The AMEDD Historian

Army Medical Department Center of History and Heritage, Fort Sam Houston, Texas Number 15 Autumn 2016

Contents

Albert Kenner later in his career.

Chief's Corner

Welcome to the fifteenth issue of the *AMEDD Historian*! This year marks three years since our first publication. I believe we are fast becoming an authoritative professional history bulletin for AMEDD Soldiers and anyone with a thirst to learn more about the Army Medical Department. During the last Command Team Leader Development Training Session, the Army Surgeon General, LTG Nadja West, strongly emphasized Army Medicine's readiness focus. She linked history and readiness with a vignette from the Korean War when an ill-prepared and ill-equipped unit (Task Force Smith) did not learn from its past, and subsequently endured unnecessary deaths on the battlefield.

In this issue of the *AMEDD Historian*, our authors present an array of topics that we hope you will find of interest. The articles span from making tanks safe, nurses visiting Nagasaki in 1900, a book review on the impact of disease in American military history, World War II Army Nurse uniforms, Camp Blanding Station Hospital, the horrors of the Gettysburg Battlefield, and new acquisitions at the ACHH Museum.

For those of you who follow organizational change, the AMEDD Center of History & Heritage (ACHH) the proponent of the *AMEDD Historian* recently moved organizations from Headquarters, U.S. Army Medical Command to the AMEDD Center & School Health Readiness Center of Excellence. (continues on last page)

Making Tanks Safe: The Armored Force Medical Research Laboratory

Sanders Marble, Office of Medical History

In July 1940 the Army established the Armored Force at Fort Knox. It was responsible for establishing armored formations, doctrine, and training in the use of armored vehicles. Its first surgeon was COL Albert Kenner (appointed in October 1941), who was well known to armor pioneer COL George Patton, probably a factor in Kenner's selection. Kenner had to devise medical support for armored units from scratch and select their medical equipment, but also determine the medical risks of the new enviroment. Right away he knew he needed a research program to make tanks safe for their crews, and to maximize the battlefield performance of the man-machine combination.

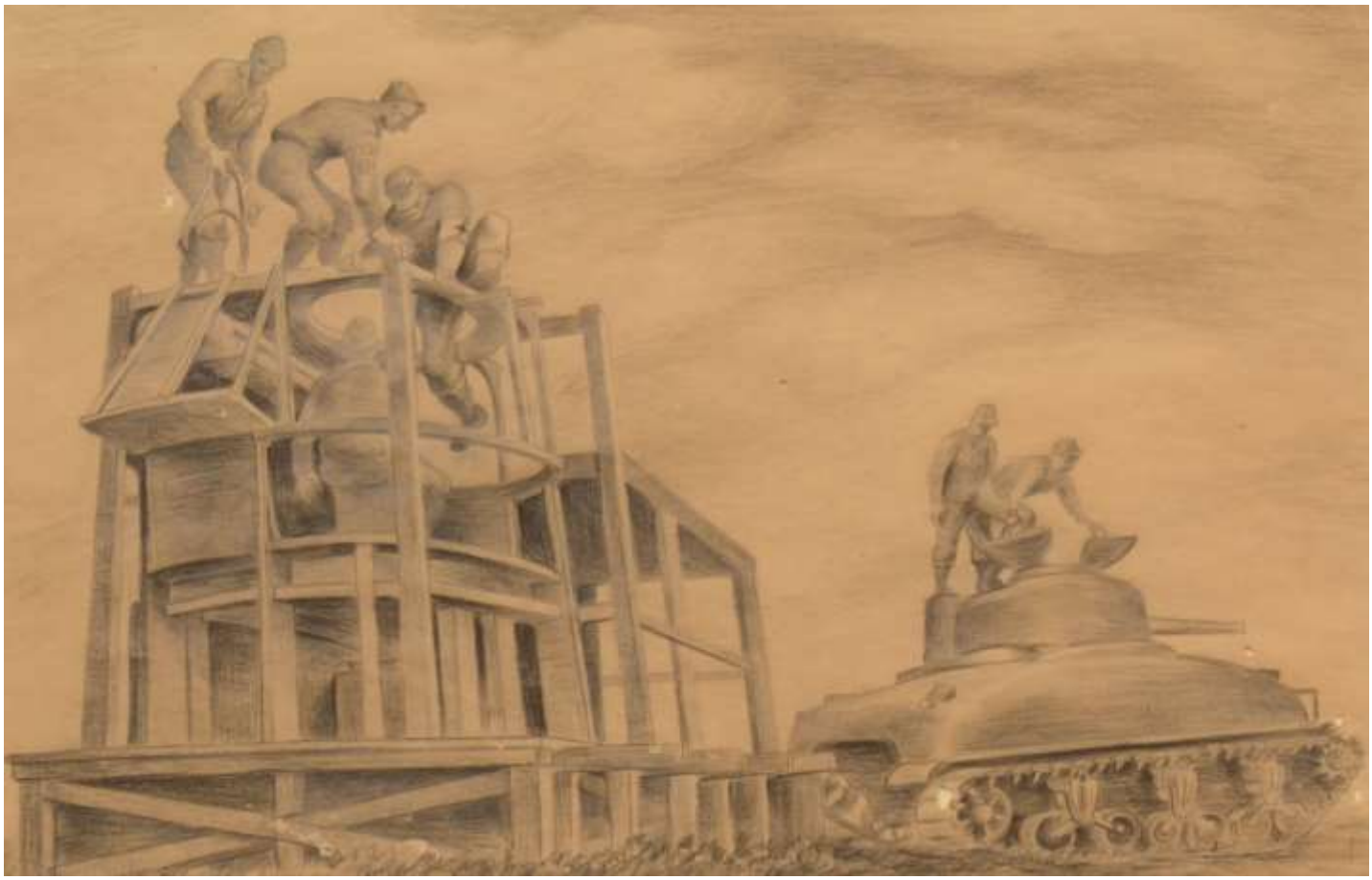
One of Kenner's first steps was to request money to, as he described it, "study the human equation in … armor and vehicles used by armored forces. … I thought that a tank might be likened to occupational hazard and studied it from that standpoint. The tanks originally had been built without reference to the crews." He laid out a long list of research topics: removal of the injured, ventilation, carbon monoxide exposure, visual disturbances, flash burns, fatigue, postural hazards and injuries, head injuries, whiplash, tinnitus, rations, excessive temperature, dust, belt supports for back and trunk, sudden decompression, even blast effects from landmines. Kenner's command-

er, MG Jacob Devers, concurred in December 1941, Secretary of War Henry Stimson approved in February 1942, the National Research Council granted $300,000, ground was broken in March 1942, and the building (still being completed) was occupied in September 1942.

