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MEDICAL SUPPORT FOR THE AMERICAN EXPEDITIONARY FORCES
IN FRANCE DURING THE FIRST WORLD WAR

A thesis presented to the Faculty of the U. S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

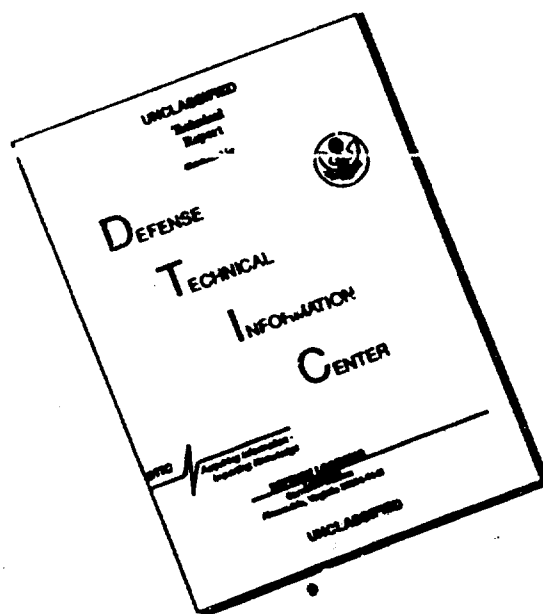
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Fort Leavenworth, Kansas
1990

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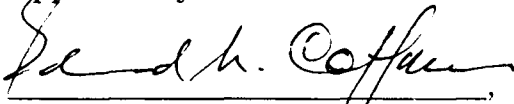
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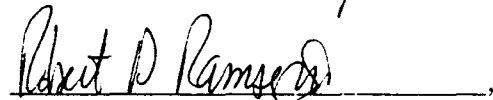
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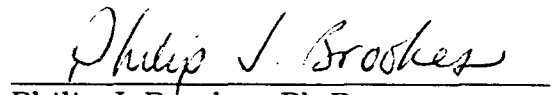
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ABSTRACT

MEDICAL SUPPORT FOR THE AMERICAN EXPEDITIONARY FORCES
IN FRANCE DURING THE FIRST WORLD WAR by MAJ Jonathan H.
Jaffin, USA, 208 pages.

World War I represents the first time that the United States Army Medical Department successfully supported a mass army overseas. The system established served as a model for those used in subsequent wars. By studying the support for the American Expeditionary Forces (A. E. F.), today's military planners can better anticipate medical problems and provide solutions.

Medical support for the A. E. F. evolved from that of the Civil War and the Spanish-American War. The years from the end of the Spanish-American War until the start of World War I were ones of reform and preparation for the Medical Department.

The A. E. F. established medical support using regular Army units and ones raised by the Red Cross. However, the demand for infantry and machine gun units left the Medical Department with a severe shortage of personnel and units. The A. E. F. adjusted by sending surgical teams from the base hospitals to the evacuation and field hospitals. Similarly, hospitals expanded far beyond their anticipated capacity. In the grueling battles of the war, the system, although stressed, worked. This success showed the Medical Department could provide medical support to an American Army overseas.

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CHAPTER 1

INTRODUCTION AND EARLY HISTORY

INTRODUCTION

On 28 April 1917, only twenty-two days after President Woodrow Wilson had declared war on Germany, Dr. George Crile received orders to mobilize Base Hospital No. 4. Ten days later, it sailed from New York on the H. M. S. *Orduna* and arrived in England on 17 May. After a week in England, the unit embarked for France, arriving in Rouen on 25 May. It replaced British General Hospital No. 9 and received patients on 28 May. The first unit of the American Expeditionary Forces (A. E. F.) to arrive in France,¹ it was treating casualties the day General John J. Pershing, the Commander-in-chief of the A. E. F., boarded the *Baltic* in New York for Europe.²

The rapid deployment overseas of Base Hospital No. 4 was not unique. On 27 April, the British medical liaison officer to the United States requested six base hospitals and 116 other medical officers.³ These hospitals rapidly

¹Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 15 *Reports of Commander-in-Chief, A. E. F., Staff Sections and Services*, (Washington, D.C.: Government Printing Office, 1948), 370. George Crile, *George Crile, An Autobiography*, edited with sidelights by Grace Crile, 2 Vol. (Philadelphia and New York: Lippincott, 1947), 274-80. U.S. Army, A.E.F. Base Hospital No. 4, *Album de la Guerre*, (Cleveland: Scientific Illustrating Studios, 1919), 4-10. Alexander T. Bunts and George Crile, Jr., *To Act as a Unit: The Story of the Cleveland Clinic*, (Cleveland: Cleveland Clinic Foundation, [1971?]), 7.

²Edward M. Coffman, *The War to End All Wars: The American Military Experience in World War I*, (New York: Oxford University Press, 1968), 122.

³Charles Lynch, Frank W. Weed, and Loy McAfee, *The Medical Department of the United States Army in the World War, Volume I, The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923), 101. Hereafter referred to as *The Surgeon General's Office*.

mobilized and deployed to France in May 1917.⁴ The Army Medical Department assisted by the American National Red Cross proved itself ready to meet the initial challenge of mobilizing and deploying units overseas.

Later in the war, the situation worsened. The Medical Department conservatively estimated that approximately fourteen per cent of the A. E. F. needed to be medical personnel to provide adequate support. Unfortunately, the demand was greatest for infantry and machine gun units in 1918; the shipping priority schedule allowed only 7.65% of slots for medical units. The medical units in the A. E. F. had to handle shortages of personnel and units while meeting the increasing demands for medical support.⁵

By 18 July 1918, the A. E. F. had 26 divisions in France. Only eight evacuation hospitals supported this force.⁶ Doctrine called for two evacuation hospitals for each division at the front.⁷ Fortunately, there were 46 base hospitals in France at the time. The A. E. F. Chief Surgeon's Office organized surgical and shock teams from the base hospitals to augment the evacuation hospitals.⁸ Using the base hospitals did cause problems. A 30 July 1918 memorandum from the A. E. F. Chief Surgeon to the G-4 described this dilemma most succinctly:

⁴Ibid. Joseph H. Ford, *The Medical Department of the United States Army in the World War*, Volume II, *Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 630-48. U.S. Army, A.E.F. Base Hospital No. 10, *History of the Pennsylvania Hospital Unit (Base Hospital No. 10, U.S.A.) in the Great War*, (New York: P. B. Hoebner, 1921), 35. Donna B. Munger, "Base Hospital 21 and the Great War," *Missouri Historical Review* 70 (April 1976): 272-90. Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 96-111.

⁵War Department, United States, *The Report of the Surgeon General, 1919*, (Washington, D.C.: Government Printing Office, 1919), 1290. Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December, 1919), 652-53.

⁶*The Surgeon General's Office*, 102.

⁷United States War Department, *Manual for the Medical Department, United States Army, 1916, Corrected to June 15, 1918*, (Washington, D.C.: Government Printing Office, 1918), 231-232.

⁸*The Surgeon General's Office*, 102.

The present surgical teams are obtained by stripping the base hospitals of a considerable extent of their surgical staffs at the very time when their services are needed at the hospitals because of the active evacuation of wounded from the front.⁹

The A. E. F. Medical Department averted disaster, but continued to wrestle with the problems of providing adequate support with limited personnel and equipment until the Armistice.

WHY STUDY WORLD WAR I?

The problems that the Army Medical Department faced in providing medical care to the A. E. F. in France are of significant interest. World War I was the first modern war fought by the United States Army. In it, the Medical Department faced problems that would continue to trouble it throughout the twentieth century. First, was the difficulty of implementing a health care system overseas for an expeditionary force. Second, was the ability to modify that system under the stress of combat. How the Medical Department met the demands of battles with numbers of casualties unforeseen before the war, provides modern medical planners with many lessons. There are two questions of particular concern. The first is what were the preparations that occurred before the war that allowed the Army Medical Department to meet the challenge in Europe? The second is how to deal with a massive army far from the continental United States with inadequate numbers of hospital units and personnel? These questions are not simply of historical interest. Planners in World War II, Korea, Viet Nam, and the Persian Gulf faced the problem of rapidly transporting and establishing a medical support system for a large expeditionary force. Presumably, in any future conflict, medical planners will face them again.

⁹Quoted in *The Report of the Surgeon General. 1919. 1291.*

As background, the discussion will go into how the Army had handled medical care in two previous wars, the Civil War and the Spanish-American War. From these wars, came major reforms to the medical system. These reforms led to the formation of hospital units that could quickly assume duties in combat on the Western Front. These units subsequently played a crucial role in providing adequate medical care at all levels during the war.

THE CIVIL WAR EXPERIENCE

The medical support provided the A. E. F. grew out of the experiences of the preceding 50 years. Before the Civil War, the Army had only to deal with small frontier forces and small battles, which never taxed it. The Civil War, with its large armies and deadlier weapons, produced more casualties faster than anyone anticipated before the war. In the opening campaigns, the Army's fossilized medical system proved incapable of providing for the soldiers. Surgeon General Clement A. Finley was a typical result of the seniority system of the day. When the war started, he was 64 years old, handsome, complacent, and self-satisfied.¹⁰ Frederick Law Olmsted of the Sanitary Commission described him less charitably as vain and incompetent. Finley ignored the proposal to organize an ambulance corps and incurred the wrath of the Sanitary Commission for the scandalous condition of medical care. He failed to provide a plan for care of the soldiers.¹¹

The Chief Surgeon for the Army of the Potomac, Charles Tripler, failed to provide an adequate evacuation and treatment system for the wounded

¹⁰P.M. Ashburn, *A History of the Medical Department of the United States Army*, (Boston and New York: Houghton Mifflin Company, 1929), 68-72.

¹¹Ibid. James M. Phelan "Clement Alexander Finley" *Army Medical Bulletin* 52, (April 1940), 38-41. Jane T. Censer, ed. *The Papers of Frederick L. Olmsted, Vol. 4 Defending the Union* (Baltimore and London: The Johns Hopkins University Press, 1986), 15-19. Mary C. Gillett, *The Army Medical Department, 1818-1865*, Army Historical Series, (Washington, D.C.: Center of Military History United States Army, 1987), 154.

also. He tried to remedy the deficiencies in hospitalization, sanitation, and evacuation, but was unable to devise new methods to solve them. When the Surgeon-General for the State of Pennsylvania, H. H. Smith, offered to provide an ambulance organization for the Army of the Potomac, Tripler refused the offer, because medical officers could not command lieutenants. He did refer the matter to the Secretary of War with a recommendation for approval, but allowed the matter to drop. In the spring of 1862, Tripler received another plan for an ambulance service. He turned this offer down, stating that it was too late to do anything. He even referred to general hospitals as "general nuisances," because they took soldiers from their units.¹²

HAMMOND AND LETTERMAN – BATTLEFIELD SUCCESS

Fortunately, two men arose who revolutionized medical care in the Army, Surgeon General William H. Hammond and Chief Surgeon of the Army of the Potomac, Jonathan Letterman. These men started the system of battlefield evacuation that the Army used in modified form in World War I. Hammond was only thirty-four when the Sanitary Commission recommended he be appointed Surgeon General. His youth and energy proved a marked contrast to Finley and Tripler. Hammond undertook a thorough reorganization of the Medical Department. He started a program to construct and equip military hospitals. He renovated medical supply procedures. He established standards for the surgeons and reorganized the examination procedures for selection. He recommended forming a hospital corps, founding an Army Medical School, establishing a permanent Army hospital in

¹²Gillett, *Army Medical Department, 1818-1865*, 166-67. Ashburn, *Medical Department History*, 68-72.

