the canal — a strip of land on which the French had spent nine years and 20,000 lives working and failing to build a canal. The Americans who went to Panama soon found out for themselves why the French had so much trouble: disease, particularly yellow fever and malaria. However, Gorgas was confident that he could stop the diseases with the techniques he used during the Spanish-American War.

However, he was again met with disbelief and disdain about the notion of the mosquito theory, even with his proof from his plans during the Spanish-American War. With additional funding and support from President Theodore Roosevelt, he went to work in Panama in 1904 until the canal was built in 1914. Gorgas started by draining all pools of standing water, which served as breeding spots for mosquitos, and sprayed crude oil on big pools of natural water. He then ordered the construction of new sewers and toilets, established a garbage collection system, and ordered constant fumigation of indoor spaces, and screens in windows. Gorgas also kept infected patients isolated to prevent the spread of disease. The death rate dropped dramatically as a result. In the short timeframe of 10 years, Gorgas was able to not only eradicate yellow fever in the country of Panama, but also to control the spread of malaria. His actions saved lived and enabled the United States to build the Panama Canal which made it possible to more easily conduct trade and travel through the newly formed connection of the Atlantic and Pacific Oceans.

Yellow fever, sometimes referred to as “yellow jack” because people displayed yellow flags in infected areas as a warning, got its name from the yellowish appearance of the jaundiced individuals who contract it. Yellow fever remains a deadly disease. Today, around 20–50% of individuals who contract a severe case of yellow fever can die.

LEGACY: Dr. William Crawford Gorgas was not only a doctor but a researcher, innovator, and risk taker. He came up with a plan and followed it, even while his methods were doubted and highly scrutinized before his immense successes in sanitation and disease prevention. The military has always been a leader in the creation of new medicine and medical techniques. In this case the enemy was mosquitoes, even though the scientific community at the time were harshly divided on whether they thought mosquitos were disease carriers — a fact we have since confirmed. Before his death in 1920, Gorgas was knighted by the King of England in Queen Alexandra Military Hospital for his work in fighting tropical diseases. As a result of Dr. Gorgas’ perseverance and innovation, the Panama Canal exists, and the insight on how to successfully fight yellow fever was gifted to the scientific community.

Fever wards at Ancon Hospital in Panama City, 1908. The hospital, originally built by the French in 1882, had turned into a breeding ground for mosquitos. When Col. Gorgas took over, he eliminated standing water within and surrounding hospital buildings, removed the vegetation close to buildings, and added screens to the porches of every building, as visible here. The hospital was renamed Gorgas Hospital in 1928. (Linda Hall Library)



SURGEON GENERAL GEORGE MILLER STERNBERG

HONOR

WALKING TOUR STOP 2
Section 2, Grave 994

George Miller Sternberg, undated. (U.S. Army)

BIRTH: June 8, 1838, Hartwick Seminary, NY

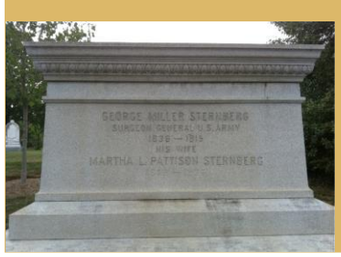
DEATH: November 3, 1915, Washington, D.C.

BACKGROUND: George M. Sternberg was one of the first bacteriologists in the United States. He dedicated his life to studying how disease worked, specifically bacterial diseases like yellow fever and typhoid.

During the Civil War, disease killed more people than battlefield injuries. At the time, few understood how diseases worked. However, rising scientist George Sternberg was working to change that. Raised at Hartwick Seminary in New York where his father was a faculty member, Sternberg graduated from the College of Physicians and Surgeons in New York City with a medical degree in 1860. At the start of the Civil War (1861–1865), he enlisted in the Army as an Assistant Surgeon.

CAREER: Sternberg never expected to spend his career in the Army. However, after the Civil War ended, he remained in the Army, serving in the Indian Wars. During his service, he repeatedly encountered disease: a cholera outbreak that killed his first wife and multiple yellow fever outbreaks, including one that almost killed him. These experiences sparked his interest in the origin of infectious diseases and the importance of sanitation.

MILITARY MEDICINE
WALKING TOUR



Continue up the hill of Section 2. At the top, turn right on the pathway. Sternberg's grave is a little further down, in the first row on your right.

While stationed in Walla Walla, Washington Territory, Sternberg began studying how sanitation impacted disease. In 1885, he published a paper on the importance of disinfectant. While researching smallpox, Sternberg invented a neutralization test that eventually helped eradicate yellow fever. During the 20th century, the test was used to detect new viruses and test the strength of vaccines.

In 1893, Sternberg was appointed Army Surgeon General, the highest position in the medical corps. Attempting to make scientific medical research a larger part of Army work, Sternberg established the Army Medical School in Washington, D.C. The school taught courses in preventative medicine and sanitation.

In April 1898, the United States declared war on Spain. Fought entirely in Cuba and the Philippines, disease was the biggest killer. Sternberg knew this would be the case before the war began and published a guide for maintaining sanitation in Army camps. However, the guide was too little, too late — few officers were trained in sanitation practices and most often, the recommendations were ignored. Within five months, the disease death rate was worse than it had been in the Civil War.

Sternberg then created a typhoid investigation board tasked with discovering the cause of the disease. He appointed Walter Reed, Edward O. Shakespeare and Victor C. Vaughan to the board. The board concluded that typhoid could be contagious and asymptomatic, which allowed the disease to "scatter." The board also reiterated the importance of sanitation, especially latrine sanitation.

Before retiring in 1902, Sternberg organized a yellow fever commission headed by Walter Reed. The commission traveled to Cuba where it discovered mosquitoes transmit yellow fever. This discovery eventually led to the elimination of yellow fever.

LEGACY: Widely praised in the medical field, George Miller Sternberg received little recognition from the Army for his contributions. He is best remembered for translating and publishing Antoine Magnin's Les Bacteries, one the first English books on bacteriology. However, Sternberg's early research on sanitation, his efforts to ingrain medical research in Army medicine and his work researching and fighting bacterial diseases changed the course of military medicine.

CORPORAL JAMES TANNER

HONOR

WALKING TOUR STOP 3

Section 2, Grave 8777

James Tanner, undated. (Public domain)

BIRTH: April 4, 1844, Richmondville, NY

DEATH: October 2, 1927, Washington, D.C.

BACKGROUND: While doctors, nurses and scientists are important to the story of military medicine, so are their patients. James Tanner was one such patient. The son of Josiah and Elizabeth Tanner, James Tanner was born and raised on a farm in Schoharie County, just outside of Richmondville, New York. With a knack for education, he graduated high school at 16 and served his neighboring communities as a county schoolteacher.

CAREER: When the American Civil War erupted across the states, 17-year-old Tanner, described by a fellow veteran as a "raw country lad in his teens," enlisted in Company C of the 87th New York Volunteer Infantry Regiment. In August 1862, during the Second Battle of Bull Run, Tanner suffered a gruesome wound when shrapnel from a Confederate artillery shelling tore off his left foot and shattered his leg, forcing Union surgeons to amputate both of his legs above the knee. He was one of many Civil War soldiers whose battle wounds resulted in amputation, one of the many reasons surgeons worked to innovate surgical practices during the war.

MILITARY MEDICINE
WALKING TOUR

On the pathway, return to where you were and continue to Tanner Amphitheater. Tanner's headstone will be in the first row on your right, just before Tanner Amphitheater.

In the year that followed his amputation, Tanner relearned how to walk on prosthetic limbs, taught himself stenography and took up a job within the War Department as a clerk. As a War Department clerk, he was the stenographer who recorded Lincoln's eyewitness testimony of his assassination at 1:30 a.m. in a bedroom in Peterson House in Washington, D.C.

In the years that followed America's Reconstruction, Tanner dedicated himself to the mission of preserving veterans' rights. In 1884, he was appointed the New York commander of the Grand Army of the Republic. As commander, he established a Union soldiers' home in Bath, New York and a confederate home in Richmond, Virginia. After his resignation in September 1889, Tanner continued his life's work as a private pension attorney for veterans.

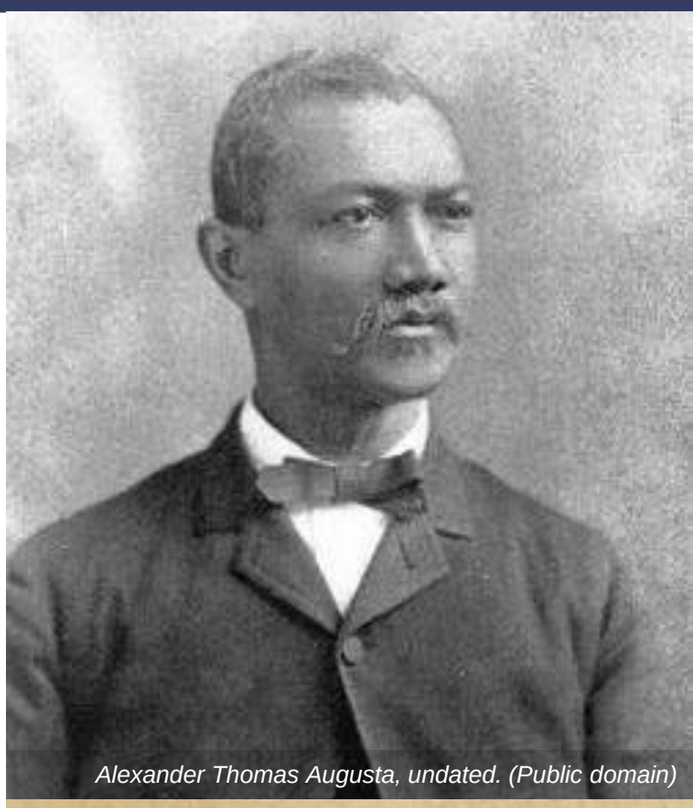
LEGACY: During the cemetery's 150th commemoration ceremony on May 30, 2015, Arlington National Cemetery memorialized the extraordinary life of James R. Tanner by renaming the "Old Amphitheater" — originally built in 1873 to celebrate the United States' 5th Decoration Day — after him. As a lifelong advocate and attorney for pension rights, his Congressional lobbying for veterans' rights frequently marked Tanner's political career. None of his accomplishments would have been possible without the skill and innovation of Army doctors, nurses, and medical researchers.

BREVET LIEUTENANT COLONEL ALEXANDER THOMAS AUGUSTA

HONOR

WALKING TOUR STOP 4

Section 1, Grave 124-C



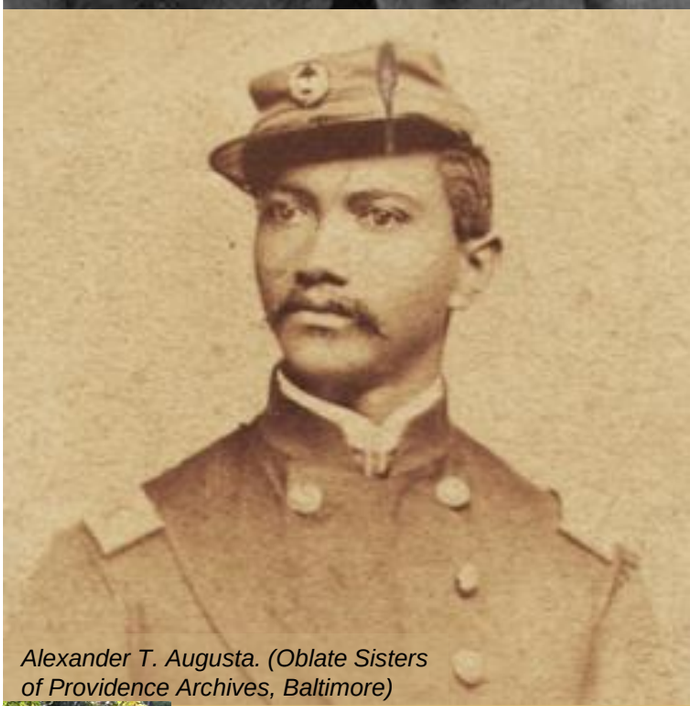
Alexander Thomas Augusta, undated. (Public domain)

BIRTH: March 8, 1825, Norfolk, VA

DEATH: December 21, 1890, Washington, D.C.