The Armored Force Medical Research Laboratory was formally established in October 1942. (Field work had already begun, with some staff spending the summer of 1942 at the Camp Young, California, Desert Training Center studying the effects of dry heat on tank crew.) Headed by a physician, the AFMRL had Medicine, Physiology, Chemistry, Ventilation, Physics, and Engineering sections. It had a three-fold mission:

- Identify the sources and evaluate the magnitude of the stresses imposed upon tank crew and other weapon operators
- Determine the anatomical, biomechanical, physiological, and psychological limits of the (assumed healthy) men selected as soldiers – what would make them unfit to fight
- Find the balance between operating demands and human capabilities to avoid soldier breakdown and/or weapon failure

The lab had plenty of work to do for the tankers. What protective clothing did they need? How safe



Medics training on evacuating wounded from a training aid of a Sherman tank turret. (Pencil drawing by Frederick Shane, 1944. Courtesy Army Art Collection and Army Medical Department Museum)

were the overalls? (An early model had buttons that absorbed heat and blistered the crews.) What could the Army do to slow down their fatigue, including better seat design? Where should vehicle escape hatches be? How could tankers safely see out during the day and at night? Should tankers routinely wear earplugs to dampen noise? What about temporary deafness after repeated gunfire? How could the Army deal with claustrophobia? The initial seven research areas were:

1. Cold weather operations.
2. Operations at high temperatures (particularly in tanks).
3. Toxic gases in armored vehicles.
4. Dust exposure in armored vehicles.
5. Crew fatigue research.
6. Vision in tanks.
7. Night vision from tanks.

Much research went into the tank as a working environment, what is now understood as ergonomics, and safety. LTC Hatch, one of the scientists, recalled a very practical issue:

> The M-4 tank of 1942 had no ventilation provided to specifically meet the needs of the crew. Engine-cooling air was drawn into the turret and through a heat-exchanger to the engine compartment. But in a stationary tank with the engine not operating, the men received no exchange air. Since the 75-mm gun released considerable carbon monoxide and ammonia as the gun breech opened after firing, there was a clear toxic gas hazard that needed to be corrected. This had not been done, I think, because it was usual to practice gun-fire with the turret hatch open. Our systematic measurements of carbon monoxide and ammonia concentrations under various conditions of firing gave convincing proof of the hazard. This led to development of a compact fan to provide the necessary exhaust ventilation. The report recommending installation of such fans was not approved on the grounds that the tank already had too many gadgets! We succeeded however, in getting two members of the headquarters' general staff to take part in another test-firing of 10 rounds of 75-mm shells with the tank buttoned-up. One general was to be the gunner and the other would load. I was the commander of the crew. When the ammonia reached about 400 ppm after firing 4 rounds, the generals were weeping copiously and ready to quit, but they were game to complete the test. Subsequently, the decision respecting our recommendation was reversed…

Similarly, early tanks had forward air intakes. That was fine, as long as there was no long line of vehicles on the road in front of you, in which case the each vehicle down the column got more and more carbon monoxide. Simply re-positioning the exhaust vents helped that problem.

Other problems were military but not purely armored. The scientists designed a gunsight that reduced magnification to get broader field of view, and found crews were hitting the target in one-quarter the previous time. A new artillery gunsight made use of a direct-reading scale within the field of view of the telescope itself, and eliminated the major source of error. The frequency of error was reduced from 107 errors per 1000 operations to just 7 and untrained personnel did better than those trained to operate with the old sight.

Still other research was useful to the military but not purely military. The lab did some basic physiology work that needed doing: how much heat can the body shed, and through what mechanisms? How much exertion can people stand at various heat/humidity combinations? (This was when the Army decided that wet-bulb temperature was the number to monitor for heat hazards.) They learned that salt tablets were not needed even if someone was sweating literally gallons a day, and that prompt water replenishment was important, not just total water replenishment. Many of the staff came from civilian physiological research labs, and they were probably happy to do work related to their civilian research interests. They investigated hot- and cold-weather clothing; cold-weather shoes and overshoes; how to design footgear to actually handle the stress of marching rather than look smart on parade. To do this work, the lab had remarkable facilities:

> The Laboratory was equipped with cold and hot rooms which approximated the conditions to which men were exposed in the field. The cold room could produce temperatures as low as -63^0 F, with wind velocities as high as 25 or 30 miles per hour. The hot room was capable of maintaining a temperature of 140^0 F. This heat could be the intense dry heat of the desert or the steaming, humid heat of the jungle. A special "tight room" was provided to investigate dusts and gases in relation to tank ventilation. Sufficient space was provided so that the largest vehicles used by the Armored Force could be accommodated, as well as a number of men at one time.

At the time the Army Medical Department had no central research and development organization, and the AFMRL worked under Preventive Medicine, specifically the occupational health and industrial medicine section. Without a central control, liaison was a key, and the AFMRL coordinated research projects with US medical labs (civilian and military), with the Armored Force Board, and the British Armored Fighting Vehicles Physiological Laboratory. Cooperation with the Armored Force Board, also on Fort Knox, was especially close and staff were interchangeably available for advice and consultation, and the facilities of the Board and the Laboratory were made available to each other. By December 1943, no new designs for tanks proceeded beyond the mock-up stage until they had been made the subject of study and report by the Laboratory. All pilot

models of new vehicles were tested by the Laboratory with respect to the gun fume hazard, contamination by carbon monoxide, placement and mounting of sights, lighting, placing of controls and seating.

One thing led to another with some of the research; hot- and cold-weather physiology led to clothing research, protective clothing for cold climates and hot-weather clothing that would not itself cause overheating. By mid-war the clothing research portfolio was assigned to the AFMRL and became the largest function. Its expertise in physiology also led to it being the natural place to consider what fitness was and what the ideal physical fitness test should contain, as compared to what was being done. Since nutrition is related to physiology, a major research project began on rations. Field rations were tested both in the US and in combat zones – groups of soldiers who had eaten only C-rations for over 120 days had blood and urine tests to determine vitamin levels and other factors. The major finding was something fairly obvious: nutrients in food that is not eaten are worthless, so the Army needed to make sure the food is palatable and popular.

Other key research, apparently growing out of the hot/humid clothing tests for jungle warfare, was on atabrine dosing. The world's standard anti-malaria drug was quinine, and the major supply source was the Dutch East Indies (now Indonesia), but that had recently been occupied by the Japanese. The US had recently developed a synthetic anti-malaria drug, atabrine, and needed clinical research to test the effectiveness, dosing, and dosing schedules. They learned what an effective level was, how many days it took the body to reach that level, how many days after leaving the malarial region an individual had to take the drug, and a host of other questions. Having a large pool of test subjects was important to quickly solving the questions, and Fort Knox had those (one test used 1000 soldiers), but there was no particular reason to use the AFMRL.

In February 1944, the AFMRL was transferred from Armored Force control to the Medical Department, but the director reminded his staff "The primary function of the Medical Research Laboratory continues to deal with the problems of armored vehicles." The Armored Force Board had absorbed the ergonomics and safety concerns, and the lab was no longer needed solely for tankers. On 1 April 1947 the Armored Medical Research Laboratory was redesignated the Medical Department Field Research Laboratory. The increasing focus on physiological research meant it was reasonably absorbed into United States Army Research Institute of Environmental Medicine (USARIEM) when that was established in 1961.