Washington, D.C., involving the medical department in construction of hospitals and transportation of supplies, and forming of a medical laboratory.¹³

Hammond appointed Letterman the Medical Director for the Army of the Potomac. This was one of his most important actions in improving care for the wounded. The Army of the Potomac had no system for recovering the wounded from the battlefield and treating them. A letter written 7 September 1862 by Surgeon General Hammond to Secretary of War Edwin M. Stanton described 600 wounded men left on the battlefield for 10 days after the Second Battle of Bull Run, where many died of starvation and neglect. Letterman created an ambulance service that no longer relied on the Quartermaster Department for vehicles, horses, and teamsters. He started the system of evacuation hospitals and field hospitals we use today with some modifications. This was the first time in history that a system existed for collecting wounded soldiers on the battlefield and transporting them to field hospitals run by the Army. Letterman's system worked in its first major test. Less than two months after he made his reforms, the ambulance service removed all the wounded from the Antietam battlefield within twenty-four hours.¹⁴

Unfortunately, Hammond's promotion over many senior officers combined with his forceful personality made him many enemies. The most powerful of these, Secretary of War Stanton, relieved Hammond of his duties as Surgeon General and had him court-martialed in 1864 on charges related to the purchase of medical supplies. Stanton pressured the court to find

¹³Ibid. 72-86. James M. Phelan, "William Alexander Hammond" *Army Medical Bulletin* 52, (April 1940), 42-44. Gillett, *Army Medical Department, 1818-1865*, 178-184.

¹⁴Ashburn, *Medical Department History*, 78-79. Gillett, *Army Medical Department, 1818-1865*, 189-193.

Hammond guilty and to dismiss him from the Army. Letterman left the Army of the Potomac about the same time. The medical system established by these two men outlasted them. Joseph K. Barnes, who succeeded Hammond as Surgeon General kept his policies in effect despite his own dislike for Hammond. This system provided the basis for field medicine in World War I.¹⁵

VOLUNTEER SOCIETIES AND MEDICAL CARE

Many volunteer societies formed during the Civil War to provide relief and assistance to the Union soldiers. Henry W. Bellows, a prominent New York Unitarian minister, obtained the approval of Secretary of War, Simon Cameron, in June 1861, to form a United States Sanitary Commission. Patterned after the British Sanitary Commission that provided medical assistance in the Crimean War, the U. S. Sanitary Commission pressured the Army to reform medical care. It started inspecting hospitals, building hospitals, furnishing medical supplies, and lobbying for a restructuring of the Medical Bureau. The tireless work of the Sanitary Commission and its inspectors markedly reduced the suffering of the soldiers in the Civil War.¹⁶

The Christian Commission and the Western Sanitary Commission were other volunteer relief organizations that provided support to the wounded. The latter performed in the West similar functions as the U.S. Sanitary Commission in the East. While the Christian Commission was more concerned with the religious development of the soldier, it helped the wounded on the battlefields and in the hospitals. These two organizations

¹⁵"Hammond," 44. Ashburn, *Medical Department History*, 86. Gillett, *Army Medical Department, 1818-1865*, 225-226.

¹⁶Censer, *Defending the Union*, 4-10. Gillett, *Army Medical Department, 1818-1865*, 160-162.

were the forerunners for the American Red Cross. They started the tradition of volunteer organizations working with the war wounded that proved essential in the first World War.¹⁷

THE FRONTIER ARMY, 1865-1898

After the Civil War, the size of the Medical Department decreased along with the rest of the Army. There was little thought toward providing medical care for a mass army. Instead, medical care focused on that required at scattered frontier posts during the Indian Campaigns. Civilian contract surgeons supplemented its meager staff.¹⁸ In contrast with the slow conditions in the frontier army, the period from 1865 to 1898 was a fertile one for medical science. Despite their small numbers, many Army doctors on the frontier actively participated in medical and other scientific research and contributed much to their fields.¹⁹

The Franco-Prussian War showed the importance of a comprehensive medical service. The Prussians used a medical system similar to that of Letterman, a hospital corps with evacuation and field hospitals. The French Medical Department had made few plans for evacuation and hospitalization of the sick and wounded. This forced them to depend solely on the Red Cross. The results were strikingly different. The Prussians claimed, for the first time in history of warfare, to have lost more men to wounds than to disease. The French had the opposite result, as diseases such as smallpox raged through their Army. The Prussian system where the Red Cross was integrated with the Army had outperformed the French where the Red Cross

¹⁷Bell Irvin Wiley, *The Life of Billy Yank: The Common Soldier of the Union*, (Baton Rouge and London: Louisiana State University Press, reissued 1978), 150. Gillett, *Army Medical Department, 1818-1865*, 160-162.

¹⁸Ashburn, *Medical Department History*, 127.

¹⁹Ashburn, *Medical Department History*, 127-28.

was independent. By the First World War, the Russian Army was the only one in which the Red Cross worked independently.²⁰

PEACETIME REFORMS

The next major advance for the United States Army was the creation of the Hospital Corps in 1887. For first time, the Medical Department had enlisted soldiers assigned, eliminating the need to take them from line units. With the formation of a Hospital Corps, the Medical Department for the first time formed medical units in peacetime and then trained these men in the medical skills necessary for care of the sick and wounded. The Hospital Corps markedly improved the quality of men serving in the hospitals. No longer could a commander dispose of his troublemakers and malingerers by detailing them to the hospital.²¹

The founding of the Army Medical School in 1893 in Washington, D.C. demonstrated the increasing emphasis by the Medical Department on professional medical care and showed that military practice required skills and training not provided in civilian schools. The school provided training in military surgery, care of the wounded, hospital administration, military hygiene, military medicine. Hospital Corps drill, and first aid to the wounded, as well as routine medical school courses. It trained all the officers who entered the Regular Army Medical Department from 1893 to the start of World War I except for a brief period during the Spanish-American War and the Philippine Insurrection.²²

²⁰*The Surgeon General's Office*, 43.

²¹Don Rickey, Jr., *Forty Miles a Day on Beans and Hay: The Enlisted Soldier Fighting the Indian Wars*, (Norman, OK and London: University of Oklahoma Press, 1963), 112. Ashburn, *Medical Department History*, 120,142. *The Surgeon General's Office*, 45.

²²*Ibid.*, 150.

The career of General George M. Sternberg demonstrates the increased professionalism of medical officers. Sternberg joined the Army on 28 May 1861 and first saw action at the First Battle of Bull Run where he was captured. He escaped and served throughout the rest of the war, being brevetted twice for his service. He served in Florida where he published two papers on yellow fever, becoming a recognized expert on the subject. After serving in the Nez Percé campaign in 1877, he returned to Washington where his researches brought him more prominence. He discovered the causative organism for pneumonia, became the first in the United States to isolate the typhoid and tuberculosis bacteria, and published the first manual of bacteriology in the United States. President Cleveland appointed him Surgeon General in 1893, over more senior medical officers. Surgeon General Sternberg started a program for better education of medical officers, which required strict examination for promotion.²³ This created a small, but well-trained group of medical officers and increased the professionalism in the Medical Department.

THE SPANISH-AMERICAN WAR

Despite these reforms, the Spanish-American War proved a disaster for the Medical Department. In 1898, the department lacked the plans, personnel and equipment, and effective doctrine necessary to support an army in the field. This was partially due to War Department neglect of medical care. When Congress authorized the volunteer army in April 1898, it failed to include any provision for a volunteer Hospital Corps to care for the sick and wounded. It only suspended the law limiting the numbers of

²³James M. Phelan, "George Miller Sternberg" *Army Medical Bulletin* 52, (April 1940), 70-74. *The Surgeon General's Office*, 46.

hospital stewards. This prevented the Hospital Corps from raising units of volunteers. The only way that the it obtained men was by recruiting from Regular and Volunteer regiments. In the end, approximately 6,000 men served in the Hospital Corps. This was less than three percent of the strength of the Army. Surgeon General Sternberg unsuccessfully argued for five percent, which fell short of the ten percent that the post-war reforms recommended.²⁴

Similarly, the act to expand to war footing of Congress of 15 May 1898 increased the strength of the Medical Corps only by fifteen assistant surgeons. It did allow the hiring of approximately 650 contract surgeons, as well as three volunteer surgeons for each regiment. Unfortunately, these men lacked military experience, and often lacked medical knowledge.²⁵ Here, too, the numbers proved woefully inadequate. Although the Army required 2,500 medical officers by post-war standards of one per 100 troops, it had 192 regular officers, 118 volunteer surgeons and 650 contract surgeons, a total of 960 when the war ended. This shortage of officers combined with the inadequate Hospital Corps strength contributed greatly to the difficulty in providing adequate medical support.²⁶

MEDICAL SUPPLY SITUATION

The acquisition of medical equipment and supplies by the Army proved an even worse situation. The Army had medical supplies for 28,000

²⁴Ibid., 49.

²⁵Congress, Senate, *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*, 56th Congress, 1st Session, Document No. 221, Vol. 1. (Washington, D.C.: Government Printing Office, 1900), 170 (Hereafter referred to as *The Dodge Commission Report*).

