

*Ward 2 at Base Hospital No. 28 in Limoges, France, crowded with men in military uniforms and in the pajamas issued to the sick and wounded at the hospital. In the background are two nurses, crisply dressed in white caps and aprons. Photograph courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.*

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# “A BRAVE AND GALLANT COMPANY”:

## A Kansas City Hospital in France during the First World War

*by Anthony Kovac, Nancy Hulston,  
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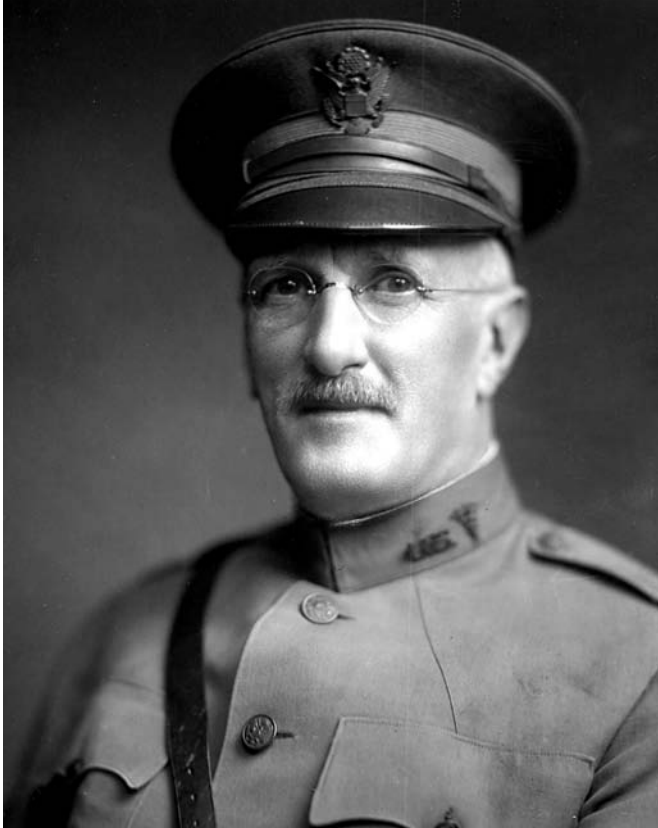
In a 1963 medical journal, Kansas City dermatologist Dr. Charles Dennie described his colleagues of the U.S. Army’s Base Hospital No. 28 as “a brave and gallant company.”<sup>1</sup> The officers, nurses, and enlisted men who comprised the staff of this 2,500-bed general hospital were recruited from the Kansas City environs in 1917. They worked efficiently and well during their posting to Limoges, France, from July 1918 until May 1919, when they returned home and were demobilized. This hospital was one of more than one hundred American base hospitals sent to France to support the two million men who served in the American Expeditionary Forces in Europe during the First World War. The Kansas City personnel of Base Hospital No. 28, nearly all of whom were associated with the University of Kansas School of Medicine, were competent and capable far beyond what is typically imagined of First World War surgical and medical practitioners.

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The authors individually found their ways to the archives of the National World War I Museum at Liberty Memorial in Kansas City, Missouri, late in 2006, hoping to find primary source materials related to medicine in the First World War. Helped by museum director Eli Paul and archivist Jonathan Casey, they were more than successful. The prize each found was the collection of papers related to Base Hospital No. 28. The four authors, all associated with the University of Kansas Medical Center and its Department of the History and Philosophy of Medicine, pooled their resources and efforts to produce this paper. They acknowledge, with gratitude, the assistance of Eli Paul, Jonathan Casey, and others of the museum staff.

1. The concluding sentence in his year-long series on Base Hospital No. 28, published in the weekly *Greater Kansas City Medical Bulletin* under the column “Little Known Medical History,” is referenced as: Charles C. Dennie, “History of Base Hospital 28,” *Greater Kansas City Medical Bulletin* 57 (February 23, 1963): 521–37; see note 34 for details about these essays and their author.



John Fairbairn Binnie, a Scottish-born surgeon and later a professor of surgery at the University of Kansas Medical School, had the reputation and authority necessary to begin the organization of a general hospital in Kansas City for service in France. As a lieutenant colonel he was the senior surgeon at Base Hospital No. 28 and a surgical consultant to other military medical facilities in France. Binnie, pictured here in 1918, returned to the private practice of surgery in Kansas City in 1919, but a stroke ended his career in 1922. He died in 1936. Photograph courtesy of the Western Historical Manuscript Collection-Kansas City (WHMC-KC), 0088 V.1:1

In fact, it can be argued that the medical and surgical practice of American military hospitals in France in 1918 was representative of the rapidly growing scientific and technical accomplishments of the twentieth century, rather than the relatively primitive practices of military medical facilities during the wars of the nineteenth century. This was the direct result of the leadership of those who commanded these American military hospitals, almost all of which were organized by prominent doctors from large cities, many of whom were associated with medical schools. Before WWI the United States participated in European affairs on a limited scale and had not fought a major war outside North America, with the possible exception of the conflict in the Philippines during and after the Spanish-American War. World War I was the first major conflict in which American medical and surgical practice could be considered modern in any sense.

Two University of Kansas School of Medicine (KUSOM) faculty members—surgeon John Fairbairn Binnie and physician Lindsay Stephen Milne—organized Base Hospital No. 28 in Kansas City in 1917 and commanded the hospital during its time in France in 1918. By curious coincidence both were born in Scotland, qualified as specialists in the United Kingdom, and came to practice in Kansas City early in the twentieth century. Binnie, born the son of a Presbyterian minister at Stirling in the south of Scotland in 1863, attended King's College and Marischal College of Medicine in Aberdeen. He pursued surgical training in Glasgow and then went for further training to Göttingen and Berlin in Germany, before immigrating to America in 1889. Binnie was a professor of surgery at KUSOM and a leading figure in medical circles in Kansas City for many years. A close friend of the famous Mayo brothers, he was internationally known and was the author of a popular surgical textbook, *Manual of Operative Surgery*, which went to eight editions. A man of many interests, he was an avid golfer and a founding member of the Kansas City Country Club. Binnie was involved in planning Base Hospital No. 28 from the first meeting of Kansas City area doctors onward.<sup>2</sup>

Lindsay Milne was born the son of a wheat broker at Montrose in northern Scotland in 1883. Upon finishing high school he tried to enlist in the British Army and fight in the Boer War but, being underage, was sent back to Scotland. There he entered the medical school of the University of Edinburgh and graduated in 1904. He remained in Edinburgh, trained in pathology and medicine at the university's hospitals, and, in 1907, attained both an advanced degree (MD) and Membership in the Royal College of Physicians (MRCP). He immigrated to America in 1908. Initially he worked at the Russell Sage and Rockefeller foundations in New York. Milne, who was multilingual, also pursued research projects in Vienna, Paris, Berlin, Costa Rica, Brazil, and South Africa before coming to Kansas City in 1912, where he became head of the Department of Medicine at KUSOM. Milne joined the U.S. Army in April 1917, just a few days after America declared war on Germany, and served briefly on the Mexican border before returning to Kansas to join the medical staff of Base Hospital No. 28.<sup>3</sup>

2. Emmet Rixford, "John Fairbairn Binnie, 1863–1936," *Annals of Surgery* 106 (July 1937): 157–60. Binnie's colleague and friend, Dr. Emmet Rixford, wrote this obituary for a prominent American surgical journal. A brief biographical sketch and an anecdote may be found in KC0088: Jackson County Medical Society Records, folder 1 and folder 16, Western Historical Manuscript Collections-Kansas City (hereafter cited as "KC0088, WHMC-KC").

3. "Dr. Lindsay Milne Dies," *Kansas City Star*, September 17, 1944; see also, for biographical materials, KC0088, folder 22, WHMC-KC.

Thus, Base Hospital No. 28 was led by a surgical specialist and a medical specialist of great experience, competence, and international reputation. They were joined by the best of Kansas City's doctors and nurses, all responsible for the remarkable record of this hospital during its service in France in the last months of the First World War. This record was no accident. It was the result of the hospital staff's adherence to the best and most dedicated practice standards of the time, under the leadership of two seasoned academics.