Source

This is a reprint of an article first appearing in *Armor* magazine, Vol. CXXVI, No. 3, July-September 2015.

The 2016 Spurgeon Neel Award

The Army Medical Department Museum Foundation is pleased to announce the 2016 Spurgeon Neel Annual Award competition for a paper of 5,000 words or less that best exemplifies the history, legacy, and traditions of the Army Medical Department.The AMEDD Museum Foundation will present a special medallion award and a $1,000 monetary prize to the winner at a Foundation-sponsored event early in 2017. The winning submission will be published in the AMEDD Journal during 2017.

Named in honor of Major General (Retired) Spurgeon H. Neel, first Commanding General of Health Services Command (now U.S. Army Medical Command), the award competition is open to all federal employees, military and civilian, as well as nongovernmental civilian authors. More information about MG (Ret) Neel can be found at http://en.wikipedia.org/wiki/Spurgeon_Neel.

All manuscripts must be submitted to the AMEDD Museum Foundation by September 30, 2016. At the time of submission, a manuscript must be original work and not pending publication in any other periodical. It must conform to the Writing and Submission Guidance of the AMEDD Journal, and must relate to the history, legacy, and/or traditions of the Army Medical Department. Manuscripts will be reviewed and evaluated by a six-member board. The winning manuscript will be selected and announced in December 2016.

Submit manuscripts to amedd.foundation@att.net. Additional details concerning the Spurgeon Neel Annual Award may be obtained by contacting Mrs. Sue McMasters at the AMEDD Museum Foundation, 210 -226-0265.

Camp Blanding's Station Hospital

George E. Cressman Jr.

Located just east of Starke, Florida, Camp Blanding was established in 1939 as the principal training facility for the Florida National Guard. In mid-1940, the post was activated as an Army training site. Nine infantry divisions and many smaller units trained there, and in mid-1943, the post became an Infantry Replacement Training Center. By the end of World War II, over 800,000 men had trained at Camp Blanding.

The development of Camp Blanding's Station Hospital highlights the installation and operation of a large mobilization camp medical facility. At the end of World War II, the station hospital held 2,800 beds, and was the largest hospital in the state of Florida. The station hospital had its origins in Letter of Instruction Number 33, dated 10 September 1940, issued at Fort Bragg. MAJ R.R. Raymond was ordered to proceed to Camp Blanding to establish a medical station at the post. The Station Hospital was officially opened on 14 September 1940 by 1LT J.D. Spencer, MC. Initially it simply supported the camp cadre. Because of Camp Blanding's infancy, hospital facilities were not complete nor were staff quarters; the hospital's first location was a temporary building. It was unclear how large the hospital would be: the initial proposal was 25 beds, but this was quickly expanded to 250 beds and COL L.R. Proust took command.

In mid-September 1940, Lt. Spencer was the only surgeon, and there were only a few corpsmen available in Camp Blanding's Station Hospital. Plans called for a training capacity of 60,000 men; a significant hospital was necessary. More medical staff were needed and in November 1940 men began arriving from a number of established posts. The first nurses – eleven of them – arrived in late November; there were no quarters for them so they were temporarily housed in houses built by the National Guard for the few caretakers envisioned for a part-time training post. Supply was an early problem, and some of the hospital's physicians privately purchased equipment and supplies. The first real shipment of supplies delivered enough for a 1,000 bed hospital – an error that greatly relieved supply inadequacies!

1941 aerial photo of Camp Blanding. The station hospital is at left center, with the 31st Infantry Division's 106th Medical Battalion, 63d General Hospital, and 6th Evacuation Hospitals located nearby for training.
Courtesy Camp Blanding Museum.

With war clouds on the horizon, the US instituted a draft. 122 draftee hospital staff arrived at Camp Blanding on 9 December 1940, with many more following to take care of other draftees. The hospital was officially occupied on 10 January 1941, and growth then exploded. By August 1941, the hospital had reached 2,000 beds, covering more than 3,450,000 square feet. At that point, hospital staff consisted of 570 enlisted men, 173 nurses, and 146 male officers. By mid-1942, the hospital had been designated a training center for medical personnel, and in 1944 it was named a regional hospital, becoming a referral center for patients from smaller hospitals. The hospital grew to 2,800 beds, but a plan to expand to 3,200 beds was halted as the war concluded.

The staff became a thriving community, and needed a "newspaper" to chronicle their activities. The *Station Hospital Newsletter* began Friday afternoon publication on 31 May 1941, and continued publication to 18 March 1944, at which time there was inadequate staff to continue the newsletter. The *Newsletter* contained news of hospital activities, staff movements, and sports events.

The hospital had a full range of medical specialties, including an obstetrics-gynecology ward. Soldiers' wives followed their husbands into central Florida, but housing was a challenge in the immediate off-post area. Many wives found housing in the Gainesville area. The Gainesville Red Cross operated an ambulance service, and transported wives in labor to Camp Blanding for the birth of a baby. The Red Cross ambulance service was shortly christened the "Stork Crew." During the Louisiana Maneuvers and the Carolina Maneuvers, injured soldiers were transported to Camp Blanding's station hospital. This practice allowed field medical units

A ward building at Camp Blanding. The station hospital ultimately had 65 of these wards.
Courtesy Camp Blanding Museum.

to practice treatment and evacuation development, while getting the patients to proper care.

Many hospitals in the US were used to train soldiers for deployable hospitals, and in mid-1942 regular classes were initiated for AMEDD enlisted men. Since many soldiers were assigned to a unit straight from their induction station, the hospital also had to train man men on basic soldier skills, and senior NCOs established a series of classes. The *Newsletter* had weekly articles to augment formal training classes, covering topics such as the organization of aid stations, immobilization of broken bones, etc. The hospital also trained soldiers from the field units that were training on post. Divisional medical personnel got both classes and practical training at the hospital, and hospital staff also put together classes in combat first aid for training soldiers. These combat first aid classes continued as Camp Blanding shifted to an Infantry Replacement Training Center. As combat casualties began to return to the US, a rehabilitation center was established in the station hospital. This rehabilitation section continued to the end of the war, when the hospital began to support separation activities conducted at Camp Blanding.

Although the medical staff's primary responsibility was to patient treatment and training of enlisted men, many staff members contributed to medical knowledge. Of particular interest were exploration of the effects of sulfa drugs and the control of malaria. As fighting in Europe wound down, emphasis changed to preparing soldiers for combat in the Pacific, and the need to prevent malaria became essential. Hospital staff

trained infantry replacements on malaria prevention.

Camp Blanding had both German navy and army prisoners. One hospital ward was reserved for German POWs. Although Camp Blanding's prison camps were reserved for enlisted men, a German officer-physician volunteered to be interned there and care for German prisoners.

The station hospital provided medical services and medical training throughout the period of Camp Blanding's mobilization.