²⁶Ashburn, *Medical Department History*, 48. U.S. War Department. "Report of the Surgeon General" *Annual Reports, 1901*. Vol. I, Part 2, (Washington, D.C.: Government Printing Office, 1901). James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927), 26.

men at the start of the war. These supplies were those that the small, scattered Western posts required, not those required by an expeditionary force in a major war. Congress prohibited the Medical Department from contracting for medical supplies until after the declaration of war. On 1 May 1898, the department ordered medical and surgical field chests. By 16 May, only thirty medical chests were ready for issue. The ignorance of many medical officers on supply procedures worsened the situation, as they did not even know how to order the available supplies. This forced many units to deploy without any medical supplies.²⁷

The transportation system failed also. Articles shipped "fast freight" often required weeks to arrive. When medical supplies arrived, they often sat in warehouses or railroad cars for days. There was one 200-bed hospital that was lost and later found in an abandoned warehouse. The lack of equipment and the inability to find that available hampered the formation of medical units as well.²⁸

An even worse situation developed in Cuba. Many supplies shipped in early June, reached Cuba in the middle of July. This led to appalling situations, such as when the chief surgeon of the First Division had on hand, for eleven days in August, only castor oil, Epsom salts, and quinine.²⁹ After the war, Col. Charles R. Greenleaf, Chief Surgeon for the Army in Cuba, said, "There was a complete lack of material with which to work—tents, ambulances, litters, medical and surgical chests, and a variety of materials

²⁷*The Dodge Commission Report*, 174.

²⁸*Ibid.*

²⁹*Ibid.*, 175-76.

absolutely necessary to the establishment of hospitals was not manufactured.”³⁰

RESULTS OF THE WAR

This lack of medical preparedness caused a disaster. Typhoid raced through camps striking down soldiers. General Sternberg commissioned a Typhoid Fever Board composed of Majors Walter Reed, Victor C. Vaughn, and Edward O. Shakespeare. Their report noted that, “Every regiment constituting the First, Second, Third, Fourth, Fifth, and Seventh Corps developed typhoid fever.” It also noted that 86.24 per cent of all deaths, were due to typhoid alone.³¹ Overall, only 266 soldiers died in battle and 275 more died from wounds and accidents. At the same time, about 3500 died of disease. This devastation by disease forced the Army to withdraw its expeditionary force from Cuba in August.³²

Public outcry caused Congress to form a commission, headed by General Grenville M. Dodge, to investigate the problems in the war. The Commission recommended that the Medical Department needed

1. A larger force of commissioned medical officers.
2. Authority to establish in time of war a proper volunteer hospital corps.
3. A reserve corps of selected trained women nurses....
4. A year's supply for an army of at least four times the actual strength, ... to be held on hand in the medical supply depots.
5. The charge of transportation to such extent as will secure prompt shipment and ready delivery of all medical supplies.
6. The simplification of administrative “paper work,” so that medical officers may be able to more thoroughly discharge their sanitary and strictly medical duties.

³⁰*The Surgeon General's Office*, 49-50.

³¹Ashburn, *Medical Department History*, 177-78.

³²Tobey, *Medical Department*, 26.

7. The securing of such legislation as will authorize all surgeons in medical charge of troops, hospitals, transports, trains, and independent commands to draw from the subsistence Department funds for the purchase of such articles of diet as may be necessary to the proper treatment of soldiers too sick to use the army ration.³³

These recommendations served as the impetus for major reforms within the Medical Department.

SUMMARY

Although the Medical Department had matured from its early history as a small frontier force, it had shown itself unable to mobilize and adapt to the care of the sick and wounded in a mass army in the Civil War. The failure of adequate preparation had led to disaster on the battlefield. From the last half of the Civil War until the Spanish-American War, the Medical Department became more professional and more accepted in the Army. Yet, again, when faced with the need to support a large army in the Spanish-American War, it failed, because of inadequate preparation. As the nineteenth century ended, the reform process had started. The leadership of the country, the Army, and the medical profession realized the increased need for preparing the medical service for war. The next seventeen years before our entry into the First World War, would change the Medical Department to one that could withstand the long and difficult struggles of that war.

³³*The Dodge Commission Report*, 188. *The Surgeon General's Office*, 57. U.S. War Department. "Report of the Surgeon General" *Annual Reports*, 1908. Vol. II. (Washington, D.C.: Government Printing Office, 1909), 147-153.

CHAPTER 2

PREPARATION FOR WAR

INTRODUCTION

The Medical Department entered the twentieth century resolved not to become involved in a fiasco like the Spanish-American war experience. In the first seventeen years of the century, it prepared for war better than it had before in its history. It reformed itself in several different ways. It first worked through the Congress to provide a legislative basis for expansion of the Medical Department to meet wartime needs. The Department reformed the medical supply situation as well. The troubles in Mexico tested the system and led to further reforms. Second, the Department worked with the civilian medical community to increase medical preparedness. The American National Red Cross raised hospital units and organized nurses in peacetime that would enter the Army during war. These units provided an effective reserve system for the Medical Department. Finally, the civilian medical community gained invaluable experience as volunteers in Europe before the United States entered the war. This experience proved invaluable for establishing an effective medical organization once America declared war.

LEGISLATIVE REFORMS

The first reform, the Army Reorganization Act of 2 February 1901, created some problems while it solved others. It established a Nurse Corps and allowed the hiring of contract dental surgeons. It increased the Medical

Corps from 192 to 321 officers and hospital stewards from 200 to 300. It authorized 50 surgeons and 150 assistant surgeons for the Volunteer Regiments in the Philippines. This medical organization supported an Army authorized 100,619 men. The Army Medical Department recognized the inadequacy of this organization and lobbied for revision.¹

The new organization, although increasing the number of doctors, decreased the proportion of medical officers to troops to less than one per 300 soldiers. The act limited chances for advancement for medical officers because the increased positions were all at the company grades. President Theodore Roosevelt, himself, sent a special message to Congress recommending an increase in the Medical Department.²

Lobbying by the Medical Department led to the reorganization act of 23 April 1908. This law increased the number of regular Army medical officers by 123, which included six colonels, twelve lieutenant colonels and forty-five majors. The increase in the field grade ranks restored a reasonable chance for medical officers' advancement. Most importantly, the act authorized the Medical Reserve Corps, a peacetime pool of trained civilian physicians. This represented the first United States Army volunteer reserve and proved the forerunner for the entire Army Reserve system.³

¹*An Act to Increase the Efficiency of the Permanent Military Establishment of the United States, Statutes at Large*, 31, sec. 752-3 (1901). William O. Owen, *A Chronological Arrangement of Congressional Legislation Relating to the Medical Corps of the United States Army from 1785 to 1917*, (Chicago: American Medical Association, 1918), 34. U.S. War Department "Report of the Surgeon General," *Annual Reports*, 1901.

²U.S. War Department, "Report of the Surgeon General" *Annual Reports*, 1905, Vol. I, Part 2. (Washington, D.C.: Government Printing Office, 1906), 149-150. P.M. Ashburn, *A History of the Medical Department of the United States Army*, (Boston and New York: Houghton Mifflin Company, 1929), 247.

³*An Act to Increase the Efficiency of the Medical Department of the United States Army, Statutes at Large*, 35.1, sec. 66-9 (1908). Owen, *Congressional Legislation*, 37-39. War Department, *Annual Reports*, 1908, 89-153. Charles Lynch, Frank W. Weed, and Loy McAfee, *The Medical Department of the United States Army in the World War, Volume I, The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923), 60

This program attracted many of the great names in American medicine, which helped the success of the program. These men used their influence to maintain high standards for selection to the Regular Medical Corps, as well as sending some of their best and brightest students to the Army.⁴ The Medical Reserve Corps grew from 180 in 1909 to 1,757 in 1916, providing an important source of trained physicians to the Army.⁵

NURSING AND DENTAL CORPS

A different reserve system developed for nurses. The Army Reorganization Act of 1901 directed the Surgeon General to maintain a list of qualified nurses to serve in an emergency. These women signed a written agreement to serve that they renewed every six months. The reserve list system failed to attract many nurses. Many thought this lack of a nursing reserve would seriously handicap the Army in providing hospital care during wartime. Miss Jane Delano, the superintendent of nurses in the War Department from 1909 to 1912, believed that the American Red Cross could provide this reserve. Because she felt the War Department was neglecting the nursing reserve, she resigned from the Army and became a volunteer for the Red Cross. She organized the American Red Cross Nursing Service and served as its chairman. By 30 June 1913, more than 4000 nurses had signed up and by 1917, about 8000. The Red Cross nursing reserve proved highly successful in providing the Army more than 20,000 nurses.⁶

(Hereafter referred to as *The Surgeon General's Office*). Ashburn, *Medical Department History*, 248.

⁴War Department, *Annual Reports, 1908*, 89-153. *The Surgeon General's Office*, 60. Ashburn, *Medical Department History*, 248.

⁵Richard B. Crossland and James T. Currie, *Twice the Citizen, A History of the United States Army Reserve, 1908-1983*, (Washington, D.C.: Office of the Chief, Army Reserve, 1984), 19.

⁶Robert V. Piemonte and Cindy Gurney, editors, *Highlights in the History of the Army Nurse Corps*, (Washington, D.C.: U.S. Army Center of Military History, 1987), 6-7. Ashburn,

The founding of the Dental Corps was another important step in the preparation for World War I. Congress authorized contract dental surgeons in 1901, and in 1911, authorized a dental corps. Initially, 60 officers received commissions as first lieutenants.⁷ Dentists played an important role in the World War, not just in providing dental care, but in supplementing the overworked physicians and nurses in medical care.

MEDICAL SUPPLY REFORM

The Medical Department realized that creating a useful medical service required more than personnel reforms, so it turned its attention as well to the supply situation. Failures of medical supply plagued the war effort in 1898. Investigation revealed that the supply problems developed from failures in purchasing and distribution. To correct this, the Army appointed a commission, which determined the amount of each medical supply item available within 30 days and the amount of that item required for armies of various sizes. Using the commission's recommendations and data, the Medical Department divided supply items into two categories: those obtainable in the civilian market and those peculiar to the military service. It could rely on easily purchasing those supplies in the first category in time of emergency. It needed to procure those in the second category ahead of time and maintain them in a war reserve. Congress appropriated \$200,000 for the purchase of field equipment in 1908. It continued this appropriation in subsequent years, which allowed the Medical Department to procure the equipment for the following units by 1916:

Medical Department History, 249. Foster Rhea Dulles, *The American Red Cross: A History*, (New York, Harper and Brothers, 1950), 96-97.

⁷Owen, *Congressional Legislation*, 41-42. Ashburn, *Medical Department History*, 250. James A. Tobey, *The Medical Department of the Army: Its History, Activities, and Organization*, (Baltimore, The Johns Hopkins Press, 1927), 32.