The early months of 1917 saw Germany extend the war when it resumed unrestricted submarine warfare against neutral ships and dispatched the Zimmerman telegram, a clumsy attempt to incite Mexican military action against the United States of America (through, among other things, an offer to finance Mexico's reclamation of New Mexico, Texas, and Arizona). By March 1917 the people of America were ready to go to war with Germany in Europe. In this spirit, and under the leadership of Binnie and Milne, a group of Kansas City area doctors gathered at the new Christian Church Hospital on April 1, 1917—five days before America actually declared war on Germany—to discuss formation of a hospital unit to be sent to France from the Kansas City area.<sup>4</sup> Many at the meeting were ready to volunteer for the war effort by planning, organizing, and staffing a large general hospital, or, in the parlance of military and Red Cross authorities, a “base hospital.” Nearly all of these doctors were faculty members of the University of Kansas School of Medicine.

Recruitment began immediately. Binnie and Milne were joined by their medical colleagues, Jabez N. Jackson and Arthur N. Altringer, and throughout the summer and fall of 1917 they worked to enlist young men and to recruit those already enlisted who “lived within a short buggy ride of the edges of the Kansas City limits” to form the professional and support staff of the hospital. Other Kansas City area physicians and surgeons, including Herbert Valentine, Claude J. Hunt, James R. Elliott, Sherman B. Hibbard, and Harry S. Dunmire, also worked to marshal volunteers.<sup>5</sup> On January 21, 1918, the staff and personnel were selected and mobilized under orders from the Surgeon General's Of-

4. The Christian Church Hospital, founded with money from local philanthropist R. A. Long was located west of Troost Park at 2625 West Paseo in Kansas City, Missouri.

5. Charles S. Stevenson, “Their Skill Saved Doughboy Lives,” *Kansas City Times*, November 9, 1968; for typed transcript of Stevenson's article, see Base Hospital No. 28, Collection 86.95, National World War I Museum, Kansas City, Missouri (hereafter cited as “Base Hospital No. 28, Collection 86.95”).



*Lindsay Stephen Milne, a Scottish-born physician and professor at the University of Kansas Medical School, joined John Binnie in recruiting Kansas City medical personnel to form the staff at Base Hospital No. 28. He finished the war as a lieutenant colonel and was commanding officer of the hospital. Milne was well regarded as a consultant physician and, with Binnie, assured high-quality care at the facility, which had a remarkable record of only sixty-nine deaths amidst its nearly ten thousand wartime admissions. Upon return to Kansas City, Milne, pictured here in the 1920s, resumed the practice of medicine and died of lung cancer in 1944. Photograph courtesy of WHMC-KC0088 V.111:60.*

fice in Washington, D.C. They were organized according to the standards of the U.S. Army and American Red Cross, the two agencies responsible for formation and training of overseas hospital units. The hospital was authorized under the name Base Hospital No. 28 with John Binnie appointed as director (and later command major), and Lindsay Milne as executive officer.

For the next month the hospital staff was stationed at the new Union Station in Kansas City, Missouri, where they received preliminary training and equipment. On February 22, 1918, 6 officers and 149 enlisted men were transferred to Fort McPherson, Georgia, for continued training. They reported to the commanding officer of Army General Hospital No. 6 to undergo a rigid training program for overseas service and to procure equipment for their own base hospital.<sup>6</sup> This

6. *Ibid.*

rigid program was supervised by Colonel Donald Bannister, a regular army physician and veteran of the Boxer Rebellion and the Philippine insurrection. His assignment was to shape this fledgling group into a military hospital unit. He was assisted by Sergeant Herbert Ridgway as Sergeant-in-Charge of the hospital Registrar's Office. Morning training at Fort McPherson included close order drill and instruction in setting up first aid stations and mobile hospitals under simulated emergency situations. Afternoon training consisted of what may have seemed like postgraduate work to some, in that it included instruction ranging from how to treat shock and amputate limbs to removal of shell fragments from the brain and reconstruction of shattered jaws. Treatment of gas casualties and other expected combat wounds was also included. This schedule—of morning drills and afternoon medical training—continued for about three months.

On June 2, 1918, the group, now of 34 officers and 201 enlisted men, began its long trip to France. The hospital's nurses went separately. The number of officers had increased so that all specialties necessary for the conduct of a base hospital in active service were represented. They left Georgia for Camp Merritt, New Jersey, and on June 12 sailed from New York City on the White Star Line steamship *Megantic*. Colonel Bannister, still the commanding officer, was senior medical officer on board. In spite of inclement weather and overcrowding, few illnesses were reported. Seasickness, not surprisingly, was the most common problem. All the sick were cared for, and vaccination histories were checked and brought up to date. During the voyage the ship's hospital was turned over to Base Hospital No. 28. Their ultimate destination was known to be France, but the exact location was not yet revealed.

On June 22, as they neared Great Britain, the convoy encountered a flotilla of German torpedo boats, which prompted their diversion around the north coast of Ireland, and then east to disembark at Liverpool, England. Two days later they left by train with about twenty-five thousand other troops for Southampton. Their journey to France continued across the English Channel on a very small, old Irish channel boat, *Antrim*, built to carry three hundred people. On that trip it managed to carry seventeen hundred. After landing on French soil, they eventually boarded a train and traveled for three days in open boxcars from Cherbourg to the site of their new camp near Limoges. They arrived at their destination on July 2, exactly one month after leaving Fort McPherson, Georgia.<sup>7</sup>

7. *Ibid*; see also Joseph Herbert Ford, *The Medical Department of the United States Army in the World War, Volume 2, Administration of American Expeditionary Forces* (Washington, D.C.: U.S. Government Printing Office, 1927), 655.

United States Army plans for locating large general hospitals were mostly completed in 1917. Twenty-two "hospital centers"—large tracts of land, well behind the front—were designated as hospital locations. Some French buildings were requisitioned but most of the hospital beds were placed in hastily erected barracks. The largest center, at Mesves, had 1 evacuation and 8 base hospitals. The smallest center, at Perigueux, had 2 base hospitals. Limoges had 3 base hospitals, Nos. 13, 24, and 28. By December 1918 there were 134 base and evacuation hospitals in France, with a total of 163,368 beds.<sup>8</sup>

Base Hospital No. 28 and its sister base hospitals were the last links in the chain of First World War medical facilities that stretched from the battlefield to the distant rear. To understand the meaning of the medical and surgical statistics that came out of these facilities, it is important to review the role that a base hospital played in the military triage system. After being wounded, soldiers were taken to advanced dressing and casualty clearing stations for first aid, where, when necessary, initial surgery and treatment for shock could be accomplished. Then the triage and transport process would begin, and, depending on the nature and severity of their wounds, soldiers would first be sent to a field hospital, then to an evacuation hospital, and finally to a base hospital far from the battle front.<sup>9</sup>

The personnel of Base Hospital No. 28 were surprised when they discovered their new camp consisted only of a single barracks building for officers and a headquarters building. All water for drinking, bathing, and sewage disposal flowed through a one-inch diameter pipe, and only one latrine in the headquarters building existed for the entire staff of three hundred, including female nurses. No building was available to admit patients, but building supplies were stacked on the premises and all personnel were temporarily detailed for construction. They met the challenge and built their hospital from the piles of lumber scattered about the hospital site and the prefabricated wooden sides intended for barracks. Help was also available from four hundred French laborers. With everyone hard at work, the new camp soon expanded to twenty buildings, and after one month the hos-

8. Ford, *The Medical Department of the United States Army in the World War*, 473–77.

9. A common field surgery handbook by Dr. George D. De Tarnowsky, a surgeon at Cook County and Ravenwood hospitals in Chicago, Illinois, was used as a standard reference for many aspects of surgical procedures during the First World War. George D. De Tarnowsky, *Military Surgery of the Zone of the Advance: Medical War Manual #7* (Philadelphia: Lea & Felbein, 1918), particularly 71–86.