Source

This was based on the author's "Camp Blanding Station Hospital in the War Years," *The Florida Historical Quarterly*, vol. 93, no. 4, Spring 2015, pp. 553-586.

Be Part Of Our Special Issues

We are planning two special issues in the near future, one about WWI in 2018 and one about Vietnam during the fiftieth anniversaries.

What story do you have to tell?

What material do you have to donate for future generations?

Medicine Under Pressure - then

Known as the "Panama Chamber," this recompression chamber was built for the Army to care for divers building the Panama Canal. Originally built in 1903 by the Berkeley Steel Corporation at a cost of $2,666.47, it was used by legions of workers. Many of the 50,000-man army of canal builders, under the supervision of the U.S. Army Corps of Engineers, owed their lives to this device which was used to treat victims of caisson disease, also known by divers as "the bends." Caisson disease, the original name for decompression sickness at depth, derives its name from the submergible pressurized air chamber used by workers to build bridge and canal infrastructures while underwater. Prolonged exposure to pressure at depth produced adverse physiological problems. The nickname "the bends" comes from the disease's most pronounced symptoms characterized by severe muscle and joint pain.

The caisson today, at Brooks City Base. The rivets were kept for the historical look, but the joints were welded in the 1964 renovation. The caisson can be visited at Brooks City Base.

Courtesy John C. "Mac" McCarthy, Brooks City Base

Caisson workers' disease, as it is also called, produced a variety of other symptoms including deafness, vomiting, labored breathing, paralysis called 'diver's palsy,' fainting and in some cases sudden death. Pressurized oxygen therapy, via the recompression chamber, saved the lives of many canal workers who had succumbed to this insidious malady.

Owned by the Panama Canal Company, the device was installed on a floating barge as a medical emergency 'vehicle' during construction of the 50.72 mile-long canal. It was sparingly used after the Panama Canal was officially opened on Aug. 15, 1914. 40 years later the Panama Canal Company loaned it to the Air Force as a temporary fix while a new high altitude chamber was being built at Howard AFB, Panama. The Air Force ultimately purchased it (after deciding depreciation reduced the value to $842.65) and refurbished it since buying a new one would be far costlier. It would eventually find a new home at Brooks AFB when the Air Force Hyperbaric Center was established there. Besides decompression sickness, the 13x6.5 foot, two-place "Panama Chamber" was used by U.S. Air Force School of Aerospace Medicine hyperbaric pioneers to treat refractory chronic bone infections, known medically as osteomyelitis.

A new hyperbaric chamber is being built at Brooke Army Medical Center, and we will have a 'now' piece when it is open.

Sources

This was adapted from information provided by Rudy Purificato, previously historian of the 311th Human Systems Wing, USAF, and John C. "Mac" McCarthy of Brooks City Base.

Nurses Visiting Nagasaki

In June 1900, Chinese rebels called the Righteous and Harmonious Fists (more commonly called the Boxers) besieged foreign embassies and other compounds in Peking. With Americans besieged, the US launched the China Relief Expedition, sending around 3,400 Soldiers and Marines as part of a multi-national force (including Britain, Germany, Italy, Russia, and France) under overall Japanese command.

The Philippine Insurrection (1899-1902) was continuing, and the US bent the line of communication that ran from San Francisco to Manila to support both operations. Now ships from San Francisco would head to Nagasaki, Japan, unload personnel and cargo for China, then continue to the Philippines. The Japanese allowed the US to use facilities in Nagasaki, including renting warehouses as a logistics base, but would not allow a US military hospital. After protracted negotiations, they allowed the US to run a private hospital, and the US leased a building from Methodist missionaries and put CPT Irving W. Rand, MC, in charge. However, that hospital was only operational from January 1901, long after the fighting was over in China. Until then, the Japanese set aside 500 beds in a Japanese military hospital in Nagasaki. The Japanese would not allow US military personnel to treat the patients, although Japanese Red Cross nurses were acceptable and the US hired them to raise the standard of care. The US nurses shown here were apparently *en route* from the US to the Philippines or China and visited the hospital to see the American patients.

New to the ACHH Research Collection

New:

Papers of CSM(R) Howard R. Harrell. Archival material consists of 6 linear feet of framed photographs, yearbooks, and service records documenting the work of CSM(R) Harrell.

Papers of Jeff F. Gamble. Archival material is comprised of .21 linear feet which includes a class photograph, an operation Map for the 188th Medical Battalion from 22 September 1944 to VE Day, and military service records.

Field Epidemiological Survey Team (FEST), Vietnam research material used for the AMEDD Journal article "Medical Surveillance in Vietnam: Meeting the Challenge".

Electronic files from MAJ (P) Jim Burns, Chief of Occupational Therapy, BACH. The PowerPoint, AAR, and conference poster document detainee healthcare at Abu Ghraib during 2006-2007.

15 digital photographs and a copy of the dedication speech for the Kandahar Airfield Military Working Dog Memorial were donated by LTC Donna DeBonis, DVM, USAR.

Highlights

CSM(R) Howard R. Harrell had a long and distinguished career in the AMEDD. He enlisted in the US Army in 1953 and retired in 1990 after 36 years of military service. Among his many distinctions was being the first NCO of the AMEDD to be selected as one of the five finalists for the position of Sergeant Major of the Army in 1987. The ACHH is thankful to CSM(R) Harrell's family for donating his papers to the research collection.

Books:

94 titles

Donors:

Elizabeth Norman, PhD

BG Robert W. Enzenauer, M.D., Colorado, Army National Guard

Highlights

Doss, Frances M. 1998. *Desmond Doss in God's care: the unlikeliest hero and Congressional Medal of Honor recipient*. Collegedale, Tenn: College Press. [Signed by Desmond Doss]

La Motte, Ellen N. 1934. *The backwash of war*. New York: G.P. Putnam's Sons.

Veterinary Corps Centennial

For the centennial, a statue showing Veterinary Corps missions was unveiled . Video of the ceremony is available at https://www.youtube.com/watch?v=T-6NInPhjmA&feature=youtu.be.

The museum also has a temporary exhibit on the Veterinary Corps' history, with more photos online at www.facebook.com/ameddmuseum

Scenes from the Battle of Gettysburg

Wayne Austerman, Leader Training Center, AMEDD C&S

The three days of battle at Gettysburg, Pennsylvania (1-3 July 1863) have long been recognized as one of seminal events in American history. It was, as Victor Hugo wrote of Waterloo, "the universe changing front." The medical story of the battle yields a wealth of insight into the contemporary state of military medicine and the nature of the American character in the worst times of adversity as the following anecdotes of the time illustrate:

Surgeon Turned Provost Marshal

Around noon on July 3rd General Winfield S. Hancock, II Corps commander, rode along Cemetery Ridge with his staff, checking his unit's lines, when a group of about fifty panic-stricken soldiers bolted past him for the rear. In a rage, Hancock shouted to his staff, "Go after them! Go after them!" Dr. Alexander Dougherty, the corps surgeon, wheeled his mount after the fugitives and vaulted a fence to apprehend them.