BACKGROUND: Born a free Black man in Norfolk, Virginia in 1825, Alexander Augusta was determined to pursue a medical career. Although Virginia law forbid African Americans from learning to read, Augusta secretly learned to read and write from local pastor Daniel Payne while working as a barber. The University of Pennsylvania's medical school denied him admission for lacking the necessary qualifications; Augusta believed that he was denied because of racial prejudice. Concerned that American medical schools would continue to deny him admission, Augusta moved to Toronto, Canada in the 1850s and enrolled at Trinity Medical College. He graduated with a medical degree six years later and established his own medical practice in Canada. He married Mary Burgoin in 1847.

CAREER: In 1863, Augusta wrote to President Abraham Lincoln asking to serve as a doctor for the United States Colored Troops (USCT). He was commissioned as a major – the first African American to be commissioned as a medical officer in the U.S. Army. Augusta was assigned as the regimental surgeon for the 7th Infantry of the USCT. However, white surgeons who refused to serve under a Black man wrote to President Lincoln to demand his termination. The Army decided to transfer him out of the regiment and appointed him as the surgeon-in-charge at the Contraband Hospital in Washington, D.C., making him the first African American hospital administrator in U.S. history. (At the time, enslaved people who escaped the Confederacy were referred to as "contraband of war"; the Contraband Hospital was for former slaves and free African Americans.)



Alexander T. Augusta. (Oblate Sisters of Providence Archives, Baltimore)

In February 1864, while Augusta was wearing his uniform, a streetcar conductor ordered him to disembark because he refused to stand in the uncovered portion of the car. Augusta later petitioned government officials to address streetcar segregation. In March 1865, Augusta was promoted to brevet lieutenant colonel (similar to a warrant officer position today), making him the highest ranking African American officer of the Civil War.

MILITARY MEDICINE
WALKING TOUR

After passing the James Tanner Amphitheater, follow the walking path adjacent to Meigs Drive to the end of the path. Augusta's grave is in the 4th row, 8th from the wall.

After the war, Augusta continued to practice medicine. He joined the medical faculty at Howard University, becoming the first African American to teach medicine at an American university. Howard also awarded Augusta two honorary degrees, including the first honorary degree awarded to an African American by an American university.

For many years, Augusta attempted unsuccessfully to join the all-white Medical Society of the District of Columbia. In 1870, he and other Black medical professionals founded the National Medical Society, which was open to physicians of all races. In 1884, Augusta helped found the Medico-Chirurgical Society, the first Black medical organization in the United States.

LEGACY: Throughout his life, Augusta protested and fought racial discrimination. Despite encountering prejudice at every step of his career, Augusta worked both within and outside of white institutions to push back against racist practices. He helped establish African Americans in the medical profession and encouraged young African Americans to pursue careers within the medical field.

CIVIL WAR NURSES

REMEMBER

WALKING TOUR STOP 5
Section 1

Section 1 is the final resting ground for 24 Civil War nurses, including the first woman buried at Arlington National Cemetery for her own military service, rather than her husband's or her father's service. These women, with their decision and advocacy for burial here, forever changed the landscape of Arlington National Cemetery, expanding our nation's understanding of who deserves to be honored and remembered.

The Civil War was the first time the U.S. military officially employed women as nurses. Wartime nursing was originally a male profession; most believed the battlefield was no place for women and many military officials worried about the perceived impropriety of women tending to the bodily and emotional needs of the men under their care. However, during the Crimean War (1854–1856), Florence Nightingale and her 38 volunteer nurses proved that female nurses were capable on the battlefield and improved conditions in military hospitals.

When the Civil War broke out, the U.S. Army Medical Department was unprepared for a large war. Many doctors lacked formal medical education and were poorly qualified. Army surgeon Jonathan Letterman (Stop 13) introduced reforms, but it was not enough to keep up with the growing number of wounded and ill soldiers. In August 1861, taking inspiration from Nightingale's success, Congress authorized hiring and payment of female nurses.

The Government appointed Dorothea Dix as superintendent of female nurses for the Army. Dix only accepted women aged 30–50 who dressed plainly and were not too attractive. Nonetheless, women (and men) became Civil War nurses, paid and unpaid, through various means. Most nurses were not medically trained, but they tended to soldiers' physical comfort (changing bandages and assisting with feeding, clothing, and washing) and mental or spiritual needs (writing letters for soldiers and reading or talking to them).

On March 3, 1897, Congress passed a law stating, "Army nurses honorably discharged from their service as such may be buried in any national cemetery; and if in a destitute condition, free of cost."

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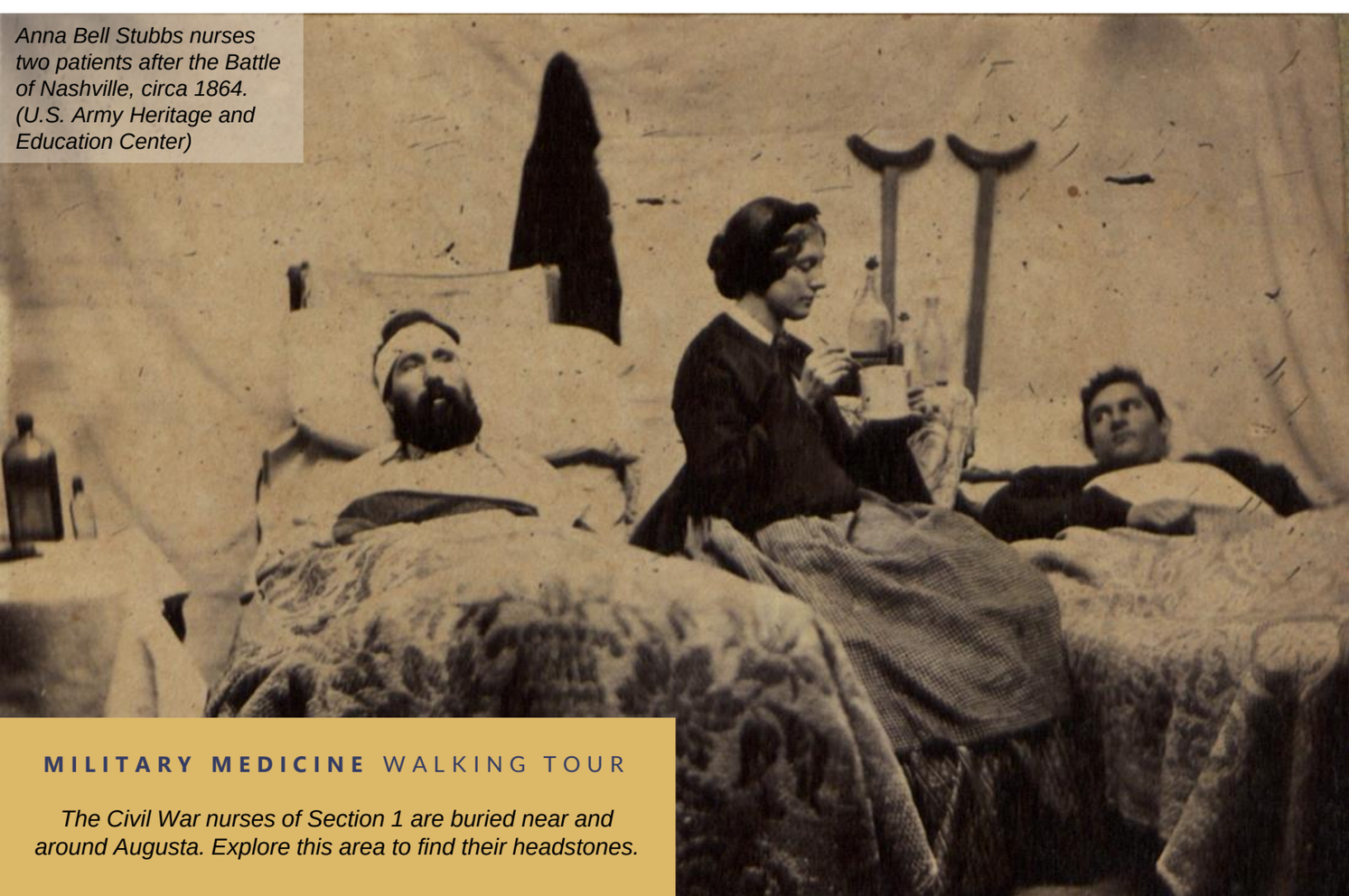

Anna Bell Stubbs nurses two patients after the Battle of Nashville, circa 1864. (U.S. Army Heritage and Education Center)

The Civil War nurses of Section 1 are buried near and around Augusta. Explore this area to find their headstones.

CIVIL WAR NURSES

24 Civil War nurses are buried in Section 1. These nurses served in established military hospitals in cities, in temporary hospitals close to battlefields, and on ships transporting wounded soldiers. They served in Washington, D.C., Maryland, Virginia, West Virginia, Pennsylvania, Ohio, Indiana, Tennessee, Louisiana, Mississippi, Arkansas, Missouri, and Florida. They include divorced, widowed, and unmarried women. Many of them had male relatives who served in the war. Six of the women were immigrants from England, Scotland, Ireland, or Germany. A few followed their husbands to war and served alongside them in hospitals. Although they are not among the Section 1 nurses at Arlington, African American women also served as nurses.

Anna Platt
Elvira Bliss Sheldon
Susan Ver Planck
Adelaide Spurgeon
Martha Hudson Coleman
Nancy L. Donaldson
Emma Southwick Brinton
Adele Johnson Hughes
Sarah Stiles Alexander
Grace McGee
Harrison Wagner (the sole male nurse among the Section 1 nurses)
Joanna Reid Turner
Mary Allen Morrison
Sarah Smith Sampson
Elizabeth Skeer Tarble
Eliza Spader Dubois
Augusta Ruedemann Kratzenburg
Sarah Lane Thompson
Aurila Mathews
Cynthia Bright Case
Caroline Grant Burghardt
Louise Smith Bryant
Leonora Watson Smith Wright
Anna S. Sherman

These 24 nurses, as well as the thousands of other female nurses who officially and unofficially served during the Civil War, put their lives on the line to care for the U.S. Army's wounded and sick. Nurses often suffered the long-term effects of diseases or injuries caused by hardships during their wartime service. As a result, an astonishing 20 of the 24 Civil War nurses buried in Section 1 received invalid's pensions authorized by the Government. Typhoid, or "camp fever," was a common culprit. The quote on Sarah Thompson's headstone nicely sums up these 24 nurses' service and sacrifice: "Her love for her country was shown by the service she gave it."

CAROLINE GRANT BURGHARDT

Section 1, Grave 1262-RH

Caroline Burghardt, circa 1861. (U.S. Army Heritage and Education Center)

At the start of the Civil War, Caroline Grant Burghardt was too young to serve as a U.S. Army nurse. However, she was determined to serve and, with endorsements from male doctors, she obtained a waiver exempting her from the 30-year-old age requirement. Burghardt trained at Bellevue Hospital in New York City for approximately six weeks before traveling to Washington, D.C. to begin her service.

During the war, Burghardt served in fever and surgical wards in Washington, D.C. and at the sites of large battles, including Antietam and Gettysburg. She also served in Wilmington, North Carolina, and onboard the hospital ship General Barnes, looking after soldiers released from Andersonville, Georgia, and other military prisons. She received the following praise from Dorthea Dix for her wartime service: "Her superior fidelity and skill required her assignment at the most difficult and responsible stations [...] She won the respect and confidence of surgeons and the gratitude of patients." Caroline experienced bouts of smallpox and yellow fever in the course of her wartime service and injured her teeth from eating hardtack, dense crackers which were a staple of the Army's Civil War diet. She received an invalid's pension as a result.

After the war, Burghardt, who never married, secured a job at the Treasury Department as a clerk. In 1878, she earned a medical degree from Howard University and practiced medicine for several years as assistant to another female physician, Susan Edson. In 1913, at the age of 80, Burghardt took a new job in the Commerce Department's Bureau of Navigation. She did not retire until May 1920, at which time she was just short of 87 years of age.

