

Chapter One

The Early Years: Fort Bayard, New Mexico

On 16 November 1899, African American regulars of the 9th U.S. Cavalry, known as the Buffalo Soldiers, departed Fort Bayard, New Mexico, for Fort Duchesne, Utah.¹ They had been garrisoned at the fort since June, but now the War Department was transferring control of the fort from line command to the Army Medical Department. As the cavalry left, another group of men arrived. Some of them came on horseback, others by train and mule-driven ambulances, many so sick they had to be carried on stretchers. Arriving from Army hospitals and soldiers' homes for disabled veterans from the East and West coasts, these soldiers and veterans came to Fort Bayard to rest and heal. They came to be treated for tuberculosis.

This "changing of the guard" at Fort Bayard reveals a broader transition that was taking place in the Army as the United States strode onto the world stage as an economic and military power. Industrialization and the military conquest of Native Americans had helped the federal government lay claim to all corners of the country. Now the nation looked outward, and the War Department's mission and that of Fort Bayard changed. In addition to protecting American interests and people, the Army post's nineteenth-century mission had been to defend the nation's acquisition and control of land and resources in the West. The twentieth century would be dedicated to caring for the casualties of that effort. From fort to hospital, from cavalry barracks to patient wards, from combat officers to medical officers, Fort Bayard transformed from a multipurpose post in an army of the Indian wars to a specialized institution in an army of an empire.

Fort Bayard had a rocky start as a tuberculosis hospital. The first commander, Major (Maj.) Daniel M. Appel, successfully established a hospital in 1899 that provided state-of-the-art care for American soldiers and veterans. But Appel had difficulty maintaining order and discipline in this half-sanatorium, half-Army post, and two years later the Army Surgeon General relieved him of command. His successor, Lieutenant Colonel (Lt. Col.) Edward Comegys, encountered simi-

lar difficulties; the Surgeon General relieved him of command within eighteen months. This time the Surgeon General put one of his best medical officers, Maj. George E. Bushnell, in command. Bushnell would manage Fort Bayard from 1904 to 1917, becoming a leading authority on tuberculosis, and bringing not only order and discipline to the hospital, but national and international praise as well. He would also shape U.S. government tuberculosis policy for a generation.

Bushnell's success was due to his deep interest and knowledge of tuberculosis, his clear sense of Fort Bayard's mission, and his efforts to employ the modern American military management techniques emerging in the early decades of the twentieth century. His authority to run Fort Bayard lay not only in his rank and military command, but also in the scientific knowledge and medical expertise that he skillfully deployed within the Army's corporate, professional bureaucracy. The modernization of the U.S. Army would take place over several decades; the early years of the Army's tuberculosis hospital exemplified many of the elements of that complex process.

The Fort

In the last third of the nineteenth century the Army was small in proportion to the national population, with only 25,000 to 30,000 soldiers in a population of more than 76 million. Isolated from the greater society in far-flung posts, poorly funded, and held in low esteem by Americans traditionally hostile to the military, soldiers and officers knew each other well and often formed tight communities.² The Army's primary missions were domestic: fighting Indians and containing them on government reservations; protecting settlers, ranchers, and miners from outlaws and Indian attacks; policing industrial labor disputes; and building roads and stringing telegraph wire across the country—in short, bringing industrial society to the West.³ That was the Army of the Buffalo Soldiers. The twentieth-century U.S. Army would adopt new, more corporate and bureaucratic methods of management, modern scientific knowledge and technology, and would also extend its mission and responsibilities to American economic interests in the Western Hemisphere and the Pacific. As this Army fought in other countries—especially in the tropics, where it encountered new, debilitating diseases—it generated a growing population of sick and disabled soldiers, some of whom would come to Fort Bayard.

A tuberculosis sanatorium was a far cry from Fort Bayard's original purpose. It began as a military outpost, situated in a valley between the Sierra Madre and Santa Rita ranges of mountains, sixty miles north of the Mexican border at an altitude of 6,040 feet.⁴ For centuries Mexican peasants, ranchers, and Indians competed for control of the region's land and mining resources. White settlers entered the fray after the 1848 Treaty of Guadalupe Hidalgo transferred much of the land claimed by the Chiricahua Apaches from Mexico to the United States.⁵ The discovery of gold, silver, and copper in the nearby mountains soon brought more fortune seekers to the region. In August 1866, after

the Civil War, the Secretary of War established a fort in the region to protect the mines, naming it for Brigadier General George D. Bayard of the First Pennsylvania Cavalry, who was mortally wounded in the 1862 Battle of Fredericksburg.⁶

Fort Bayard (Figure 1-1) was a classic western settlement: predominantly male, ethnically diverse, dependent on one industry, and vulnerable to its booms and busts. In 1870 the post housed about 185 soldiers—one infantry and two cavalry units. The medical officer on duty estimated the local population to be about 300 Mexicans, Irish, and German immigrants, and some Americans, most of whom were engaged in mining. A few men had their wives and children with them, and although Fort Bayard had no chapel or schoolhouse, it boasted a library with sixty-five books.⁷ The cemetery already had twenty-one graves and the hospital had one twelve-bed ward “which is used alike by white and colored patients.”⁸ These “colored” patients were members of the Black Regulars—the four Army units that Congress had designated after the Civil War for African Americans: the 9th and 10th Cavalry Regiments and the 24th and 25th Infantry Regiments. Dubbed “Buffalo Soldiers” by the Indians, almost 20,000 African Americans served in the Army between the Civil War and the Spanish-American War, comprising about 10 percent of the enlisted men of the Army in a given year.⁹ Seeking to avoid racial hostilities in the East and South the War Department posted most African Ameri-

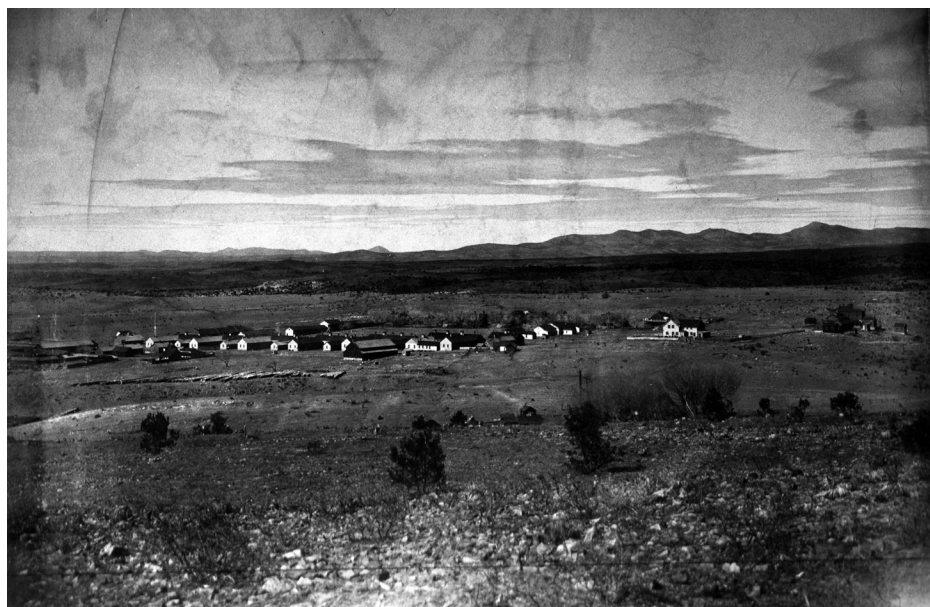


Figure 1-1. U.S. Army, General Hospital, Fort Bayard, New Mexico, General View, circa 1900, showing the isolation of the post on a high mesa in New Mexico Territory. Photograph courtesy of the National Library of Medicine, Image #A02342.

can soldiers in the West during this period, many of them at Fort Bayard. Fort Bayard was a rung on the career ladder of other famous soldiers, including John Pershing, commander of the U.S. forces in Europe during World War I. Fresh out of West Point in 1886–87, Pershing commanded a troop of the 6th Cavalry at Fort Bayard.¹⁰ Leonard Wood, who rode with Theodore Roosevelt and the Rough Riders during the Spanish-American War, served as Army chief of staff, and later ran for president. He also served as a medical officer at Fort Bayard early in his career.¹¹

In the 1890s, however, with the West increasingly settled, there was less need for a military presence. Activity in the area further declined when local mines closed down after the 1893 economic crash. As the United States acquired new territories overseas, its military interests turned outward, and the War Department decommissioned forts across the West. As Fort Bayard soldiers dismantled Forts Selden and Stanton in New Mexico, they must have wondered if they would be doing the same to their own post. Rather than tear it down, however, the Army gave Fort Bayard a new mission.

From Climate Therapy to Sanatoriums

American medicine was in transition in the late nineteenth century, departing from the centuries-old practices of purging and bleeding, but not yet fully comprehending or embracing the power of germ theory—that specific pathogens caused specific diseases and could be passed from person to person.¹² With few effective medical remedies at their disposal, Americans resorted to a wide range of cures. Indians had long enjoyed the benefits of Rocky Mountains hot springs, and whites soon discovered that the warm waters and clear, dry mountain air offered relief from maladies such as arthritis, rheumatism, heart and skin ailments, and respiratory diseases.¹³ As early as 1846 the Army erected a bath house and hospital at the hot springs at Las Vegas, New Mexico, for sick and wounded soldiers from the Mexican War, and during the nineteenth century many other people traveled west to visit similar springs, seeking health as well as land and riches.¹⁴

Tuberculosis is the disease that brought the most people to the West and Southwest. Eastern and midwestern physicians sent patients to Colorado, New Mexico, and California to regain their health, and medical journals such as the *Boston Medical and Surgical Journal* debated the merits of various resorts and locations.¹⁵ Doctors traveled west for their own health, as well. Among them was John Henry “Doc” Holliday, a dentist who left Georgia in search of a cure for his tuberculosis and a chance to gamble. After gaining infamy at the gunfight at the O.K. Corral with the Earp brothers in 1881, he went to Colorado for his health and in 1887 died of tuberculosis in a hotel at Glenwood Springs, Colorado, at the age of 36.¹⁶ At first health seekers had to be well enough to endure a journey on horseback or with wagons and mules, but the completion of the transcontinental railroad in 1869 opened the West to sicker and weaker patients. Some arrived at their destinations on stretchers and soon died. Many communities, with little

appreciation of the contagious nature of tuberculosis, welcomed people with tuberculosis, especially if they brought adequate funds. In Denver more than 20 percent of the population was invalid in 1890.¹⁷ By the early 1900s, New Mexico had forty-four tuberculosis sanatoriums, and as historian Jack Spidle put it, “tuberculosis dominated New Mexico medicine.”¹⁸

Health seeking acquired a scientific aura during the 1880s and 1890s, as physicians and scientists developed the field of “climatology” to study the effect of climate on sickness and health. Men such as Charles Denison and Samuel Fisk of Colorado followed a European school that promoted the benefits of high altitude, fresh air, porous soil, and piney forests for recuperation from illness, especially tuberculosis. They believed that escaping dirty cities and getting rest, fresh air, hearty meals, and exercise would strengthen the body to fight disease and debated the relative merits of ocean breezes, mountain air, high altitude, and aridity on patients.¹⁹ Denison, a physician who traveled west to cure his tuberculosis and indeed recovered his health, produced detailed tables and maps of the aridity and altitude of communities across the country to inform the debate.²⁰

By the end of the century, however, climatology was losing its attraction. The lack of empirical evidence demonstrating the salubrious effect of certain climates fostered doubt. One Colorado physician was shocked and disappointed to learn that fewer than fifty of the one hundred tuberculosis patients he was studying were still alive after two years.²¹ Others observed that recovery rates from tuberculosis were similar in New York, North Carolina, and Colorado—dampening any unique claims of high altitude therapy.²² At the same time, and perhaps more importantly, people were coming to better understand the nature of infectious disease. By the early 1880s, germ theory had been developed by Louis Pasteur, Robert Koch, and other scientists, demonstrating that diseases like tuberculosis and typhoid were not inherited or caused by bad air (miasmas) but were transmitted by pathogenic organisms. After Koch identified tuberculosis bacteria in 1882, and other researchers began to find the pathogens causing various diseases, people began to view the sick with less sympathy and more fear. Some began associating tuberculosis with lower classes and treating those infected like lepers.²³ Health spas and resorts turned to soliciting healthy tourists rather than infectious invalids, and public health officials began to suggest that it would be safer to isolate sick people than to let them travel around the country infecting others.