Southern Surgeon Placed Under Arrest

Surgeon Joseph Yates of the 1st South Carolina Cavalry became so excited when his unit clashed with Union cavalry on July 3rd that he rode at the head of the regiment, pistol and sabre in hand. The fire-breathing physician was subsequently placed under arrest for deserting his post at the regimental aid station, but "was soon released, however, on account of the circumstances of the case."

Doctor "Stands" Enemy Fire

About 1pm on July 3rd the aid station of the 19th Virginia Infantry came under Union artillery fire. A piece of shrapnel uncharitably removed "three or four cubic inches of tissue" from Dr. William H. Taylor's "gluteous maximus muscle." The doughty surgeon ignored the wound and was soon treating the flood of wounded from Pickett's Charge.

On 2 July 1863, Major General Daniel Sickles was hit in the leg by a cannonball at Gettysburg. A saddlestrap was used as a tourniquet, but the leg had to be amputated. Sickles ordered his evacuation to Washington DC, and donated the leg to the Army Medical Museum, now the National Museum of Health and Medicine.

Eleven Days Without Treatment

Union Lieutenant J.G.B. Adams suffered three severe wounds on July 2nd. He received no medical attention until he was evacuated to Baltimore on July 13. His worst wounds were in his right hip and the groin, where the bullet had driven deeply into his body. Adams recounted how "the surgeon placed a large syringe where the ball had entered and forced water through the opening; maggots, pieces of clothing and bone came out; then they probed for the ball which had entered the groin, found it had struck the bone and glanced downward, lodging in the leg where it yet remains." Despite the severity of his wounds and delayed treatment, no infection resulted and they healed without further complications. How Adams escaped gangrene remains a mystery.

<u>Sources</u>

These are drawn from research for a AMEDD-focused supplement to the Gettysburg staff ride guide, part of a series of AMEDD-focused supplements to staff ride guides that will be available starting later in 2016.

New Museum Vehicle!

A new artifact made its way to the AMEDD Museum on March 8, 2016. Almost overshadowed by the huge truck, trailer, and massive crane, the mini-convoy included the newest vehicle added to the museum's collection, a 35-ton armored ambulance. Transferred from Red River Army Depot, the vehicle is one of three prototypes built in the 1990s.

Referred to as Armored Medical Treatment Vehicles (AMTV) or Armored Treatment and Transport Vehicles (ATTV), they were developed under the Army's M4 Command and Control Vehicle (C^2V) program. The M4 family of vehicles was built on the M993 Carrier Vehicle for the M270 Multiple Launch Rocket System (MLRS) and is a variant of the M2 Bradley Fighting Vehicle chassis. The AMTV and its companion vehicle, the Armored Medical Evacuation Vehicle (AMEV) were intended to replace the M577 battalion aid station treatment vehicle and the M113 ambulance. Speed was a consideration as the top speed of the M113 was 25 mph versus the much faster Abrams tanks and Bradleys. Initial testing of the prototype vehicles put their speed at 40 mph.

Lessons learned during Operation Desert Storm led the Army to develop the M4 C^2V family of vehicles for the Force XXI Army Warfighting Experiment. The M4 C^2V included onboard generators providing 21 Kw AC and 4.6 Kw DC power, an antenna compartment with a ten foot nesting mast, a 579 cubic foot crew compartment with a biological-chemical overpressure protection system and a 40,000 BTU environmental cooling unit.

The AMTV had a central position for treating a litter patient inside the vehicle while on the move with room for medical treatment providers to work on either side of the litter. The AMTV could carry four litter patients in addition to the medical crew when the vehicle displaced to maintain contact with the supported unit.

The M4 C^2V development program was canceled in 1999 when the Army shifted to a lighter Stryker-based platform resulting in the development of the M1133 Stryker Medical Evacuation Vehicle for fielding in Stryker equipped units.

Adolphus Lewis Heermann: Physician, Naturalist, Pioneer

Scott C. Woodard, Office of Medical History

What kind of Army doctor is this? With the appearance of an explorer, complete with muzzle loaded firearm and frilled buckskin complimented with fur, A. L. Heermann did not resemble the vision of a physician accompanying troopers across the western frontier. Adolphus Lewis Heermann was one of many physicians in the mid-1800s who practiced their keen sense of observation as a naturalist. The United States Army was the cutting edge of advancement enabling western exploration. Just as the Army had a professionally trained cadre of engineers and topographical surveyors, the Medical Department had well-trained physicians skilled in the art of an emerging science of medicine. Doctors were tasked to collect natural specimens and meteorological data. Among Dr. Heermann's contemporaries were also Dr. William Hammond, later to be the Surgeon General, and Dr. Bernard Irwin, recipient of the Medal of Honor. As such, Heermann was contracted by the Secretary of War to accompany the Pacific Railroad Survey led by an Army topographical engineer, Lieutenant Robert S. Williamson.

Acting Assistant Surgeon Adolphus Lewis Heermann, served on the Pacific Railway Survey from 1853 to 1854.
Courtesy National Library of Medicine.

The Heermann family was no stranger to military service. Adolphus' father, Lewis Heermann, was a career naval surgeon and served during the War of 1812. Like many military families, the Heermann's moved around with each duty assignment. Adolphus was born in Louisiana about 1821. Before his graduation from medical school at the University of Maryland in 1845, he and his brother, Theodore, went on an expedition in Wyoming and Oregon in 1843. It appears this trip collecting birds and eggs whet his appetite for the natural world. By 1845 he was a member of Philadelphia Academy of Natural Sciences.

Having gained notice as an accomplished naturalist in previous western frontier trips, he became known and was befriended by John Cassin of the Philadelphia Academy of Sciences. One of the most well-known discoveries by Heermann was his observation of a never documented seabird on Isla Coronado off the California coast. This particular bird was described by Heermann as a particular unusual occurrence of a smaller bird successfully harassing a much larger feathered friend, a pelican. Upon capturing a fish from the sea, this "newly discovered" gull swept down and snatched the feast from the poor pelican. Dr. Heermann was colorful in his descriptions of the various birds met along his journeys and he noted, "I have never seen the pelican offer the least resistance, or show any anger or impatience at the intrusion or impudence of his little neighbor, who like a tax gatherer, follows through life, an evil inevitable." Cassin would later honor his friend by naming the newly identified seabird *Heermann's Gull*.