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CIVIL WAR NURSES

ADELAIDE SPURGEON

Section 1, Grave 1256-WH

Adelaide Spurgeon was born about 1829 in England; she moved to the United States in about 1860. Platt was recruited as a Civil War nurse by New York Times publisher Henry Raymond. She was the only female nurse willing to accept the risk of working in the smallpox building of the Washington Infirmary, and as a result, she was the hospital's first nurse. When Spurgeon arrived at the hospital, she found the hospital steward drunk and the quality of both the food and the cooking very poor. With friends' help, she went to New York City to purchase better food and supplies, including "a bottle of powerful disinfectants." She also helped secure a mansion to serve as an additional hospital for the wounded of the first Battle of Bull Run. Most nights, Spurgeon got only a few hours' sleep on a cot, often with the bodies of a few soldiers in the next room awaiting removal.

Spurgeon's proximity to smallpox patients eventually caught up to her, and she contracted blood poisoning, from which she never fully recovered. Spurgeon did not return to nursing. For the remainder of the war, she worked as an undercover agent of the Army's Provost Marshal. In that capacity, she uncovered two women who had disguised themselves as soldiers to follow a husband and a fiancé to war. She also identified soldiers who failed to return to duty after their leaves of absence expired. She received an invalid's pension for her service.

Following Spurgeon's death on March 4, 1907, fellow-Civil War nurse Libbey Porter secured Spurgeon's burial at Arlington with a letter from the War Department "stating that thereafter the remains of army nurses whose records had been established, by special act of Congress could be buried in Arlington without further trouble."

ANNA PLATT

Section 1, Grave 1251-EH

During the Civil War, Anna Platt served as an unpaid volunteer nurse at Armory Square Hospital in Washington, D.C. Her shift began at 6:00am and lasted until 8:45pm, with only one small break. Not only was she responsible for dispensing medications, serving food, and generally tending to her patients' medical needs, but she also arranged their evening entertainment, including playing the accordion herself. After the war, Platt worked as a Treasury Department clerk. She received an invalid's pension for her Civil War nursing work.

Anna Platt, circa 1863. (U.S. Army Heritage and Education Center)

EMMA SOUTHWICK BRINTON

Section 1, Grave 1256-WH

Born in Peabody, Massachusetts, Brinton served as an Army nurse during the Civil War. While stationed in City Point, Virginia, she came down with typhoid while "laboring in intense heat, and destitute of pure water" and returned to her home in Boston, Massachusetts to recover. (Brinton successfully applied for an invalid pension in 1891, suggesting that she suffered from long-term effects of her exposure to disease.) She then resumed work in Washington, D.C. In 1864, Brinton traveled to Fredericksburg, Virginia on a wagon full of oats. She was one of three nurses attending to ten houses full of soldiers wounded in the May 1864 Battle of the Wilderness. According to The Washington Times, "The nurses slept on the floor in the slave quarters of one of the houses, and ate whatever chance provided."

After the war, Brinton went to the Sea Islands off the coasts of South Carolina, Georgia, and Florida, to help educate formerly enslaved people there. She married Dr. Jeremiah Bernard Brinton, a Civil War surgeon and botanist, in 1880; he died four years later leaving her widowed. After her husband's death, Brinton moved to Washington, D.C., where she became a newspaper correspondent. According to the The Washington Times in 1903, Brinton was "a widely-known cosmopolite, writer, and lecturer" who had crossed the Atlantic Ocean more than 20 times.

At the age of 84 in 1918, Emma Brinton (the last of the Section 1 Civil War nurses to die) was active in the Red Cross and known as "one of the speediest knitters in her chapter." During World War I, she urged all eligible young women to serve as war nurses, saying, "I only wish I could go too. They say I am too old. I feel just as young as I did fifty years ago."

★ DR. ANITA NEWCOMB MCGEE ★

HONOR

WALKING TOUR STOP 3
Section 1, Grave 526-B

BIRTH: November 4, 1864, Washington, D.C.

DEATH: October 5, 1940, Washington, D.C.

BACKGROUND: Dr. Anita McGee served as the only woman acting assistant surgeon in the Army during the Spanish-American War (1898) and helped create the Army Nurse Corps. McGee was born in 1864 to noted astronomer and mathematician Simon Newcomb and academic Mary Caroline Hassler. Her mother created an environment where her daughters could flourish academically. McGee spent three years studying at Newnham College in Cambridge, England and the University of Geneva in Switzerland.

In 1888 she married prominent geologist and anthropologist W.J. McGee. Shortly after their marriage she attended medical school at Columbian College (now George Washington University). After receiving her degree, she established a private practice in Washington D.C. She had three children: a daughter named Klotho, a son named Donald who died of meningitis at 9 months, and a son named Eric.

CAREER: With the outbreak of the Spanish-American War in April 1898, the U.S. Army needed nurses. After learning that Army Surgeon General George M. Sternberg intended to staff base hospitals with female nurses, McGee petitioned him to allow only qualified women to serve. McGee screened and approved 1,600 qualified nurses for service, and Sternberg subsequently appointed her as acting assistant surgeon of the U.S. Army, which made her the only woman permitted to wear an officer's uniform during the Spanish-American War.

After the war, McGee drafted the legislation to establish the Army Nurse Corps. President William McKinley signed the legislation on February 2, 1901, creating a permanent place for female nurses in the Army. McGee later helped the Navy establish the Navy Nurse Corps (officially established by Congress in 1908). Although the Army Nurse Corps guaranteed women a place in the Army, female nurses were still ineligible for veteran's benefits such as disability pay and health care. In addition, to protect the nurses who served under her in the war, McGee founded the Society for Spanish-American War nurses in 1898. As president of the organization for six years, McGee advocated for nurses' rights and recognition and led the campaign to erect the Spanish-American War Nurses Monument.

LEGACY: Dr. McGee raised the standards for nursing in the military and secured its position in the Army by creating the U.S. Army Nurse Corps. Throughout her career, Dr. McGee defied social norms and paved the way for future female doctors and nurses. Dr. McGee was buried with full military honors in Arlington National Cemetery in 1940.

Anita Newcomb McGee. (NIH)

MILITARY MEDICINE
WALKING TOUR

Cross Section 1 until you reach Humphreys Drive. McGee's headstone is 4 rows back and 3 plots in from Humphreys.

Dr. McGee (center) with female, American nurses at the Military Reserve Hospital, Hiroshima, Japan, 1904. (AMEDD)

NURSING IN THE SPANISH-AMERICAN WAR

Nurses ready to leave New York for service in the Spanish-American War, 1898. (NIH)

Nurses in the Spanish-American War worked 14-hour shifts with 20-minute lunch breaks. They provided their own uniforms, which they also had to launder and maintain. Duties included giving ice baths, dressing wounds, preparing food, feeding soldiers, administering medicine, and attempting to maintain sanitary conditions for medical care in tents, fields, and overcrowded buildings. Many locations experienced nurse shortages that put more stress on the nurses they had. Some nurses worked until they were too ill to do so. The pay was railroad fare to the assigned location, $30 a month, meals, and lodging (sometimes).

REFLECT

Would you want this job?

What kind of people would volunteer for this work?

What character traits would make a successful nurse?

Read the following statement from nurses Helen B. Schuler and Florence M. Kelley, describing the conditions at Sternberg Field Hospital at Fort Thomas, GA during the Spanish-American War:

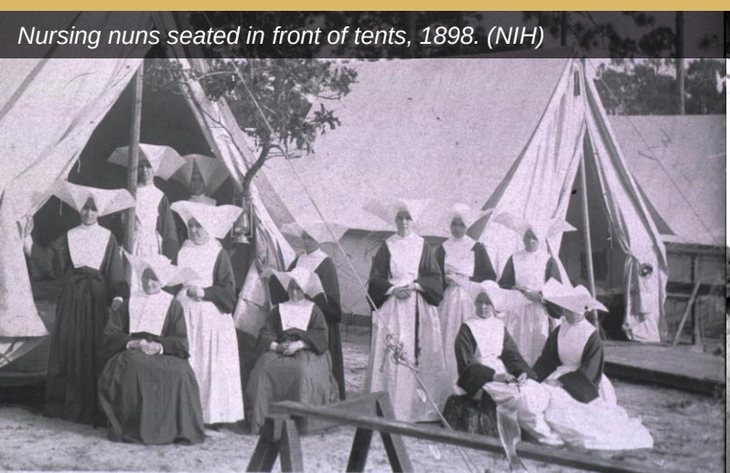
> *"We had no disinfectant whatsoever to use. There was not even one wash basin in these wards for the nurses to wash their hands. At one time when there was a shortage of water for several days, we were requested 'not wash at all.' The three toilets which were supposed to be adequate for the needs of the 200 nurses, were over 500 feet away from their sleeping quarters. Every one of the nurses had contracted dysentery and under these fearfully unsanitary conditions, consider how inevitable it was, that the majority of the nurses left Sternberg Hospital Service with an intestinal condition which soon became chronic and which we shall suffer from the effects of, until the end of our life."*

REFLECT

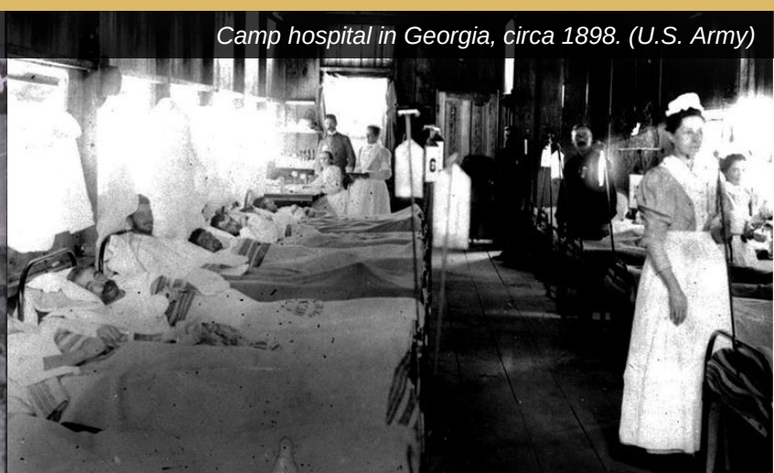
Who was at greater risk in the Spanish-American War: Active-duty military personnel, or nurses and doctors?

We often consider the sacrifices of veterans, who may return home with visible or invisible scars and wounds… but what about nurses? What scars and wounds might a war-time nurse carry home?

Nursing nuns seated in front of tents, 1898. (NIH)



Camp hospital in Georgia, circa 1898. (U.S. Army)

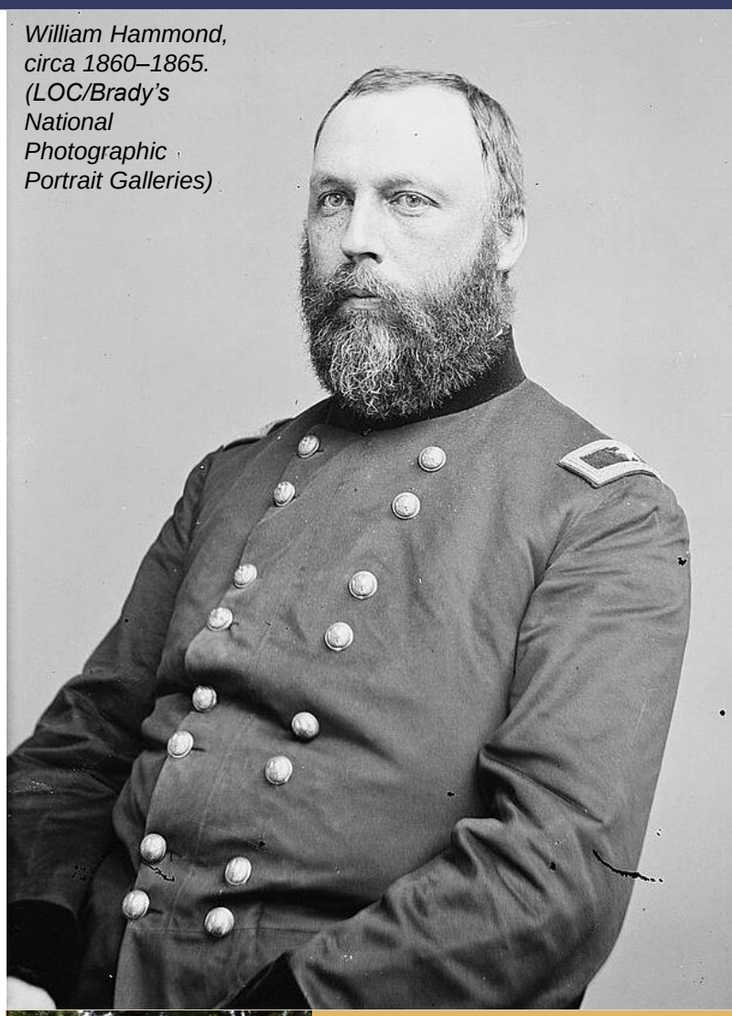


BRIGADIER GENERAL WILLIAM A. HAMMOND

HONOR

WALKING TOUR STOP 7

Section 1, Grave 465-468



William Hammond, circa 1860–1865. (LOC/Brady's National Photographic Portrait Galleries)

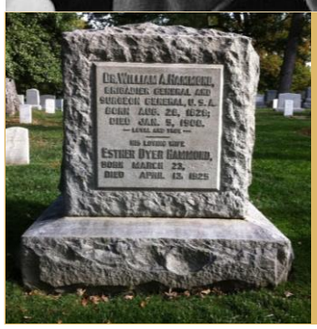
BIRTH: August 26, 1828, Annapolis, MD

DEATH: January 5, 1900, Washington, D.C.