New York City public health commissioner Hermann M. Biggs launched the first campaign against tuberculosis in 1889 by instituting routine bacteriological analysis of specimens from tuberculosis patients, and in 1893 required physicians to report all tuberculosis cases.²⁴ By the end of the century, at least twenty-four states had antituberculosis programs, as did many of the larger cities. Public health leaders formed the National Association for the Study and Prevention of Tuberculosis in 1904 to advance the view that tuberculosis was preventable and curable. Antituberculosis measures ranged in severity from outlawing spitting, to barring people with tuberculosis from food-handling or teaching jobs, to compulsory hospitalization for tuberculosis patients. Several states ruled that fraudulent

concealment of tuberculosis was, like syphilis, sufficient grounds for marriage annulment, while a number of physicians opposed marriage for people with tuberculosis, especially women of childbearing age, and counseled patients to not kiss their husbands, wives, or children.²⁵ Some people called for the sterilization of the tuberculous. The *New Mexico Medical Journal* editorialized, "We cannot prevent the mating of the unfit, but we can prevent the procreation of the unfit." The journal also supported abortion for women with tuberculosis: "The command 'thou shalt not kill' is not violated when a fetus is taken from a tubercular woman and a life, problematic yet and probably a social unfit is sacrificed to prolong the existence of a social unit."²⁶ As historian Michael Worboys has written, "The campaign against consumption...ended in a war against the consumptive."²⁷

As germ theory gained traction the federal government also took action against tuberculosis. The Public Health Service and Navy officials called for segregated train cars for people with tuberculosis traveling west and in 1907 immigration officials barred anyone with tuberculosis from entering the country.²⁸ Upon recommendation of the National Association for the Study and Prevention of Tuberculosis, President Theodore Roosevelt ordered an inspection of the sanitary conditions of all government buildings and issued regulations to prevent the spread of tuberculosis in government offices. These prohibited spitting on the floors, required ventilation and regular cleaning of all work spaces, and ordered that government employees with tuberculosis "be separated when possible from others while at work" and "provide their own drinking glasses, soap, and towels, and shall not use those provided for the general use." The federal government also began funding a program to eradicate tuberculosis from cattle and dairy herds and thereby prevent contagion by milk.²⁹

Physicians and public health officials also increasingly turned to sanatoriums and tuberculosis hospitals to isolate and care for patients. Hospitals at the time were just emerging as a key element in American healthcare. The first national hospital survey in 1873 tallied 178 hospitals with about 50,000 beds, while one in 1909 counted 4,359 hospitals with more than 420,000 beds.³⁰ Nursing pioneer Florence Nightingale's admonitions and instructions on sanitation, fresh air, light, and good ventilation, along with professional, well-trained nursing care, helped reduce death rates in hospitals. New technologies such as aseptic surgery, X-rays, and laboratory diagnostics also increased the value of hospitals.³¹ Massachusetts established the first state sanatorium for people with tuberculosis in 1895 and by 1916 there were more than 200 sanatoriums in the country, with 70 percent of the beds provided by local, state, or federal governments.³² Religious and ethnic voluntary organizations established sanatoriums for special communities of tuberculosis sufferers. In Denver, groups established the National Jewish Hospital for Consumptives, the Jewish Consumptives' Relief Society, the Evangelical Lutheran Sanitarium, and the Swedish National Sanatorium for Consumptives.³³ Tuberculosis hospitals provided a threefold solution of isolating patients, treating the disease, and educating tuberculosis patients on how to care for themselves. The War Department's establishment of a tuberculosis hospital in New Mexico put the Army in the first wave of this movement.

Tuberculosis and the Army

Like the rest of society, the Army struggled with a range of diseases. Hospitalization rates for disease during the 1890s averaged more than one a year per soldier or 30,670 admissions for a mean strength of 29,308 men.³⁴ Although the War Department sought to screen sick men from the ranks—rejecting 64 percent of recruits in 1891 for poor health—soldiers still fell ill.³⁵ Malaria was the most common reason, accounting for 16 percent of hospital admissions, followed by diarrheal diseases at 12 percent. Respiratory diseases, influenza, tonsillitis, rheumatism, and sexually transmitted diseases each generated between 5 and 10 percent of admissions. Tuberculosis accounted for less than 1 percent of the hospital admissions but was responsible for 7 percent of the deaths from disease. After the Spanish-American War (1898–99), in which the United States supported Cuba’s rebellion against Spanish control and challenged Spanish dominance of the Philippines, the Surgeon General noted with alarm a doubling in sickness rates over those of the previous decade, largely due to increases in malaria and dysentery among troops deployed overseas. In 1900 soldiers required hospitalization more than twice a year on average: the Army with a mean strength of 100,389 men had 212,377 annual admissions, with malaria still in the lead, followed by diarrhea, dysentery, and sexually transmitted diseases. Thirty percent of the Army’s 2,283 deaths in 1900 were from wounds and injuries, the rest from disease. Dysentery caused one-third of the deaths from disease (565 of 1,585) and typhoid, malaria, and smallpox each killed more than 100 men. Another troubling development was that ninety-six men died of tuberculosis in 1900 compared to 140 during the entire previous decade.³⁶

By 1900 tuberculosis caused about 20 percent of all American deaths. That was down from a horrifying 40 percent in the mid-nineteenth century, but tuberculosis still remained the single greatest killer in the country and a problem for the military.³⁷ During the Civil War more than 20,000 Union troops had been hospitalized with the disease and at least 6,000 died. Military surgeons conducting autopsies on soldiers killed in action or who had died of another disease noted that they often bore calcified lesions on the lung, signs of pulmonary tuberculosis, and concluded that “consumption was truly a development of the hardships and exposures of military life.”³⁸ In peacetime, during the last two decades of the nineteenth century, Army hospital admissions for tuberculosis ranged from 1.5 to 4.7 per 1,000 annually.³⁹ Although these rates were lower than in the civilian population, any infection in the Army created a risk of contagion to healthy soldiers and could generate lifelong pension obligations to disabled soldiers.

In 1893 the War Department turned to Army Surgeon General George Sternberg (Figure 1-2) to solve its tuberculosis problem. A leader in American bacteriology, Sternberg was one of the first medical officers to acquire a microscope, one of the first American scientists to attempt to reproduce Robert Koch’s famous experiments isolating tuberculosis bacteria, and author of the first American textbook on bacteriology in 1893.⁴⁰ As Surgeon General from 1893 to 1902, he would guide the Medical Department into the era of modern medicine, establishing the Army

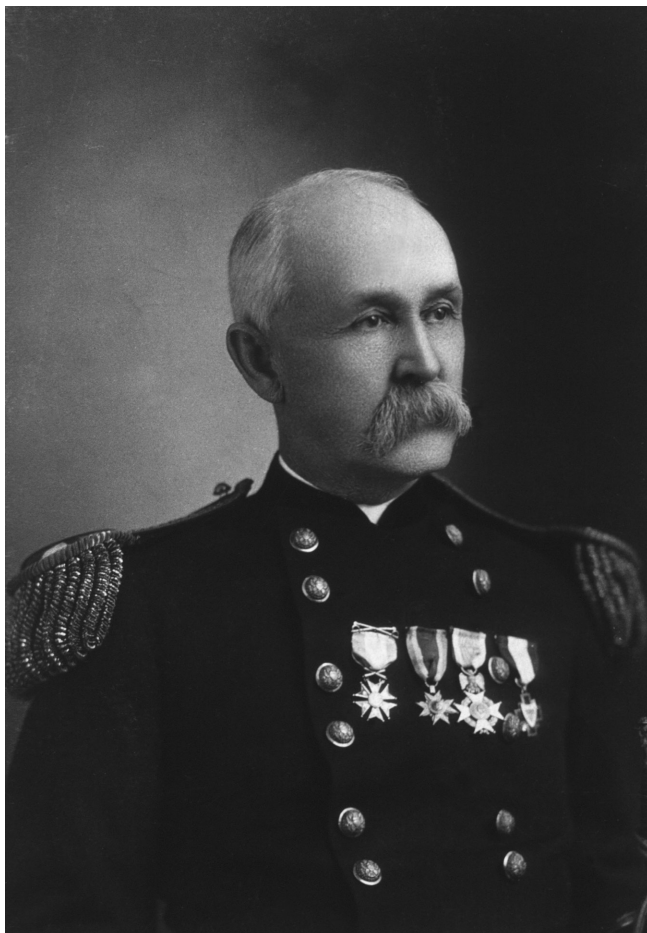


Figure 1-2. Brigadier General George Miller Sternberg, the Surgeon General who established the Army's first tuberculosis hospital in Fort Bayard, New Mexico. Photograph courtesy of the National Library of Medicine, Image #B011438.

Medical School and the Army Nurse Corps, promoting professional dentistry and nursing, and creating a special surgical hospital in Washington, DC.

As Sternberg grappled with tuberculosis he faced four factors contributing to the problem: First, high rates of alcoholism and sexually transmitted diseases in the Army undermined soldiers' immune systems and rendered them susceptible to developing active tuberculosis; second, the War Department's expansion and increased activities in the tropics exposed soldiers to diseases such as malaria and dysentery, which also weakened their resistance to active tuberculosis; third, increasing numbers of aging Civil War and Indian wars' veterans crowded the

Soldiers' Homes in Washington, DC, and elsewhere, increasing the risk of contagion; and finally, rising expectations about the powers of new medical knowledge and technology to keep soldiers healthy reduced public tolerance for disease in the military.⁴¹

Alcoholism and venereal disease have long histories in the military, and physicians understood that these conditions could make people more susceptible to active tuberculosis. Before the Spanish-American War, hospital admission rates for syphilis averaged 7 percent, but in 1898 the rate nearly doubled to 13 percent, with almost one in five men in the American forces in Cuba hospitalized for sexually transmitted diseases.⁴² The standard medical text of the time, William Osler's *Principles and Practice of Medicine*, noted that syphilis and other diseases could facilitate tuberculosis and that "chronic drinkers are much more liable to acute and pulmonary tuberculosis." Alcoholism, Osler suggested, "altered the tissue-soil, the alcohol lowering the vitality and enabling the bacilli more readily to develop and grow."⁴³ Hospital admissions for alcoholism in the Army averaged 6 percent to 7 percent in the 1890s, and virtually every Army post contended with drunkenness and the resulting fights, injuries, and desertions.⁴⁴ In 1896 the Soldiers' Home in Washington, DC, reported that 10 percent of residents suffered from alcoholism and 7.5 percent from tuberculosis.⁴⁵ Medical officers experimented with various methods of discouraging drunkenness. Lt. Edmund Munson injected patients with sulphate of strychnine, morphine, and other medicines that would make them very sick if they took a drink. Another medical officer pumped drunken soldiers' stomachs and then gave them beef broth with cayenne pepper. "The deterrent effect of this treatment is excellent," he reported.⁴⁶ The War Department also instituted post canteens in 1890 to sell beer and wine, but not spirits, and in 1899 concluded that the canteen reduced alcoholism admissions to Army hospitals from 6 percent to 3 percent of troops and was therefore "an aid to discipline as well as to the health and morals of the troops."⁴⁷

The second factor framing the Army tuberculosis problem was the effect of tropical diseases such as malaria and dysentery on U.S. troops overseas. During the Spanish-American War the Army increased tenfold, from 25,000 to 275,000 men. So did the diseases that raged through the crowded camps. After the victory at San Juan in the summer of 1898, yellow fever and typhoid drove the Fifth Corps from Cuba in an ignominious retreat to Long Island. Dysentery and diarrhea rates in the Philippines were three times higher than among soldiers in the United States.⁴⁸ The 122,000 soldiers who served in the Philippines between 1898 and 1902 suffered at least 500,000 cases of illness, about four per capita.⁴⁹ Tuberculosis cases increased sixfold, from fewer than 100 annually to 547 cases in 1898, abetted by malaria, dysentery, and tropical fevers such as dengue, Malta, and yellow fever that could weaken or "break down" an individual's immune system and allow latent tuberculosis infections to flare.⁵⁰ So many Philippine Scouts (employed by the U.S. War Department) were developing tuberculosis that the Medical Department had to construct special hospitals in country to care for them.⁵¹

The case of one young officer is instructive. Lt. Watts C. Valentine was an infantry officer whose father had been a congressman from Nebraska. Young Valentine served in Puerto Rico (1898–99), but then went on sick leave for four months for an unspecified illness. Upon recovery, he was ordered to the Philippines where in a single year he experienced dysentery, Malta fever, dengue fever, and rheumatism. When he returned to the United States his weight had dropped from 155 to 83 pounds. Medical officers found malarial parasites in Valentine's blood and tuberculous infiltration of the upper and middle lobes of his right lung. Valentine spent three months at Fort Bayard in 1902 and the next year was forced to resign from the Army on disability.⁵²

Alcoholism, malaria, dysentery, and tuberculosis not only damaged Army health and morale, but also generated increased federal costs when veterans had to retire on disability. Career Army enlisted men earned a pension after thirty years of service, and by the 1890s Congress had so expanded pension eligibility requirements that the vast majority of Union veterans of the Civil War received monthly stipends. Enlisted men and officers who were injured or became disabled due to illness during duty could also retire—or were compelled to retire—on disability and therefore received monthly pensions. Although lawmakers intended the pension system to obviate the need for government institutions to care for impoverished or disabled veterans, the nation cobbled together a system of domiciliary care for veterans in three parts: (1) the U.S. Soldiers' Home in Washington, DC, for poor and disabled career veterans of the Regular Army, established before the Civil War and administered by the War Department; (2) the National Home for Disabled Voluntary Soldiers, established after the Civil War to provide food, shelter, medical care, and companionship for lonely or destitute veterans, with a network of homes from Maine to California; and (3) various state-run homes. In 1899 the U.S. Soldiers' Home reported 1,296 "beneficiaries," the National Home for Disabled Volunteer Soldiers had 18,814 "members" in eight regional branches, and twenty-nine state homes served 9,140 more veterans.⁵³ As Civil War veterans aged and Spanish-American War veterans swelled the disabled rolls of these homes, government officials became concerned that tuberculosis was an increasing threat to the residents.⁵⁴

Finally, the War Department and Surgeon General Sternberg faced rising public expectations regarding their abilities to keep soldiers healthy. A generation of improvements in public sanitation and medicine had largely banished water- and filth-borne diseases from American cities, and many people expected that soldiers would be as safe in the Army as at home. Such was not the case, however. Deaths by disease during the Spanish-American War outnumbered combat deaths sevenfold, 2,565 to 345.⁵⁵ Disease not only drove Americans from Cuba in 1898, but crippled the Army at home. In the summer of 1898, more than 20,000 soldiers contracted typhoid in Army training camps. At Camp Thomas, in Chickamauga, Georgia, almost 10 percent of the 80,000 men there came down with typhoid. These outbreaks outraged the public and infuriated Congress. Many people considered typhoid a disease of filth and poverty caused by

poor sanitary conditions and personal hygiene; therefore, the epidemic signaled the War Department's failure to care properly for its men. A special commission established to investigate the scandal ultimately faulted the War Department leadership—not the Army Medical Department—for the failure of line officers to grasp the urgent need for sanitary efficiency and discipline, and criticized Congress for failing to provide sufficient funds to carry out the required measures. The episode, however, still humiliated the Medical Department and its officers.⁵⁶