The White-Headed Gull, Larus Heermanni, named in honor of Heermann by John Cassin, curator at the Philadelphia Academy of Sciences. Dr. Heermann's California work provided "the most extensive collections ever made in that country."
From John Cassin, *Illustrations of the Birds of California, Texas, Oregon, British and Russian America*, 1862

The Williamson Pacific Railroad Survey mission was to explore California and find a suitable route for the railroad to pass through the mountains and extend to the coast. Army

medical officers worked under the direction of Professor Spencer F. Baird, later to become Secretary of the Smithsonian Institution, in matters of collecting bird specimens. Acting Assistant Surgeon Heermann accompanied the party and worked from San Francisco to the Tejon Pass and Colorado River in California. He continued the expedition by accompanying Lieutenant John G. Parke traveling east along the 32nd parallel from Fort Yuma, Arizona to El Paso, Texas and eventually Philadelphia by way of San Antonio. The naturalist and outdoorsman-physician knew the harshness of following the frontier Army. Enroute to Fort Yuma, Heermann described the scene abounding with the turkey vulture which "… finds an ample supply of food from the carcasses of the numerous animal perishing from fatigue or the want of grass and water, and whose whitened bones, strewn over the ground, mark both the road and the hardships of the western pioneer." Herrmann was, once again, selected as the acting assistant surgeon and naturalist on the follow-on mission with Lieutenant Parke. During this exploration, the fortunate party encountered both friendly Mexican soldiers and friendly Apache Indians. The mission was completed at Mesilla, Texas and Adolphus continued on to San Antonio. In his final report from the entire expedition, Heermann listed 220 species and collected 213 specimens.

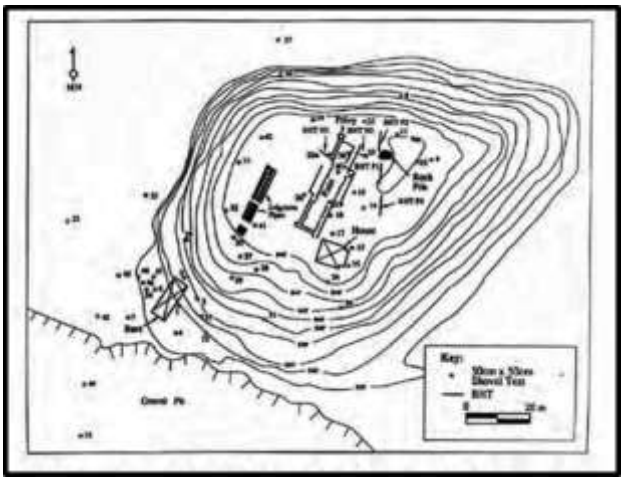
Melospiza Heermanni (the Heermanni Finch/ Heermann's Song Sparrow), was collected in the Tejon Valley and was named for its collector and discoverer by Spencer Baird of the Smithsonian Institute.
From United States Senate, *Reports of Explorations and Surveys, to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean (1853-1856)*, 1858.

San Antonio made for a good home to the naturalist. He and his brother, Theodore, bought land along the Medina River and established a ranch which is an archeological site and working farm today. Initially, Adolphus lived in town, but eventually retired to the ranch where he continued to enjoy his ornithological pursuits. He still managed to visit his beloved Philadelphia and worked at the Academy of Natural Sciences, but his continued syphilitic loss of coordination and inability to know the location of his legs compromised his motor skills. With the exception of his trips to Philadelphia, Adolphus, spent his remaining years in San Antonio. As a known local doctor, he was called upon again to assist the United States Army in 1856. As part of the Camel Corps experiments throughout Texas, camels were stationed in San Antonio at San Pedro Springs and eventually moved to more hospitable terrain near the Heermann Ranch. One of the camels died and Heermann conducted the autopsy. He discovered the animal died from heavy blows that fractured her clavicles and ribs which drove bone splinters into her chest. The camel's skull was collected and submitted to the Academy of Natural Sciences.

The ranch made for an ideal setting for observation and collection, and he collected hundreds of bird, fossil, reptile, egg, and amphibian specimens nearby. Theodore, concerned for his brother's declining health, invited the visiting British ornithologist Henry E. Dresser to stay with them in 1863. Henry and Adolphus would venture from the Heermann's bungalow in town to collect bird skins. The ranch served as the forward base in longer explorations. Although Adolphus was nearly lame from the waist down, he could easily shoot from horseback when his legs were tied into the saddle. This collaboration produced over 40 documented observations and specimens directly accredited to Heermann when Dresser published his findings in 1865 and 1866. Many of those birds collected along the Medina River are now on display in the University of Manchester museum and the British Museum of Natural History.

Upon his return to England in 1864, Dresser maintained correspondence with Theodore. It was through this correspondence that Theodore revealed the untimely death of his brother, Adolphus. When Theodore would leave the ranch, Adolphus would venture out and collect birds. A year after Dresser left, Theodore found his brother dead. It appeared that he was on another of his hunts and stumbled because of his handicap

and killed from the discharge of his gun. Adolphus Lewis Heermann died as he lived, pursuing what he loved for the benefit of science and learning. Witmer Stone of the Academy of Science of Philadelphia, remarked of Dr. Heermann conferring he "was one of the those pioneers to whom we owe a great deal in the development of our knowledge of western birds. A man who was willing to put up with all kinds of hardship and danger with no other reward than the discovery of new birds or additions to our knowledge of others."



(Left) Heermann Ranch archaeological survey circa 1994 (Thoms, 57) and (Right) Google Maps image of the location accessed 14 June 2016.

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Clarification

In last issue's article on the Military Blood Program in Vietnam, we erroneously referred to "Major Frank W. Kiel, MC" as having estimated the amount of blood needed per week. The paragraph should have read "…the blood program officer estimated that 1,000 units…" without mention of Major Kiel. This typo from an earlier draft made it into print. We apologize for the error.

The figure of the growth of the need for blood rising from 100 units per month in 1965 to 8,000 units by February of 1966 is taken from MG Spurgeon Neel's study of medical support in Vietnam. The chapter on the blood program is online here http://history.amedd.army.mil/booksdocs/vietnam/medicalsupport/chapter9.html .

Army Nurse Corps WWII Beige Uniforms

COL Betsy Vane, ANC Historian

The largest group of nurses to ever serve in the U.S. Army Nurse Corps was during World War II, with a total of 59,000 Army nurses serving, and 32,500 of those serving overseas. By law, the ANC was a female-only corps. How was the Army going to outfit these women with functional and attractive uniforms in a global war requiring specialized clothing for varied and extreme climates?

Army Regulation 600-37 required nurses (and other AMEDD women, such as dietitians and physical therapists) to wear prescribed or authorized uniforms "at all times, whether on or off duty, when attending ceremonies and social functions of an official nature, and when in foreign countries." Thus the Army needed to provide uniforms beyond field uniforms (analogous to today's ACU or MCU) hospital uniforms (analogous to today's scrubs), and dress uniforms (analogous to today's ASU).

In WWI nurses lacked a good off-duty uniform, undermining morale. Unfortunately, WWII would start with a limited number of uncomfortable and inappropriate uniforms for nurses due to a number of challenges:

The Army Quartermaster Corps was not prepared to design or supply so many female uniforms. They faced the scarcity of materials, facilities, and manpower, along with wartime rationing difficulties which delayed uniform production.