*The Christian Church Hospital was barely a year old in 1917 and was located at 2625 West Paseo in Kansas City, Missouri. It was here that John Binnie and Lindsay Milne recruited medical staff members, who in turn recruited other doctors, to form Base Hospital No. 28. After the First World War this building became the Robinson Neurological Hospital and is presently an apartment building for retired persons. Photograph courtesy of WHMC-KC590KC, N177.*

pital construction was essentially complete. Subsequently the Bellaire Seminary, a single-building girls school in the final stages of construction adjacent to the hospital grounds, was requisitioned and tents were added on the grounds.<sup>10</sup>

While waiting for their first patients, non-medically trained enlisted men were taught specific techniques necessary to assist surgeons, anesthetists, and pathologists. The medical officers conducted the training and tested various pieces of medical equipment. Illustrative of the planning and ingenuity of this effort was the creation and operation of a medical laboratory, which proved to be of comparable quality to the KUSOM Bell Memorial Hospital laboratories. Firsthand accounts of the construction and launch of Base Hospital No. 28, such as the "History of Laboratory of Base Hospital No. 28, Limoges, France," describe the early days of the facility in considerable detail and demonstrate the flexibility that was required of the hospital's personnel. In their first days at the site, the staff was unsure, even, of the capacity of their hospital:

At the time when the laboratory of Base Hospital No. 28 was organized, information from outside

<sup>10</sup> "History of Laboratory of Base Hospital #28, Limoges, France," unpublished typescript, Base Hospital No. 28, Collection 86.95.2.

sources as to the scope of work, extent of equipment expected of a Base Hospital Laboratory was decidedly meager. This was demonstrated by the fact that the original capacity for a Base Hospital was calculated to be 500 beds, "or thereabouts," but practical evidence shows that "thereabouts" is extremely elastic, and in case of Base Hospital No. 28 permitted a maximum of over 2900 patients. . . .

The scope of equipment covered the necessary detail for a fully equipped, large sized, modern laboratory, doing microscopical pathology, post mortems, bacteriology, serology, epidemiological work (survey, etc., etc.), water and milk analyses, biological chemistry, organic and inorganic chemistry. . . .

At the time Base Hospital Unit No. 28 arrived and possession of the respective outlay assigned for occupation, the laboratory consisted of walls, roof and blue prints. That most of the laboratory consisted in the shape of blue prints was a most fortunate circumstance, because it permitted a number of much desired additions and alterations during its process of construction,



The French government requisitioned the use of Bellaire Seminary, a single-building girls school that was in the final stages of construction, for the use of Base Hospital No. 28. The school, pictured here, was an excellent addition to the hospital, providing space for offices, wards, living quarters, and ancillary services, including at least one operating suite and radiology facilities. Photograph courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.

quite impossible, had the building been completed according to original plans.<sup>11</sup>

Once construction was complete, hospital personnel could begin to use the laboratory and other facilities they had built with their own hands. One problem of particular interest at Base Hospital No. 28 was wound bacteriology, specifically how to identify bacteria that could thrive without oxygen. These organisms—anaerobic bacteria such as *Clostridium* species—could cause cellulitis, myositis, and myonecrosis (gas gangrene), problems particular to the soldiers the hospital treated. These soldiers were infected when their wounds came into contact with the bacteria present in the soil of the farm fields upon which they fought. As the author of the “History of Laboratory of Base Hospital No. 28” explained in his discussion of the identification of anaerobic bacteria:

The mode of most of the fighting in the present war, i.e., position warfare over fields which have been cultivated for centuries, inevitably resulted in a great prevalence of gas [gangrene] infections. At the laboratory of Base Hospital No. 28, an effort was made to find a method by which identification could be made positive through the cultivation of the organisms by the plate method, anaerobically [without oxygen],

11. *Ibid.*

and which at the same time would permit of a large number of cultivations being made at once.

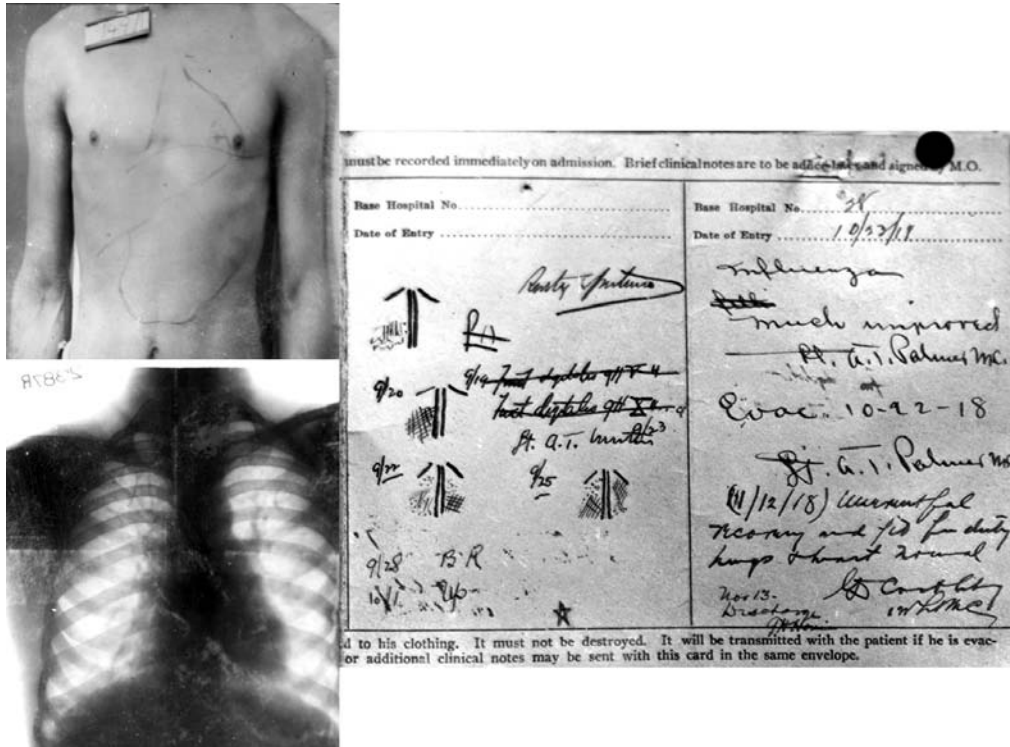
After a careful review of such literature as was available on the subject, in which none of the methods outlined seemed to answer all of the requirements, a method was finally worked out which proved highly satisfactory and at the same time is practicable under the somewhat limited facilities of a war laboratory.<sup>12</sup>

The writer described in great detail the improvisations that the laboratory personnel carried out in order to adapt materials to serve their needs and outlined the operation of the apparatus that they created to isolate, grow, and identify deadly gas gangrene anaerobes in an oxygen-free environment. In a poignant ironic parallel, memorialized in Dr. John McCrae’s famous poem, “In Flanders Fields,” the profusion of poppies in the soil of France and Belgium during the war, like that of the bacteria that caused gas gangrene, was a consequence of the disruption of farmland by the war. The artillery shells that churned the soil and maimed and killed soldiers brought not only *Clostridium* to the surface, but also the dormant seeds of the poppies that bloomed in profusion on the barren, scarred land, even in the cemeteries.<sup>13</sup>

Another firsthand account of the work done at Base Hospital No. 28 was written by the head of the hospital’s Registrar’s Office, Captain Sherman B. Hibbard. Hibbard’s duties as the supervisor of this independent organization began before leaving Kansas City. Starting in January 1918, for example, Dr. Hibbard held daily “sick call” in Kansas City’s Union Station for uniformed members of the hospital contingent. Once the Registrar’s Office was up and running in France, it became one of the most important factors in the hospital’s success. Hibbard recorded his experiences forming and operating the office in a manual he drafted after the armistice titled “History Registrar’s Office, Base Hospital No. 28 USA.” This report described, in considerable detail, the administration of the office, which was divided into independent sections, including the Receiving and Admissions Ward, the Sick and Wounded Office, the Information and Post Office, the Detachment Office, and the Patients’ Property and Evacuation Office. Some sec-

12. *Ibid.* Gas gangrene is caused by infection of a dirty wound with a virulent gas-forming bacteria, such as *Clostridium perfringens*. Gas forming in tissues causes massive swelling and in the First World War was always fatal. Though rare now, it can be treated with antibiotics, aggressive surgery, and hyperbaric chambers. None of these treatment options were available in 1918.