In 1899, with his Medical Department reeling from scandal, Surgeon General Sternberg surveyed the resources available to him to control the spread of tuberculosis in the Army. He had only three major hospitals: (1) the Army and Navy General Hospital located in Hot Springs, Arkansas, for the treatment of injuries and illnesses such as rheumatism; (2) the hospital in Washington, DC (later named for Walter Reed), where Sternberg had established a specialized surgical service; and (3) the new general hospital at the Presidio in San Francisco (later named for Jonathan Letterman), for care of the sick and wounded coming from the Philippines.⁵⁷ Sternberg commanded only 181 medical officers, 385 contract surgeons (civilian physicians hired on a contractual basis), several hundred contract nurses, and 3,300 enlisted men of the Hospital Corps, specially trained to carry out medical and hospital duties. In addition to supporting hospital ships, the Army Medical School, the Army Medical Museum, and the Surgeon General's Library, this staff had to care for a postwar Army of 99,000 officers and men located in more than 100 posts in the United States, Cuba, Puerto Rico, Hawaii, Alaska, and the Philippines.⁵⁸

Sternberg's department was stretched thin, but the War Department's decommissioning of forts presented opportunities. In the 1890s Congress considered using government posts in the West as tuberculosis sanatoriums, and in April 1899, the Public Health and Marine Hospital Service established the first federal sanatorium at Fort Stanton, New Mexico.⁵⁹ The Army had been caring for some tuberculosis patients at the Army and Navy General Hospital in Arkansas and, since 1892, had transferred men in the early stages of tuberculosis to posts in Arizona, New Mexico, and southern California—"in order to give them the advantages of a more favorable climate."⁶⁰ In 1899 a medical officer at Whipple Barracks, Arizona, reported to Sternberg that several tuberculosis patients regained their health in the warm weather, and other Army physicians commented on the freedom from consumption of the New Mexico native population despite their poverty.⁶¹ Anecdotal accounts of soldiers improving from tuberculosis also contributed to the belief that the environment did not "breed tuberculosis."⁶² When a quartermaster officer inspected various southwestern forts as prospective hospitals, he reported favorably on Fort Bayard, estimating that \$90,000 could make the buildings and barracks "suitable for occupation."⁶³ Given the crowding at the Soldiers' Home in Washington, DC, Sternberg proposed to the governing board that it send its tuberculous residents to a special Army hospital for tuberculosis. The Board agreed and the Secretary of War approved the proposal in 1899.⁶⁴

Arrival of Daniel Appel and Early Optimism

When Sternberg sought a commander for the new tuberculosis hospital, he knew the medical officers from whom he could choose; small and spread thin, the Medical Corps was like a professional club. Most medical officers had worked together overseas or in training camps during the Spanish-American War and their business correspondence included inquiries about their families and one another's health. The Surgeon General's annual reports to the Secretary of War included information on individual officers' research and medical activities, the surgical procedures they had performed, and special reports on epidemics, scientific experiments, or case studies that might be of interest to their colleagues. Some reports even included medical charts, such as one tracking the temperature of a patient with appendicitis.⁶⁵

Anticipating a favorable report for Fort Bayard's suitability, Sternberg had already chosen the medical officer to run the Army's first tuberculosis hospital. Maj. Daniel M. Appel (Figure 1-3), forty-five years old, was a respected officer with twenty-three years of experience, skilled in bacteriology, and had suffered from tuberculosis. His annual job evaluations, or "efficiency reports," deemed him "an excellent medical officer."⁶⁶ Born and raised in Pennsylvania, Appel graduated from Jefferson Medical College in Philadelphia in 1875 and received his commission as a medical officer the next year. He was married, with one child, Robert. Sternberg perhaps assumed that because Appel had had tuberculosis himself, he would have a keen interest in the disease and welcome a chance to live in the salubrious New Mexican climate. In assigning him to command at Fort Bayard, he explained, "The intention is to have a model sanitarium under the best climatic conditions, and where proper diet, an out-door life and approved methods of treatment we may expect a large proportion of recoveries." Given the urgency of the situation, Sternberg asked Appel to forgo the balance of his leave, and "report to duty at the earliest possible moment."⁶⁷ Appel's initial response to the assignment was not enthusiastic, however. He took more than two weeks to answer the Surgeon General and arrived at Fort Bayard five weeks later, 3 October, telegraphing Sternberg that he was "prepared for patients as soon as they can get here."⁶⁸

The Soldiers' Home in Washington, DC, immediately began to send tubercular veterans west. The first patient to reach the hospital was an African American veteran of the 10th U.S. Cavalry, Private (Pvt.) Clifford Thornton. He arrived 12 October 1899, according to Appel, with "only the clothes he wore, an old civilian suit."⁶⁹ If the new patients were poorly provisioned, some were also virtually moribund. Pvt. Peter Murphy, of the 1st Artillery, died within weeks of his arrival and was buried at the Fort Bayard cemetery.⁷⁰ Appel complained to the governor of the Soldiers' Home that the disease was so advanced in some of the men they were sending that "there is no prospect for recovery."⁷¹ But Fort Bayard became so useful that the Army also began transferring tubercular active-duty enlisted men and officers there, so that by January 1900, Fort Bayard had forty-seven patients, only one-third of them from the Soldiers' Home.⁷²

As Appel took stock of Fort Bayard's resources he identified housing for him-



Figure 1-3. Daniel M. Appel, first commanding officer of the Army tuberculosis hospital at Fort Bayard, New Mexico.
Photograph courtesy of the National Library of Medicine, Image #B011271.

self and other officers but found most of the buildings dilapidated, with only one suitable for “a Model Sanitarium.” He requested the assignment of a quartermaster officer to oversee the “necessary extensive repairs, alterations, and construction,” and the authority to purchase four milk cows and employ laborers, a cook, and a baker. He also requested a garrison at the fort, “owing to the disreputable character of the inhabitants of the adjacent town,” and “the extreme isolation of this post.”⁷³ The War Department declined to send the garrison, but approved Appel’s other requests, sending as quartermaster Lt. Robert Powers, who had recently been diagnosed with tuberculosis, to oversee the construction and refurbishment

as he recovered his health.⁷⁴ Appel and his staff ordered medical and hospital supplies, stocked the library with medical journals and other periodicals, and acquired the requisite Army manuals. They hashed out myriad details and logistics such as arranging for the transportation of patients to the hospital. Fort Bayard was located three miles from the nearest rail line at Silver City, a spur from the Southern Pacific Railroad at Deming, New Mexico, and patients too ill to care for themselves could miss connections and languish for hours or days at the Deming station. The Army Medical Department therefore arranged to pay rail station employees to telegraph the hospital of the arrival of patients so they could ensure their safe travel on to Silver City.⁷⁵

The local community watched events at Fort Bayard with interest. In November the *Silver City Enterprise* reported that nineteen carloads of furniture and supplies arrived along with fifteen nurses who were preparing the post to receive patients.⁷⁶ One of the most urgent tasks was to find personnel for the hospital. The Fort Bayard workforce included Chinese launderers and cooks, Mexican laborers, and African Americans, such as Pvt. Rice of the 9th Cavalry, recruited by Appel to serve in the Hospital Corps.⁷⁷ Appel also tried to build a medical staff. T. S. Bullock, a local civilian expert in tuberculosis, first ran the hospital laboratory, but Appel told the Surgeon General that "he has tubercle bacilli in his sputum and should not be closely confined to the laboratory."⁷⁸ Similarly, Margaret Drum was a nurse who was also a patient, doing light duty as a dietician while she recovered. Because the laboratory microscope showed that she had tuberculosis bacteria in her sputum, Appel wrote, "it is not advisable that she continue on duty as a dietist."⁷⁹

Appel soon established a hospital regimen. A mule-drawn ambulance would pick up new patients from the train station in Silver City and upon arrival a medical officer, usually Appel, evaluated the patient, conducting a thorough medical history and physical examination. While Fort Bayard had X-ray machines, they broke down repeatedly and few medical officers knew how to operate them or read the X-ray images. They instead relied on a physical examination of the chest and laboratory studies of the blood, urine, and sputum.⁸⁰ Patients provided sputum samples, which laboratory staff concentrated by chemical or centrifugal preparation, placed on a glass slide, dyed to reveal the acid-fast tubercle bacilli, and then examined through a microscope. Once Appel had confirmed a tuberculosis diagnosis, he assigned the patient to a ward according to his rank—enlisted man or officer—and condition. Absent a national medical standard for tuberculosis classification, Appel divided patients into three classes according to the severity of their tuberculosis and then tracked their progress to evaluate the effectiveness of treatment. Class 1 patients had normal temperatures and no tuberculosis bacilli in their sputum, and included both patients with incipient cases and those who were recovering from serious illness. Class 2 patients had no temperature but did have tuberculosis bacilli in their sputum and were therefore infectious. Class 3 patients had a constant temperature above 100 degrees and bacteria in their sputum. Fort Bayard housed Class 1 and Class 2 patients in separate dormitories to prevent reinfection from the other patients, and confined to bed Class 3 patients in the enlisted men and officers' infirmaries.

Patients followed a routine, centering on rest, an abundant diet, outdoor living, and the regular monitoring of their bodily functions.⁸¹ Nurses recorded temperatures three times a day, weighed patients every Friday, and recorded pulmonary hemorrhages, sputum production, and bowel regularity as needed. Medical officers conducted daily rounds of the patients, and gave them full physical examinations every two months. Patients had to bathe at least once a week and every morning Appel led ambulant patients in breathing exercises, such as one involving slow inspiration and rapid expiration to increase lung capacity. Patients received cod liver oil to strengthen their resistance and disinfectant sprays on laryngeal lesions to prevent secondary infections. Appel prescribed narcotics such as morphine and heroin for pain and to control coughing, explaining that coughing “is easily allayed by heroin, in the extensive use of which I have yet to see tolerance produced or a habit formed.”⁸² To combat the weight loss that accompanied consumption, Fort Bayard offered patients “abundant good nutritious food,” dominated by milk and eggs provided by resident dairy cattle and chickens. Hospital rules instructed patients to eat slowly, “chew your food thoroughly,” and refrain from coughing at meals. Appel noted that “to prevent eating too rapidly and bolting the food (so common among soldiers) it was found necessary to direct that ambulant patients must remain in the dining room for at least twenty minutes during each meal.”⁸³ The patients needed to gain weight. Of 160 male patients weighed in April 1902, for example, 22 percent weighed less than 120 pounds; four patients weighed less than 100 pounds. Only twenty-eight patients, or 17 percent, weighed more than 142 pounds, the average weight of an American soldier during World War I.⁸⁴

In addition to treating the disease, Fort Bayard (Figure 1-4) also educated patients on how to take care of themselves and practice proper hygiene.⁸⁵ Hospital staff instructed patients in the elaborate spit cup system intended to collect and



Figure 1-4. Post Hospital, Fort Bayard, New Mexico. It became one of several patient wards when the post became a tuberculosis hospital. Photograph courtesy of the National Library of Medicine, Image # A01206.

destroy sputum infected with tuberculosis bacteria. General Order No. 2, "Instructions to Patients," explained that tuberculosis germs were found "in the spit," and "should it be allowed to dry and in the form of dust float around in the air, millions of these germs would be set free, and would not only endanger those who are well, but would often re-infect the sick."⁸⁶ The hospital gave patients tin cups with spring-loaded covers and paper inserts to carry with them at all times, placing them on shelves beneath the dining room chairs during meals. Patients had to spit into the cups carefully, never swallow the spit, and deposit the liners in large covered spittoons, also fitted with paper receptacles that were located throughout the facility. Four crematories burned the spit cups and other infected material daily.⁸⁷

Ambulant patients were to make their beds every day and keep their belongings off the floor to avoid contamination. Fort Bayard prohibited the use of "stimulants," meaning whiskey, wine, or beer, and cigarettes, but cigars and chewing tobacco were allowed "in moderation." Above all, Fort Bayard required all patients to get as much fresh air and rest as possible by staying outside at least eight hours a day year-round, occupying their quarters only at night, and sleeping for at least ten hours a night with the windows wide open. Patients had to stay within the camp boundaries. An armed guard patrolled the area to ensure that these rules were enforced, especially the prohibitions against alcohol and leaving the post without permission.