BACKGROUND: William A. Hammond was destined to practice medicine. Born in Annapolis Maryland in 1828, his father and inspiration was a physician. He began studying medicine at age 16 and earned a degree from University of New York Medical School in 1849 at the age of 21. Following graduation, he entered the U.S. Army as an assistant surgeon.

CAREER: Hammond's first tour in the Army lasted 11 years. He first posted out west in New Mexico where he supported the Sioux War; and then at Ft. Riley, Kansas, where he served as medical director. During his free time, he conducted research on how poison interacted with the central nervous system and collected botanical specimens. Hammond left the Army in 1960 for a faculty position with the University of Maryland School of Medicine.

His time in the civilian world was short lived. He rejoined the military only one year later after the Civil War began in April 1861. Hammond rose quickly among the U.S. Army medical ranks. Initially he worked with General William Rosecrans to establish an ambulance corps. However, by April 25th, President Lincoln nominated Hammond as the 11th Surgeon General and promoted him to Brigadier General. In this position he made significant strides in making the U.S. Army hospital system more efficient. He also focused on improving ventilation, cleanliness, and hygiene.



MILITARY MEDICINE
WALKING TOUR

Hammond's headstone is in the first row along Humphreys, 15 down the road.

Unfortunately, Hammond's successes were soon marred by disputes with fellow military doctors and the Secretary of War, Edwin Stanton. In May 1863, Hammond banned use of the mercury-based drug, calomel. Promoted as a "miracle drug" used to treat the likes of syphilis, influenza, and cancer, Hammond believed it caused undue stress on the body. Most military doctors and Secretary Stanton disagreed, and the Army sent Hammond to Louisiana to inspect hospitals. To complicate his situation, the Army charged Hammond with acquiring supplies using unauthorized methods. He was subsequently court martialed and removed from service in August 1864.

After the war, he became a professor of mental and nervous diseases at several universities, including the New York College of Physicians and Surgeons, Bellevue Hospital and Medical College, and the University of Vermont. In 1878, Congress restored him to the Army, and he was placed on the retired list at his previous rank, Brigadier General.

LEGACY: Hammond's implementation of hospital hygiene standards is credited with saving thousands of lives and improving military hospital operations for decades to come. During his time as the Army Surgeon General, he established the Army Medical Museum, known today as the National Museum of Health and Medicine, located just north of Washington, D.C. in Silver Spring, Maryland. The museum's original intent was to collect morbid anatomy specimens from Civil War hospitals for research. Several war veterans, like General Dan Sickles (Section 3, Grave 1906-WS) who lost part of his right leg in battle, later visited this museum to view their own amputated limbs. Over the past 160 years this institution has contributed to major medical breakthroughs in preventing infectious disease, developing vaccinations for typhoid fever, and advancing pathology research.

A prolific writer, Hammond authored numerous medical texts using the lessons he learned during his military service. Medical schools used these collections for many years to teach and prepare future doctors.

SPECIALIST LAWRENCE JOEL

HONOR

WALKING TOUR STOP 11
Section 46, Grave 15-1

BIRTH: February 22, 1928, Winston-Salem, NC

DEATH: February 4, 1984, Winston-Salem, NC

BACKGROUND: Lawrence Joel was the first African American medic awarded the Medal of Honor. Joel was the third of 16 children born to Trenton and Mary Ellen Joel. He grew up in extreme poverty, and when he was eight years old, he was taken in by another family.

CAREER: Wanting to escape Winston-Salem, Joel joined the Merchant Marines at age 17 in 1945. When he turned 18 one year later, he enlisted in the Army. During World War II, Joel served in France, Germany, and Italy. He left the Army after the war and served as a civilian inspector of artillery shells at Ft. Meade, Maryland.

In 1953, Joel reenlisted in the Army as an airborne medic. He attended airborne school at Ft. Bragg, North Carolina, where he trained as a paratrooper. In November 1964, he traveled to Okinawa, Japan to join the 1st Battalion, 503rd Airborne Infantry, 173rd Airborne Brigade. Five months later, his battalion was sent to Vietnam. For his first few months in Vietnam, Joel saw little action and only treated minor wounds. That changed on November 8, 1865.

On November 8, 1965, Joel's battalion of paratroopers embarked on a routine patrol. While trekking through the South Vietnamese jungle near Bien Hoa, his unit was ambushed by the Viet Cong; they were outnumbered six to one. Under heavy gunfire, Joel administered first aid to wounded soldiers. While providing aid, he was shot in the leg. Instead of stopping, he bandaged his wound, self-administered morphine to dull the pain and continued to search and care for wounded men. Still under machine-gun fire, Joel was shot in the leg again and the bullet lodged in his thigh. Using a makeshift crutch, Joel treated 13 men, including one with a life-threatening chest wound, before his supplies ran out. He resupplied and continued attending to wounded soldiers until the battle subsided, about 24 hours after it began.

Lawrence Joel, circa 1967. (Public domain)

MILITARY MEDICINE
WALKING TOUR

Facing Memorial Amphitheater on Memorial Drive, turn to your right and walk about 400 feet. At the border of Sections 21 and 46, as the headstone rows change directions, Joel's headstone is the third row from the end, closest to the road.

"I found a stick on the ground with a little crook in it," he recalled. "I broke it about waist high and sort of cradled my arm in it so I could hobble around. That way I could make it from one man to the next – sort of fall down beside him, then pull myself up on a tree or something when I finished."

— Lawrence Joel

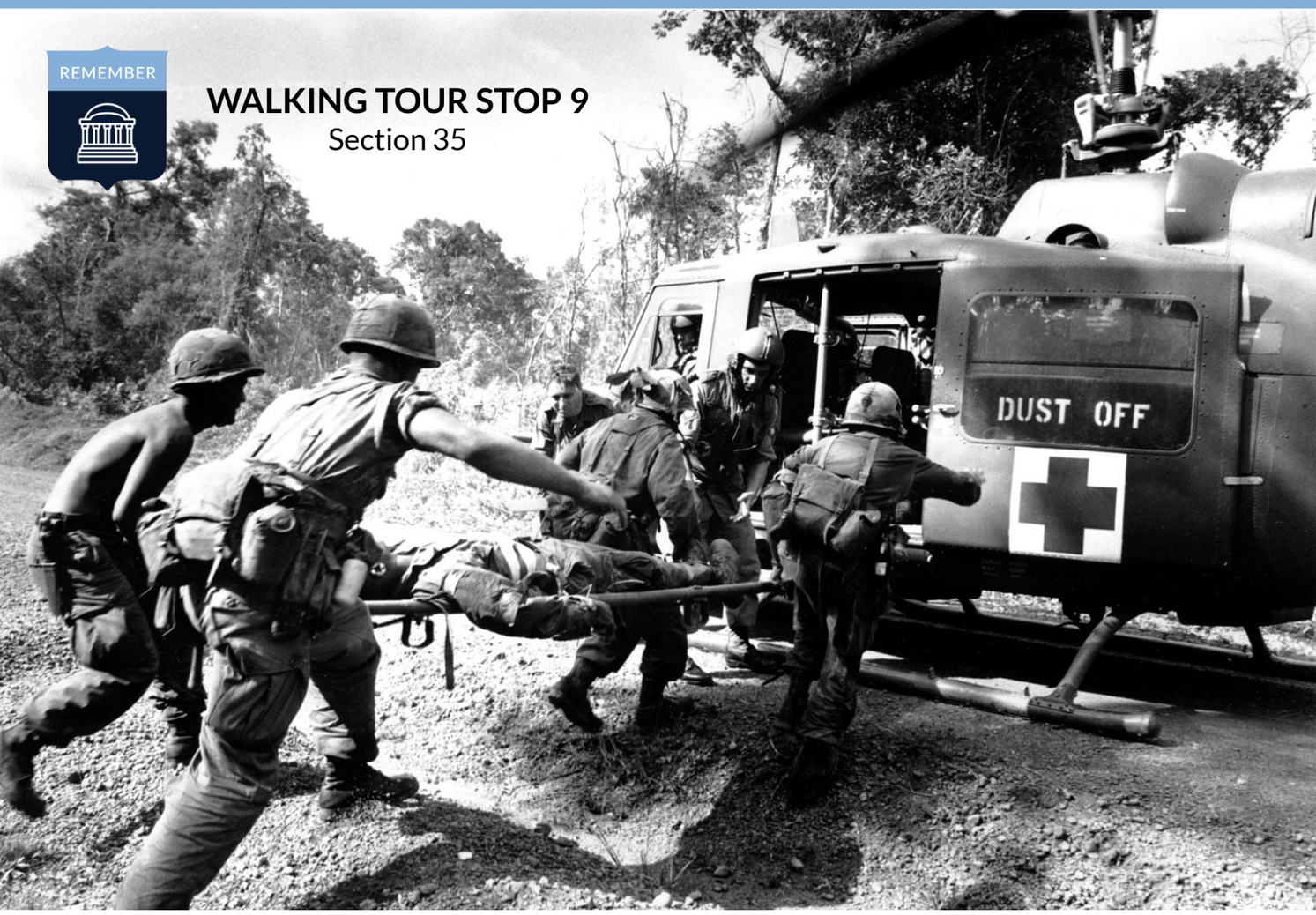
On March 9, 1967, President Lyndon B. Johnson presented Joel with the Medal of Honor for his unfailing courage and commitment to treat the wounded. About being honored with this medal, Joel stated, "I'm glad to be alive…I just wish I could have done more. I never say that I deserved the medal. That's just not for me to say. It was just my job." Joel retired from military service in 1973.

LEGACY: Lawrence Joel was the first African American medic awarded the Medal of Honor and the first living Black American awarded the Medal of Honor since the Spanish-American War in 1898. His bravery saved the lives of many men in his unit.

VIETNAM HELICOPTER PILOTS AND CREWMEMBERS

REMEMBER

WALKING TOUR STOP 9
Section 35



The Vietnam War, nicknamed the "Helicopter War," saw 4,800 helicopter pilots and crew members killed in action, and more than 300 of them are buried at Arlington National Cemetery. In 2018, Arlington National Cemetery memorialized the service and sacrifice of these thousands of men who served throughout Southeast Asia from 1961–1975 with a monument and memorial tree.

Helicopters were still a fairly new technology at the start of the Vietnam War. The Army began using helicopters for evacuations at the end of World War II; however, the military did not use helicopters in full force until the Vietnam War. Historians estimate that the Army transported between 850,000 and 900,000 U.S. servicemembers, allied servicemembers, and Vietnamese civilians during the war.

Before helicopters, wounded service members had to be carried or driven to trained professionals for medical care and often did not receive the care they needed until hours after they were injured.