13. *Ibid.*



This three-panel figure shows how three separate patients were treated at Base Hospital No. 28. The torso at the top left shows the practice of using a patient's skin as a record upon which his underlying pathology was drawn. The chest x-ray at the bottom left shows clear lungs, perhaps from a case of influenza without lung involvement. The paper record at right is illustrative of the brevity and utility of simply structured written records of individual patients. This particular patient was thought to have influenza—though sputum was noted to be "rusty," suggestive of pneumonia—and was given digitalis, a treatment at the time for pneumonia. During his two-week hospital stay the patient steadily improved and was discharged, fit for duty, just in time to see the war end. Illustrations courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.

tions began functioning in Kansas City and others were not activated until the hospital was operational in France.<sup>14</sup>

In Limoges Captain Hibbard was the admission officer for all new patients. Receiving and Admissions Ward personnel were the first to greet patients after long, wearying trips from the front. These patients included sick and wounded from the battlefields and frequent transfers from other hospitals depending on the availability of specialized surgery at particular facilities. Cardiothoracic surgery and neurosurgery were in their infancies in 1918, and not all general hospitals had the surgeons and facilities available to perform operations in these spheres.

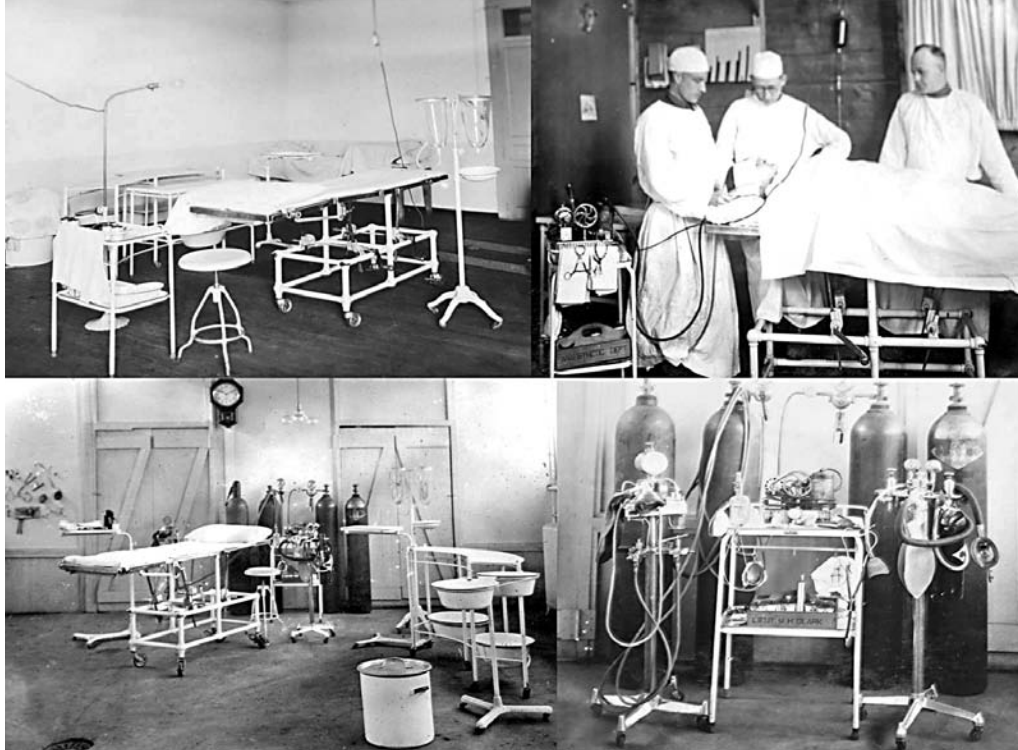
Given the poor quality of roads and the lack of air evacuation in 1918, it was necessary to devise a unique method to simultaneously clear hundreds of wounded and sick soldiers away from the front. What France lacked in roads it made up for in railroads and soon ambulance trains, specially outfitted with beds in two or three tiers along each

side, moved the sick and wounded to over one hundred U.S. Army base hospitals situated behind the front, including Base Hospital No. 28. A train of twenty cars could carry four to five hundred wounded and sick soldiers and was staffed by doctors, Red Cross nurses, and enlisted personnel. Though there were also operating rooms on some of the ambulance trains, those patients with serious abdominal and chest wounds were not expected to live and were kept comfortable at smaller hospitals near the front rather than being sent to general hospitals in the rear. Even when the sick and wounded reached a hospital their journeys were often not over. At Base Hospital No. 28, for example, where the essential services and sickest patients were to be found in the myriad of one-story temporary buildings that were quickly built just before the hospital began operations, patients were moved between buildings on stretchers, sometimes in rainy weather along muddy roads, paths, and trails.

As Hibbard described it, the physical examination performed upon admission was rigid, and an accurate diagnosis was expected for each patient. The process of "renova-

14. Capt. Sherman B. Hibbard, "History—Registrar's Office, Base Hospital No. 28, U.S.A.," unpublished typescript, Base Hospital No. 28, Collection 86.95.1.





*The four panels of this illustration show operating rooms at Base Hospital No. 28, which were surprisingly modern in appearance, with IV bottles on standards, cylinders of oxygen and nitrous oxide, a variety of anesthesia masks, and ethyl chloride bottles and ether canisters on carts. Close scrutiny of the right lower panel shows the apparatus is labeled as belonging to Lieut. M. H. Clark, or Dr. Morris Clark, the anesthesiologist who, along with three corpsmen anesthetists, provided most of the anesthesia for Base Hospital No. 28. Photographs courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.*

tion,” the term used to describe the transition the sick and wounded underwent from filthy, louse-infested soldiers to clean patients, started with a warm meal, a suit of pajamas, and a towel. Plenty of warm water, soap, and vermifuges—called “cootie oil” by the soldiers—were available in the hospital’s bathhouse. Each man was given a slip printed with his designated ward number, and patients waited in lines sometimes three hundred patients long. Typists took the patients’ clinical records, and then the men were escorted to their appropriate wards.

The records produced by the Receiving and Admissions Ward were maintained by the Sick and Wounded Office, the executive department of the Registrar’s Office. All hospital reports were generated in this department, and everything pertaining to patients started and ended in this office. Daily the Sick and Wounded Office recorded all diseases and all serious cases, and determined which patients were available for discharge and a return to duty. Patients were further described as “walking, sitting, or lying.” On any given day this office could determine that several hundred patients were well enough to leave the hospital.

The Information and Post Office was organized early in July and by the fourteenth of that month the first batch of mail arrived from the United States. The delivery was very heavy as it was the first news from home for over a month. Many of the hospital personnel were so eager for mail that they rushed the post office building, which was kept locked until the mail was sorted. Some received as many as thirty-five letters. On July 23 the first patients arrived at Base Hospital No. 28 and soon mail was coming for both staff and fifteen hundred patients. At least ten thousand pieces of mail passed through the Base Hospital No. 28 post office every week.

The Detachment Office was the administrative unit for the hospital staff and for the hospital as a physical entity. This office kept payroll and personnel records and also oversaw unit discipline, what we would now call “patient rights,” chaplaincy services, community relations, cooperation with the Red Cross and the Young Men’s Christian Association (YMCA), and relations with other American, British, and French military units.