Fort Bayard patients met one of several fates: some died, some were falsely diagnosed, and many others cycled in and out of the hospital as their health improved or deteriorated. The lucky ones recovered their health to leave Fort Bayard and live out the rest of their lives. Captain (Capt.) Charles L. Steele was one of the unfortunates. He arrived at Fort Bayard on 5 November 1899 very ill and was immediately put to bed.⁸⁸ A graduate of West Point and an officer in the 18th Infantry, Steele had enjoyed good health until 1881 when he contracted "mountain fever" in Montana, followed by malaria in 1883, from which he did not fully recover. His condition worsened on the long voyage to duty in the Philippines in 1899, and during just four months in the Philippines, Steele had two recurrences of malaria. His commanding officer recommended that he retire for his health, but Steele declined and applied for sick leave to return to the United States. After two months of rest, and then duty as a recruiting officer, Steele developed a sore throat and persistent cough. After a New York physician diagnosed him with tuberculosis of the larynx, the Army ordered him to Fort Bayard, and when he arrived Appel found that the disease had also "made giant strides in the lungs." Steele's condition deteriorated. He continued to lose weight and his medical record noted that the lungs were "universally involved," with "both upper lobes excavated." Appel put Steele on a liquid diet, and nurses monitored his temperature and tried to make him comfortable. Steele lived to see the turn of the century, but on the morning of 18 January 1900, he died at the age of forty-two. The immediate cause of death was listed as "exhaustion."⁸⁹

Other Fort Bayard patients fought tuberculosis for years until they succumbed. Just weeks after a medical panel in the Philippines declared Albert B. Henderson fit for promotion, he fell ill with tuberculosis. The War Department promoted

him to first lieutenant anyway, and ordered him back to the United States where he spent four days in the hospital at the Presidio in San Francisco, and then took the five-day trip by train and wagon to Fort Bayard. Arriving on 5 August 1901, Henderson was a sick man, with tuberculosis consuming most of his left lung and infiltrating his upper right one. Nurses described the twenty-two-year old as an “irritable and insubordinate” patient, and in 1904 he had to retire from the Army, disabled with tuberculosis. Henderson stayed in the West hoping the dry climate and altitude would cure him, but after five years, he died of tuberculosis in Denver.⁹⁰

Pvt. Edward Long, an immigrant from Ireland, also struggled with tuberculosis for years, cycling in and out of Fort Bayard in his fight. He arrived at Fort Bayard in November 1901, having lost twenty-five pounds in five months and coughing constantly. Medical officers found active tuberculosis in the left lung and, after five months of treatment with little improvement, discharged him on disability. Long left Fort Bayard and went to New York, but returned in September 1902 with a fever and tuberculosis now in both lungs. He stayed five months, as a beneficiary of the Soldiers’ Home, until he was “discharged at his own request.” This time he stayed in the area, and over the next six years was in and out of Fort Bayard at least six times as his tuberculosis ebbed and flowed. On 25 June 1908, he disappeared from the historical record with his medical chart noting for the last time that he “left at his own request.”⁹¹

Not all of Fort Bayard’s patients would succumb. Two medical officers arrived at the hospital in 1904 with active tuberculosis but soon returned to duty at the hospital. In 1906 they went on a hunting trip in the mountains, and despite getting caught in a blizzard retained their health.⁹² One of them, Lt. Paul Hutton, had developed tuberculosis in Beijing while on the China Relief Expedition to protect U.S. interests threatened by the Boxer Rebellion.⁹³ Ordered to Fort Bayard, after five months of sick leave as a patient there, he began light duty as a medical officer and two years later, once again feeling fit, requested foreign service and was assigned to Fort Seward, Alaska, where he continued his work on tuberculosis. Hutton served as a Medical Department inspector during World War I and became commander of a new Army tuberculosis hospital in Denver in 1923. He survived tuberculosis to die of a heart attack at the age of fifty-eight and was buried with honor in Arlington Cemetery. His hunting companion, Maj. Edward L. Munson, was already a bright star in the Medical Department when he came to Fort Bayard.⁹⁴ A graduate of Yale Medical School, Munson lectured at the Army Medical School, wrote one of its first textbooks, *The Theory and Practice of Military Hygiene* (1901), and was one of the medical officers present at the autopsy of President William McKinley after he was assassinated in 1901. Like Hutton, Munson fell ill during foreign deployment and was ordered to Fort Bayard. As he began to feel better, he went on part-time duty, caring for patients. With his health recovered, Munson continued his Army career in military medical education. During World War I Munson worked in the training division and headed the War Department’s morale program. One of the few medical officers to be promoted to general before 1920, Munson continued his work in medical education and retired in 1932. He died in 1947, just short of his eightieth birthday.

Such successful recoveries fueled hopes for effective treatment or even a cure for tuberculosis. Surgeon General Sternberg required all Army hospitals to have a well-equipped laboratory and encouraged his medical officers at Fort Bayard and elsewhere to conduct research as time allowed. In 1900, with Appel's approval, contract surgeon Bullock gave thirty-three volunteer patients a series of injections of an experimental antituberculosis serum, but the results were discouraging. He had to stop the treatment on ten patients when they either left the hospital or refused more injections. Four patients had "extremely distressing" reactions, and twelve others' conditions appeared to worsen.⁹⁵ In a more benign experiment, Fort Bayard medical officers examined red and white cell counts in the blood of tuberculosis patients in 1900 and 1901 to learn if the blood tests "would furnish any diagnostic or prognostic value."⁹⁶

In June 1902, Appel traveled to Saratoga, New York, to present the results of the first two years of Fort Bayard to the annual conference of the Association of the Military Surgeons of the United States.⁹⁷ He also participated in an American Medical Association (AMA) symposium on tuberculosis, along with Surgeon Paul M. Carrington, in charge of the Public Health Service sanatorium at Fort Stanton, Colorado. Appel told his colleagues that from October 1899 through March 1902, Fort Bayard admitted 623 patients, and discharged 449 after an average of five and one-half months in residence. Patients included officers, nurses, and civilians, but the vast majority were enlisted men and beneficiaries of the Soldiers' Home. Appel observed that about 80 percent of patients came from the tropics, "owing to enervating effects of the tropic climate," and that more than half of the patients had experienced pulmonary hemorrhaging. Of the "discharged patients," 21 percent had died and 7 percent were judged to be "clinically cured." Almost half, 46 percent, left the hospital with improved health but still bore signs of tuberculosis. Appel concluded that with regard to high-altitude therapy, "a larger variety of cases are amenable to its beneficial influence than is commonly believed."⁹⁸

Surgeon General Sternberg seemed satisfied. The Medical Department's project at Fort Bayard had several goals—to prevent the spread of tuberculosis in the Army ranks and soldiers' homes, to provide healthcare to soldiers and veterans with tuberculosis, and to return to duty as many Army officers and enlisted men as possible to preserve the nation's investment in their training. In his last annual report in 1902, Sternberg told the Secretary of War that Fort Bayard had "proved to be of inestimable value for the treatment of victims of pulmonary tuberculosis," and that Appel had been "indefatigable in his effort to make this a model sanitarium and in his attention to the interests of the sick under his care."⁹⁹

Bumps in the Road

Still, only two years after arriving at Fort Bayard, Appel departed for the Philippines with a clouded reputation. Although his superiors never questioned his work as a physician, they faulted his performance as an administrator. In 1904 he faced a court-martial for fraud and conspiracy in purchasing supplies for Fort Bayard.¹⁰⁰

Although acquitted on all accounts, the War Department disciplined Appel several more times for rule infractions until his death of a heart attack in 1914.

Appel's first problem was his inability to handle the press. In the aftermath of the medical scandals during the Spanish-American War, Surgeon General Sternberg was sensitive to the Army Medical Department's public image. When a June 1900 *New York Tribune* story reported that twelve cases of "incipient consumption have been completely cured" at Fort Bayard and that Appel had characterized the results as "little short of marvelous," Sternberg may have worried that such pronouncements could lead to inflated public expectations about the Army's medical abilities.¹⁰¹ Appel had to assure him that "no such statements...were ever made by me." He explained that "as far as I can ascertain, they originated in the brain of the newspaper canvasser who recently visited this hospital."¹⁰² Several months later a similar wire story ran in newspapers across the country reporting the "remarkable success" in curing tuberculosis in government hospitals in New Mexico. The *Chicago Daily Tribune* reported that 30 of 121 patients had been discharged from Fort Bayard, "considered cured," and credited the Army hospital's treatment of outdoor living, abundant food, rest, and graduated exercise.¹⁰³ In March 1902 a *New York Times* front page story read: "You may quote me as saying that we can cure consumption in every stage." The speaker, Daniel Appel, also asked "that the statement be given the widest publicity."¹⁰⁴ On cue, a *New York Herald* reporter traveled to New Mexico to write a feature-length article. The story read like a travel article, describing the Fort Bayard grounds, its golf course, croquet field, and other amusements for recovering patients, and quoted Appel as saying "We have demonstrated at Fort Bayard Sanatorium for Soldiers that we can cure consumption at any stage."¹⁰⁵ The hospital, the reporter noted, had been "deluged by letters and telegrams" from physicians and tuberculosis sufferers eager for any new information on how to treat the disease. None of Appel's reports to the Surgeon General or the papers that he presented at scientific meetings in 1902 contained such boastful claims, but such stories suggest that Appel did not communicate well with the press, that he did brag about his record at Fort Bayard, or that they exaggerated his claims. The War Department, certainly not looking for new patients, did not need that kind of publicity, especially if it held out false hopes of a tuberculosis cure.

Appel also had difficulty managing the hospital staff. During his two years of command, Fort Bayard staff stole from the hospital, fought among themselves, and criticized his command. Trouble began within months. In June 1900 the local newspaper reported that two hospital employees had been stealing blankets and sheets and selling them to civilians in the area.¹⁰⁶ In 1902, Appel was again embarrassed when a hospital steward named Herbst deserted, taking with him more than \$1,000 in patient funds. Slow on the uptake, Appel explained that, "I had no suspicion whatever that Steward Herbst was dishonest until several days after his desertion."¹⁰⁷ When Appel expelled patient Fred W. Wilkins from Fort Bayard for using profane language, and for refusing to clean out spittoons while on light duty, Wilkins protested to the Secretary of War. The Secretary referred the matter back to Appel, who was within his authority, but the fact that Wilkins went around the chain of command reflected Appel's lack of control.

Officers, too, questioned the commander's leadership. In 1902, a young cavalry officer, Lt. Robert L. Collins, filed two complaints against Appel, the first for insulting him. Appel, he charged, had broken up a card game Collins was playing with two other patients, saying that gambling was not good for their health and that the men could not afford to gamble because they had unpaid debts. Stung, Collins protested that he had money in the bank and resented Appel's accusation in front of another officer. An Army inspector came down from Chicago to investigate the charges and found that Appel's remarks were "unnecessary and showed a lack of consideration and tact, which justified the resentment on the part of Lt. Collins."¹⁰⁸ Collins also accused Appel of "irregularities" in the commander's practices of purchasing meat for the hospital's commissary; this charge led to Appel's trial by court-martial in 1904.¹⁰⁹ Other complaints included one by Pvt. Albert Henderson, who accused Appel of altering Henderson's medical record to force his retirement. Another medical officer and patient, Lt. H. D. Bloombergh, reported discourteous and unfair treatment. An investigating officer sided with Appel in these matters, but observed a lack of command: "I can see nothing in this case of importance beyond another outcropping of a spirit of insubordination among officers, both on duty and under treatment."¹¹⁰ While the inspector recommended transferring several of the complainants out of Fort Bayard, in another case—that of a nurse who also challenged Appel's authority—it was Appel who had to leave.

Minnie H. Ruble entered Army service as a contract nurse during the Spanish-American War, serving in Cuba and the Philippines. Her supervisors rated her work "excellent" in those positions, but after being assigned to Fort Bayard in January 1902, she refused to carry out some duties and clashed with other staff members. By the summer Appel requested that Ruble be replaced "as early as practicable."¹¹¹ The Surgeon General declined, ordering instead that the Superintendent of Nurses give Ruble a warning, and then discharge her if there were further complaints. The superintendent, Dita H. Kinney, admonished Ruble for "insubordination" and "impertinence" in an August 1902 letter. "Your offensive manner under distasteful orders or toward those with whom you are not personally pleased is a thing that can not and will not be allowed," she warned. After Ruble refused to carry out duties in the officers' mess, which she considered outside her role as a nurse, Appel again requested her transfer. This time Ruble enlisted the support of her congressman, Rep. Frederick C. Stevens (R-MN), who asked for an investigation. An Army inspector gave Ruble a low evaluation score—6 of 10 points for efficiency—but with complaints piling up about Appel's leadership of Fort Bayard, the focus turned to him instead of her. The inspector concluded that Nurse Ruble could be continued at Fort Bayard on probation, in view of the "prospective change in the command."¹¹²

Appel's biggest problem was his failure to follow War Department rules and regulations. In March 1902, Army inspector Maj. James A. Irons deemed Appel "an exceedingly zealous and capable officer," noting the good condition of the post and restoration of the health of many of the patients. He was concerned, however, that the commander had not yet issued hospital rules,

and instead was applying Army regulations by “changing them to suit existing conditions.”¹¹³ Another officer noted that Appel usually gave his orders verbally.¹¹⁴ In September, the Army Medical Department ordered senior medical officer Col. John van R. Hoff to Fort Bayard to evaluate the hospital’s progress and viability after two years in operation. He concluded that “it may be safely affirmed that the Army needs such an institution as the sanatorium at Fort Bayard, N. M.,” but, he added, “the success or failure of this undertaking should not be permitted to rest upon the shoulders of any one man.” Instead of verbal management, the hospital needed a comprehensive system of regulations to govern it, and recommended that the commanding officer “at once compile and forward for the consideration of the Surgeon General such a set of rules.” He also questioned Appel’s handling of patients’ money, noting that a check for Fort Bayard was written out to Appel personally, rather than the “commander of Fort Bayard,” and that the funds were held in a personal bank account in Silver City, not in a safe at the post.¹¹⁵ The Surgeon General had already downgraded Appel’s performance from the previous year’s “excellent,” to “good,” but with van Hoff’s report, relieved him of command in November 1902.¹¹⁶

Appel’s career never fully recovered. Transferred to the Philippines, he was recalled to the United States for the court-martial. Ironically, it may have been Appel’s lack of record keeping that prevented the court from convicting him of fraud. The Army charged him with buying beef on the open market for six to nine cents a pound and then reselling it to an Army commissary officer (also charged with conspiracy and fraud), at \$0.10 a pound, accumulating a profit of more than \$1,000 in two years. Appel said he did this to build up the hospital fund for patients, and without a paper trail proving fraud, the court acquitted both him and the commissary officer.¹¹⁷ Secretary of War Elihu Root, however, found his conduct “highly reprehensible,” and required him to repay the Army \$1,238.86. In 1907 Appel’s superiors again reprimanded him, this time for making “baseless accusations” of mismanagement against another officer, and in 1911 the Secretary of War sent him a letter of “emphatic censure” for failing to follow Army regulations in procuring diphtheria antitoxin during an epidemic. Appel’s superior officer in 1913 rated him “good” but said he “would not choose him over other medical officers known to me.”¹¹⁸ On duty in Hawaii, Appel died in his sleep of a heart attack in April 1914.