Evacuation Hospitals	20
Base Hospitals	3
Field Hospitals.....	44
Ambulance Companies	41
Regimental Infirmaries	131 ⁸

The reorganization of the medical supply system became a Medical Department priority. The medical depot at New York closed for several months, to correct the confusion between routine and war supplies. A system of field medical supply depots was established throughout the country that issued supplies on telegraphic order. These depots contained enough supplies for a force of several divisions. The Army tested the system in 1906 when it sent an expeditionary force to Cuba. The medical supplies arrived at the port of embarkation long before any other supplies. This new system proved of inestimable value during the World War.⁹

MEDICAL MANEUVERS

The Medical Department started to test these developments in the field. In the 1903 maneuvers, the Army tested the new field hospital. The use of field units expanded; a year later, provisional ambulance companies, field hospitals, and base hospitals took part. After that, the medical units participated annually. By 1910, the maneuvers contained specific field problems for the participating medical units. The participation of these units improved as permanent medical units replaced the provisional ones.¹⁰

⁸*The Surgeon General's Office*, 61. Also War Department, *Annual Reports* for 1908 and subsequent.

⁹War Department, *Annual Reports*, 1908, 147-153. *The Surgeon General's Office*, 61-62.

¹⁰War Department, *Annual Reports*, 1911. *The Surgeon General's Office*, 70.

FIRST TEST IN MEXICO

In 1911, a revolution in Mexico and the unrest it caused, led to the mobilization of a division on the border. The actions against Mexico provided field experience for the new medical system. The Army sent a sanitary train of four field hospitals with ambulance companies to accompany the division. This sanitary train, trained and organized under the recent reforms, showed how far the Medical Department had progressed. Due to the improved sanitation, the identification of carriers, and the vaccination of the troops against typhoid, there were only two cases of typhoid fever in the camps. Other diseases were comparably low.¹¹

The Medical Department still had problems supplying equipment and men to support the Army. The small stock of available medical equipment and Hospital Corps soldiers hampered the medical support of the 1913 occupation of Vera Cruz. Although a field hospital accompanied the brigade to Vera Cruz, the doctors improvised an ambulance company from the regimental ambulances. The Surgeon General, in his annual report, said that the Hospital Corps could supply only about one-fourth the sanitary units called for in the *Field Service Regulations*.¹²

The deterioration of the Mexican situation in 1916 led to the Punitive Expedition of 12,000 men supported by the rest of the Regular Army and the National Guard to the Mexican border. The expedition required two field hospitals and two ambulance companies.¹³ One of the units mobilized was the field hospital of the District of Columbia National Guard. Herbert

¹¹ *The Surgeon General's Office*, 70-71.

¹² U.S. War Department. "Report of the Surgeon General" *Annual Reports*. 1913. Vol. I. (Washington, D.C.: Government Printing Office, 1914), 401. *The Surgeon General's Office*, 70-74.

¹³ *The Surgeon General's Office*, 70-74.

George, who served as a farrier for the hospital on this expedition, remembered how the unit gained confidence in its ability to treat the soldiers during its four months of active service. He noted that the unit rated an "excellent" for its performance. He later served with this field hospital in the Forty-second (Rainbow) Division.¹⁴

This expedition was the first where the United States Army used motorized ambulances, which easily proved their worth. It also demonstrated the need for more medical and sanitary units to support the Army in the field.¹⁵ After the expedition, the Army increased the number of men assigned to the table of organization for field hospitals and became more conscious of the importance of field sanitation in minimizing disease. This interest in effective field sanitation proved invaluable in the American Expeditionary Forces (A. E. F.).¹⁶

Major General John J. Pershing commanded the Army in Mexico. Many of the men who would lead the Medical Department of the A. E. F. served with him. Colonel Merritte W. Ireland, the Post Surgeon at Fort Sam Houston, later became the Chief Surgeon of the A. E. F. Colonel Walter D. McCaw, the Chief Surgeon of the Department, was Ireland's assistant in the A. E. F. and became its Chief Surgeon when Ireland became Surgeon General. Colonel James Glennan, the Chief Surgeon for Pershing's force, served as the Chief of the Hospitalization Division for the A. E. F. These men established a close working relationship with Pershing and one another that enabled them to work efficiently together in Europe.¹⁷

¹⁴Herbert George, *The Challenge of War*, (New York, Washington, and Hollywood: Vantage Press, 1966), 6, 215.

¹⁵*The Surgeon General's Office*, 70-74.

¹⁶George, *The Challenge of War*, 215.

¹⁷Ashburn, *Medical Department History*, 236-37.

DEFENSE ACT OF 1916

When difficulties in Mexico heightened, Congress passed the National Defense Act of 1916, which provided a comprehensive reorganization of the Army. It established the Officers' Reserve Corps and the Enlisted Reserve Corps, and incorporated the Medical Reserve Corps into the Officers' Reserve Corps.¹⁸ It allowed the expansion of the Army to 175,000 and set up the organization of that force into brigades, divisions, and, at the discretion of the President, corps and armies. It reorganized the Medical Department, and brought the Medical Corps, Medical Reserve Corps, Dental Corps, Nurse Corps, Veterinary Corps and the enlisted force into a single department, with The Surgeon-General, a major general, as head. The act authorized seven medical officers and one dental surgeon per thousand enlisted strength of the Army. Similarly, it authorized a medical enlisted force of 5 per cent of the total enlisted force of the Army.¹⁹

Recognizing the importance of the sanitary trains²⁰ to the improved health of the Army, the act prescribed one sanitary train per Infantry and Cavalry division. Army corps contained "as many sanitary trains as the President may deem necessary."²¹ It also acknowledged the close cooperation between the American National Red Cross and the Medical Department, when it specified that the President could detail five officers to the military relief division of the Red Cross, which worked exclusively on providing

¹⁸Crossland and Currie, *Twice the Citizen*, 30.

¹⁹*An Act for Making Further and More Effectual Provision for the National Defense, and for Other Purposes, Statutes at Large*, 39, sec. 166 (1916). Owen, *Congressional Legislation*, 49-59. *The Surgeon General's Office*, 75-80.

²⁰The sanitary train consisted of those units assigned to the division that provided medical care, but were not assigned to the regiments. It normally consisted of a train headquarters, field hospitals, medical supply unit, camp infirmaries, and ambulance companies. The next chapter discusses the organization of the sanitary trains in more detail.

²¹*The Surgeon General's Office*, 75.

medical support to the armed forces of the United States. It gave the Red Cross permission to

...erect and maintain on any military reservations within the jurisdiction of the United States buildings suitable for the storage of supplies, or to occupy for that purpose buildings erected by the United States, under such regulations as the Secretary of War may prescribe.²²

THE AMERICAN NATIONAL RED CROSS

The references to the American National Red Cross in the Defense Act reflected its importance in providing medical support in time of war. It is important to understand how the relationship with the Red Cross developed. Although the Red Cross worked with the military since its founding, in 1905 Congress incorporated the American National Red Cross. The relationship between the Red Cross and the military expanded with the Act of Congress of 24 April 1912, which allowed the President to accept assistance from the Red Cross in time of war. The Red Cross would provide sanitary supplies and personnel to the armed forces. Those personnel federalized would serve as civilian employees of the United States government.²³

As part of its charter to provide war relief, the American National Red Cross participated in the European war. In September 1914, eleven hospital units sailed for Europe, followed by two more in November. These provided medical care to both sides for approximately one year. These hospital units employed seventy-five surgeons and 255 nurses and treated approximately 30,000 patients. In the spring of 1915, donations to the Red Cross declined,

²²Ibid., 77.

²³Act of April 24, 1912, 62d Congress, 2d Session, "An Act to provide for the use of the American National Red Cross in aid of the land and naval forces in time of actual or threatened war." U.S. Congress, House, *Twelfth Annual Report of the American National Red Cross*, 64th Congress, 2d Session, 1918, House Document No. 2131, 28.

making it difficult to pay the salaries, travel, and costs of running these hospitals. At the same time, the Red Cross believed that the sanitary services of the belligerents were able to provide medical care without American assistance. The Bureau of Medical Service of the Red Cross made the decision to withdraw its hospital units and to use the money saved to purchase medical supplies for the combatants.²⁴

CIVILIAN MEDICAL ASSISTANCE

The civilian medical community also supplied medical assistance to the combatants. Dr. George W. Crile of Cleveland was one of the key individuals. Crile had served as a brigade surgeon in Cuba during the Spanish-American War, where he saw first hand the failings of the Army Medical Department. A patriotic man, Crile joined the Medical Reserve Corps when it started. He was one of the most prominent men in American surgery, being a founding member of the American College of Surgeons and a professor of surgery at Wooster Medical School and Western Reserve University.²⁵

In the fall of 1914, Myron Herrick, the ambassador to France, wrote Crile that he wanted to start an *Ambulance Americaine* (American Hospital). Herrick wanted to pattern it after one that had helped the French in the Franco-Prussian War. He sent Francis Drake, the president of the American Charitable Commission in Paris, to Cleveland to visit Crile and discuss the hospital's organization. Crile got the idea of raising the hospital's personnel from the university's surgical service. This had the advantage of composing a

²⁴U.S. Congress, House, *Eleventh Annual Report of the American National Red Cross*, 64th Congress, 1st Session, 1916, House Document No. 1307, 9-25.

²⁵George W. Crile, *An Autobiography*, edited with sidelights by Grace Crile, 2 Vol., (Philadelphia and New York: Lippincott, 1947), 86-108. Alexander T. Bunts and George W. Crile, Jr., compilers, *To Act as a Unit: The Story of the Cleveland Clinic*, (Cleveland: Cleveland Clinic Foundation, [1971?]), 6.7.

unit of people who had worked together and reduced training time. He made a deal with the trustees of the Lakeside Hospital. If the hospital would raise \$10,000 for the rest of the staff, Crile and his partner, Dr. William E. Lower, would pay their own way to France. He approached Harvard, the University of Pennsylvania, University of Chicago, and the Johns Hopkins Hospital to see if they wanted to participate in the hospital. All of these, but Johns Hopkins, signed up for a three month rotation in Paris.²⁶

CRILE'S SUGGESTION

The *Ambulance Americaine* worked well. Their experiences in France impressed Crile and Dr. Harvey Cushing that the United States would soon become involved in the war in Europe. They started giving speeches about their experiences in France and their views on the necessity for medical preparedness. The Surgeon General, William C. Gorgas, heard the address to the American First Aid Conference, where Crile "advocated well-organized hospital units of men who have trained together." Gorgas, white-haired and distinguished, had earned the respect of the civilian medical community.²⁷

Crile's remarks impressed Gorgas who solicited his and Cushing's views on problems of raising base hospitals. Gorgas worked under the restrictions of American neutrality that limited Army medical officers from going to Europe to observe the medical methods in use and desired to use Crile's experience to fill that gap. In a letter to Crile dated 25 August 1915, Gorgas asked him the hypothetical question of how the Medical Department should establish a base hospital if war has been declared.²⁸ Crile's answer

²⁶Crile, *Autobiography*, 247-50.

²⁷*Ibid.*, 265. Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 79-82.