The Patients' Property and Evacuating Office tracked and maintained soldiers' belongings while they were at Base Hospital No. 28. Very few soldiers had a complete or intact uniform upon admission. The renovation process meant each man traded his uniform for pajamas, the common hospital garb. Uniforms were washed, sterilized, repaired when possible, and then reissued by the Property and Evacuating Office. The office was likewise responsible for placing each discharged soldier appropriate to his condition, arranging for return to his unit, return to his home in America, or transfer to another hospital.<sup>15</sup>

Initially, when a convoy of wounded soldiers arrived, all available personnel from all the departments of the Registrar's Office assisted in the admission procedures. When on July 23 the first patients arrived at the hospital, thirty gassed patients transferred from Base Hospital No. 24, the medical staff quickly learned that mustard gas burns were very common and caused severe injuries. Consequently, three of the doctors who treated them—G. Wilse Robinson, Charles Dennie, and Claude Hunt—were sent to Paris to study new methods of therapy.<sup>16</sup> Four days later, on July 27, the hospital's preparations were put to a more serious test when notice came that a train full of wounded was expected to arrive at 6:39 p.m. All available personnel, including nurses and officers, went to work, industriously setting up beds in the twelve completed wards. The train arrived three hours late and well after sunset, and Sherman Hibbard and the other officers used lanterns in the darkness to examine more than six hundred patients. Those who could walk were checked first, with several hundred patients lined up in the road. There were also a great number of stretcher cases, many badly wounded and very sick. All were efficiently diagnosed and sent to appropriate wards, where additional information was obtained and clinical records initiated. Because this was their first large group of patients, hospital personal were not yet accustomed to their jobs, and that night's work was not completed until after 3:00 a.m. However, processing over six hundred patients in about five hours—two patients each minute—must be recognized as an excellent initial effort.

Later, of course, more wards were built, and the system of receiving new patients became even more efficient. Eventually, the total number of beds at the hospital reached 2,908. These were housed in 23 wards of 64 beds each, or 1,472 beds in various one-story temporary barracks buildings, 1,136 beds at the nearby Bellaire Seminary, and 300 tented beds. Base Hospital No. 28 had one ward for eye,

15. *Ibid.*

16. Stevenson, "Their Skill Saved Doughboy Lives."

ear, nose, and throat problems, and a single ward for gas contact and skin and venereal diseases. Of the remaining wards, eight were surgical, including fractures, and thirteen could be considered medical wards of various types, including a ward for contagious diseases. Beyond this, relatively fit convalescent cases were housed in tents and the adjacent Bellaire Seminary building.<sup>17</sup>

In the final official report of the activities of Base Hospital No. 28 during the period of its functioning in France, the total number of patients received was 9,954, of which 6,087 were medical cases and 3,867 were surgical cases. Another compilation showed that somewhat fewer than half of the patients admitted, 4,321, were declared fit for service and returned to their units, while the remainder of living patients were sent home. There were only sixty-nine in-hospital deaths, twenty-three from battle wounds that surgery could not successfully address and forty-six from medical conditions. Not all pages of the official hospital reports are available in the National World War I Museum archives in Kansas City, Missouri; some have apparently been lost, but the extant hospital census numbers for 1918 are illustrative: October 30—2,343; November 12—2,906; November 30—2,435; December 8—1,225; December 20—648; and December 31—280. The single-day record of admissions for Base Hospital No. 28 was 1,100 patients. The hospital started that day with 1,400 patients and was a little more than half empty, having recently discharged 1,500 soldiers. By 3:00 a.m., 400 patients had arrived by train; 300 more came at breakfast time; and an additional 400 showed up in the afternoon. Even with all this shuffling, no one lacked for a bed. On January 31, 1919, Base Hospital No. 28 ceased clinical operations and its last patient was transferred to another American base hospital.<sup>18</sup>

A variety of statistical reports and a complete alphabetical list of admitted patients and their diagnoses, compiled by the Registrar's Office of Base Hospital No. 28 during the nearly six months the hospital functioned in Limoges, shows that of the nearly 10,000 admissions, 2,435 were classified as "GSW." While this classification might be assumed only to

17. Hibbard, "History—Registrar's Office." Most hospital wards, in 1918 and now, can be divided into medical and surgical wards. Medical wards house patients with diseases not requiring operative intervention, who are usually treated with medications. Surgical wards house patients who require operative intervention to manage their problems.

18. "Base 28 Minus Nurses," *Kansas City Times*, May 2, 1919; see also in Kansas City Newspaper Clippings, Base Hospital No. 28, Collection 86.95; "Admissions, Discharges, Death, Transfers and totals in hospital," Base Hospital No. 28, Collection 86.95.21; Hibbard, "History—Registrar's Office."



*These nurses from Base Hospital No. 28 are representative of the thousands of women who went to France in 1918 to staff hospitals at every level, largely under the aegis of the American Red Cross. Not only did they soften the pain and suffering of war for the wounded and sick soldiers, they supervised the order and discipline necessary to run large hospitals with rapid patient turnover. The "Red Cross Nurse" is an enduring image of the First World War, often celebrated in songs of the time. Photograph courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.*

refer to "gun shot wounds," in fact it also seemed to include injury from artillery rounds and shrapnel as well as bullets, because no patients were identified as having artillery or shrapnel injuries. It is not possible to know how many patients received surgery in hospitals close to the front and were then transferred to the base hospitals for postoperative care. Nor is it possible to know how many patients had more than one operation—perhaps emergency surgery at the front and then definitive surgery at a base hospital.

Between July 23, 1918, and January 31, 1919, a total of 2,066 surgeries were listed for GSWs: 361 involved wounds to the upper extremities, 963 the lower extremities, 332 the head and neck, 68 the abdomen and genitals, 130 the back and side, 92 the chest, and 114 were the result of multiple wounds. There were six cases of gas gangrene, a fearful and significant cause of mortality from contaminated wounds.<sup>19</sup> In addition to surgery for GSWs, other surgeries performed

included 178 ear, nose, and throat procedures, 53 eye operations, and 1,774 dental cases. As mentioned previously, a total of twenty-three patients died from battle casualties at Base Hospital No. 28, including seventeen non-operative and six operative cases. No cases were reported dead on arrival, and of the 23 GSW patients who died, all were autopsied.<sup>20</sup>

When surgery and anesthesia were performed in the early part of the twentieth century, fast surgeons were considered the best surgeons. Military surgeons were trained and skilled in the application of tourniquets and ligation of arteries to stop hemorrhage in severely bleeding patients. As all patients were triaged, special areas were available for the treatment of shock, low body temperature (hypothermia), and disordered blood chemistry (acidosis). In the event of severe blood loss, depending on the patient's physical condition and blood pressure at the time of admis-

19. The common causative gas-producing organisms were *Bacillus aerogenes capsulatus* and *Bacillus perfringens*, now known as *Aerobacter aerogenes* and *Clostridium perfringens*, respectively. These gas-producing bacilli grow best on the glycogen of muscle and produce a maximum of gas that suffuses adjacent tissues.

20. "Statistical Reports—Base Hospital #28," Base Hospital No. 28, Collection 86.95.24a–g; "Numerical Survey of Cases of Gun-Shot Wounds in Base Hospital #28, from July 1918 to December 1918, Inclusive," Base Hospital No. 28, Collection 86.95.22. Both of these reports were compiled by Captain Paul M. Krall, pathologist. The total number of surgeries performed at Base Hospital No. 28 based on the information provided by these sources was 4,071, though as previously noted another hospital report, "Admissions, Discharges, Death, Transfers and totals in hospital," lists the total number of surgeries at 3,867.

sion to an evacuation or base hospital, fluid infusions and whole blood transfusions were administered.<sup>21</sup>

In the operating rooms of Base Hospital No. 28, located in the Bellaire Seminary annex and the nearby temporary wooden hospital buildings, the majority of surgical cases received general anesthesia. One anesthesiologist, Dr. Morris H. Clark, and three corpsmen assistants provided anesthesia. The type of anesthesia selected depended on the condition of the patient and the type of surgery he needed. First World War soldiers were healthy young men, and they were, for the most part, in good physical condition with few medical problems. However, as was common at the time, many were heavy smokers and they had some degree of lung disease and chronic bronchitis. These medical problems, combined with the effects of living in cold, damp trenches, often made it difficult to anesthetize with ether or chloroform. Also, the injured soldiers were often very anxious or nervous, many with shell shock from fighting in the trenches for long periods of time.