Helicopters and their pilots and crew changed this process forever. With a helicopter, it only took an average of 35 minutes to evacuate and provide medical care to wounded servicemembers. Not only did helicopters allow quick evacuation, but they also served as airborne ambulances. Onboard crew could stabilize patients with life threatening injuries like hemorrhaging and traumatic shock while en route to a hospital for more targeted care and surgery.

MILITARY MEDICINE
WALKING TOUR

The Vietnam Helicopter Pilots Association monument and memorial tree is across Memorial Drive.

Medevac/air ambulances gained the callsign and nickname DUSTOFF because of the dust that pilots kicked up at liftoff. DUSTOFF stands for, "Dedicated Unhesitating Service To Our Fighting Forces.

CONTINUE TO NEXT PAGE

VIETNAM HELICOPTER PILOTS AND CREWMEMBERS

Helicopter crews were often made up of four people: two pilots, a crew chief, and a medic. Crews were equipped to provide basic medical care like administering IV fluids, monitoring breathing, and applying tourniquets and bandages while transporting injured soldiers to field hospitals.

Crews frequently flew blindly into situations — without intelligence briefing or planning, in bad weather, and directly into combat. In the depths of the jungle, pilots would have to hover and idle in enemy territory, putting them directly in harm's way. Vietnam's natural terrain of rice paddies, rivers, mountains, and jungle only increased the danger. Many times, the military needed to create artificial landing zones for helicopters, which meant that when helicopters had to make repeat trips, which they often did, they landed in the same spot each time, making them easier targets for enemy forces. In fact, the Viet Cong began targeting helicopters marked with the International Red Cross symbol. As a result, many helicopters started carrying weapons to defend their patients against ambushes. Even with the immense dangers facing the helicopter aircrew, helicopters greatly increased the odds of service members surviving and making it back home.

One of the most dangerous jobs during the Vietnam War was as a helicopter airman. These brave and selfless pilots and crews risked their lives to evacuate and provide medical care for patients during the Vietnam War. Combat Search and Rescue (CSAR) operations alone saved over 4,120 lives, including nearly 3,000 individuals engaged in active combat situations . CSAR's motto was, "That Others May Live," and they lived up to this motto in every mission.

U.S. Army service members rush a wounded soldier to a medevac helicopter, undated. (Texas Tech University)

Corporal Larry R. Mikios (center) and an unidentified marine corpsman look in horror as an enemy machine gun fires on their medevac helicopter. Mikios was wounded during a search and destroy mission, September 1, 1967. (Texas Tech University/W.F. Schrider)

JANE DELANO

WALKING TOUR STOP 8
Section 21, Grave 6


Jane Delano, undated. (LOC/Harris & Ewing.)

BIRTH: March 12, 1862, Montour Falls, NY

DEATH: April 15, 1919, Savenay, France

BACKGROUND: Jane Delano served as superintendent of the U.S. Army Nurse Corps from 1909 to 1912, and in 1909, she founded the American Red Cross Nursing Service. Delano was raised by her mother; her father died from yellow fever while serving in the Union Army before her birth. Delano briefly worked as a teacher before enrolling at Bellevue Hospital Training School for Nurses in New York, NY. She graduated in 1886.

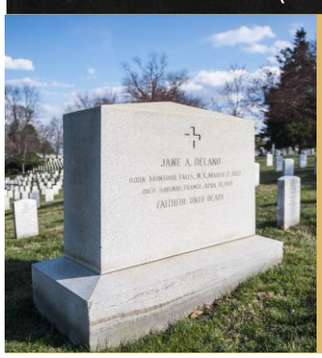
CAREER: Delano pursued nursing for different reasons than many of her fellow nurses. Later in her career, she recalled that "many young nurses start out with the statement that the sight of suffering impelled them to begin a career of alleviating distress, but please don't say that my career was ever influenced by such a sentiment." She claimed to choose the profession for its practicality.

In 1886, Delano moved to Jacksonville, Florida, to serve as the superintendent of nurses at Sandhills Hospital. She cared for patients afflicted with yellow fever by covering the windows with nets to prevent mosquitoes from entering the facility. Delano adopted this innovative technique before scientists determined that mosquitoes transmitted the disease.

In 1898, during the Spanish-American War, Delano became a member of the American Red Cross. In 1902, Delano accepted the position of superintendent of the nursing school at Bellevue Hospital. She modernized the nursing curriculum and insisted students have time for cultural and recreational activities.

In 1905, the Army Nurse Corps lacked recruits. Delano and two of her colleagues, Anna Maxwell (Section 21, Grave 21) and Mary Galdwin, enlisted. Although they all exceeded the age limit of 45 years, the Army accepted their applications. Delano strengthened the Corps by encouraging more female nurses to join. She wanted to ensure that if a conflict erupted, the military would not face a medical crisis due to a lack of nurses.


American Red Cross Nursing Service leaders, circa 1918. Jane Delano is in the center. (LOC)



MILITARY MEDICINE
WALKING TOUR

Continue on Memorial Drive away from the amphitheater. Turn right on Porter Drive and continue to the intersection of Porter and McPherson. Delano's headstone is on the right, six rows back, 8 plots in.

In 1909, Delano was named the first chairman of the new National Committee on Red Cross Nursing Service and created a plan for the first volunteer American Red Cross nursing unit. While serving as superintendent of the Army Nurse Corps, Delano made the American Red Cross Nursing Service the official reserve for the Army, Navy, and Public Health Service. She resigned in 1912 to serve as a full-time volunteer with the Red Cross. To increase the number of registered nurses ready to serve, Delano traveled the country giving speeches at nursing schools. Her successful recruitment efforts resulted in the U.S. having 8,000 registered nurses available for duty when the nation entered World War I in 1917.

In 1919, a few months after World War I ended, Delano traveled to France to conduct a review of military hospitals still in use. During her travels she contracted an illness and required surgery. Her condition worsened after surgery, and she died on April 15, 1919. It is reported her final words were, "What about my work, I must get back to my work."

CONTINUE TO NEXT PAGE

JANE DELANO

LEGACY: Delano revolutionized the nursing field. She demanded that nurses receive respect for their invaluable work and be treated as full members within the medical profession. Under her leadership, the American Red Cross Nursing Program swelled in numbers which ensured that the military would have a proper reserve of nurses. Through her innovative approaches and contributions, Delano expanded the programs and care supplied by the American Red Cross. She ensured that it would remain an invaluable organization in the nation's modern health care system.

Jane Delano's funeral at Arlington National Cemetery, September 18, 1920. In the background are representatives from the Red Cross, military medical officers, and Army uniformed nurses. (LOC)

NURSES MEMORIAL

REMEMBER

Section 21 is sometimes known as the "Nurses Section" because it is the resting place of 653 nurses who heroically served in the U.S. Armed Forces throughout history.

Overlooking them is a white statue made from Tennessee marble. The figure, often called "The Spirit of Nursing," is surrounded by evergreens and appears to gesture towards the rows of deceased nurses that lie before her. The figure is dressed simply with her hair pinned up, a practical style many nurses adopted while working. Frances Rich, later who served as a Navy WAVE (the women's branch of the U.S. Naval Reserve during World War II), sculpted the statue in 1938 initially to honor the nurses who died during their service in the Army or Navy. However, its meaning has since expanded to include all nurses who served in the Armed Forces.

Section 21, May 2020. (ANC/Elizabeth Fraser)

LIEUTENANT COLONEL RUBY BRADLEY

WALKING TOUR STOP 8
Section 21, Grave 318


Ruby Bradley, undated. (U.S. Army)

BIRTH: December 19, 1907, Spencer, WV

DEATH: May 28, 2002, Hazard, KY

BACKGROUND: Ruby Bradley was a lifelong nurse, dedicated to her patients, even when she was taken prisoner by the Japanese military during World War II. After graduating high school, Bradley became a teacher. As a teacher, Bradley grew concerned over the health care of her students and decided to pursue nursing. In 1933, she graduated from the Philadelphia General Hospital of Nursing.

CAREER: Entering the nursing field during the Great Depression, Bradley's first job was with the Civilian Conservation Corps (CCC) as a nurse at Walter Reed Hospital in Washington, D.C. After almost a year with the CCC, Bradley joined the Army Nurse Corps. In 1940, the Army assigned Bradley her first overseas post: the Philippines.

Less than 12 hours after the Japanese attacked Pearl Harbor on December 7, 1941, they invaded the Philippines and attacked Camp John Hay, where Bradley was stationed. According to Bradley, the Japanese "dropped 128 bombs [on the camp], many of which did not explode. Had each one been 'live,' the results would have been even more disastrous."

MILITARY MEDICINE
WALKING TOUR

Bradley's grave is 15 rows back from Delano's, under a large tree.

Bradley fled Camp John Hay for Manila with fellow nurse Major Beatrice Chamberson on December 23, but six days later they were captured and taken prisoner by the Japanese. During her imprisonment, Bradley established a hospital for her fellow civilian internees and acted as a head nurse, providing surgical care and medical treatment. She even delivered 13 babies. Bradley also worked to maintain sanitary conditions and to educate other internees on the importance of washing hands, clothing, and utensils. She and her fellow nurses earned the nickname "Angels in Fatigues" by those they cared for while imprisoned.

The U.S. Army liberated Bradley and her fellow prisoners on February 3, 1945. Upon her release, she was promoted to 1st lieutenant and then captain later that year. When the Korean War broke out in 1950, Bradley was once again on the frontlines of a war, serving as a chief nurse in Korea. On March 4, 1958, Bradly became the third woman to achieve the rank of colonel in the U.S. Army. She retired in 1963.

LEGACY: Despite being imprisoned for four years as a POW, Bradley never stopped serving her country and working for a better future. On the 50th anniversary of the end of World War II, Bradley said, "It was my pleasure to take care of the best patients in the world: the American soldier."


U.S. Army Nurses from Bataan and Corregidor in the Philippines leave Manila after their three-year imprisonment, February 12, 1945. In the center front, Bradley waves at the camera. (U.S. Army)

CHIEF NURSE
LENAH SUTCLIFFE HIGBEE

HONOR

WALKING TOUR STOP 9
Section 3, Grave 1797-WS

BIRTH: May 18, 1874, New Brunswick, Canada

DEATH: January 10, 1941, Winter Park, FL

BACKGROUND: Lenah Higbee was one of the U.S. Navy's first 20 nurses. Born in Canada, Higbee immigrated to the United States where she attended nursing school in New York. After she graduated in 1899, she married U.S. Marine Corps Lieutenant Colonel John H. Higbee and began privately practicing nursing. In April 1908 Colonel Higbee died. Higbee then decided to complete a graduate nursing course at Fordham Hospital in New York to advance her career.

CAREER: On May 13, 1908, President Theodore Roosevelt signed a bill creating the Navy Nurse Corps. The Navy Nurse Corps was the second Nurse Corps in the U.S. military; the Army established a Nurse Corps in 1901. Navy nurses were required to be unmarried and between the ages of 22 and 44. Higbee, newly widowed, joined the Corps and was one of its first "Sacred Twenty" nurses. In April 1909, Higbee was promoted to Chief Nurse and transferred from Washington, D.C. to Norfolk, Virginia.

On January 20, 1911, Higbee was promoted to Superintendent of the Navy Nurse Corps. She was the second superintendent and held the position until November 30, 1922, when she was honorably discharged at her own request. During her tenure as Superintendent, Higbee oversaw the Corps through World War I and the 1918 influenza epidemic. In 1920, she was one of four Navy nurses awarded the Navy Cross for their World War I service. She was the only one of the four who survived the flu epidemic and the first living woman to receive the Navy Cross.

LEGACY: As one of the first nurses in the Navy Nurse Corps and the second superintendent, Higbee shaped naval nursing. She is remembered for her leadership during World War I and the 1918 influenza epidemic.