²⁸Crile, *Autobiography*, 265-66. Cushing, *A Surgeon's Journal*, 79.

would set the stage for the raising of the Red Cross base hospitals two years later.

It has occurred to me that the heads of surgery in the American medical colleges in good standing would form an excellent nucleus from which such reserve organizations may be built. This would on the average give the best men to the service both in personal fitness and with experience in organization—and of no less importance, they would have connections with our best hospitals; they would also have a large corps of qualified assistants and would be well distributed over the land.²⁹

THE COUNCIL OF MEDICAL PREPAREDNESS

In October 1915, Crile presented his ideas at the Clinical Congress of Surgeons in North America at a Symposium on "Military Surgery."³⁰ Other prominent surgeons, such as Dr. Frederic A. Washburn of the Massachusetts General Hospital and Drs. Hugh H. Young and Winford Smith of Johns Hopkins, shared this concern for medical preparedness. The leadership of the American Medical Association, American Surgical Association, the Congress of American Physicians and Surgeons, the American College of Surgeons, and the Clinical Congress of Surgeons in North America met in Chicago in April 1916 to form a Committee on Medical Preparedness. These men clearly saw that the United States needed to prepare ahead of time if it were to expect adequate medical support in war. They volunteered their own services and those of the 70,000 physicians whom they represented.³¹

²⁹Crile, *Autobiography*, 267.

³⁰George W. Crile, "The Unit Plan of Organization of the Medical Reserve Corps, U.S. Army for Service in Base Hospitals," *Surgery, Gynecology, and Obstetrics* 22 (1916), 68-69.

³¹*The Surgeon General's Office*, 81. Hugh H. Young, *Hugh Young: A Surgeon's Autobiography*, (New York: Harcourt, Brace and Co., 1940), 264-265. [Clymer, George], ed., *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*, (Boston: Privately published, 1924), 22-23.

This committee petitioned President Woodrow Wilson to increase medical readiness in the Army. On 26 April 1916, they offered to make a survey of the medical resources available to go to war to include a list of men trained in the various specialties, of nurses, and of equipment.³² The President, on the advice of the Secretary of War and the Surgeon General, accepted the offer.³³ The Committee wanted to insure that the Council of National Defense had medical representation. On 11 October, President Wilson appointed Dr. Franklin H. Martin to the advisory body. Dr. Martin constructed a medical advisory committee to include himself as chairman; William C. Gorgas, Surgeon General of the Army; Rupert Blue, Surgeon General of the Public Health Service; Colonel Jefferson R. Kean, Director General, Department of Military Relief, American Red Cross; Dr. William Welch, member, National Research Council; Dr. William J. Mayo, chairman, Committee of American Physicians for Medical Preparedness; Dr. Frank Simpson, chief, Medical Section, Council of National Defense, and secretary, Committee of American Physicians for Medical Preparedness.³⁴

RAISING BASE HOSPITALS

The Council of Medical Preparedness proved instrumental in integrating the medical community with the armed services. It adopted Crile's base hospital plan and recommended it to the Surgeon General. The correspondence with Crile convinced Surgeon General Gorgas, so he asked Crile, Cushing, and Dr. J. M. Swan to proceed with organizing base hospitals. The Red Cross protested, as its charter gave it the duty of providing

³²Report of the Chairman of the Committee on Medicine and Sanitation of the Advisory Commission of the Council of National Defense, (Washington, D.C.: Government Printing Office, 1 April 1918)

³³*The Surgeon General's Office*, 81.

³⁴*Ibid.*, 81-82.

volunteer care to war casualties. Fortunately, the two organizations struck a compromise. They agreed that the American Red Cross would raise and equip the hospital units along military lines. However, when these units came on active duty, they would become a part of the Army. The administrative officers would come from the Army with all other officers assigned to the Medical Reserve Corps. The Army and Red Cross planned initially to raise thirty-eight base hospitals of 500 beds apiece. Shortly after the United States declared war, the Medical Department expanded this to fifty hospitals. In addition to the base hospitals for the Army, the Red Cross raised eight 250-bed base hospitals for the Navy.³⁵

The Red Cross organized a Department of Military Relief in 1916. Colonel Jefferson R. Kean became its first director-general, and promptly visited medical schools throughout the country to encourage the organization of base hospitals.³⁶ In March 1916, the Red Cross and Lakeside Hospital from Cleveland signed an agreement for Crile to form a hospital unit for a five-hundred-bed base hospital. This unit was to remain ready for service as required by the Red Cross or the Surgeon General. The local Red Cross chapter raised the money and the first base hospital formed.³⁷

The Red Cross felt that to demonstrate the feasibility of the base hospital system, a base hospital needed to be mobilized. It originally planned

³⁵Cushing, *A Surgeon's Journal*, 79-82. [E. L. Munson], "Organization of Base Hospitals." *Military Surgeon* 39 (July, 1916): 107-08. [E. L. Munson], "The Red Cross" *Military Surgeon* 39 (August, 1916): 200-13. U.S. Congress, House, *Twelfth Annual Report of the American National Red Cross*. 64th Congress, 2d Session, 1918, House Document No. 2131, 26-37. *The Surgeon General's Office*, 92-93. Henry P. Davison, *American Red Cross in the Great War*, (New York: The MacMillan Company, 1920), 80-82. T. W. Richards, "The Organization and Equipment of Navy Hospital Units" *United States Naval Bulletin* 12 (April, 1918), 186-93. Dulles, *American Red Cross*, 179-80. Jefferson R. Kean, "The New Role of the American Red Cross," *Military Surgeon* 38 (May 1916): 539-44.

³⁶*Eleventh Red Cross Report*, 9-25. Kean, "New Role of the Red Cross," 539-44.

³⁷Crile, *Autobiography*, 267-68.

to use the Presbyterian Hospital Unit at the annual meeting of the American College of Surgeons in October 1916. However, the Presbyterian Hospital trustees stopped the mobilization three weeks before the meeting. Instead, the Red Cross mobilized and set up the Lakeside Hospital Unit in Philadelphia. Using tents supplied by the Philadelphia depot, the hospital covered about 12 acres. For a little over \$5000, the mobilization provided a powerful demonstration of the base hospital concept and of the role of the civilian medical community in medical preparedness.³⁸

MEDICAL EQUIPMENT FOR ARMY HOSPITALS

The mobilization familiarized the civilian physicians with Army medical and surgical equipment, much of which was old and outdated. The Surgeon General's Office formed a Committee on Standardization of Medical and Surgical Supplies and Equipment, consisting of Crile, Cushing, Dr. John M. T. Finney from Johns Hopkins, Dr. William Mayo from the Mayo Clinic, and Dr. George Brewer from Presbyterian Hospital. These men found that the reform of the medical supply situation was far from perfect. Cushing describes the medical chests as "antiquated, with instruments dating from the Civil War." Crile recalls finding instruments that no one in the group even knew how to use.³⁹

The Army had neither the appropriations, nor the storage space to acquire the equipment for the base hospitals. Therefore, it relied upon charitable donations to raise the money. The War Department estimated that each base hospital would cost about \$25,000; however the units averaged

³⁸Crile, *Autobiography*, 270-71. *The Surgeon General's Office*, 98. Davison, *Red Cross*, 82.

³⁹Cushing, *A Surgeon's Journal*, 89. Crile, *Autobiography*, 271.

\$75,000. Base Hospital No. 38 spent more than \$120,000, while the Red Cross spent over \$3,000,000 on the base hospital program. Most of the increased cost was from purchases beyond the standard equipment such as ambulances, extra beds, and laundry equipment.⁴⁰

TRAINING CIVILIANS IN MILITARY SUBJECTS

The increase in military awareness among the civilian medical community raised calls for the teaching of military subjects in medical schools throughout the country. Medical officers recognized the need for knowledge of military subjects, as well as medical ones. This prompted courses in military medical subjects at medical schools. Johns Hopkins used medical students as soldiers in its Base Hospital No. 18. These men went to France with the unit and graduated from medical school at Bazoilles.⁴¹ The Harvard unit, Base Hospital No. 5, trained fifty medical students, but the University Committee prohibited the fifty students from going overseas with the unit.⁴²

The proper use and training of the Medical Reserve Corps were other issues in the Medical Department. The 1916 Wellcome Prize, for the best essay submitted to the Association of Military Surgeons, went to Captain Marlon Ashford for his essay on the Medical Reserve Corps. Many of the articles in *Military Surgeon* in 1916 and early 1917, dealt with teaching civilian physicians military subjects and the most effective ways to train and employ the Reserve Corps. The issue at the heart of these essays was that

⁴⁰Davison, *Red Cross*, 82. W.M. L. Coplin, *American Red Cross Base Hospital No. 38 in the World War*. (Philadelphia: Privately published, 1923), 30. Richards, "Navy Hospital Units," 191.

⁴¹History of Base Hospital No. 18, American Expeditionary Forces. (Baltimore: Base Hospital No. 18 Association, 1919), 16.

⁴²Cushing, *A Surgeon's Journal*, 80.

trained physicians needed to be available to prevent another Spanish-American War fiasco.⁴³

One solution, a two week period of annual training for members of the Medical Reserve Corps, the Officers' Reserve Corps adopted. A second, the institution of a medical correspondence course for the reserve officers, proved a disappointment. Only about one-fourth of the members signed up for the course and many dropped out. The course required four years to complete, so none had gotten very far by the time war broke out.⁴⁴ The problem of training for the Medical Reserve Corps remained unsolved when the United States declared war.

Despite all these efforts, the Medical Reserve Corps and the National Guard lacked adequate numbers of trained physicians to supply the Army if war broke out. The Medical Reserve Corps had grown to 1,757 officers, plus 146 on active duty, compared to 443 Regular Army medical officers at the time. By 30 June 1917, less than three months after the declaration of war, this had grown to 9,223 officers in the Medical, Dental, and Veterinary Officers' Reserve Corps, most recently enrolled.⁴⁵ The National Guard had experienced considerable difficulty with volunteers after activation for the Mexican campaign. This changed after the declaration of war when "medical officers and men poured into the service in a veritable flood."⁴⁶ There were 1,267 medical, 250 dental, and 74 veterinary officers called into active

⁴³Ibid., 317-325. Marlon Ashford, "The Most Practicable Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps of the United States Army and Navy and of the Medical Officers of the Officers' Reserve Corps of the United States Army, in Peace and War," *Military Surgeon* 40 (February 1917): 130. Henry C. Coe, "The Inactive Medical Reserve Corps in War," *Military Surgeon* 39 (August 1916):

⁴⁴Henry C. Coe, "The Wellcome First Prize Essay, 1916," *Military Surgeon* 40 (February 1917): 318-19. M. A. W. Shockley, "The Correspondence Course for Officers of the Medical Reserve Corps," *Military Surgeon* 38 (January 1916): 64-67.