At that time, military patterns were not established to fit female body shapes. Uniforms were categorized with three lengths: L for "Long", R for "Regular" and S for "Small" which did not necessarily fit bust and hip measurements for women. The size range was established from 30 to 46. Patterns also did not necessarily take into account the smaller sizes and frames of women. Complaints in 1942 from the Army nurses and a representative of the Philadelphia Depot were that the blue wool uniform jacket was "shapeless and unattractive in appearance." The blue wool skirt was "too large in the waist and too small in the hips and in general does not look as though it had been made for fitting the female figure." Additionally, fabrics selected for women's uniforms could shrink or discolor after washing. The volume of complaints about the ill-fitting uniforms led to a complete revision of size ranges for women, but this did not happen until the summer of 1943.

The quartermasters also had to supply the Women's Auxiliary Army Corps (WAAC, later re-named Women's Army Corps, or WAC) with uniforms. Eventually one uniform line was established for both branches, with each branch wearing their insignia. Army nurses preferred distinctive uniforms because they had a longer standing tradition of being a Corps, since 1901 with the WAAC starting in 1942. Once one female uniform was instituted, only the service cap, the nurses' handbag, and the branch insignia distinguished nurses from WACs. As with many wartime situations, Army nurses needed to use the already procured stocks of uniforms before receiving any "new" uniforms. There were further supply difficulties overseas.

The following is a list of service and dress uniforms that could be worn by Army nurses in WWII:

Blue Outdoor Uniform
Olive-Drab Service Uniform
Wool Field Uniform
Beige Summer Service Uniform (purchased at own expense)
Off-Duty Dress (blue or beige)

Left: Beige one-piece dress
Right: Revised Beige Summer Service Uniform. This uniform was donated by LTC Nola Forrest, who wore this uniform during her service as Chief Nurse of the Southwest Pacific Theater of Operations. AMEDD Museum. Due to preservation concerns, these historical garments were not steamed or ironed prior to being photographed. Please excuse our wrinkles.

Olive-Drab Summer Service Uniform
Summer Seersucker Service Uniform
White Hospital Uniform
Blue Hospital Uniform
Cotton Seersucker Uniform
Herringbone Twill special Uniform
Flight Nurse's Uniform
Blue Flight Nurses' Uniform
ETO-style wool field uniform
Type K-1 and L-1 Nurse's Flight Uniforms
Blue Covert Wool cape with interior maroon lining
Winter Field Clothing
Summer Field Clothing
Tropical Field clothing
Protective Clothing
Nurses' Intermediate Flying Suit
Heavy Winter Shearling Flying Outfit
Sweaters and waists (shirts)

Additionally, various hats, shoes, and overcoats or jackets could be worn.

From 1941 nurses could buy the nurse's beige summer service uniform for off-duty wear. The lightweight material used for this uniform's coat, skirt and cap was cotton warp with mohair filling, or tropical worsted fabric, or rayon in plain or twill weave, or gabardine in beige shade No. 55. The first version of the optional beige summer service uniform was worn with a white shirt, black tie, white gloves, beige or neutral stockings and low white oxford shoes. The first pattern service cap with a visor did not officially require insignia, but many Army nurses put the ANC caduceus or the Army coat of arms on the front of the cap. There also was a matching beige garrison cap with maroon piping. Rank insignia was placed on the left side of this cap.

The unlined single-breasted coat was semi-form fitting and had three medium regulation coat buttons. The coat had two hip pockets with buttoned flaps, but there were no breast pockets. Rank insignia, "U.S." emblems, and caducei were worn as on the blue uniform. This coat was trimmed (like the former blue uniform) with maroon edged shoulder loops and maroon mohair officers' braid sewn three inches from the edge of the sleeves. The officer's braid was a visual indication that the nurse was an officer, and could be recognized as such from a distance from front or rear. This uniform had a matching six-gore skirt that utilized the same pattern as the olive-drab skirt. The length of this skirt reached below the knees.

These privately purchased uniforms needed to conform to uniform regulations, and the commercial labels sewed inside the garments indicated that information. Military retail stores sold these uniforms at less expense than if the nurse went to a private or custom tailors shop.

In addition to the winter and summer service uniforms, a one-piece dress was designed for Army nurses. It was used as an off-duty dress at unofficial and social functions. Since they had to be in a uniform at all times, in 1942 nurses had requested a one-piece dark blue dress in the same style as the white uniform. The dress could be worn instead of the three pieces of the jacket, skirt and shirtwaist (blouse). The Army Nurse Corps established a requirement that this one-piece dress must be "washable with minimum shrinkage and fast colors." So, in the summer of 1942 the one-piece, light weight, beige summer off-duty dress was made available for purchase (rather than issue). This dress became essential in hot climates. The design was a tailored model in plain weave rayon or a tropical worsted with a yoke back, four darts at each shoulder, and three darts at the waistline to provide a proper fit. There was a V-neck, collar with lapel, and a three large regulation coat buttons equally spaced for the front closure area and smaller gold buttons that held down the shoulder straps. A detachable white collar was optional for wear with this dress. The dress had a belt with one large regulation gold coat button to fasten it. The two top patch pockets were finished with rounded flaps. Tailored sleeves were

Nurse Ranks and Commissions

Of note, the "officer" status of Army nurses changed several times during World War II.

In December 1942, Congress authorized the **relative rank** of Army nurses from second lieutenant through colonel. It also provided pay and allowances approximately equal to those granted commissioned officers without dependents. This increased the maximum authorized rank from major to colonel.

In June 1944, Congress granted Army nurses **temporary commissions** with full pay and privileges from second lieutenant through colonel for the duration of the emergency plus six months.

April 16, 1947 Congress passed The Army-Navy Nurse Act providing permanent Commissioned Officer status for ANC members, second lieutenant through lieutenant colonel, and for the Chief of the Army Nurse Corps to serve in the temporary grade of colonel. This act also established the Army Nurse Corps section of the Officers' Reserve Corps. 894 Army nurses were integrated into the Regular Army.

gathered into a straight open French cuff with small regulation gold coat button links. Time of service chevrons could be worn on the lower left sleeve, just above the officer's maroon braid on the cuff. Rank and branch of service were worn as usual. The shoulder loops were piped in maroon. A six gore skirt was used. This dress could be worn with the beige service cap or the women's beige garrison cap. Shoes were to be the low cut russet color, and stockings were to be of neutral color.

Left: Summer beige service cap.
Right: Beige garrison cap.
AMEDD Museum

In 1943, a revised beige summer service uniform (shade no. 55) was introduced. This second version looked like the olive-drab service uniform with a single-breasted jacket with four medium regulation coat buttons, a notched collar, shoulder loops, two simulated button flap upper pockets and two lower slit pockets. The back of the jacket had a center seam with four gores. The sleeves were trimmed with maroon officers' braid (shade no. 57), as were the shoulder loops. Now a maroon tie replaced the black tie. This uniform was modified with the wear of beige or russet gloves, russet brown service shoes, and the brown nurses' utility bag (handbag). These changes to the regulations applied to the first pattern beige summer service uniform as well. The jacket buttons were detachable, and some nurses used safety pins on the back as they could more easily be replaced than the other styles of button bar or ring fasteners. This was especially true when the Army nurses were serving overseas where Post Exchanges and other stores were scarce. By April 1945, the beige garrison cap was trimmed with the officer's cord edge braid in both gold and black.