Lenah Higbee in her WWI uniform, circa 1918. (NARA)

Lenah Higbee, 1918. (LOC)

"The Sacred Twenty," October 1908. Higbee is the sixth from the left in the front row. (BUMED Library and Archives)

MILITARY MEDICINE
WALKING TOUR

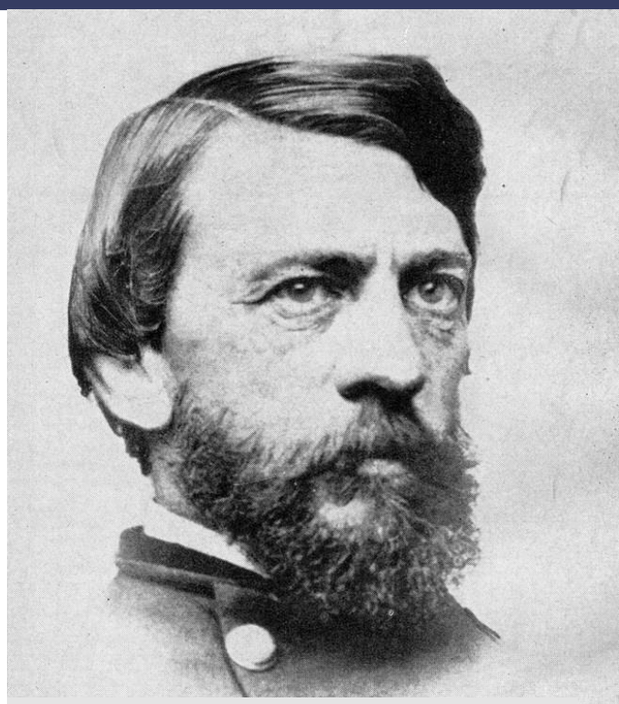
Return to Porter Drive and turn right. Turn left on McPherson and then left on McKinley and then left on Miles. Follow Miles until it intersects itself. Higbee's headstone will be on your left, 5 rows back.

MAJOR JONATHAN LETTERMAN

HONOR

WALKING TOUR STOP 13

Section 3, Grave 1869



Jonathan Letterman, undated. (U.S. Army)

BIRTH: December 11, 1824, Canonsburg, PA

DEATH: March 15, 1872, San Francisco, CA

BACKGROUND: Surgeon general of the Army of the Potomac during the Civil War, Major Letterman has been called "the father of battlefield medicine." Letterman attended and graduated from Jefferson College in 1845. He received his M.D. from Jefferson Medical College in 1849. In October 1863, he married Mary Digges Lee. They had two daughters.

CAREER: After graduating from medical school in 1849, Letterman took the entrance exam for the Army Medical Service. Upon passing the exam he received a military commission and assumed the position of assistant surgeon in the Army Medical Department. Between 1849 and 1861, Letterman served in various military campaigns against Indigenous tribes throughout North America. He attended to soldiers that suffered from battle wounds and infectious diseases. Letterman was stationed in California when the Civil War erupted in April 1861, and by the end of the year he returned to the east coast to serve with the Army of the Potomac, a division of U.S. forces.

MILITARY MEDICINE
WALKING TOUR

Continue on Miles to the end of the road. Letterman's headstone is shaped like a cross.

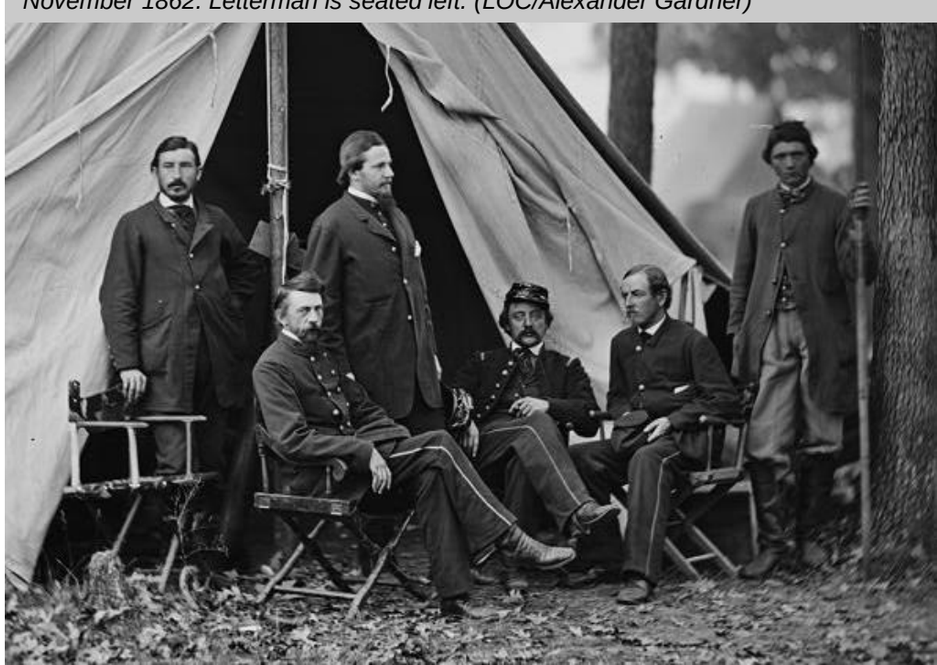
In May 1862, Letterman was named medical director of the U.S. forces in West Virginia. His efforts to care for injured soldiers earned the respect of high-ranking government and military officials. In June 1862, Letterman became the medical director of the entire U.S. Army and received the rank of major. General George B. McClellan tasked Letterman with improving the medical care given to soldiers and developing new methods to strengthen and maintain the health of U.S. forces. He mandated that soldiers receive a proper breakfast and larger rations of food prepared in more hygienic conditions. Letterman also instituted rules that allowed soldiers to receive breaks, clean uniforms, and improved sleeping conditions.

Letterman also focused on improving the evacuation of battlefield casualties. Before he instituted reforms, injured soldiers were left on the battlefield unless a fellow comrade carried them to safety. Letterman created the first Ambulance Corps, which trained soldiers to venture into battlefields and rescue wounded soldiers with wagons and stretchers. To determine the level of attention wounded soldiers required Letterman created the triage system. He also modernized the dispersion of medical supplies.

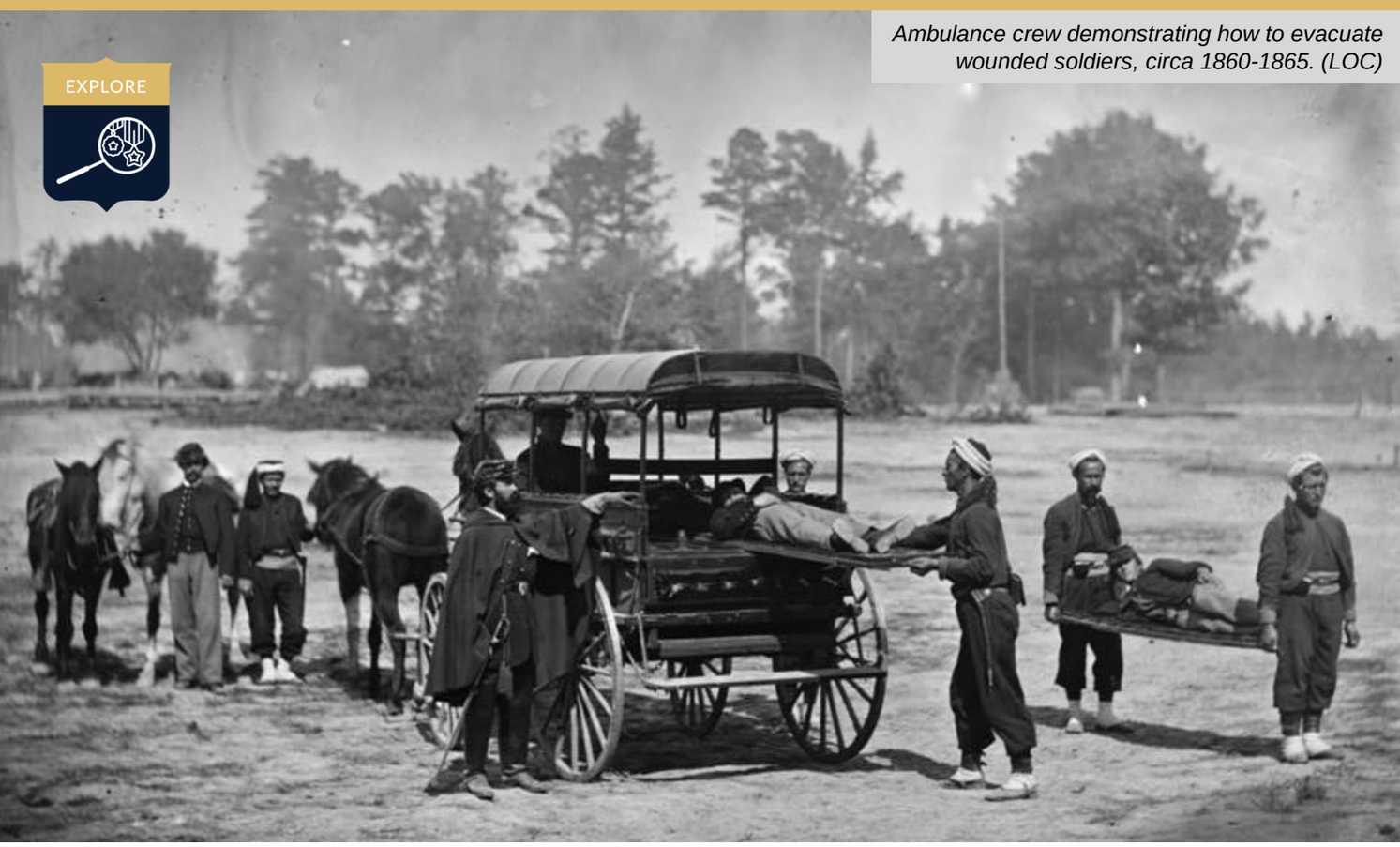
Letterman went on to serve as the Inspector of Hospital before retiring from military service in December 1864. He relocated to San Francisco and found employment as a coroner. He also published a memoir about his service in the Civil War titled "Medical Recollections of the Army of Potomac."

LEGACY: Letterman's efforts played a significant role in United States' success in the Civil War. He raised morale amongst the troops by ensuring that soldiers received basic necessities and rest. The battlefield evacuation reforms he implemented continue to serve as the foundation for modern U.S. military medical procedures.

Dr. Letterman, medical director of the Army of the Potomac, with his staff, November 1862. Letterman is seated left. (LOC/Alexander Gardner)



TRIAGE



Ambulance crew demonstrating how to evacuate wounded soldiers, circa 1860-1865. (LOC)

EXPLORE

When the Civil War erupted in 1861, the lack of a formal battlefield evacuation system placed injured soldiers at risk of dying from their wounds. In June 1862, when Letterman assumed the position of Medical Director of the Army of the Potomac, the largest force in the Union Army, he instituted the Letterman Plan. Part of the plan called for the establishment of an Ambulance Corps to evacuate soldiers wounded during battles.

Letterman also created a tiered system to assess battlefield casualties. Once the men in the Ambulance Corps transported an injured soldier from the battlefield to a nearby aid station, assistant surgeons and medical attendants used tourniquets to limit the flow of blood and administered morphine or whisky for pain. After this preliminary round of care, doctors and attendees determined the severity of the wound and placed the injured soldier into one of four categories: severely wounded, mildly wounded, lightly wounded, or mortally wounded.

Soldiers with severe wounds, such as fractures, missing limbs, or severe bleeding, were marked as first priority and brought to a nearby field hospital for immediate medical care. If the soldier survived, they were transported to a hospital in a nearby city to recuperate and receive long-term care. Soldiers in stable condition with mild wounds were marked as second priority and remained at the aid station until all of the severely wounded soldiers were attended to and removed. Soldiers with minimal injuries that required bandages were marked as third priority. After receiving treatment, medical attendants ordered soldiers to return to their units. Soldiers that arrived at the aid station with mortal wounds to their head or chest were made comfortable, possibly received their last rites, and left to die.

During the Battle of Antietam on September 17, 1862, Letterman's plan was tested. The tiered system proved successful when the Medical Department successfully removed 17,000 wounded soldiers from the battlefield within 24 hours. The system also withstood the heavy casualties from the Battle of Fredericksburg and the Battle of Gettysburg.

Today, we know Letterman's tiered system as triage. It is used by Emergency Medical Services and combat medic units to apply the best form of care to as many people as possible.