As War Department officials wearied of the complaints and problems coming from the isolated hospital in New Mexican Territory, Fort Bayard was set to grow. The Navy had an especially serious tuberculosis problem due to the closed and crowded conditions aboard ships. Acutely aware that the formidable German and British navies had lower tuberculosis rates, Navy Surgeon General Presley M. Rixey chafed at not having his own sanatorium. He requested appropriations to enlarge Fort Bayard to accommodate sailors with tuberculosis, and in 1903 Congress approved \$100,000 for improvements at Fort Bayard.¹¹⁹ With the influx of funds, Washington officials wanted a trustworthy hand on the tiller—and in the till.¹²⁰

Comegys in Charge

To replace Appel, Army Surgeon General Robert M. O'Reilly turned to a medical officer who had a mixed record in the Medical Corps. Lt. Col. Edward T. Comegys (Figure 1-5) arrived with his wife Grace and three children from Fort Meade, South Dakota, to take command in November 1902. He had served more than twenty-five years in the Army, receiving his commission in 1875 after his education at Harvard and Miami Medical College in Cincinnati, Ohio. He was also familiar with Fort Bayard, having served as post surgeon in the early 1890s. Most of his efficiency reports were positive, but in 1899 Surgeon General Sternberg had judged him "a medical officer of fair ability" and in 1901 stated, "I do not consider him a very active or efficient medical officer."¹²¹ Comegys' poor health was perhaps hurting his performance. He had been hospitalized for malaria at least four times since 1894, and in 1901 suffered from "malarial cachexia"—physical wasting, including anemia and jaundice. Maj. John McDill, the examining physician in Manila, stated that "he is not fit for service in a tropical climate and should be sent back to the United States to prolong his life."¹²² This condition may account for what his superiors perceived as a lack of energy. "He may be said to be rather an 'office man,'" observed another officer in 1903, "and lacks the energy in getting around which characterized the administration of Major Appel."¹²³

Comegys did quickly promulgate rules for Fort Bayard, but his administration of these rules and regulations was not always satisfactory to the Office of The Surgeon General (OTSG).¹²⁴ OTSG staff considered Comegys' first requisition for surgical materials and drugs "excessive" and required an explanation before approving some items.¹²⁵ The office denied a requisition for carpeting because the Surgeon General considered it "undesirable furnishing for an institution for the treatment of contagious diseases," and scolded Comegys for "numerous uncorrected mistakes in spelling in this requisition," pointing out that articles were not arranged in alphabetical order and one item appeared in five places.¹²⁶ Other officials criticized Fort Bayard's administration. The Judge Advocate's Office in Denver thought that Comegys was quick to order general court-martial proceedings when less onerous and costly procedures were appropriate, and suggested that the commanding officer at Fort Bayard study the laws and regulations governing judicial proceedings.¹²⁷ Similarly, the Navy Secretary complained to the Secretary of War after Comegys asked him to convene a court-martial at Fort Bayard. The Navy, he said, did not have such authority and disciplinary problems at the hospital could be handled in other ways.¹²⁸

In May 1903, the Secretary of War also received what was surely an unwelcome anonymous letter from a patient suggesting that all was not well at Fort Bayard. Written in a fine hand, but with poor spelling and grammar, the message was not subtle. "The commanding officer is drunk and smoking cigarettes all the time and lets the officers and lady nurses do as they please," the patient charged. "It seems as if he don't care [if] the officers sleep in the nurses quarters more than they sleep in their own quarters and when they are not doing that they

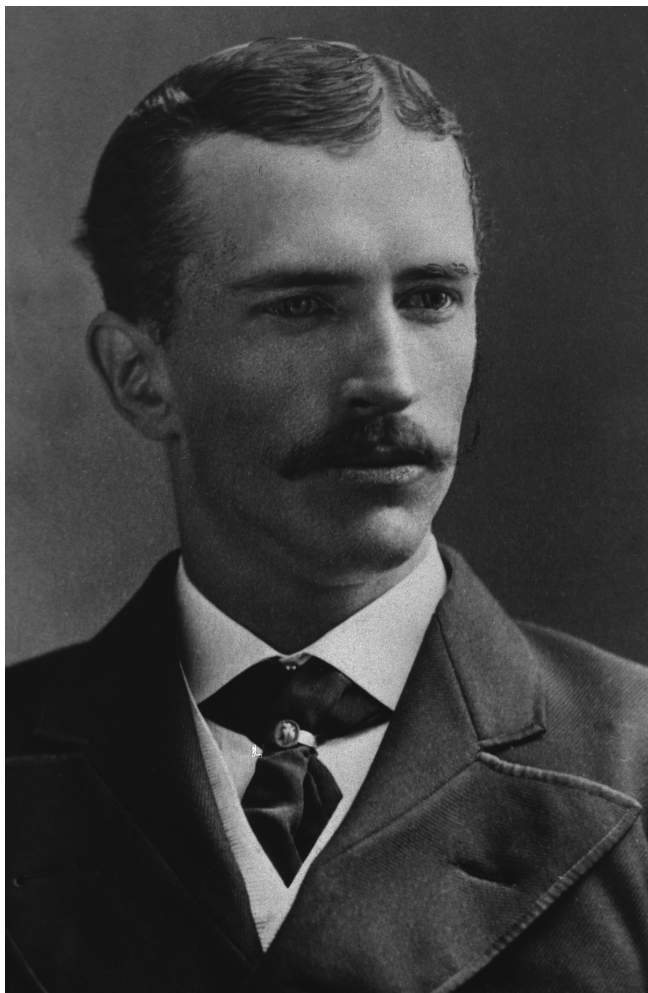


Figure 1-5. Edward T. Comegys, the second commanding officer of the tuberculosis hospital at Fort Bayard, New Mexico.
Photograph courtesy of the National Library of Medicine, Image #B011291.

are all out horse back ridding and laying around in bushes and hollows doing there dirt because patients here saw what they were doing.” The writer identified them as “Lt. Patterson and Miss Rhubel, Miss Chamberlain and Liet. Collins and also the head nurse and Dr. Ohlinger and Miss Valentine. They carry on out here in the hills and bushes worse than dogs on the street.” These distractions, the letter charged, caused the medical staff to neglect the patients, who were “dieing for the want of attention how can they help themselves they are helpless and cant move without someone moves them.” The solution was to bring back

Maj. Appel "so we can have some one to see to us so we can't starve and die." The correspondent closed with the threat that if the War Department did not investigate their complaints, "we turn it over to the newspapers so every body can see how the government let things go on," because, "you are not here [so] you don't know what is going on and we do."¹²⁹

The Adjutant General's Office in Washington immediately sent Col. Charles H. Heyl to Fort Bayard. He arrived on 17 May 1903, and after a ten-day investigation determined that the charges against Comegys were "without foundation in fact and that on the contrary, Col. Comegys, while somewhat more lenient as compared with the former commanding officer, is nevertheless a competent officer and courteous gentleman." The real problem, he found, was a shortage of fully capable medical officers. Whereas Comegys had requested eight full-time officers, Heyl believed six would be sufficient if they were all well and able to work. A majority of the medical officers, however, were patients themselves and could not perform all of their tasks. "The practice of placing such officers on 'Light Duty,' requiring professional skill and mental as well as physical effort," he recommended, "should be discontinued." He added that while officers had generally disliked Appel, Comegys was popular with officers, "but not so much so with the enlisted class."¹³⁰

Surgeon General O'Reilly's annual evaluation of Comegys was measured. He recognized that command of Fort Bayard was "a peculiarly difficult position" because the patient mix included officers, enlisted men, beneficiaries of the Soldiers' Home, and sailors. Comegys, he wrote, "is possibly deficient in energy and precision," but was discharging his duties "acceptably" and "must stand or fall on the record he is now making."¹³¹ Signs that Fort Bayard was not being well managed continued to accumulate. When soldiers' families complained that Fort Bayard was losing patients' property, the Surgeon General observed that it indicated "a lack of system and adequate care in this respect."¹³² At least one patient, medical officer Loren Ohlinger, who had pulmonary tuberculosis and developed tubercular appendicitis, was reviewing and signing his own medical chart.¹³³ Records during Comegys' tenure suggest that two officers, cavalry officer Lt. Robert L. Collins (who reported Appel's irregularities in procurement), and Maj. George Bushnell, who had arrived in August 1903, were assuming many of Comegys' duties. Bushnell represented the Army Medical Department at a tuberculosis conference in Baltimore in December 1903, for example, and made his report directly to the Surgeon General, and Collins signed numerous orders in Comegys' name.¹³⁴ The OTSG corresponded with Bushnell about the post construction program—something in which the hospital commander should have had an interest.

With such evidence of Comegys' carelessness and lethargy, on 21 April 1904 the Surgeon General relieved him of command of Fort Bayard, and put Bushnell in charge.¹³⁵ The War Department transferred Comegys to the Philippines, even though three years earlier a medical officer had judged him unfit to work in the tropics. Things did not go well for Comegys there. His 1905 efficiency report was so damning that the Army gave him the choice of retiring or being forced to do so. "The infirm condition of this officer is convincing to any one who has seen him

that he is no longer qualified to discharge the duties of his position,” reported his commanding officer, H. C. Corbin. And, he added, “It is beyond reasonable doubt that this condition is at least due to his inordinate use of drugs.”¹³⁶ Comegys may have been using opium to treat chronic dysentery, which he had contracted in the Philippines, a common medical practice at the time. Within weeks of his negative efficiency report Comegys retired from the Army and died a year later in Los Angeles of heart disease and chronic dysentery.¹³⁷

A New Hospital Commander for a New Army

When the Surgeon General named George Ensign Bushnell (Figure 1-6) to be the commander at Fort Bayard, he set the hospital on a steady course. Bushnell was one of the most esteemed members of the Medical Corps with uniformly

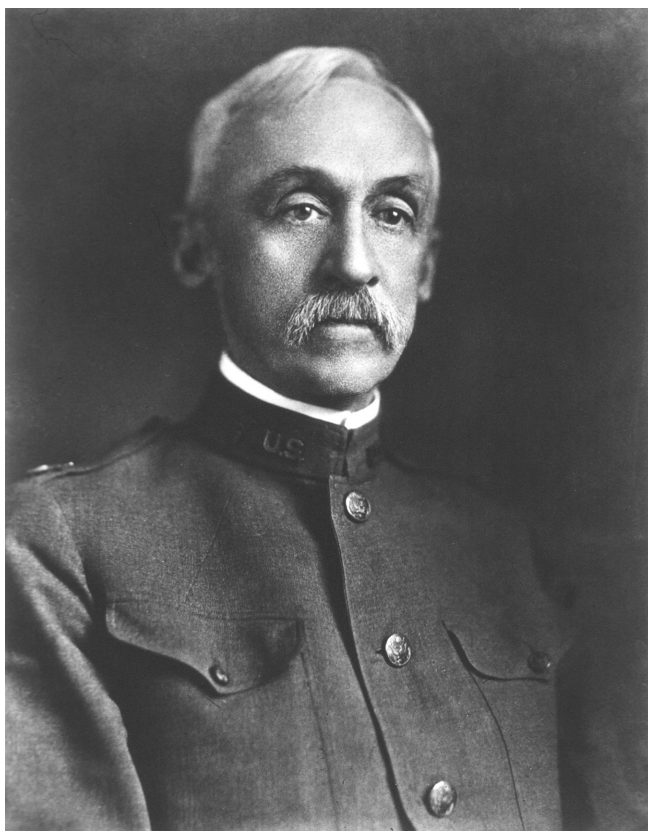


Figure 1-6. Colonel George E. Bushnell, commander of the tuberculosis hospital at Fort Bayard, 1907–1917.
Photograph courtesy of the National Library of Medicine, Image #B03218.

excellent efficiency reports and a strong record of medical scholarship that included the ability to translate medical articles in seven languages—a Renaissance man. Born in 1853, in Worcester, Massachusetts, he attended Yale University, receiving an A.B. in 1876, a Ph.D. in classical languages and literatures with a dissertation on the “the conditional sentences of Aeschylus,” and an M.D. in 1880.¹³⁸ While working as an intern in a New York hospital, he developed tuberculosis, but soon regained his health and received his commission as an Army surgeon in 1881. Bushnell married twice, the first time in 1881 to Adra Holmes, with whom he had a daughter. After Adra died in 1896, Bushnell married Ethel M. Barnard in 1902, with whom he had no children. As a young officer Bushnell served at a number of frontier posts where his patients included Chinese laborers working on the railroads, and at Fort Yates, North Dakota, 3,000 Sioux prisoners of war, including Sitting Bull. During the long stretches of quiet common at frontier posts, he studied languages and botany. Called to Washington for the Spanish-American War, Bushnell worked in the medical supply depot until his health failed and his tuberculosis reactivated. He took a sick leave of absence in 1900 and spent six months in Asheville, North Carolina, in the care of tuberculosis specialist Charles L. Minor. Following the practice of sending tuberculous soldiers West, the Army transferred Bushnell to Fort Logan, Colorado. Ordered to Fort Bayard in August 1903, Bushnell took command the following May. One medical officer described him as “tall, thin, and rather ascetic in appearance, shy in manner, and very modest notwithstanding his learning and attainments, but,” he added, “very positive in his opinions.”¹³⁹

Bushnell's deficiency as a medical officer was his physical condition, which his superiors believed precluded service in the field.¹⁴⁰ But tuberculosis also gave him a keen interest in the disease and he developed an expertise that impressed his superiors. In 1905, the Army inspector general concluded that Bushnell's leadership at Fort Bayard would “make a lasting success of the institution.” The next year the inspector again stated, “the commanding officer, Major Bushnell, is an authority on tuberculosis and has acquired a reputation world-wide and second, perhaps, to none.”¹⁴¹ The War Department promoted him to lieutenant colonel in 1908 and colonel in 1911. In 1916, after Bushnell had been in command at Fort Bayard for twelve years, Surgeon General William Gorgas judged him “one of the most efficient officers ever developed in the Medical Corps.”¹⁴² Gorgas then called him to Washington, DC, in 1917 to take charge of the Medical Department's tuberculosis section during World War I.