⁴⁵Crossland and Currie, *Twice the Citizen*, 19.

⁴⁶*The Surgeon General's Office*, 82-83.

Federal service from the National Guard.⁴⁷ These numbers are small compared with the 61,844 officers (30,591 physicians) in the Medical Department at the Armistice, out of an estimated 115,500 American physicians in active practice at the time. The Reserve and National Guard provided a mechanism for commissioning applicants without resorting to contract surgeons as in the Spanish-American War.⁴⁸

MEDICAL LIAISON WITH THE COMBATANTS

Once World War I had started in Europe, the Surgeon General and other medical leaders tried to find out the lessons that the combatants had learned in field medical care. The War Department worked with the State Department to send observers to England, France, Germany, and Austria-Hungary. There was no medical corps officer sent to Germany, but medical officers went as part of the observation teams to the other combatants.⁴⁹

Major J. H. Ford was the medical observer in Austria-Hungary. He remained with the Austrians along the Russian and Serbian fronts until 27 October 1915, when he returned to the United States. He was not replaced. He published his observations on the Austro-Hungarian Army in a well-illustrated article in the June 1917 *Military Surgeon*.⁵⁰ Seven military observers went to France before the war, including two doctors, Lieutenant

⁴⁷Ibid., 140.

⁴⁸Ibid., 83. "Our Resources in Medical Personnel," *Military Surgeon* 40 (February 1917): 437-40.

⁴⁹Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December 1919): 637-39. The Medical Department of the United States Army in the World War, Volume II, *Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 13-19 (Hereafter referred to as *Administration, A.E.F.*). U.S. War Department. "Report of the Surgeon General" *Annual Reports, 1916*. Vol. I, (Washington, D.C.: Government Printing Office, 1916), 472-73. U.S. War Department. "Report of the Surgeon General" *Annual Reports, 1917*. Vol. I, (Washington, D.C.: Government Printing Office, 1918), 640-41.

⁵⁰Joseph H. Ford, "The Sanitary Service of the Austro-Hungarian Army in Campaign," *Military Surgeon* 38 (June 1917): 645-65.

Colonels James R. Church and Sanford H. Wadhams. They found that the French were uncoöperative in showing them much of their medical system until after the United States severed diplomatic relations with Germany on 3 February 1917. Church wrote his observations on the French sanitary service in May 1917 for *Military Surgeon*.⁵¹

Three officers, Lieutenant Colonel Alfred E. Bradley, Major Clyde S. Ford, and Major W. J. L. Lyster, went to the British on 6 March 1916. They established a close relationship with the British and found them very open and helpful, observing conditions both in England and France.⁵²

One unusual situation was that of Major Robert M. Culler who was granted a leave of absence to take charge of the hospital at Passy, France run by the French Benevolent Society. Major Culler went to France as a civilian; when the United States entered the war, he reverted to a duty status. The Surgeon General tried to get this status for other officers, but President Wilson refused, to avoid violating the United States' neutrality.⁵³

DEVELOPMENT OF MEDICAL DOCTRINE

The last area of reform for the Medical Department was the development of a doctrine for field operations. Before the Spanish-American War, the regulations had centered on the peacetime administration of medical units. The failings in that war, the increased emphasis on field exercises, and the experiences of the Europeans in World War I, drove the Army to develop and revise its medical doctrine. It published its doctrine in

⁵¹James Robb Church, "Notes on the Organization of the French Sanitary Service," *Military Surgeon* 38 (May 1917): 531-48. Wadhams and Tuttle, "Early Problems," 637-39. *Administration A.E.F.*, 14-19.

⁵²Wadhams and Tuttle, "Early Problems," 637-39. *Administration A.E.F.*, 14-19. Lyster is better known for inventing the cloth water storage container that bears his name.

⁵³ *Administration A.E.F.*, 17-19.

the *Field Service Regulations* and the *Manual for the Medical Department*. The editions of the *Manual for the Medical Department* before the Spanish-American War dealt only with post administration, not war at all. The 1898 edition contained only four paragraphs on duties in time of war. The Manual of 1900 added two paragraphs on the regimental hospital. By 1902, the Manual provided the sanitary organization of a division and the field hospitals and ambulances that supported it. This emphasis continued to the edition of 1916, which provided the medical organization for war that the A. E. F. used, based upon field hospitals, evacuation hospitals, and ambulance companies. These units filled the gaps from battalion aid station to the base hospital.⁵⁴

The Medical Department developed a field service school at Fort Leavenworth in 1910 to teach medical officers this doctrine. It taught other aspects of medical practice, such as field sanitation, that were peculiar to the Army. The field service school also started a correspondence school for line officers in sanitary matters. The other service schools agreed with the Medical Department that every tactical solution required plans for handling the wounded.⁵⁵

SUMMARY

This organization gave the Medical Department a solid basis for providing medical services once the American Expeditionary Forces deployed. It was similar to the French and British systems, which allowed the United States forces to integrate medical care closely with its allies. The strain of war would force changes on the system, but the reforms generated in

⁵⁴*The Surgeon General's Office*, 63-65.

⁵⁵*Ibid.*, 69.

response to the Spanish-American War provided the Medical Department a solid base on which to build. The experience gained in the mobilizations along the Mexican border allowed the Medical Department to solve some of the problems it would experience on a much larger scale in France. Finally, the foresight and dedication of members of the civilian medical community, working in close coöperation with the Medical Department and the American Red Cross, created a system for rapidly raising hospital units. When the A. E. F. arrived in France, the magnitude of the demands stressed the medical support. The organization and doctrine changed to meet these demands.

CHAPTER 3

ORGANIZATION OF MEDICAL SUPPORT FOR THE AMERICAN EXPEDITIONARY FORCES

INTRODUCTION

The Army deployed to France having prepared its medical care more carefully than in the past. It remained unsure how to administer the medical service that would administer this care. The problem of effective medical administration affected delivery of medical care. The Medical Department faced the challenge of organizing and administering a larger medical force than it ever had before. To understand the medical organization of the American Expeditionary Forces (A. E. F.), one must understand the personalities that ran it. The next step is to analyze the organization of General Headquarters, A. E. F., the Services of Supply, and how these interacted with the A. E. F. Chief Surgeon's office. The role played by the Allies as they helped the Medical Department adjust to the demands of the European War also aids in studying the Department's success. Finally, it is necessary to study the detailed organization and functioning of the various levels of medical support.

ADMINISTRATION

The A. E. F. patterned its medical section after the Army Medical Department. Neither organization achieved what it felt was the optimum staff structure. Both the General Staff in the War Department and the staff of the A. E. F. reorganized twice during the war. After the war, the *Field*

Service Regulations and the *Manual for the Medical Department* changed the staff organization again. This inability to decide on a staff structure complicated the functioning of the Chief Surgeon's office of the A. E. F.¹

THE SURGEON GENERAL'S OFFICE

When war broke out, the Surgeon General, Major General William C. Gorgas headed the Medical Department. This white-haired, distinguished officer came from a military background. His father, General Josiah Gorgas, had been the chief of ordnance for the Confederacy. Gorgas joined the Medical Corps in 1880. He won an international reputation in public health through his success in controlling mosquitoes and yellow fever in Havana. He became sanitarian for the Panama Canal project, the world's expert on sanitation, and the choice for Surgeon General in 1914. His work with the civilian community, discussed in the previous chapter, was crucial in preparing the Medical Department for war.²

The Surgeon General's Office had only six medical officers and 146 civilian employees when the war broke out. Four divisions made up the office: Sanitation; Supply; Record, Correspondence, and Examining; and Museum and Library Division. By the end of the war, it had expanded to

¹Charles Lynch, Frank W. Weed, and Loy McAfee, *The Medical Department of the United States Army in the World War, Volume I, The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923), 123-126 (Hereafter referred to as *The Surgeon General's Office*). P.M. Ashburn, *A History of the Medical Department of the United States Army*, (Boston and New York: Houghton Mifflin Company, 1929), 323. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 16, *General Orders, G.H.Q., A.E.F.*, (Washington, D.C.: Government Printing Office, 1948), 1, 13-24, 216-225. (Hereafter referred to as Historical Division, *General Orders*).

²James M. Phelan "William Crawford Gorgas" *Army Medical Bulletin* 52, (April 1940), 88-93. Marie D. Gorgas and Burton J. Hendrick, *William Crawford Gorgas: His Life and Work*, (Garden City, New York: Doubleday, Page and Company, 1924), is an admiring biography written by his wife, although with little critical assessment of his work.

some thirty administrative divisions with 181 medical officers and 1, 543 civilian employees.³

ADMINISTRATION, A. E. F.

The A. E. F. Medical Department resembled the Surgeon General's Office. Gorgas recommended that Colonel Alfred E. Bradley be assigned as the Chief Surgeon, A. E. F.. Bradley was in England, serving as an observer with the British Forces. As the senior officer in Europe in May 1917, he had assumed supervision over the six base hospitals with the British.⁴

General Orders, No. 1, A. E. F., (26 May 1917) designated Bradley as the Chief Surgeon, Colonel Merritte W. Ireland as his assistant, and Major George P. Peed and Captain Harry Beeuwkes as assistants. Peed, Beeuwkes, and Major J. R. Mount accompanied Ireland and General John J. Pershing to Europe, where they joined Bradley and Lieutenant Colonel Sanford H. Wadhams and Lieutenant Colonel James R. Church on the medical staff. Both Church and Wadhams were serving as liaison officers with the Allies. General Orders, No. 8 (5 July 1917) established the staff relationships; the Chief Surgeon, A. E. F. was part of the administrative and technical staff. It assigned the Medical Corps staff responsibilities for sanitation and health, care and evacuation of sick and wounded, medical personnel and supplies, etc. These orders served as the basis for the initial organization of the Medical Department of the A. E. F.⁵

³*The Surgeon General's Office*, 126.

⁴Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December, 1919), 640-44. Joseph H. Ford, *The Medical Department of the United States Army in the World War, Volume II, Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 19-23, 39, (Hereafter referred to as *Administration, A.E.F.*).