REFLECT

- Why do you think it is important to have a triage system during combat? During any emergency?
- What other aspects of emergency medicine have evolved since the Civil War?

MAJOR WALTER REED

HONOR

WALKING TOUR STOP 11

Section 3, Grave 1864

BIRTH: September 13, 1851, Gloucester County, VA

DEATH: November 23, 1902, Washington D.C.

BACKGROUND: Serving in the U.S. Army Medical Corps in Cuba during the Spanish-American War, Major Reed was a pioneering bacteriologist whose experiments confirmed the mosquito transmission of yellow fever. Reed attended the University of Virginia where he completed the two-year medical course in one year. At age 17, he became the youngest student to graduate from the medical school. After graduation, Reed moved to New York City where he earned a second medical degree from Bellevue Hospital Medical College. He was described by others as enthusiast, optimistic, and sociable. In 1875, he joined the Army and married Emilie Lawrence. They had two children.

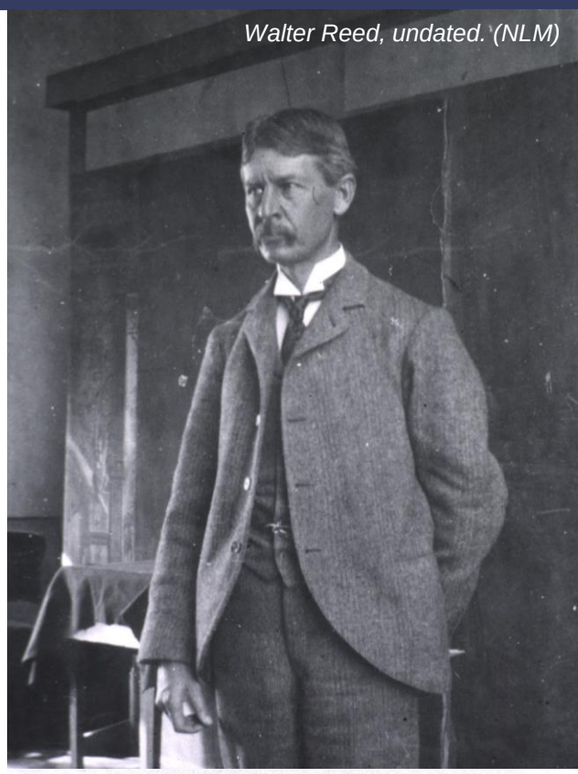
CAREER: Much of Reed's early Army career was spent in the American west, providing care to soldiers, settlers, and Native Americans. In between stints in the west, he was also stationed in Baltimore, Maryland; and Alabama. While in Baltimore, Reed studied at Johns Hopkins University and developed professional relationships with bacteriologists William Henry Welch and George Sternberg (Stop 1). Reed's early career was marked by medical advances across the globe. In the 1860s in France, Louis Pasteur proved the germ theory hypothesis, or that microorganisms caused diseases. In the 1870s, German scientist Robert Koch linked specific bacteria to specific diseases, marking the start of the field of bacteriology. Soon, Reed would join their ranks.

In 1893, Army Surgeon General Sternberg promoted Reed to major and brought him to Washington D.C. In Washington, Reed worked as curator of the Army Medical Museum (now the National Museum of Health and Medicine), professor of clinical microscopy and bacteriology in the Army Medical School (now Walter Reed Army Institute of Research) and director of bacteriology at Columbian University (now George Washington University). He was known for his accurate and original work.

During the Spanish-American War (1898), infectious diseases like typhoid fever and yellow fever were the largest killers of American troops. To combat the spread of disease, Reed headed an investigation of typhoid fever. The commission discovered that typhoid was mostly spread through contaminated drinking water and contact with flies that had touched contaminated fecal matter. They recommended stricter sanitation efforts at Army camps. In 1900, Reed traveled to Cuba where he headed the team that discovered that yellow fever was spread by mosquitoes biting an infected person and passing the disease to healthy people.

Reed returned to Washington, D.C. in 1901 and resumed his previous positions at the Army Medical School and Columbian University Medical School. On November 23, 1902, he died of infection after surgery for a burst appendix. He was 51 years old.

LEGACY: Walter Reed helped pioneer the field of bacteriology in the United States. His confirmation that mosquitos transmitted yellow fever was a breakthrough in biomedicine. It led to greater understanding of how disease worked and led to further research on combating tropical diseases.

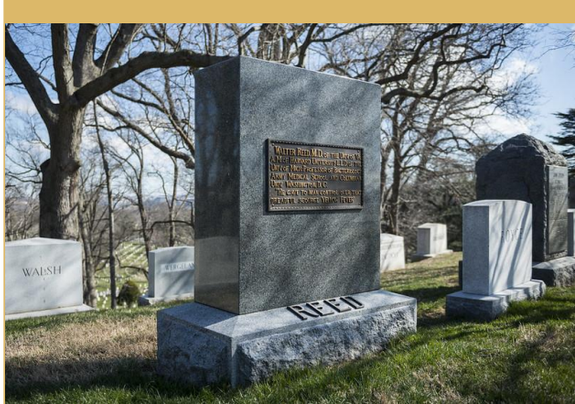


Walter Reed, undated. (NLM)

Walter Reed with his daughter, Blossom, circa 1900. (NLM)

MILITARY MEDICINE
WALKING TOUR

Reed's headstone is nine plots to the left of Letterman's.



YELLOW FEVER, CUBA AND HUMAN VOLUNTEERS

Volunteers from Walter Reed's yellow fever experiments, September 1900. (University of Virginia)

In 1898, the United States went to war with Spain over Spanish rule in Cuba. During this conflict, disease was the most common cause of death for soldiers. In 1900, the United States still had troops stationed in Cuba and Army Surgeon General George Sternberg sent a group of Army doctors to Cuba to study yellow fever. Walter Reed headed the study.

The team began by testing the theory of Italian bacteriologist Guiseppe Sanarelli that yellow fever was caused by *bacillus icteroides*. At the time, this was the most widely-accepted theory. Unable to find evidence to support Sanarelli's theory, the team decided to tackle the problem by studying how yellow fever spread. Dr. Carlos Juan Finlay of Havana had theorized that yellow fever was carried by mosquitoes. Unable to prove this, he and his work had become a joke.

With Reed called back to Washington, D.C., the Yellow Fever Commission — James Carroll, Jesse Lazear, and Aristides Agramonte — continued their experiments. Experiments involved having mosquitoes bite yellow fever patients and then bite healthy volunteers. Usually experiments at this stage used animals as test subjects. However, many of the animals typically used were not affected by yellow fever. The commission decided they needed to use human volunteers. Volunteers signed a consent form and were paid $100 for participating. They received an additional $100 if they contracted yellow fever.

Not expecting the experiment to be successful, Lazear and Carroll also volunteered. Carroll developed a severe case of yellow fever but recovered. Lazear also contracted yellow fever and died a short time later. When Reed returned to Cuba, Lazear's notes were useful in proving the theory and establishing the infection timeline: a mosquito had to bite a yellow fever patient within the first three days of his illness. Then, after 12 days of incubation, the mosquito could pass the disease to another person.

Image from Science Comic's March 1946 cover. (Ace Magazines)

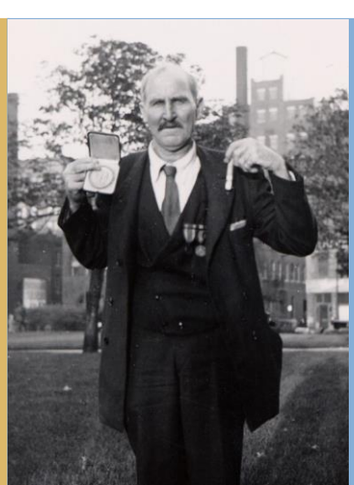
Next, Reed set out to disprove the widely held belief that yellow fever could be passed along by handling the soiled clothing or bedding of patients. To do this, volunteers spent 20 days and nights in a cabin with bedding and clothing that was dirty with the blood and vomit of other yellow fever victims. None of the volunteers got sick.

Other experiments continued as the scientists worked to learn more about the transmission of yellow fever and the virus that causes it. While testing the effectiveness of inoculation, eight volunteers contracted yellow fever. Three of them died. This included the only female volunteer, a young nurse named Clara Maas. These deaths shocked the Army and led to the end of human experimentation.

The work of Reed and others in Cuba advanced scientific knowledge and dramatically reduced yellow fever deaths.

REFLECT

- Would you willingly contract yellow fever or another deadly disease for a research study?
- Have you volunteered to participate in a medical study? Are there parameters that would make you feel more comfortable participating in a medical study? Less comfortable?



Charles Sonntag holding a medal and a test tube with the mosquitoes that likely gave him yellow fever, September 1941. (University of Virginia)

Pvt. Charles G. Sonntag
(Section 17, Grave 23239)

Charles G. Sonntag was one of the volunteers in the experimental yellow fever group in Cuba. He and other volunteers were awarded the "Conquest of Yellow Fever" medal for their unique bravery.

LIEUTENANT COLONEL ALBERT SABIN

HONOR

WALKING TOUR STOP 15

Section 3, Grave 1885-RH

BIRTH: August 26, 1906, Bialystok, Poland

DEATH: March 3, 1993, Washington, D.C.

BACKGROUND: Albert Sabin invented the oral polio vaccine. Sabin was born in northeastern Poland, then part of Russia, in 1906. In 1921, when Sabin was 14, his family immigrated to the United States to escape anti-Semitism.

Sabin originally intended to study dentistry because his dentist uncle offered to pay for his schooling. However, after enrolling at New York University (NYU), Sabin changed his mind and pursued medical research instead. He earned his M.D. from NYU in 1931.

Sabin had two daughters with his first wife, Slyvia Tregillus. After Tregillus died in 1966, he married Heloisa Dunshee de Abranches.

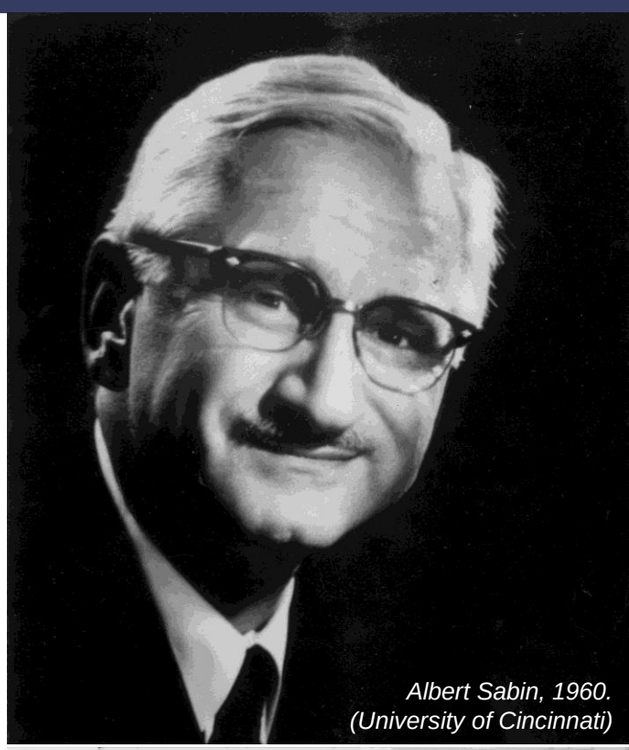
CAREER: Immediately after earning his M.D., Sabin began researching a polio vaccine. By 1931, polio was an epidemic. In 1916, polio killed 6,000 people in the United States and left thousands more paralyzed. Each summer it returned, leaving people dead and paralyzed in its wake. Through his research, Sabin proved that polio viruses primarily infected people through their digestive tract, and therefore an oral vaccine could prevent infection.

World War II interrupted Sabin's research. For the duration of the war, Sabin served as a lieutenant colonel in the Medical Corps. As part of the U.S. Army Epidemiological Board's Virus Committee, he developed vaccines for dengue fever, encephalitis, and sand-fly fever. After the war, Sabin returned to his research on polio at the Children's Hospital Research Foundation in Cincinnati, Ohio.