Bushnell assumed command at Fort Bayard shortly after Elihu Root's tenure as Secretary of War, 1899 to 1904. President William McKinley had appointed Root, a lawyer and businessman, to shape up the War Department after the scandals of the Spanish-American War. The “Root Era” accelerated the modernization of the Army to better serve an urbanized, industrial society and the most powerful economy in the world.¹⁴³ In the 1890s, to professionalize the officer corps, Congress abolished promotion based only on seniority and the War Department established advanced training schools and increased standards for officers. It also improved living conditions for enlisted men and officers to make military service more attractive.

Secretary Root established the chief of staff and general staff system that would improve military policy development and planning, and convinced Congress to strengthen the nation's defense capability by creating a National Guard in 1903. Many of these reforms would not truly take hold until World War I, but Root set a new tone in the War Department, bringing its Army and Navy more in line with European powers as the United States assumed the world stage. In a similar vein, the Army Medical Department produced a manual in 1898 to standardize Army hospital and other medical unit supplies, equipment, and procedures, which it updated periodically. In addition to the Army Medical School and the Army Nurse Corps, the Army Medical Department developed a special curriculum for members of the Hospital Corps.¹⁴⁴ The Surgeon General's appointment of Bushnell reflected this new professionalism.

Tuberculosis had sidelined Bushnell during part of Root's tenure, but he clearly embraced the reforms. Although in the same generation as Appel and Comegys, Bushnell had perhaps a more modern, even corporate view of his military role than his predecessors and therefore less trouble enforcing Army regulations and standards. He wielded them as management tools.¹⁴⁵ In an article prescribing improvements in the recruitment, training, and promotion of the Hospital Corps, Bushnell sought to ensure that the force could be expanded in time of war, "yet contain only expert and well-disciplined men."¹⁴⁶

Upon assuming command, Bushnell quickly issued new general orders for the hospital, and within months he began to shape Army tuberculosis policy, basing his arguments on science and professional knowledge as well as his military authority. Whereas Comegys' rules governed staff, including the guards, officers, nurses, and members of the Hospital Corps, Bushnell's also focused on patients' responsibilities and discipline. Instead of simply requiring ambulant patients to make their beds, Bushnell required them to be made by "nine o'clock A. M." Although Bushnell omitted detailed instructions on how patients should eat, he did require patients to pay for thermometers if they broke more than one.¹⁴⁷

Bushnell's impact on Fort Bayard was both medical and military. Bushnell the physician proposed a change in the classification of patients at the hospital, objecting to Appel's system of three classes of patients because it "lays undue stress on the presence or absence of tubercle bacilli in the expectoration." He preferred a system that focused on "how far the lesions are advanced in the individual cases upon admission," and that, he added, "will make our reports more intelligible and interesting."¹⁴⁸ He also cut back on the amount of alcohol medical officers prescribed for their patients and cracked down on patient drunkenness.¹⁴⁹ Meanwhile, Bushnell the Army officer imposed strict discipline at the hospital. When superior officers questioned his frequent use of the court-martial against patients as well as staff, he stood his ground. In early 1905 the regional adjutant general objected to Bushnell's imposition of strict punishments for absence from roll call (which the commander no doubt implemented in part to discourage carousing). Bushnell responded that roll calls at the hospital were intended to prevent absences that would tire patients or "prove detrimental to their cure." He added, "These soldiers are in a status of privilege, being required to do no duty, absence on their part is

therefore considered a more serious offense and should in my judgement in the interests of discipline of this Hospital be punished more severely than is permitted under the 32nd Article of War." He concluded by requesting that if the adjutant "does not approve of the views herein set forth, this paper be forwarded to higher authority for decision."¹⁵⁰

A final example of Bushnell's change in command style reflects the transition from the "Old Army" to the new. In early 1904, the Medical Department circulated a memo describing a new system of medical forms for hospitalized patients, reflecting the increase in medical data now available and the Department's efforts to systematize data and patient care.¹⁵¹ Instead of one single form, medical officers were to use a history sheet, a progress sheet, charts for temperature, weight, and pulse, and a treatment sheet, to be filled out by nurses. When Comegys departed, Lt. Robert Collins, the cavalry officer who had been working in the commander's office, asked to be transferred to his regiment in the Philippines. Bushnell gave Collins his final physical examination, noting that, "at the time of his departure he was considered clinically cured."¹⁵² This entry was the first in Collin's medical record written with a typewriter instead of longhand.¹⁵³

Bushnell's use of a typewriter reflects a departure from the nineteenth-century "Old Army" of the Indian Wars, cavalry raids, rifles, and documents written in fine hand. Bushnell's was more a technologically sophisticated, industrialized, and bureaucratic twentieth-century Army whose mission was not only to defend the homeland against its enemies, but also to protect American economic and political interests overseas. Surgeon General George Sternberg and his medical officers Daniel Appel and Edward Comegys had established the Army's first tuberculosis hospital in the West, putting the Army Medical Department in the vanguard of tuberculosis treatment and modern medicine. But George Bushnell would complete Fort Bayard's transition to the modern era. With his modern medical knowledge, firm military authority, and efficient typewriter, Bushnell would foster an oddly vibrant community of soldiers and patients living together in sickness and health, striving to rest or doing their duties, and united in common cause against a deadly disease.

Notes

1. "Fort Bayard Abandoned, to be Turned into Army Consumptives' Home," *Silver City Enterprise*, 17 November 1899.

2. Russell Weigley, *History of the United States Army* (New York, NY: The Macmillan Company, 1967), 292.

3. On the role of the federal government in the West see Richard White, *"It's Your Misfortune and None of My Own": A New History of the American West* (Norman, OK: University of Oklahoma Press, 1991); and Patricia Nelson Limerick, *The Legacy of Conquest: The Unbroken Past of the American West* (New York, NY: W. W. Norton, 1987).

4. On establishment of Fort Bayard see D. M. Appel, "United States General Hospital for Tuberculosis in Fort Bayard, N. M.," *Journal of the American Medical Association* 35 (1900): 1003–5; Daniel M. Appel, "The Army Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Journal of the American Medical Association* 39 (1902): 1373–79; David Kammer, "National Register of Historic Places, Registration Form, Fort Bayard, United States General Hospital for Tuberculosis, Veterans Administration Hospital #55," 31 March 2001, New Mexico State Records and Archives, <http://www.newmexicohistory.org/filedetails.php?fileID=9953>, accessed 26 August 2012; and Eve E. Simmons, "It Took Blood, Bravery to Make Ft. Bayard History," *El Paso Times*, 20 January 1963.

5. On mining in New Mexico, see Christopher J. Juggard, "Copper Mining in Grant County, 1900–1945," in Judith Boyce DeMark, ed., *Essays in Twentieth-Century New Mexico History* (Albuquerque, NM: University of New Mexico Press, 1994).

6. War Department, Surgeon General's Office, *A Report on Barracks and Hospitals with Descriptions of Military Posts* (Washington, DC: GPO, 1870), 240.

In 2004 Congress designated Fort Bayard a National Historic District. See Public Law 108-209, "Fort Bayard National Historic Landmark Act," 108th Cong., 2nd sess.; and U.S. Congress, Senate, Report 108-8, "Fort Bayard National Historic Landmark Act," 108th Cong., 1st sess.

7. A. Judson Gray, "Notes on the History of Fort Bayard," 16 April 1870, Record Group [hereafter cited as RG] 112, Entry 386, Box 26, National Archives and Records Administration [hereafter cited as NARA].

8. War Department, Surgeon General's Office, Circular No. 4, *A Report on Barracks and Hospitals with Descriptions of Military Posts* (Washington, DC: Government Printing Office, 1870), 241.

9. On the Buffalo Soldiers see William A. Dobak, and Thomas D. Phillips, *The Black Regulars, 1866–1898* (Norman, OK: University of Oklahoma Press, 2001); Monroe Lee Billington, *New Mexico's Buffalo Soldiers, 1866–1900* (Boulder, CO: University Press of Colorado, 1991); Charles L. Kenner, *Buffalo Soldiers and Officers of the Ninth Cavalry, 1867–1898: Black and White Together* (Norman, OK: University of Oklahoma Press, 1999); and Frank N. Schubert, *Voices of the Buffalo Soldier: Records, Reports, and Recollections of Military Life and Service in the West* (Albuquerque, NM: University of New Mexico Press, 2003).

In 1992 a Buffalo Soldier Memorial Statue was dedicated at the Fort Bayard parade ground. See U.S. Congress, House of Representatives, "Fort Bayard National Historic Landmark Act," House Report 108-257, 108th Cong., 1st sess., 3 September 2003.

10. Pershing commanded white troops of the Sixth Cavalry at Fort Bayard, but earned his nickname as "Black Jack Pershing" when he commanded the African American soldiers of the 10th Cavalry at Fort Assiniboine, Montana, in the 1890s.

11. Jack Lane, *Armed Progressive: General Leonard Wood* (San Rafael, CA: Presidio Press, 1978).

12. Nancy J. Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life* (Boston, MA: Harvard University Press, 1998).

13. On health seekers see Esmond R. Long, "Weak Lungs on the Santa Fe Trail," *Bulletin of the History of Medicine* 8 (1940): 1040–54; Billy Jones, *Health Seekers in the Southwest, 1817–1900* (Norman, OK: University of Oklahoma Press, 1967); Gregg Mitman, "Geographies of Hope: Mining the Frontiers of Health in Denver and Beyond, 1870–1965," *Osiris* 19 (2004): 93–111; Jake W. Spidle Jr., *Doctors of Medicine in New Mexico* (Albuquerque, NM: University of New Mexico Press, 1986); Jake W. Spidle Jr., "Coughing and Spitting and New Mexico History," in Judith Boyce DeMark, ed. *Essays in Twentieth Century New Mexico History* (Albuquerque, NM: University of New Mexico Press, 1994); Jeanne E. Abrams, *Blazing the Tuberculosis Trail: The Religio-Ethnic Role of Four Sanatoria in Early Denver* (Denver, CO: Colorado Historical Society, 1991); Jeanne E. Abrams, *Dr. Charles David Spivak: A Jewish Immigrant and the American Tuberculosis Movement* (Boulder, CO: University of Colorado Press, 2009); Judith L. DeMark, "Chasing the Cure—A History of Healthseekers to Albuquerque, 1902–1940," *Journal of the West* 21, no. 3 (July 1982): 49–58; and John Baur, "The Health Seeker in the Westward Movement, 1830–1900," *Journal of American History* 46 (1959): 91–110.

14. Jones, *Health Seekers in the Southwest*, 166.

15. See, for example, L. Huber, "The Climatic Treatment of Pulmonary Consumption in the Dry Elevated Regions of the Rocky Mountains," *Medical and Surgical Reporter* 55 (1887): 2227–29; J. Hilgard Tyndale, "New Mexico, Its Climatic Advantages for Consumptives," *Boston Medical and Surgical Journal* 108 (15 March 1888): 265–67; and Samuel A. Fisk, "The Effect of the Climate of Colorado upon Phthisis Pulmonalis, as Shown by the Analysis of One Hundred Recorded Cases," *Boston Medical and Surgical Journal* 121 (22 August 1889): 173–77.

16. Karen Holliday Tanner, *Doc Holliday: A Family Portrait* (Norman, OK: University of Oklahoma Press, 1998).

17. Jones, *Health Seekers in the Southwest*, viii and 97. See also Julius Lane Wilson, citing Edwin Solly in "Pikes Peak or Bust: An Historical Note on the Search for Health in the Rockies," *Rocky Mountain Medical Journal* 64 (1967): 59.

18. Spidle, *Doctors of Medicine in New Mexico*, 87.

Please note: I will use the spelling, "sanatoriums," in my discussion, but will retain the use of "sanitaria" and "sanitariums" in original quotes and publications.

19. For example, J. Hilgard Tyndale, "The Selection of a Suitable Climate for the Various Forms of Pulmonary Consumption," *Boston Medical and Surgical Journal* 112 (28 May 1885): 517–20; and Edward T. Bruen, "The Relative Importance of Different Climatic Elements in the Treatment of Phthisis," *Transactions of the American Climatological Association* 5 (1888): 36–45.

20. Charles Denison, *Rocky Mountain Health Resorts: An Analytical Study of High Altitudes in Relation to the Arrest of Chronic Pulmonary Disease* (Boston, MA: Houghton, Osgood, 1880); and "Dryness and Elevation, the Most Important Elements in the Climatic Treatment of Phthisis," *New York Medical Journal* 40 (1884): 283–89, and 309–15.

21. Jones, *Health Seekers in the Southwest*, 179. On the decline in popularity of the climate approach, see Frank B. Rogers, "The Rise and Decline of Altitude Therapy of Tuberculosis," *Bulletin of the History of Medicine* 43 (1969): 3.

22. Susan Jane Edwards, "Nature as Healer: Denver, Colorado's Social and Built Landscapes of Health, 1880–1930." Ph.D. dissertation, University of Colorado, 1994, 76.

23. Tomes, "The Making of a Germ Panic, Then and Now," *American Journal of Public Health* 90, no. 2 (2000): 191–98.

24. On the tuberculosis movement see Richard H. Shyrock, *The National Tuberculosis Association, 1904–1954: A Study of the Voluntary Health Movement in the United States* (New York, NY: The National Tuberculosis Association, 1957); Michael E. Teller, *The Tuberculosis Movement: A Public Health Campaign in the Progressive Era* (New York, NY: Greenwood Press, 1988); Ott, *Fevered Lives*; Rothman, *Living in the Shadow of Death*; Bates, *Bargaining for Life*; James A. Tobey, *Public Health Law*. 3rd ed. (New York, NY: Commonwealth Fund, 1947), 152–53; and James A. Tobey, *The National Government and Public Health* (Baltimore, MD: Johns Hopkins Press, 1926).

25. William Osler, *The Principles and Practice of Medicine*. 4th ed. (New York, NY: D. Appleton & Co., 1901); and Arnold C. Klebs, ed., *Tuberculosis: A Treatise by American Authors on Its Etiology, Pathology, Frequency, Semeiology, Diagnosis, Prognosis, Prevention, and Treatment* (New York, NY: D. Appleton & Co., 1909), 409.