⁵Historical Division, *General Orders*, 1, 13-24. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 15, *Reports of the Commander-in-Chief, A.E.F., Staff Sections and Services*, (Washington, D.C.:

THE CHIEF SURGEONS

Bradley proved an able administrator. He laid the ground work for the functioning of the Chief Surgeon's office, and headed that office for the first year that the United States was in the war. His health was poor, so much of the daily operations of the office fell to Ireland as his deputy. In April of 1918, he returned to the United States an invalid from a lung abscess. This abscess would eventually kill him in December 1922.⁶

Colonel Ireland, replaced Bradley as Chief Surgeon. Ireland had joined the Army in 1891 and had spent many years in the Surgeon General's office in the supply division and as chief of the personnel division. From 1902 to 1912, he had worked under Surgeons General Robert M. O'Reilly and George H. Torney with Jefferson R. Kean, Carl R. Darnall, and Walter D. McCaw in what was known as the "Catholic clique." Although O'Reilly was Catholic, none of the others were. This group had implemented many of the reforms recommended by the Dodge Commission. This work had given Ireland an comprehensive knowledge of the problems that the Medical Department had experienced in the Spanish-American War and the steps needed to correct them. As the previous chapter discussed, these reforms provided the basis for the medical support for the A. E. F.⁷

Ireland held another important post under O'Reilly, that of medical personnel officer. He was the first medical officer to hold this post, previously, the chief clerk made the assignments. He completely reorganized

Government Printing Office, 1948), 370-71 (Hereafter referred to as Historical Division, *Reports*).

⁶Wadhams and Tuttle, "Early Problems," 640-44. *Administration, A.E.F.*, 19-23, 39, .

⁷Ashburn, *Medical Department History*, 284. John J. Pershing, "Surgeon General Merritte W. Ireland," in Ashburn, *Medical Department History*, 394-396. *Administration, A.E.F.*, 22-24. James M. Phelan "Merritte Weber Ireland," *Army Medical Bulletin* 52, (April 1940), 94-100.

the office, keeping detailed records of each officers stations and service. At the same time, he removed much of the patronage that had characterized medical assignments. The job gave Ireland an in-depth knowledge of the strengths and weaknesses of the other medical officers. This enabled him to select the best men for the various positions in the A. E. F.⁸

While he was at the War Department, Ireland worked with many of the officers who would play important roles in the A. E. F. In addition to Kean and McCaw, Carl R. Darnall, who did much to prepare the medical supplies for the A. E. F., James D. Glennan, who headed the Hospitalization Division, and Francis A. Winter, who served as Chief Surgeon, Lines of Communications (L. O. C.), all worked at the Surgeon General's Office. He also became acquainted with men such as Johnson Hagood who served as the Chief of Staff, Services of Supply, Peyton C. March, the Army Chief of Staff, Hunter Liggett, Robert L. Bullard, and J. T. Dickman, the three army commanders while he worked at the War Department.⁹

From 1912 to 1915, Ireland served at Fort McKinley in the Philippines and worked with Pershing, Hagood, and James G. Harbord. This was his second tour in the Philippines. From the Philippines, he went to Fort Sam Houston, Texas as sanitary inspector, cavalry division surgeon, and, finally, post surgeon. He held this last job during the mobilization of troops for the Punitive Expedition with Mexico. His able administration of the post during these difficult times impressed Pershing who chose Ireland to be his Chief Surgeon in the A. E. F..¹⁰

⁸Ashburn, *Medical Department History*, 284-85.

⁹Ashburn, *Medical Department History*, 284-85. Johnson Hagood, *The Services of Supply, A Memoir of the Great War*, (Boston and New York: Houghton Mifflin Company, 1927), 8.

¹⁰Pershing, "Surgeon General Merritte W. Ireland," 394-96. Hagood, *The Services of Supply*, 11. Phelan, "Merritte Weber Ireland, 94-100.

Ireland accompanied Pershing to Europe on the *Baltic*. The Surgeon General recommended Bradley, who was senior, for the position. Ireland served as the assistant until Bradley resigned 30 April 1918. The success of the Medical Department in the World War is in many respects due to his able leadership. Probably the greatest tribute to his abilities is the respect with which Pershing held him. When Gorgas got ready to retire in the summer of 1918, Pershing sent John M. T. Finney, the chief consultant in surgery back to Washington with a message for President Woodrow Wilson. Pershing's message was brief, "We want Ireland for Surgeon General and we have *no second choice*." That Pershing would send his chief surgical consultant back to the United States shortly before the St. Mihiel operation emphasizes the importance he placed on getting Ireland the appointment. Wilson agreed with Pershing and Ireland left the Chief Surgeon's job 4 October 1918 to become the Surgeon General on Gorgas's retirement.¹¹

Colonel Walter D. McCaw succeeded Ireland in the Chief Surgeon's job. Known for his great learning, McCaw worked with the Surgeon General in Washington before the war, as part of the "Catholic clique." He had a good sense of humor, which made him extremely popular within the Medical Department. From 1909-1913, he served as the Librarian for the Army Medical Library under Surgeon General George H. Torney. From this prestigious job, he went to Texas during the Punitive Expedition as the Chief Surgeon of the Department and worked with both Pershing and Ireland. Ireland respected him enough to recommend McCaw for Chief Surgeon when

¹¹Ashburn, *Medical Department History*, 284. John J. Pershing, "Surgeon General Merritte W. Ireland," in Ashburn, *Medical Department History*, 394-396. *Administration, A.E.F.*, 22-24. James M. Phelan "Merritte Weber Ireland" *Army Medical Bulletin* 52, (April 1940), 94-100. James G. Harbord, *The American Army in France, 1917-1919*, (Boston: Little, Brown, and Company, 1936), 579-583. John M. T. Finney, *A Surgeon's Life*, (New York, G. P. Putnam's Sons, 1940), 193-194 (italics present in original).

Bradley resigned. Before becoming Chief Surgeon, McCaw headed the Sanitation and Inspection Division in the A. E. F.¹²

THE CHIEF SURGEON'S OFFICE

The first A. E. F. Headquarters was in Paris on the Rue Constantine. The medical section had only three small rooms in which to do business. As there were seven medical officers and about twice that many clerks assigned to the Chief Surgeon's office at the time, the office was quite cramped. As more troops and other personnel arrived, the crowding worsened and the Chief Surgeon's office moved to the old Hotel St. Anne. The main problems confronting the office at this time involved adapting doctrine to the realities of the front and preparing medical facilities for the soldiers arriving from the United States. It struggled to solve these problems, as it lacked officers.¹³

The Chief Surgeon's office made the first of many calls for personnel from base hospitals; these were the only source of additional manpower in Europe. It took the Regular Army adjutants from the six base hospitals serving with the British. Bradley reassigned two of these men to the Chief Surgeon's office and four to the Chief Surgeon, Lines of Communications, (L. O. C.). These experienced medical officers added sorely needed personnel to these offices. The base hospitals also supplied enlisted soldiers to serve as clerks and other administrative assistants. These additional officers allowed a reorganization on 28 July 1917, to help handle the arriving troops and base hospitals.¹⁴

¹²*Administration, A.E.F.*, 24-26. James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927), 22,39. Ashburn, *Medical Department History*, 284, 323.

¹³Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 42-45.

¹⁴Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45, 48-49. Historical Division, *Reports*, 370-71.

The reorganization divided the Chief Surgeon's office into six divisions. These were Hospitalization, Sanitation and Statistics, Personnel, Supplies, Records and Correspondence, and Chemical Warfare Service. The executive officer assisted the chief surgeon and was in general charge of the administration of the medical service. The functions of the divisions are self-explanatory.¹⁵ The A. E. F. established a Chemical Warfare Service in September 1917 as a separate staff section, it took over the division in the Chief Surgeon's office. The Chemical Warfare Service received medical input from a medical officer assigned to the division.¹⁶

Ireland served as assistant to the Chief Surgeon and ran the Personnel division. Colonel Wadhams headed the Hospitalization Division, Franco-American liaison, and general estimates on personnel and equipment. Major Daniel W. Harmon was responsible for sanitation and statistics; Major J. R. Mount, for supplies. Church had responsibility for the medical aspects of gas warfare. The only division to have more than one officer assigned was Hospitalization, which had Major Arnold D. Tuttle as assistant. Although the number of officers in the Chief Surgeon's office still was small, the formation of the divisions allowed the A. E. F. Medical Department to start to plan medical support and to answer the medical questions of how to adapt doctrine to the situation overseas.¹⁷

EXPANSION OF CHIEF SURGEON'S OFFICE

The summer of 1917 was a time of expansion both for the A. E. F. and its medical section. In August, dental and veterinary sections started in the

¹⁵War Diary, Chief Surgeon's Office, A. E. F., 28 July 1917 reprinted in *Administration, A.E.F.*, 44-45.

¹⁶General Orders No. 31, General Headquarters, A.E.F., 3 September 1917, Historical Division, *General Orders*, 67. *Administration, A.E.F.*, 44-45.

¹⁷Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45.

personnel division. These expanded to become the dental and veterinary divisions of the Chief Surgeon's office. The Chief Surgeon's office moved to Chaumont with the General Headquarters (G. H. Q.) in September 1917. This gave it much more room than it had had in Paris. The Chief Surgeon's office continued to grow. A proposed table of organization from 9 October 1917 requested authorizations for four general officers, fourteen field grade officers and 255 clerks and soldiers. Each army headquarters would also have a brigadier general and staff. General Pershing did not approve this organization; he did approve one on 22 December 1917 that included one general officer, seventeen field grade officers, fourteen company grade officers, and 256 enlisted men for the Chief Surgeon's Office. The office at G. H. Q. never reached those numbers. By 10 January 1918, it had only twenty-one officers and fifty-eight clerks and soldiers assigned.¹⁸

LINES OF COMMUNICATIONS

During the summer of 1917, the Lines of Communications also formed. According to the 1914 edition of the *Field Service Regulations*, this organization managed the Rear Zone of the Zone of Operations. The L. O. C. were divided into five Base Sections, an Intermediate Section, and an Advance Section. The L. O. C. supplied what is now called combat service support for the combatant forces. General Order No. 20, A. E. F., 13 August 1917, defined the geographical limits of the L. O. C. as extending from "the sea to the points where delivery of supplies is made to the field transportation of the combatant field forces." The Base Sections received supplies from the

¹⁸ Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 2, *Policy-Forming Documents American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1948), 24, 31, 113 (Hereafter referred to as Historical Division, *Policies*). Wadhams and Tuttle, "Early Problems," 640-42. *Administration, A.E.F.*, 44-45. Historical Division, *General Orders*, 113.