Similar to present-day medical practice, albeit briefer, patients underwent a physical examination and preoperative workup. Commonly, in order to facilitate identification of the location and nature of a soldier's wounds or sickness, the diagnosed area of abnormality was actually drawn on the patient's body. This especially helped to indicate problems that could not easily be seen, such as chest diseases like lung consolidation, pneumonia, or heart murmur. Patient medical records consisted of small cards and included the admission diagnosis and date, and a one- or two-line entry each day to note changes in the patient's condition. To those who would undergo surgery, morphine and scopolamine were commonly given by intramuscular injection approximately one-half hour before their procedures. This combination helped to provide for sleep and a quiet recovery after surgery.

In order to determine what type of treatment a given patient should receive, the severity of the patient's shock had to be balanced with the operation deemed optimal. In order to minimize the effects of surgical shock, the concept of "anoci-association" was developed before WWI and promoted during the war by Dr. George Crile, who practiced at Base Hospital No. 4 out of Cleveland, Ohio. This method of anesthesia sought to prevent further shock during surgery

21. Edward W. Archibald and W. S. McLean, "Observations Upon Shock, With Particular Reference to the Condition as Seen in War Surgery," *Annals of Surgery* 66 (September 1917): 280-6; see also, F. H. McMecham, "Some Experimental Researches and Clinical Observations on Wound, Shock, Blood Pressure, Anesthesia, Acidosis, and Fat Embolism at the Front," *American Journal of Surgery* 32 (April 1918): 66-67.

by disrupting communication between the area of operation and the patient's nervous system through the use of local anesthetics. If a patient was already in shock prior to surgery, then regional local anesthesia with novocaine was used, a combination that worked best for short surgeries of less than an hour's duration. Preoperative preparation was performed on an individual basis and the choice of the anesthesia was tailored to a patient's fitness to withstand the operation itself.<sup>22</sup>

Inhalation anesthesia techniques included the use of chloroform, ether, ethyl chloride, and nitrous oxide/oxygen mixtures. For general anesthesia chloroform and ether were initially given by the open drop mask method, and nitrous oxide/oxygen was given via Connell and Heidbrink anesthesia machines.<sup>23</sup> Because chloroform worked quickly to anesthetize patients deeply enough for surgery and because it was well tolerated by most patients, it was given more often than ether to start anesthesia. Ether was then given as a secondary anesthetic, using a separate mask. Initially, chloroform was given with a Schimmelbush mask and a single layer of gauze. A second mask for ether used two layers of gauze. During anesthesia and the accompanying surgery patients breathed spontaneously, though oxygen was available if the patient became cyanotic, or blue from lack of oxygen. Morris Clark and his three corpsmen anesthetists provided most of the anesthesia for Base Hospital No. 28.

In a 1919 interview with the *Kansas City Star*, one of these corpsmen, Corporal Clyde Morris, described his impressions of giving anesthesia for surgery performed by John Binnie. Morris mentioned that Binnie, after one of his consultations at another hospital, returned to Base Hospital No. 28 and operated on nine patients, one after the other, in a single surgical session. Morris administered the first anesthetic by himself, but then, because of the number of patients waiting for operations and because many surgeries needed to be performed in a short amount of time, he worked as part of a team with Corporal Neal Woodruff to decrease the time spent anesthe-

22. McLean, "Observations upon shock"; see also, G. W. Crile, *A Physiological Interpretation of Shock, Exhaustion, and Restoration* (London: Oxford University Press, 1921). The initial publication by Crile was years before the First World War: G. W. Crile, "Nitrous Oxide Anesthesia and a Note About Anoci-Association, a New Principle of Operative Surgery," *Surgery Gynecology and Obstetrics* 13 (August 1911): 170-3; T. Clarke, "Anesthetics in Military Hospitals," *American Journal of Surgery* (Anesthesia Supplement) 32 (October 1913): 134-35. Crile's "anoci-association" method used a balanced anesthetic technique of intramuscular morphine, inhalation nitrous oxide/oxygen, and local block regional anesthesia.

23. Clarke, "Anesthetics in Military Hospitals"; see also, A. Mills, "The Administration of Anesthetics to Soldiers: An Ethyl Chloride Ether Vapor Method," *American Journal of Surgery* (Anesthesia Supplement) 33 (April 1919): 60-62.

tizing each patient. Morris stated that by the time he started the first anesthetic, Woodruff had the next man ready for surgery and brought to the operating room. As Morris finished the anesthetic on the first patient, Woodruff started the anesthetic on the second patient. Morris noted that in this way no time was lost, and Binnie had only to change his gloves and gown before starting the next case. Morris and Woodruff, enlisted men, recognized the rare opportunity they were given as anesthetists at Base Hospital No. 28. They noted that while many doctors and students had observed Binnie operating in Kansas City, they were not only able to view his work firsthand, but also to give anesthesia for his patients.<sup>24</sup>

Since antibiotics were not yet available, the primary method of treatment to prevent infection after surgery was the use of steam and chemical sterilization. Wound treatment by chemical means, via irrigation with Dakin's Solution, required consummate skill, careful administration, and keen observation by skilled nurses. These young women were the heroines of the base hospitals and, without a doubt, primarily responsible for the excellent results and low mortality rate of Base Hospital No. 28.<sup>25</sup> Along with wound care, they had a number of other responsibilities, ranging from hospital admission, patient nutrition, patient comfort and safety, and physical rehabilitation, all the way to hospital discharge.

As with laboratory medicine, surgery and anesthesia changed during the First World War in ways that would translate into improved civilian medical care in subsequent years. For example, trench warfare made non-lethal head and neck injuries common. Because of the large number of these disfiguring injuries and the need for challenging and new surgical management, the specialty of reconstructive plastic surgery was born. Anesthesia techniques and strategies advanced as well, to the great benefit of society at large.<sup>26</sup>

24. "Kansas Citian Writes of Watching Operations on Nine Soldiers," *Kansas City Star*, January 7, 1919; see also Charles M. Singleton Scrapbook, Base Hospital No. 28, Collection 83.15, National World War I Museum, Kansas City, Missouri; James Tayloe Gwathmey, "Anesthesia During the World War," in *Anesthesia: With Collaborators on Special Subjects* (New York: The Macmillan Company, 1924): 688–703. Dr. Gwathmey described the problem of doing anesthesia, especially when the operating room schedule could be overwhelmed by the arrival of numerous injured patients, in his landmark anesthesia textbook. He recommended the simultaneous use of four anesthesia teams preparing and concurrently administering anesthesia to as many as twelve patients at once.

25. John F. Binnie, *Manual of Operative Surgery* (Philadelphia: P. Blakiston Son & Co., 1916). Components of Dakin's solution are sodium carbonate, chlorinated lime, boric acid, and tap water. It was administered with the use of rubber tubing through which the solution was slowly dripped onto an open wound.

26. B. O. Rogers, "British Plastic Surgeons Who Contributed to the Revue de Chirurgie Plastique and the Revue de Chirurgie Structrice (1931–1938)," *Aesthetic Plastic Surgery* 25 (May 2001): 213–40; Neil H. Metcalf, "The Effect of the First World War (1914–1918) on the Development of British Anaesthesia," *European Journal of Anaesthesiology* 24 (August 2007): 649–57.

X-ray was another newly developed technology employed at Base Hospital No. 28. Just twenty-three years after the invention of x-ray imaging by Wilhelm Röntgen in Germany in 1895, Base Hospital No. 28 had several x-ray machines and the volume of x-ray work accomplished was quite considerable. A general hospital report recorded 4,014 radiology examinations performed by the hospital during its six months of operation, including 2,102 x-rays on extremities, 142 on the spine, 708 on the chest, 44 on genitourinary (genital and urinary) organs, 53 on the abdomen, 206 on the skull, 346 for dental problems, and 413 for unspecified reasons. There were 577 fluoroscopic examinations as well. This distribution of x-ray examinations suggests that bone fractures and searches for foreign bodies (probably shrapnel) were very common problems. The relatively small number of abdominal x-rays suggests that few patients with abdominal wounds reached this general hospital, for previously stated reasons. Chest x-rays were probably used to identify medical problems within the thorax, for example pneumonia and fluid collections. The relatively large number of skull x-rays suggests that facial trauma was commonly seen and some of the dental x-rays may have been part of this challenge. Important to note is that several dentists were part of the hospital staff.<sup>27</sup>

Perhaps even busier than the x-ray machines was the well-equipped hospital laboratory. In total, the laboratory performed 16,232 tests. Among the tests recorded, 3 of 84 malarial smears were positive, suggesting that malaria was uncommon. Of 380 stool specimens examined, 7 were positive for various infections, signifying that not only smears of fecal material were done but bacterial cultures as well. Out of the 100 stools specifically examined for evidence of typhoid fever bacteria, none were positive, evidence that sophisticated bacterial identification methods were in use.