26. Francis T. B. Fest, "Sociological Musings in Relation to Tuberculosis," *New Mexico Medical Journal* 6 (January 1911): 68. See also Barron H. Lerner, "Constructing Medical Indications: The Sterilization of Women with Heart Disease or Tuberculosis, 1905–1935," *Journal of the History of Medicine and Allied Sciences* 49 (1994): 362–79.

27. M. Worboys, "The Sanatorium Treatment for Consumption in Britain, 1890–1914," in J. V. Pickstone, ed., *Medical Innovations in Historical Perspective* (London, UK: 1992), 58.

28. John William Trask, "The Dangers of Unrestricted Traveling of Consumptives," *Military Surgeon* 16 (1905): 322–33; L. W. Curtis, "Consumptives on Trains," letter to the editor, *New York Times*, 3 May 1905; and S. Adolphus Knopf, "Public Measures in the Prophylaxis of Tuberculosis," in Arnold C. Klebs, ed., *Tuberculosis: A Treatise by American Authors*, 418–20.

29. *Public Health Service Annual Report, 1906*, 207–214. On the bovine tuberculosis effort, see Susan D. Jones, "Mapping a Zoonotic Disease: Anglo-American Efforts to Control Bovine Tuberculosis Before World War I," *Osiris* 19 (2004): 133–48.

30. Charles E. Rosenberg, *The Care of Strangers: The Rise of America's Hospital System* (New York, NY: Basic Books, 1987), 5. See also Charles E. Rosenberg, "Inward Vision and Outward Glance: The Shaping of the American Hospital, 1880–1914," *Bulletin of the History of Medicine* 53 (1979): 346–91; David Rosner, "Social Control and Social Service: The Changing Use of Space in Charity Hospitals," *Radical History Review* 21 (1979): 183–97; Guenther Risse, *Mending Bodies, Saving Souls: A History of Hospitals* (New

York, NY: Oxford University Press, 1999); Rosemary Stevens, *In Sickness and in Wealth: American Hospitals in the Twentieth Century* (New York, NY: Basic Books, Inc., 1989); and Dianna E. Long and Janet Golden, eds., *The American General Hospital: Communities and Social Contexts* (Ithaca, NY: Cornell University Press, 1989).

31. Florence Nightingale, *Notes on Hospitals* (1859). See also Adrian Forty, "The Modern Hospital in England and France: The Social and Medical Uses of Architecture," in Anthony D. King and Paul Kegan, eds., *Buildings and Society: Essays on the Social Development of the Built Environment* (London, UK: Routledge, 1980), 61–93.

32. Michael E. Teller, *The Tuberculosis Movement: A Public Health Campaign in the Progressive Era* (New York, NY: Greenwood Press, 1988), 82.

33. Abrams, *Blazing the Tuberculosis Trail*; and Jeanne Abrams and Maryann Fitzharris, *A Place to Heal: The History of National Jewish Medical and Research Center* (Boulder, CO: Johnson Publishing, 1997). On segregating patients with different disease severity, see Edward O. Otis, "What is a Tuberculosis Sanatorium?" *American Climatological Association* (1911): 161–70.

34. *War Department Annual Report* [hereafter cited as *WDAR*], 1901, 866–71.

35. *WDAR*, 1892, 451–576.

36. *WDAR*, 1901, 855–68.

37. Twenty percent is an estimate because the United States was not yet compiling nationwide health statistics. Estimates on the percentage of deaths due to tuberculosis in the early nineteenth century range from 25 percent to 40 percent. See Bureau of the Census, *Tuberculosis in the United States* (Washington, DC: Department of Commerce and Labor, 1908), table 1.

38. United States Army, Office of The Surgeon General, *Medical and Surgical History of the War of Rebellion, 1861–1865* (Washington, DC: Government Printing Office, 1888), vol. 1, pt. III, 818.

39. "The Army Sanatorium for Tuberculosis at Fort Bayard, New Mexico," n.d., RG 112, Entry 26, Box 91, NARA. The rate in 1891, for example, was 2.97 percent, *Surgeon General Annual Report*, 1892 [hereafter cited as *SGAR*, year], 498.

40. George M. Sternberg, "Is Tuberculosis a Parasitic Disease?" *Medical News* 41 (July–December 1882): 6–7, 87–89, 311–14, 564–66, and 730–31; and George M. Sternberg, *A Manual of Bacteriology* (New York, NY: William Wood, 1892). For information on George Sternberg see Mary C. Gillett, *The Army Medical Department, 1865–1917*, Army Historical Series (Washington, DC: Center of Military History, 1995), 94–98; Martha L. Sternberg, *George Miller Sternberg: A Biography* (Chicago, IL: American Medical Association, 1920); John M. Gibson, *Soldier in White: The Life of General George Miller Sternberg* (Durham, NC: Duke University Press, 1958); Edgar Erskine Hume, "Sternberg's Centenary, 1838–1938," *Army Medical Bulletin* 46 (1938): 69–78; and Office of Medical History, Office of The Surgeon General, "The Surgeons General," http://history.amedd.army.mil/surgeongenerals/G_Sternberg.html, accessed 26 August 2012.

41. On rising expectations see Tomes, *The Gospel of Germs*.

42. *WDAR*, 1901, vol. 1, pt. 2, 709. See also Daniel Appel's observation at Fort Bayard, "A large majority of our patients have been addicted to the excessive use of alcohol, either occasionally or habitually," in Daniel Appel, *The General Hospital and Sanitorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard* (Carlisle, PA: Association of Military Surgeons, 1902), 11.

43. William Osler, *The Principles and Practice of Medicine*. 4th ed. (New York, NY: D. Appleton & Co., 1901), 269, 382; and Thomas J. Mays, "Alcohol as a Factor in the Causation of Pulmonary Consumption," *Journal of the American Medical Association* 48 (2 February 1907): 398–99. On the relationship between alcoholism and tuberculosis see

Barron H. Lerner, *Contagion and Confinement: Controlling Tuberculosis along Skid Row* (Baltimore, MD: Johns Hopkins University Press, 1998).

Also on problems of alcoholism in the Army see Edward M. Coffman, *The Old Army: A Portrait of the American Army in Peacetime, 1784–1898* (New York, NY: Oxford University Press, 1986); James Marten, “Nomads in Blue: Disabled Veterans and Alcohol at the National Home,” in David A. Gerber, ed., *Disabled Veterans in History* (Ann Arbor, MI: University of Michigan Press, 2000); Anton Paul Sohn, *A Saw, Pocket Instruments, and Two Ounces of Whiskey: Frontier Military Medicine in the Great Basin* (Spokane, WA: Arthur H. Clarke, 1998); 82, 102–4, and 354–56; Charles A. Byler, *Civil-Military Relations on the Frontier and Beyond, 1865–1917* (Westport, CT: Praeger Security International, 2006); and Earl F. Stover, *Up From Handyman: The United States Army Chaplaincy, 1865–1920*, vol. 3 (Washington, DC: Office of the Chief of Chaplains, Department of the Army, 1977).

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44. WDAR, 1899, vol. 1, pt. 1, 275.

45. WDAR, 1896, vol. 1.

46. W. H. Arthur to Surgeon General, 27 August 1894, RG 112, Entry 52, Box 2, NARA; and Gillett, *Army Medical Department, 1865–1917*, 103–4.

47. WDAR, 1899, vol. 1, pt. 1, Appendix C, “Report of the Adjutant General of the Army to the Secretary of War on the Canteen Section of the Post Exchange,” 81–279.

48. Gillett, *Army Medical Department, 1865–1917*, 216; and Vincent J. Cirillo, *Bullets and Bacilli: The Spanish-American War and Military Medicine* (New Brunswick, NJ: Rutgers University Press, 2004).

49. Ken DeBevoise, *Agents of Apocalypse: Epidemic Disease in the Colonial Philippines* (Princeton, NJ: Princeton University Press, 1995), 41–42.

50. WDAR, 1900, 783. On tropical medicine and imperialism see DeBevoise, *Agents of Apocalypse*; Gillett, *Army Medical Department, 1865–1917*, 201–306; Warwick Anderson, “Immunities of Empire: Race, Disease, and the New Tropical Medicine, 1900–1920,” *Bulletin of the History of Medicine* 70 (Spring 1996): 94–118; and Marcos Cueto, “Sanitation from Above: Yellow Fever and Foreign Intervention in Peru, 1919–1922,” *Hispanic American Historical Review* 72 (1992): 1–22.

51. Isaac W. Brewer, “Tuberculosis Amongst the Philippine Scouts (native troops) of the United States Army,” *Boston Medical and Surgical Journal* 163 (1910): 940–42.

52. “Clinical History, Valentine, Watts C.,” RG 112, Entry 396, Box 82, NARA; and “Efficiency Report, Watts Crawford Valentine,” RG 94, Adjutant General’s Office [hereafter cited as AGO] 111610, Box 781, NARA.

53. Carol R. Byerly, “Army Sanctuary for Tuberculous Veterans: Fort Bayard, New Mexico, 1899–1919,” in Stephen P. Ortiz, ed., *Veterans’ Policy, Veterans’ Politics: New Perspectives on Veterans in the Modern United States* (Gainesville, FL: University Press of Florida, 2012); Paul R. Goode, *The United States Soldiers’ Home: A History of Its First Hundred Years* (Richmond, VA: n.p., 1957); Patrick J. Kelly, *Creating a National Home: Building the Veterans’ Welfare State, 1860–1900* (Cambridge, MA: Harvard University Press, 1997); Patrick J. Kelly, “Establishing a Federal Entitlement,” in Larry M. Logue and Michael Barton, eds., *The Civil War Veteran: A Historical Reader* (New York, NY: New York University Press, 2007); David A. Gerber, *Disabled Veterans in History* (Ann Arbor, MI: University of Michigan Press, 2000); William A. Dobak and Thomas D. Phillips, *The Black Regulars, 1866–1898* (Norman, OK: University of Oklahoma Press, 2001); and Trevor K. Plante, “Genealogy Notes: The National Home for Disabled Volunteer Soldiers,” *Prologue* 36, no. 1 (Spring 2004): 56–61.

54. WDAR, 1899, vol. 1, pt. 1, 482. Also Eve E. Simmons, "It Took Blood, Bravery to Make Ft. Bayard History," *El Paso Times* 20 January 1963.

55. Cirillo, *Bullets and Bacilli*, 32; see also Mary Gillett, *Army Medical Department, 1865–1917*; Vincent J. Cirillo, "Fever and Reform: The Typhoid Epidemic in the Spanish-American War," *Journal of the History of Medicine and Allied Sciences* 55 (October 2000): 363–97; Percy M. Ashburn, *A History of the Medical Department of the U.S. Army* (Boston, MA and New York, NY: Houghton Mifflin, Co., 1929); and George M. Sternberg, *Sanitary Lessons of the War and Other Papers* (Washington, DC: Press of Byron S. Adams, 1912).

56. Walter Reed, Victor C. Vaughan, and E. O. Shakespeare, *Reports on the Origin and Spread of Typhoid Fever in the U.S. Military Camps During the Spanish War of 1898*, 2 vols. (Washington, DC: GPO, 1904); United States, Congress, Senate, *Report of the (Dodge) Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56th Cong., 1st sess., Senate Doc. 221; Gillett, *Army Medical Department, 1865–1917*, chapter 7; and Stanhope Bayne-Jones, *The Evolution of Preventive Medicine in the United States Army, 1607–1939* (Washington, DC: Office of The Surgeon General of the Army, 1968), 123–46. On the impact on the Medical Department see Carol R. Byerly, *Fever of War: The Influenza Epidemic — The U.S. Army during WWI* (New York, NY: New York Univ Press, 2005).

57. The Medical Department was closing two hospitals it no longer considered useful—the Army General Hospital in Savannah, Georgia, and the Josiah Simpson Hospital at Fort Monroe, Virginia.

58. WDAR, 1899, vol. 1, pt. 1, 5, 371; and Gillett, *Army Medical Department, 1865–1917*, 319–25.

59. See, for example, Parker W. Thorton, "A National Sanatorium for Consumptives," *Journal of the American Medical Association* 26 (1896): 570–72; Jones, *Health Seekers in the Southwest*, 191–92; and "An Army Sanitarium for Tuberculosis," *Boston Medical and Surgical Journal* 141 (7 September 1899), 248–49. The federal government also established the Navajo Agency Sanatorium, with twenty beds, at Fort Defiance, Arizona, in 1915. See Robert A. Trennert, *White Man's Medicine: Government Doctors and the Navaho, 1863–1955* (Albuquerque, NM: University of New Mexico Press, 1998).

60. "An Army Sanitarium for Tuberculosis," *Boston Medical and Surgical Journal* 141 (7 September 1899): 248; and Gillett, *Army Medical Department, 1865–1917*, 339.

61. Porter, "Whipple Barracks," 328.

62. Esmond R. Long, "Weak Lungs on the Santa Fe Trail," *Bulletin of the History of Medicine* 8 (1940): 1046–47, 1045.

63. M. I. Ludington to Quartermaster General, 18 August 1899, RG 112, Entry 26, Box 359, NARA.

64. WDAR, 1899, vol. 1, pt. 1, 482.

65. WDAR, 1897, vol. 1, 502–44.

66. Efficiency Records of Daniel M. Appel, RG 94, Appointment, Commission and Personnel Branch, Office of the Adjutant General [hereafter cited as ACP], Box 631, NARA.

67. George Sternberg to D. M. Appel, 8 August 1899, RG 112, Entry 382, Box 1, NARA.

68. Appel to Office of The Surgeon General, telegram, 3 October 1899, RG 112, Entry 26, Box 359, NARA.

69. Appel to Board of Commissions, Soldiers' Home, 12 October 1899, RG 112, Entry 377, NARA.

70. Appel to Governor, Soldiers' Home, 12 December 1899, RG 112, Entry 377, NARA; and records of the Fort Bayard National Cemetery at <http://www.interment.net/data/us/nm/grant/ftbaynat/index.htm>, accessed 26 August 2012.