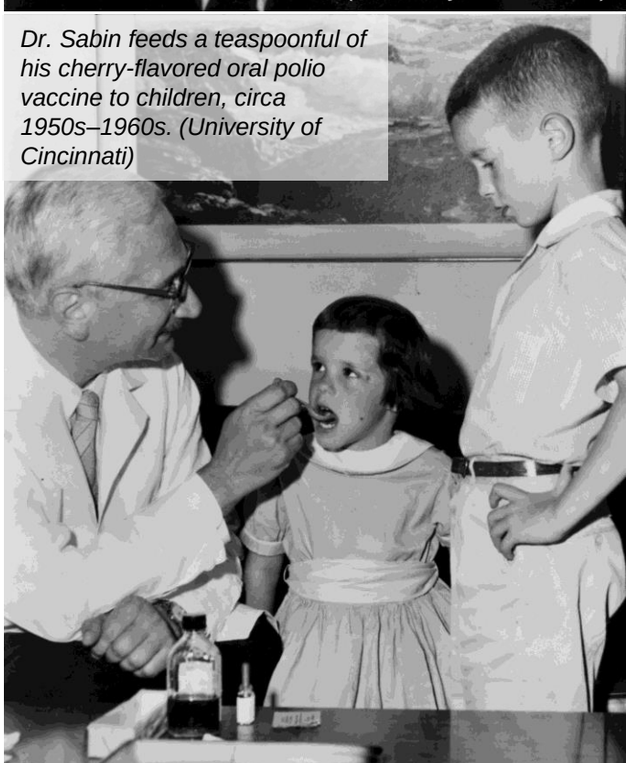
Through his research, Sabin discovered that some people had polio-resistant antibodies in their bloodstream, suggesting they had contracted a weak strain of the virus that protected them from more violent strains. Inferring he could produce a vaccine using a weak, but live strain of the virus, Sabin began seeking a weak strain he could isolate. In 1957, Sabin had developed a live, oral vaccine and began performing human experiments in Chile, Holland, Japan, Mexico, the Soviet Union, and Sweden. It was not approved for use in the United States until August 1961.

A few years earlier, Jonas Salk had developed a polio vaccine using a "dead" viral strain. While this vaccine prevented people from contracting polio, it did not prevent them from infecting others. It was also administered as a shot. Sabin's oral vaccine was easier to distribute and also guaranteed individuals immunized to the disease could not spread the disease. His vaccine led to the global eradication of polio.

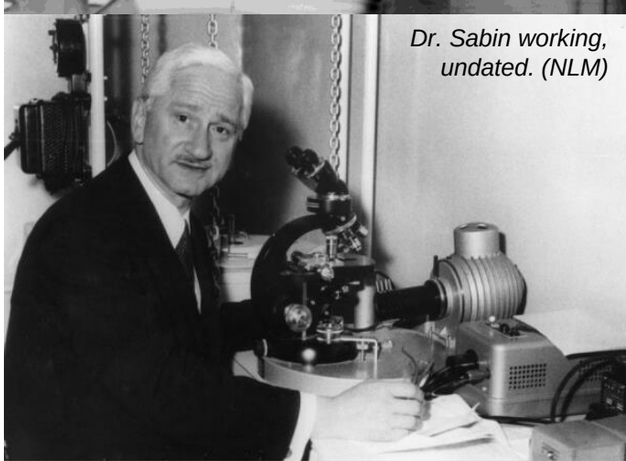
LEGACY: Sabin's vaccine led to the virtual global eradication of polio. The World Health Organization reported in 2019 that worldwide polio cases decreased over 99% since 1988 — from approximately 350,000 cases in 1988 to only 33 cases in 2018.



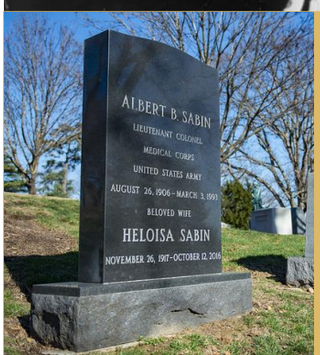
Albert Sabin, 1960. (University of Cincinnati)



Dr. Sabin feeds a teaspoonful of his cherry-flavored oral polio vaccine to children, circa 1950s–1960s. (University of Cincinnati)



Dr. Sabin working, undated. (NLM)



MILITARY MEDICINE
WALKING TOUR

Sabin's headstone is on the opposite side of the cul-de-sac, in the first row.

COLONEL MICHAEL E. DEBAKEY

WALKING TOUR STOP 16

Section 34, Grave 399-A

BIRTH: September 7, 1908, Lake Charles, LA

DEATH: July 11, 2008, Houston, TX

BACKGROUND: A cardiovascular surgeon, Michael DeBakey developed a "roller pump" that enabled open-heart surgery. Born Michel Dabaghi to Lebanese immigrants Shaker Morris and Raheeja Debaghi, DeBakey grew up in Louisiana. He earned his medical degree from Tulane University in New Orleans in 1932.

CAREER: After earning his degree, DeBakey joined the faculty of Tulane University. While still in school, he invented the roller pump. The roller pump was an important part of the machine that keeps the heart and lungs functioning during surgery. His invention launched the era of open-heart surgery.

When the United States entered World War II in 1941, DeBakey volunteered for military service. As director of the Surgical Consultants' Division in the Army Surgeon General's Office, he helped develop Mobile Army Surgical Hospital (MASH) units. Before MASH units, field hospitals had been the primary means for physicians to treat soldiers during war. During World War II, however, transporting soldiers to field hospitals became too time-consuming and cost too many lives. The military assigned DeBakey and others to develop a better method to treat soldiers on the battlefield, and they created MASH units: small groups of medics sent to provide immediate medical attention on the battlefield. Each group included a chief surgeon, an assistant surgeon, an anesthesiologist, a surgical nurse, and two enlisted technicians. For his work developing MASH units, DeBakey earned the Legion of Merit Award. After the war ended, DeBakey returned to academia but remained in the Army Reserves.

Over the next 50 years of his career, DeBakey continued to innovate. He developed the artificial graft to replace and repair blood vessels, ventricular assist pumps (LVAD), and artificial hearts. He was also the first person to successfully complete a coronary bypass operation and a multiple-organ transplant.

In addition to his work in the medical field, DeBakey helped establish the National Library of Medicine in 1956 and advised U.S. presidents, foreign governments, and organizations on health care policy and systems.

LEGACY: Over a 75-year career, DeBakey transformed the medical field. His surgical inventions, his medical practice and teaching, and his work in health care policy saved countless lives and continue to impact the medical field today.

DeBakey in his Army uniform, undated. (NIH)

MILITARY MEDICINE
WALKING TOUR

Return to McPherson and turn left. McPherson will loop and turn into Grant Dr. When you come to Section 34, DeBakey's grave is 8 rows up from Pershing Dr, along Grant.

DeBakey performing surgery, undated. (NIH)

COLONEL EMMA VOGEL

WALKING TOUR STOP 5
Columbarium Court 1/M/7/1

Vogel in uniform, circa 1920. (APTA)

MILITARY MEDICINE
WALKING TOUR

Continue on Grave Dr. At the circle, turn right on Porter. Porter will become Bradley Drive. Enter Court 1 from Bradley. Vogel's niche is directly to the left of the entrance.

BIRTH: September 18, 1889, Mankato, MN

DEATH: August 8, 1981, St. Petersburg, FL

BACKGROUND: Emma V. Vogel was a pioneer of the physical therapy profession. She graduated from Mankato State Teachers College in 1908. In 1918, she enrolled in a three-month-long War Emergency Training Course at Reed College in physical therapy, one of the first formal training courses in physical therapy.

CAREER: Physical and occupational therapy became an important part of World War I military medicine. Shortly after getting injured, patients came to Reconstruction Aides — physical and occupational therapists — for rehabilitation. Reconstruction Aides used exercises, activities, and other treatments to "reconstruct" the bodies of men who were wounded in combat so they could return to society and lead functional, productive lives. Emma Vogel began her military career in 1919 as a civilian Reconstruction Aide at Army General Hospital No. 24 near Pittsburgh, Pennsylvania.

During World War I, Reconstruction Aides had served as paid employees working for the American Red Cross or the American Expeditionary Forces, but they were not in the military. Their wartime duties took them both overseas and to military installations across the United States. Wherever they were stationed, they played a critical role in dealing with the aftermath of combat and helping wounded service members regain their dignity, independence, and confidence. Reconstruction Aides helped to develop the fields of physical and occupational therapy, both still very new before World War I.

In 1920, after only a few months at General Hospital #24, Vogel was transferred to Walter Reed General Hospital and named Supervisor of Physical Therapists. In this role, she helped organize and lead the Army's first peacetime physical therapy training course. She also served as an advisor to the Surgeon General's office for issues related to physical therapy. Over the next several decades, Vogel dedicated much of her time to improving the military status, benefits, salaries, and privileges of reconstruction aides. Progress came slowly, and it was not until World War II that female physical therapists finally attained military status; male physical therapists were barred from the same status until 1955.

From 1947 until her retirement in 1951, Vogel led the Women's Medical Specialists Corps – now the Army Medical Specialist Corps — as its very first chief. She retired from the U.S. Army at the rank of colonel.

President Harry Truman and senior female medical officers posing with the law that established the Women's Medical Specialist Corps in 1947. Vogel is on the far right. (U.S. Army)

LEGACY: Upon Vogel's retirement, former Surgeon General Norman T. Kirk stated, "No woman, either as a civilian employee of the Medical Department, or a commissioned officer in one of its corps, has made the contribution to the Medical Department that you have made."

Throughout her career and especially during her retirement, Vogel vocally advocated on behalf of the World War I Reconstruction Aides. She worked to keep the memory of their service alive, donating her own papers to a museum now known as the National Museum of Health and Medicine to ensure that their legacy would not be forgotten.

BRIGADIER GENERAL HAZEL JOHNSON-BROWN

HONOR

WALKING TOUR STOP 18

Section 60, Grave 9836

BIRTH: October 10, 1927, West Chester, PA

DEATH: August 5, 2011, Wilmington, DE

BACKGROUND: Hazel Johnson-Brown was the first Black woman general in the U.S. Army. Johnson-Brown and her six siblings grew up on their parents' farm in Pennsylvania. During her youth, Johnson cared for her younger siblings, and by the age of twelve she was also working as a maid in another family's home.

CAREER: Johnson-Brown initially applied to the Chester School of Nursing but was denied admission because of her race. She instead enrolled at the Harlem Hospital School of Nursing, graduating in 1950. She worked in the emergency ward at Harlem Hospital for three years before joining the medical cardiovascular ward at the Philadelphia Veterans Administration. After only three months there, she was promoted to head nurse. During this period, she decided to pursue a bachelor's degree in nursing at Villanova University.

Johnson-Brown joined the Army Nurse Corps in 1955 and was deployed to Walter Reed Army Medical Center to work on the female medical-surgical ward. In 1966, as the United States escalated its involvement in the Vietnam War, the Army Nurse Corps assigned Johnson to evaluate a transportable hospital intended for use in Vietnam. The following year, after overcoming a lung infection, she assumed control of central material services at Valley Forge General Hospital (at the time, one of the largest military hospitals in the United States). In 1976, Johnson-Brown served as director and assistant dean of the Walter Reed Army Institute of Nursing while working towards a Ph.D. at Catholic University. In 1979, the Army promoted Johnson-Brown to the position of chief of the Army Nurse Corps, with the accompanying rank of brigadier general — the first Black woman in U.S. military history to attain a general officer rank. Johnson-Brown retired from the Army in 1983.

LEGACY: Throughout her career, Johnson promoted the importance of academic scholarships for Reserve Officers' Training Corps (ROTC) students. She also worked to implement the first standards of practice within the Army Nurse Corps, and she laid the foundation for the expansion of the nursing profession within the military.

In Her Own Words

In this video series for the Visionary Project, Johnson-Brown described her childhood as well as experiences in the Army.

MILITARY MEDICINE
WALKING TOUR

Johnson-Brown's headstone is toward the center of Section 60, closest to York and Marshall Drives.

Top: Johnson-Brown, circa 1979. (U.S. Army)

Bottom: Johnson-Brown's promotion to colonel ceremony, undated. (U.S. Army)

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