Of 409 sputum smears done for tuberculosis just 12 were positive. Of 464 sputum specimens examined for other pathogens, 146 were positive. The bacteriology of sputum, other than tuberculosis, was not well understood at this time but some of the positive sputa were surely diagnostic of pneumococcal pneumonia. Out of 33 cerebrospinal fluid smears, 18 were positive, meaning that there

27. "Report of Dental Work at Base Hospital No. 28, A.P.O. 753, Limoges, France, August 10–December 31, 1918," Base Hospital No. 28, Collection 86.95.25; "X Rays and Photographs of Organs in various states of disease," Base Hospital No. 28, Collection 86.95.31; "Record. Summary of Work Completed in X-Ray Laboratory, Base Hospital No. 28, A.P.O. 753, France, August 10, 1918–January 31, 1919," Base Hospital No. 28, Collection 86.95.33.



*Plastic surgery was born during the First World War. Shown in these panels are examples of wounds and their treatment by surgeons using the developing techniques of this new discipline. It is likely that these wounds were irrigated daily with Dakin's solution, a mixture of sodium carbonate, chlorinated lime, boric acid, and tap water that served as the pre-antibiotic method of reducing bacteria and preventing or limiting infection. Photographs courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.*

were 18 patients with meningitis. Most patients thought to have a venereal disease were seen in smaller hospitals or aid stations, nonetheless, 9 of 73 dark-field examinations for syphilis at Base Hospital No. 28 were positive, and 98 of 250 urethral discharge smears for gonorrhea were positive. The hospital laboratory seems to have been state of the art for 1918 and capable of performing a variety of examinations and dealing with a high volume of work.<sup>28</sup>

In the early twentieth century, venereal disease fell under the purview of dermatologists, as most of the initial manifestations are external, that is, in and on the skin. Charles Dennie, a dermatologist at Base Hospital No. 28, noted after supervising the examination of about 300,000 soldiers on their way home at the end of the war, that the venereal disease rate was less than 1 percent, and

most of these cases suffered from gonorrhea. He attributed this to aggressive management of men with sexual exposure. The U.S. Army had a policy, General Order 45, that each soldier was required to report sexual activity with a woman within one hour of that exposure. He was then given a prophylactic urethral irrigation with a solution of potassium permanganate or a similar solution. A man who developed a venereal disease but had not reported his sexual exposure in a timely fashion was confined to the stockade and suffered loss of pay for three months. The statistics for Base Hospital No. 28 reflect the success of this draconian policy, as there were only eighty-four admissions for gonorrhea and forty-eight for syphilis.<sup>29</sup>

28. The syphilis bacteria could easily be identified from smears of penile sores by a specific sort of microscopic examination, the so-called dark-field examination. The gonorrhea bacteria were more easily identified by simple microscopic examination of stained smears of urethral discharge. "Reports—American Expeditionary Forces, France, Base Hospital #28," Base Hospital No. 28, Collection 86.95.23; "Statistical Reports," Base Hospital No. 28, Collection 86.95.24; "Laboratory Equipment, Base Hospital 28," Base Hospital No. 28, Collection 86.95.29.

29. This rate is inferred from "Reports—American Expeditionary Forces, France, Base Hospital #28," Base Hospital No. 28, Collection 86.95.23; "Statistical Reports," Base Hospital No. 28, Collection 86.95.24; "Report of Dental Work at Base Hospital No. 28," Base Hospital No. 28, Collection 86.95.25; "Laboratory Equipment, Base Hospital 28," Base Hospital No. 28, Collection 86.95.29.



*Base Hospital No. 28 employed the newly developed technology of x-ray in its treatment of the war wounded, performing 4,014 radiology examinations during the six months it operated in France. Like early x-rays generally, the test being performed here does not offer much shielding from the tube's radiation scatter. As is shown with this patient, even skull images could be obtained. Developing of exposed films would have been done in an adjacent darkroom. Photograph courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.*

Much can be learned about the hospital by examining its deaths. The fact that there were only sixty-nine in-hospital deaths out of 9,954 admitted patients—or 0.7 percent—bespeaks a remarkable record for any hospital before the widespread use of antibiotics. Two caveats must be adduced at the outset. First, as previously stated, patients with wounds so severe they could not survive never arrived at the base hospitals. Thus, open wounds of the abdomen with fecal spillage, open chest wounds, and severe head wounds probably were rarely seen in base hospitals. This can be confirmed by scrutiny of the complete alphabetical list of admitted hospital patients available in the archives of the National World War I Museum. The second caveat is that American soldiers were healthy young men, arriving at the hospital with single surgical or medical problems, for example a gunshot wound of the arm or pneumonia, unlike the most common occupants of hospitals in America today:

the elderly with multiple chronic diseases. Arriving at Base Hospital No. 28, therefore, nearly guaranteed survival.<sup>30</sup>

In twenty-three of the sixty-nine recorded deaths, the cause was associated with war trauma, and designated as GSW. Of these patients seven had gas gangrene, ten had other wound infections, and six died of other causes. The remaining forty-six deaths included pneumonia, influenza, lung abscess, and meningitis, all medical conditions, as opposed to the GSW which were obvious surgical conditions. In addition to the death list of sixty-nine patients, the archives of the National World War I Museum contain thirty-seven complete autopsy reports, consecutively numbered from six to sixty-five, with gaps in the numbering representing deaths not autopsied. These reports are neatly

30. "Reports—American Expeditionary Forces, France, Base Hospital #28," Base Hospital No. 28, Collection 86.95.23; "Statistical Reports," Base Hospital No. 28, Collection 86.95.24; "Laboratory Equipment, Base Hospital 28," Base Hospital No. 28, Collection 86.95.29; and other miscellaneous reports and forms throughout the collection. Sadly, it has not been possible to find published national statistics for base hospital mortality rates from the First World War period. However, it is reasonable to assume that other American base hospitals had similarly low mortality rates.



This image of a Skinner family Christmas card suggests that 1918 was the first Christmas Dr. E. H. Skinner, the hospital radiologist, was away from his wife and family. Though the war was over by December 1918, Base Hospital No. 28 was still six months from being home in America. The stark wooden-frame barracks of the hospital surely made cold quarters in the French winter. Card courtesy of the National World War I Museum at Liberty Memorial in Kansas City, Missouri.

typed and reflect careful, complete gross examinations of the bodies, usually with bacteriology completing the report. There were no microscopic examinations reported for any of the patients. Interestingly, there were twenty-four deaths from influenza and twenty-two of these deaths were autopsied. The remaining fifteen autopsies were for a variety of other causes of death.<sup>31</sup>

Some of these autopsies, then, evidenced the influenza epidemic that swept through France from late spring through the autumn of 1918. This pandemic may have started in Haskell County, Kansas, when young men took the virus to Camp Funston, adjacent to Fort Riley, Kansas, late in February 1918. From Camp Funston soldiers car-

ried the virus to military bases across America and then to France, reaching the port of Brest very early in April, and infecting French troops in Paris by April 10. Ironically influenza did not reach Spain until May, though it became popularly known as the Spanish flu. Initially there were few fatalities from influenza but, as the epidemic intensified and spread, the mortality rate increased.<sup>32</sup>

Soon many soldiers had influenza, and the vast majority either stayed in place until they were well or were cared for in aid stations or the next level of front-line hospitals. The sickest were sent to the general hospitals. Admission records of Base Hospital No. 28 show a total of 1,295 cases of influenza admitted from July through December 1918, with 18 cases in July, 16 in August, 280 in September, 578 in October, 221 in November, and 182 in December. Some young soldiers died of the influenza. It is now known that

31. "Statistical Reports," Base Hospital No. 28, Collection 86.95.24; "Autopsy Findings, Case No. 6-65 (not inclusive)," Base Hospital No. 28, Collection 86.95.27. The number of gangrenous patients at Base Hospital No. 28 according to the autopsy reports (seven) is different from the number given in other hospital records (six), including "Statistical Reports—Base Hospital #28," Base Hospital No. 28, Collection 86.95.24a-g; "Numerical Survey of Cases of Gun-Shot Wounds in Base Hospital #28, from July 1918 to December 1918, Inclusive," Base Hospital No. 28, Collection 86.95.22.