The beige summer uniforms presented a professional and formal look for Army nurses during World War II. The beige color with maroon cording is best shown in color photos, although the majority of photos from that time are black and white. These uniforms may not be as recognizable as the blue outdoor uniform, or the olive-drab service uniform, but it holds a place in the outfitting of the Army Nurse Corps.

AR 600-37 also required stockings when skirts or dresses were worn, but accepted they need not be worn by "nurses assigned to duty in advanced zones or otherwise engaged in rough field duty." The war effort required most of the available silk and nylon. Civilian women resorted to using cosmetics for their legs, drawing or painting black lines up the back of their legs to simulate the illusion of stocking seams, which was called 'liquid silk stockings' or 'paint-on hosiery.' Army nurses found another solution when faced with a lack of stockings – wearing cotton socks.

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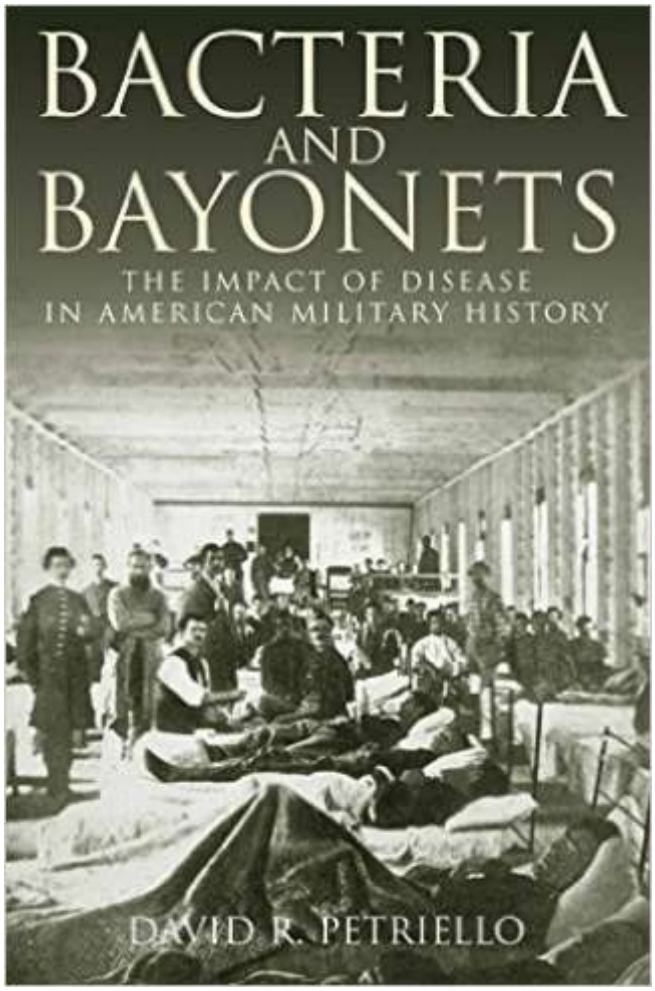
Bacteria and Bayonets: The Impact of Disease in American Military History.

By David R. Petriello. Casemate, 2016. ISBN 978-1-61200-341-2. Pictures. Bibliography. Pp. 226.
Reviewer: Robert S. Driscoll

In thirteen chapters of fast-paced reading, David Petriello eloquently delivers a chronological history of diseases that affected American military history. Petriello opens with American military history's connection to the military conquest of the New World (America) by Spain and the other great European powers (Pp 11). The first two chapters take the reader back to the 16th Century when the English and Spanish brought "contagion" with them from to the new world. Here Petriello describes the effects these diseases had on the native peoples. Chapters (3-6) focus on the pre-revolution and American Revolution. Some of the diseases during this period are not a surprise to readers with a basic knowledge of disease and its effect on an unprotected army. However, Petriello places a lot more fidelity on this topic than is typically found in military history of this time period. Chapter seven offers new information concerning expansion and expeditions, that includes a topic not normally addressed in a military history book. Petriello writes that the Lewis and Clark expedition left St. Louis with enough medications to combat malaria and sexually transmitted diseases, and argues that venereal disease posed the biggest threat to the expedition. Petriello added new information that various tribes regarded sex as a means to settle differences, and even a way in which to obtain power. Husbands offered their wives, and fathers their daughters to Lewis and Clark's men, believing sex with them was a conduit by which they could acquire the white man's power (Pp 127).

One of the best documented wars in American military history was the Civil War. The Army Surgeon General commissioned the *Medical and Surgical History of the War of the Rebellion* which covered the many disease encounters by both sides of the conflict. What Petriello achieves in *Bacteria and Bayonets* is the synthesis of hundreds of pages of *MSHWR* to a single chapter that is easily digested.



The next several chapters of *Bacteria and Bayonets* focus on the 20th Century, from the Spanish-American War through the Cold War period. During this period, the focus shifts from armies encountering diseases to disease experimentation and the prevention efforts conducted by the Army Medical Department. Before reaching the books last chapter, Petriello discusses today's terrorism and disease in the post-Cold War America with focus on Al-Qaeda and ISIS.

In summary, David Petriello wrote a volume that well serves military history enthusiasts, and is useful to the military officer responsible for preventive medicine for a land-based force. For readers desiring to learn more about the etiology of disease, this book will disappoint. However, Petriello provides an excellent description of how disease impacted American and enemy troops alike, and its limiting capacity to all. I highly recommend this book to anyone thirsting to know more about the role of disease and American military history.

This relocation allows us to reach a larger audience beyond the MEDCOM, bring the past to life, to educate and inspire!

We are your AMEDD history team, and the staff of the AMEDD Center of History & Heritage remain ready to assist with your readiness endeavors and lessons learned. Finally, I thank you for your continued support and interest in our Nation's military medical history. It was especially refreshing to talk to a recent Basic Officer Leadership Course visit the AMEDD museum, and answering the many questions they had about our history, as they too will one day become the fabric of our past. We hope you enjoy reading this issue of the *AMEDD Historian* as much as we enjoy telling the AMEDD story! Please contact us if we may be of help to you or your organization, and remember, we invite each of you to become one of our future authors!

Bob Driscoll
Chief, ACHH

ACHH: the Center for the study of AMEDD History.

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We are seeking contributions! We believe variety is the way to attract a variety of audiences, so we can use:

Photos of historical interest, with an explanatory caption

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Documents (either scanned or transcribed), with an explanation to provide context

Articles of varying length (with a 500 word minimum), which must have sources listed if not footnotes/endnotes

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