71. Appel to Governor, Soldiers' Home, 16 December 1899, RG 112, Entry 377, NARA.

72. WDAR, 1900, vol. 1, pt. 2, 784 and 538.
73. D. M. Appel to Office of the Surgeon General, 10 October 1899, RG 112, Entry 26, Box 359, NARA.
74. Sternberg to Appel, 17 October 1899, RG 112, Entry 26, Box 359, NARA.
75. D. W. Powell to Signal Officer, Department of Colorado, U.S. Army, 6 January 1900, RG 112, Entry 382, Box 1, NARA.
76. "The Bayard Sanitarium," *Silver City Enterprise*, 20 October 1899.
77. Appel to Adjutant General, Department of Colorado, 10 January 1900, RG 112, Entry 377, NARA.
78. Appel to Surgeon General, 17 December 1899, RG 112, Entry 377, NARA.
79. Appel to the Office of the Surgeon General, 15 August 1900, Entry 377, NARA.
80. This description of a sputum test is drawn from a tuberculosis manual that was listed as being in the Fort Bayard Library, Arnold C. Klebs, ed., *Tuberculosis: A Treatise by American Authors*, 327–30.
81. From WDAR, 1901.
82. Daniel M. Appel, "The Army Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Journal of the American Medical Association* 39 (1902): 1378. See also Morris Manges, "Treatment of Coughs with Heroin," *New York Medical Journal* 69 (26 November 1898): 768–70; and Henry D. Fulton, "Heroin in Affections of the Respiratory Organs," *New York Medical Journal* 70 (1899): 760–61.
83. Appel, *The General Hospital and Sanitorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard* 15.
84. Appel, "The Army Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Journal of the American Medical Association* 39 (1902): 1378; and Appel, *The General Hospital and Sanitorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard*, 13.
85. On education see also Evelyn Fisher Frisbee, "Education of the Consumptive in Home Care," *New York Medical Journal* 6 (January 1911): 86–89.
86. U.S. General Hospital, Fort Bayard, 26 October 1900, RG 112, Entry 26, Box 369, NARA.
87. WDAR, 1901, vol. 1, pt. 2, 552.
88. Charles Steele, "Efficiency Report," RG 94, Box 578, and RG 112, Entry 52, Box 3, NARA.
89. Daniel M. Appel, "Clinical History #4820," RG 112, Entry 53, Box 3, NARA.
90. Information on Albert B. Henderson can be found in RG 94, AGO 391621, Box 2727, NARA; and RG 112, Entry 26, #92255, Box 639, NARA.
91. Clinical History, Edward Long, RG 112, Entry 396, Box 50, NARA.
92. E. L. Munson, S. P. Vestal, and Paul Hutton to Adjutant, Fort Bayard, 20 November 1906, RG 112, Entry 386, Box 2, NARA.
93. Information on Paul Hutton from RG 94, AGO 229172, Box 1461, NARA.
94. Information on Edward L. Munson is from RG 94, AGO 2115, Box 1440, NARA; RG 112, Entry 396, Box 59, NARA; Edward L. Munson biography, from "U.S. Army Surgeon General's Office Biographical Sketches of Medical Officers," Manuscript Collection 44, History of Medicine Division, National Library of Medicine; and Dale C. Smith, "In Days Gone By: Edward Lyman Munson, M.D.: A Biographical Study in Military Medicine," *Military Medicine* 164 (January 1999): 1–5.
95. WDAR, 1901, vol. 1, pt. 2, 559.
96. Appel, "The Army Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Journal of the American Medical Association* 39 (1902): 1379.

97. The following discussion is from Daniel M. Appel, "The Army Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Journal of the American Medical Association* 39 (1902): 1373–79; and Daniel Mitchell Appel, "The General Hospital and Sanatorium for the Treatment of Pulmonary Tuberculosis at Fort Bayard, New Mexico," *Military Surgeon* 11 (1902): 203–21.

98. Appel, "Hospital and Sanatorium at Fort Bayard," *Military Surgeon*, 221.

99. *WDAR*, 1901, vol. 1, pt. 2, 849–50.

100. "General Court Martial of Major Daniel M. Appel," 1903, RG 153, Records of the Judge Advocate General, Box 3473, #35995, NARA; and RG 112, Entry 26, Box 40, NARA.

101. "Consumption Cured in New Mexico," *New York Tribune*, 14 June 1900, clipping attached to Appel to General Sternberg, RG 112, Entry 26, Box 359, NARA.

102. D. M. Appel to General Sternberg, date stamped 21 June 1900, RG 112, Entry 26, Box 359, NARA.

103. "Cured Thirty Consumptives," *Chicago Daily Tribune*, 30 September 1900. See also "Curing Consumption," *Fort Wayne Sentinel*, 6 October 1900.

104. "Can Cure Consumption," *New York Times*, 2 March 1902. See also "Benefits at Fort Bayard," *Chicago Tribune*, 6 March 1902.

105. "Consumption Conquered by United States Army," *New York Herald*, 30 March 1902.

106. "Employees Rob Uncle Sam," *The Enterprise*, 29 June 1900.

107. Appel to John G. McCartney, 20 September 1902, RG 112, Entry 377, vol. 3, NARA.

108. Surgeon General to D. M. Appel, 11 November 1902, RG 112, Entry 382, Box 1, NARA; and "Report of Investigation in the Case of 2d Lieut. R. L. Collins, 2d Cavy, U.S. Army General Hosp., Ft. Bayard, N. M." 14 October 1902, RG 112, Entry 26, Box 639, NARA.

109. "General Court Martial of Major Daniel M. Appel," 1903, RG 153, Box 3473, #35995, NARA.

110. See "The Case of Lieut. H. D. Bloombergh, Assistant Surgeon, U.S. Army," July 1902, RG 112, Entry 26, Box 639, NARA.

111. "The Case of Nurse M. H. Ruble, Nurse Corps," RG 112, Entry 26, Box 639, NARA.

112. "The Case of Nurse M. H. Ruble," 1902.

113. "Extracts from Annual Report Inspection of U.S. General Hospital, Fort Bayard, New Mexico, by Major James A. Irons, made March 5th, 6th, 7th, and 8th, 1902," RG 153, Box 3476, NARA.

114. "Synopsis of the Result of the Investigation of the General Hospital at Fort Bayard, New Mexico," 2 July 1903, RG 94, AGO 484491, Box 3393, NARA.

115. Hoff to Surgeon General's Office, 20 October 1902, Inspection Report, RG 112, Entry 26, Box 639, NARA.

116. Efficiency Record of Daniel M. Appel, RG 94, ACP, Box 631, NARA.

117. "General Court Martial of Major Daniel M. Appel," 1903, RG 153, Box 3473, #35995, NARA.

118. "Efficiency Report, Daniel M. Appel," RG 94, ACP, Box 631, NARA.

119. P. M. Rixey, "Hospital, Fort Bayard, For Tuberculosis Patients," U.S. Congress, House Committee on Naval Affairs, Committee Report 30-4, 1 December 1902, 57th Cong., 2nd sess., CIS-No H71-0.35. See also House Committee on Naval Affairs, "Hospital, Fort Bayard, N. Mex., for Tuberculosis Patients," 5 January 1903, Com. Serial Rpt. No.

28; and "Surgeon General Rixey's Recommendations on Personnel, Nurse Corps, Dental Corps, Fort Bayard Hospital, and Hospital Naval Academy," 7 January 1903, Com. Serial Rpt. No. 30, 57th Cong., 2nd sess., CIS-No H71 - 0.29 and 0.31.

120. "Appropriations for Ft. Bayard," *Silver City Independent*, 15 July 1902.

121. "Efficiency Reports, E. T. Comegys," RG 94, ACP, Box 311, NARA.

122. "Application for Leave of Absence," 26 March 1901, RG 94, Box 582, NARA.

123. "Synopsis of the Result of the Investigation of the General Hospital at Fort Bayard, New Mexico," 2 July 1903, RG 94, AGO 484491, Box 3393, NARA.

124. "General Orders No. 1," 12 January 1903, RG 112, Entry 389-91, Box 1, NARA. Please note: Fort Bayard, like all Army hospitals, communicated with a number of people within the Office of The Surgeon General. Unless it is important to the analysis, I will not introduce each staff person by name, but rather will use the designation OTSG to indicate surgeon general staff.

125. Surgeon General's Office to Commanding Officer, Fort Bayard, 3 December 1902, RG 112, Entry 382, Box 1, NARA.

126. Surgeon General's Office to Commanding Officer, Fort Bayard, 6 October 1903, RG 112, Entry 382, Box 1, NARA.

127. Judge Advocate to Adjutant General, Department of Colorado, U.S. Army, 19 August 1903, RG 112, Entry 382, Box 2, NARA.

128. Acting Secretary of the Navy to Secretary of War, 17 February 1904, RG 112, Entry 382, Box 3, NARA.

129. Anonymous to the War Department, 29 April 1903, RG 112, Entry 26, Box 639, NARA.

130. "Synopsis of the Result of the Investigation of the General Hospital at Fort Bayard, New Mexico, by Colonel Charles H. Heyl, Inspector General, U.S. Army," 2 July 1903, RG 94, AGO 484491, Box 3393, NARA.

131. Efficiency Report, Edward T. Comegys, RG 94, Box 311, ACP, NARA.

132. Surgeon General's Office to Commanding Officer, Fort Bayard, 18 August 1903, RG 112, Entry 381, Box 2, NARA.

133. Clinical History, L. B. Ohlinger, RG 112, Entry 396, Box 62, NARA.

134. G. E. Bushnell to the Surgeon General, 24 March 1904, RG 112, Entry 26, Box 91, NARA.

135. War Department, Special Orders, No. 94, 21 April 1904.

136. Efficiency Report, E. T. Comegys, RG 94, ACP, Box 311, NARA.

137. War Department, Special Orders No. 110, 19 May 1905; *Washington Post* 21 May 1905; and Grace Wilcox Comegys to General Ainsworth, n.d., and Chas. B. Nichols to "To whome it may concern," 21 October 1905, RG 94, ACP, Box 311, NARA.

138. Information on Bushnell's life is drawn from "Efficiency Report," George E. Bushnell, RG 94, ACP, Box 715, NARA; Earl H. Bruns, "Colonel Bushnell: An Estimate of His Character and Work," *American Review of Tuberculosis* 11 (June 1925): 275-91; James M. Phalen, "George Ensign Bushnell: Colonel, Medical Corps, U.S. Army," *Army Medical Bulletin* 50 (1939): 130-33; "Obituary: George Ensign Bushnell," *Military Surgeon* 55 (September 1924): 423-24; and Yale University, *Obituary Record of Graduates Deceased During the Year Ending July 1, 1925* (New Haven, CT: Yale University, 1925), 1327-30.

139. "Obituary: George Ensign Bushnell," *Military Surgeon* 55 (September 1924): 424.

140. Surgeon General to Adjutant General, 21 November 1911, RG 94, AGO 1850340, Box 6734, NARA.

141. Efficiency Report, George E. Bushnell, RG 94, ACP, Box 715, NARA.

142. SGAR, 1916, vol 1, 469.

143. On the transition from the "Old Army" to the army of the twentieth century see Richard W. Stewart, ed. *American Military History*, vol. 1, *The United States Army and the Forging of a Nation, 1775–1917* (Washington, DC: Center of Military History, U.S. Army, 2005); Edward M. Coffman, *The Old Army: A Portrait of the American Army in Peacetime, 1784–1898* (New York, NY: Oxford University Press, 1986); Stephen Skowronek, *Building a New American State: The Expansion of National Administrative Capacities, 1877–1920* (New York, NY: Cambridge University Press, 1982); Paul A. C. Koistinen, *Mobilizing for Modern War: The Political Economy of American Warfare, 1865–1919* (Lawrence, KS: University Press of Kansas, 1997); and Ronald J. Barr, *The Progressive Army: US Army Command and Administration, 1870–1914* (New York, NY: St. Martin's Press, 1998).

144. WDAR, 1901, has a lengthy discussion of Hospital Corps training; and Gillett, *The Army Medical Department, 1865–1917*, 313–39.

145. Comegys was born in 1849, Appel in 1854, and Bushnell in 1853.

146. George E. Bushnell, "The Expansion of the Hospital Corps in War," *Military Surgeon* 14 (1904): 144.

147. See "General Orders No. 28, U.S. General Hospital, Fort Bayard, New Mexico," 17 October 1904, RG 112, Entry 26, Box 359, NARA, and "General Orders, No. 1," 12 January 1903, RG 112, Entry 389–91, Box 1, NARA.

148. G. E. Bushnell to Charles F. Mason, 14 February 1905, RG 112, Entry 380, NARA.

149. Earl H. Bruns, "Colonel Bushnell: An Estimate of His Character and Work," 277.

150. G. E. Bushnell to Adjutant General, Department of Colorado, U.S. Army, 5 January 1905, RG 112, Entry 380, NARA.

151. Charles Lynch, Office of the Surgeon General, memorandum, 15 April 1904, RG 112, Entry 381, Box 2, NARA.

152. "Clinical History," Robert L. Collins, RG 112, Entry 396, Box 17, NARA.

153. Christopher Crenner, "Diagnosis and Authority in the Early Twentieth-Century Medical Practice of Richard C. Cabot," *Bulletin of the History of Medicine* 76 (2002): 30–55; Christopher Crenner, "Professional Measurement: Quantification of Health and Disease in American Medical Practice, 1880–1920," Ph.D. dissertation, Harvard University, 1993; Stanley Joel Reiser, "Creating Form Out of Mass: The Development of the Medical Record," in Everett Mendelsohn, ed., *Transformation and Tradition in the Sciences: Essays in Honor of I. Bernard Cohen* (Cambridge, UK: Cambridge University Press, 1984); and Joel Howell, *Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century* (Baltimore, MD: Johns Hopkins University Press, 1995).