32. See John M. Barry, *The Great Influenza* (New York: Penguin Books, 2004), 169–75. The literature pertaining to the influenza pandemic of 1918 is vast and not very well organized. The genetic make-up of the virus is known and the first known cases were indeed from Haskell County, Kansas.





*The University of Kansas Medical School is situated on a steep hill overlooking Southwest Boulevard in Kansas City, Kansas. In 1917 the school was twelve years old and a rallying point for doctors within greater Kansas City who had interest in medical academia. John Binnie and Lindsay Milne, both British-trained and eminent in their fields, were professors at the school before the war and they used the connections they formed there to recruit staff for Base Hospital No. 28. After the war most of the returning medical officers from the hospital in France eventually had an affiliation with the University of Kansas Medical School. Photo courtesy of the KUMC Archives, Photograph Collection.*

a heightened immune response to the virus in some otherwise healthy people may lead to severe acute lung damage and death, meaning that certain strains of influenza are more dangerous to young adults, rather than to children and the elderly. A mortality rate of less than 1 percent can be adduced when comparing admission and mortality figures from Base Hospital No. 28.<sup>33</sup> It is certain, however, that some severe influenza cases died before they could reach the large general hospitals. Thus, general hospital statistics may underestimate influenza death rates in American soldiers during the war.

A reasonable summary of the functioning of Base Hospital No. 28 during its actual service from July 23, 1918, until January 31, 1919, would be that the mix of personnel by specialty, experience, and interest was quite fortuitous for the challenges faced. At one point a team from the hospital's surgeons, nurses, and anesthetists was detached to move closer to the front to work because of their recognized skill in dealing with acute trauma. The hospital's

33. Computation of a general rate from statistics in a number of files, particularly those related to autopsies in "Statistical Reports," Base Hospital No. 28, Collection 86.95.24; "Autopsy Findings, Case No. 6-65 (not inclusive)," Base Hospital No. 28, Collection 86.95.27.

nurses, largely drawn from the Kansas City area, were the ones who saw that post-op care was accomplished under less than ideal conditions, that sick soldiers had received what would now be called "TLC," and that sanitation and order were maintained in wards housed in barracks, tents, and the Bellaire Seminary building. The American Red Cross provided most nurses, and the sainted image of the "Red Cross nurse" in song and lore from this time cannot be overstated.

The innovative techniques of the doctors at Base Hospital No. 28, too, helped to ensure the facility's success. In 1962 Charles Dennie, by then a prominent Kansas City dermatologist, published a set of engaging essays about his experiences at Base Hospital No. 28 in the weekly medical periodical *The Greater Kansas City Medical Bulletin*.<sup>34</sup> For over a year, in a series of fifty-five separate essays, Dennie

34. Dennie, "History of Base Hospital 28." This weekly series went to fifty-five separate essays, ending in March 1963. Dennie had a unique perspective on medical care in France, as he had gone to that country to study in 1914, before the war broke out, and continued on there through his service at Base Hospital No. 28 and for some months after its closure. He returned home in May 1919. The initial essay series was so popular that Dennie produced a second series of essays titled "The Guns of Skoda," which included more stories of Base Hospital No. 28 and went to seventeen separate essays, concluding in September 1963.

described the medical procedures practiced at the hospital. In one essay he wrote about the treatment of six men who were given horse serum for meningococcal disease, which at that time was uniformly fatal. Dennie and his medical colleagues devised a method of using adrenalin to counter the often-fatal effects of intravenously administered horse serum. In another essay he poignantly described men with belly wounds, virtually all of whom died, and explained the innovations surgeons and dentists employed in dealing with severe facial injuries. His observations about treating burns, including those caused by mustard gas, are particularly interesting.

Throughout Dennie's essays and the other records and images of Base Hospital No. 28 housed in the National World War I Museum archives, the leadership of John Binnie and Lindsay Milne shine through. Binnie was the wise old surgeon who had experienced every surgical challenge and had ready every answer then available, the surgeon who was able to lead his team in spite of fatigue and fresh cases coming sometimes by the hundreds. Because of his senior rank and vast experience, Binnie served at least part of his time in France as a consultant surgeon to other hospitals. Milne, too, had seen it all, and with his orderly demeanor and fluency in French and German he was uniquely qualified to serve, ultimately, as commanding officer of Base Hospital No. 28. He seemed to enjoy military life and was very much a man of the world, as well as a consultant physician *par excellence*.

After six months back in America, on November 6, 1919, the members of the medical staff of Base Hospital No. 28 gathered for a dinner at the University Club in Kansas City, where they were served a menu of filet mignon and accompanying delicacies. John Binnie was the toastmaster, Lindsay Milne gave an address, and Charles Dennie read a poem about keeping alive the memories of Base Hospital No. 28. By the time of the dinner most of the hospital's staff were again part of the growing medical community of greater Kansas City.<sup>35</sup> It is not known whether or how often they gathered to remember in subsequent years. The personal aspect of their service in France certainly left deep marks, however, as was evidenced in the case of Dr. and Mrs. E. H. Skinner, who in 1918 sent a Christmas card to family and friends adorned with a drawing of the hospital in winter.

John Binnie, the oldest of the staff members at Base Hospital No. 28, returned to his busy surgical practice, but in

July 1921 suffered a stroke that left him without speech and a right-sided paralysis. He was unable to continue his practice, though over a period of several years he did experience some recovery in military hospitals in California. Binnie finally settled in San Diego, where he lived as an invalid until his death in 1936. Lindsay Milne opened a private practice in Kansas City and was a member of the staffs of the University of Kansas Hospital, the Christian Church Hospital, General Hospital, St. Luke's Hospital, Research Hospital, and Menorah Hospital. He was widely admired by his colleagues and patients and was an avid hunter and fisherman, consistent with his Scottish origins. He died of cancer in 1944 at his home in Fairway, Kansas.

Many other staff members of Base Hospital No. 28 became leaders in Kansas medicine. Charles Dennie, a neighbor of Lindsay Milne, joined the distinguished company of dermatologists in Kansas City. Rex Dively joined Frank Dickson, an orthopedic consultant to the Third Army, to form the famed Dixon Dively Orthopedic Clinic at St. Luke's Hospital in Kansas City and performed research at KUSOM. George Hoxie, the first dean of KUSOM, maintained a general practice in Kansas City and was involved in tuberculosis control and school health. Donald Black was long associated with the Kansas State Department of Health and KUSOM. G. Wilse Robinson bought the Christian Church Hospital on West Paseo, where Base Hospital No. 28 was conceived in 1917, and created the Robinson Neurological Clinic. Sam Snider was a leader in care of tuberculosis patients in Kansas City. Edward Skinner was one of the founders of the Kansas City Southwest Clinical Society and also one of America's leading radiologists. Frank Teachenor returned to become the area's first neurosurgeon, the founder of the Section of Neurological Surgery at KUSOM, and a leader in surgical and neurosurgical circles in America. All of these men also taught at KUSOM at one time or another.<sup>36</sup>

The men and women of Base Hospital No. 28 carried clinical excellence and leadership to Limoges and, after the armistice, back to Kansas City. Charles Dennie was quite right: they were a brave and gallant company on through the years. Their record of excellent medical and surgical practice, excellent even by modern standards, makes it quite clear that the First World War was very much of the twentieth century, not the preceding centuries. [KH]

35. Photo album, banquet program, in Base Hospital No. 28, Collection 86.95.

36. Individual Faculty Record Files, 1900–2006, University of Kansas Medical Center Archives, Kansas City, Kansas.