United States; they shipped the supplies on to the Intermediate Section. Here, the supplies went to the Advance Section and subsequently to the front. The L. O. C. eventually contained all the base, camp, and convalescent hospitals, as well as the medical supply depots, laboratories and all medical units not assigned to corps, divisions, or armies.¹⁹

The A. E. F. benefitted greatly when Colonel Winter arrived in France in July 1918 to take over as Chief Surgeon, L. O. C.. Winter was an experienced medical supply officer and his understanding of supply procedures helped make the system work. The main administrative work concerning medical supplies took place in the L. O. C.. In one of his first actions as Chief Surgeon, L. O. C., Winter established a medical supply depot at Cosne. This proved invaluable as an accumulation and distribution point. Problems arose in the coordination of medical supply issues, as both the Chief Surgeon's Office at A. E. F. Headquarters and that at the L. O. C. made decisions on supply questions. Winter wrote a letter to the Chief Surgeon in February 1918, recommending centralization of supply control.²⁰

Confusion and coordination problems developed in other areas also. Initially, when both G. H. Q., A. E. F. and G. H. Q., L. O. C. were in Paris, there was considerable overlap in responsibilities. Often questions relating only to the L. O. C. ended up in the Chief Surgeon's Office, A. E. F. and vice versa. After G. H. Q., A. E. F. moved to Chaumont, this division of responsibility became better defined.²¹

¹⁹War Department, *Field Service Regulations, United States Army 1914*, (Washington, D.C.: Government Printing Office, 1914), 1-4, . Hagood, *The Services of Supply*, 44-47. Historical Division, *Reports*, 3-5. Historical Division, *General Orders*, 52-53.

²⁰*Administration, A. E. F.*, 387-89. Historical Division, *General Orders*, 216-25. Wadhams and Tuttle, "Early Problems," 649-52. Historical Division, *Reports*, 381-82.

²¹*Administration, A.E.F.*, 230. Wadhams and Tuttle, "Early Problems," 640-42.

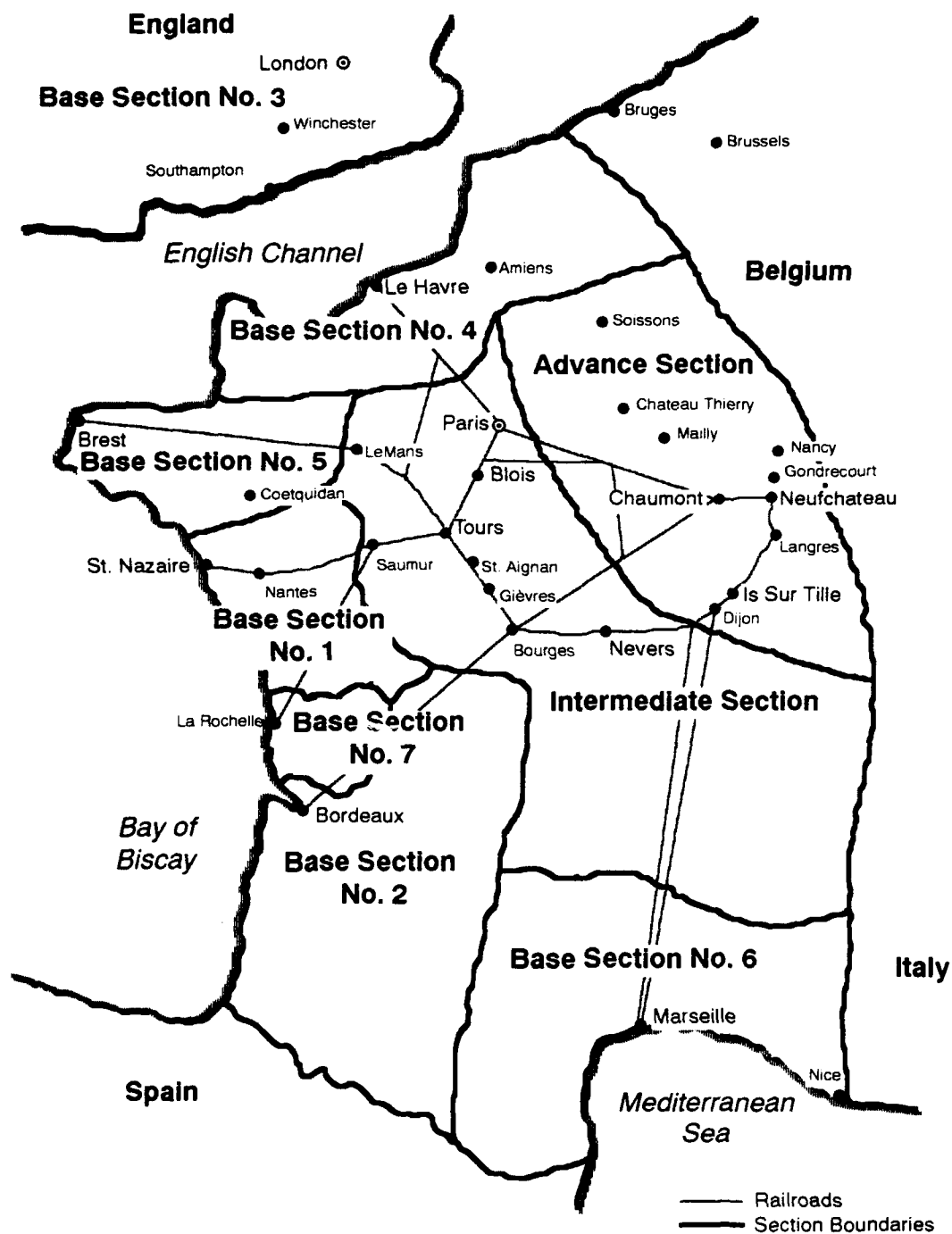


Figure 1: The Advance, Intermediate and Base Sections of the S. O. S.²²

²²Adapted from Hagood, *The Services of Supply*, 47, and *Administration, A.E.F.*, Figure 1 opposite page 30. This shows the situation after the formation of Base Sections 6 and 7 in June 1918.

THE SERVICES OF SUPPLY

Problems arose in G. H. Q. from the sheer amount of activity centered there. Pershing worried that he had created a copy of the War Department at Chaumont. There was a great deal of jurisdictional dispute over supply matters between the L. O. C. and G. H. Q. An attempt to correct the chaotic situation in supply for the A. E. F. resulted in General Orders No. 73, A. E. F. on 12 December 1917. This order detailed the responsibilities of the Chiefs of the Supply Departments in procuring supplies. It assigned the Commanding General, L. O. C. responsibility for storage and distribution of supplies. It divided supplies into four classes; medical supplies fell into the second class, supplies for the individual to perform his tasks as a soldier. It also described the functioning of a railhead and a regulating station.²³

Although this order helped the supply situation, it did nothing to shrink the size of G. H. Q. Pershing felt that the best way to do this was through sending the bureau chiefs back to the L. O. C. This would leave only the military advisers and the Inspector General at G. H. Q. He commissioned a board, headed by Hagood, to look into ways to decrease the size of the headquarters. The Hagood Board recommended that the L. O. C. be renamed and that the Chiefs of Services, except for Adjutant General, Inspector General, and Judge Advocate move to the renamed L. O. C. It envisioned the S. O. S. as a central headquarters for supply, to include the G-1 and G-4 sections of the General Staff at G. H. Q.²⁴

²³Historical Division, *General Orders*, 136-40. Hagood, *The Services of Supply*, 65-72. James A. Huston, *The Sinews of War: Army Logistics 1775-1953*, Army Historical Series, (Washington, D. C.: Office of the Chief of Military History, United States Army, 1966), 360-61.

²⁴ Hagood, *The Services of Supply*, 129-147. Huston, *Sinews of War*, 360-61.

These recommendations led in February 1918, to a complete reorganization of logistic support in the A. E. F. General Orders No. 31, 1918 moved all the chiefs of services, except the adjutant general, the Inspector General, and the Judge Advocate, to the L. O. C., renamed the Services of Supply (S. O. S.). The same order divided the general headquarters, A. E. F., into five separate staff sections designated G-1 to G-5. The chiefs of services sent to the S. O. S. remained on the Commander-in-chief's staff.²⁵

The separation from G. H. Q. and the lack of specific medical representation on the General Staff rankled Bradley. He wrote Pershing on 15 March 1918, detailing his objections. He argued for a separate medical section on the General Staff headed by an experienced medical officer. He based his assessment on the French system; the French added a *service de santé* to their G. Q. G. (French General Headquarters) after the disastrous medical support for the April 1917 offensives.²⁶ The Assistant Chief of Staff, G-4, Brigadier General W. D. Connor, opposed Bradley's request; G. H. Q., A. E. F. never added a separate medical section. According to Wadhams, "The lack of action in the matter was a source of bitter disappointment to the Chief Surgeon."²⁷

Like the other staff sections sent to the S. O. S. at Tours, Bradley realized he needed to maintain medical representation on the General Staff. He assigned Wadhams to remain at Chaumont as his deputy. In addition, he assigned the following officers to remain at G. H. Q. as liaison with the

²⁵Harbord, *American Army in France*, 211-17. Hagood, *The Services of Supply*, 129-147. Historical Division, *General Orders*, 216-25. *Administration, A.E.F.*, 46-48. Historical Division, *Reports*, 370-71. Historical Division, *Policies*, 199-200, 204-07, 224-26.

²⁶Letter, chief surgeon A. E. F. to the commander-in-chief, A. E. F., 15 March 1918, reprinted in *Administration, A.E.F.*, 60-61.

²⁷*Administration, A.E.F.*, 60-61. Sanford H. Wadhams, "Report on Activities of G-4 'B,'" reprinted in *Administration, A.E.F.*, 67.

various staff sections. Colonel A. P. Clark worked in G-1, Beeuwkes worked in G-2 and served as the attending surgeon to G. H. Q., Colonel M. W. Shockley worked in G-3 and G-5, and Colonels Paul C. Hutton and Arnold D. Tuttle worked in G-4. The representation with G-2 proved unnecessary and ended in May 1918.²⁸

Despite the attempt by the Hagood Board to move matters of supply to the S. O. S., much of the responsibility for supply fell on the G-4 section at G. H. Q. Many felt that this reflected the abilities and personality of Brigadier General George Van Horn Moseley. The G-4 supervised hospitalization and evacuation of the sick and wounded, so most of the medical liaison and other work was with that section. Eventually, the G-4-B section became the medical section of the General Staff.

Having medical officers functioning solely as liaison officers on the General Staff did not work. The G-4 section exercised much control over the medical supplies and hospitalization. This resulted, in part, because the S. O. S. had no responsibility over the armies, corps, and divisions. All decisions relating to the combat forces went through G. H. Q. Ireland worked to get his liaison officers assigned to G. H. Q., which would allow the Medical Department some say in care of the combat forces. Accordingly, General Orders No. 73, on 10 May 1918, assigned Wadhams and Shockley to the General Staff and General Orders No. 138, 23 August 1918, did the same for Clark and Tuttle. The medical section remained small, averaging four medical officers, two sanitary officers, and a clerical staff, yet it performed the difficult job of coordinating medical support for all combat units in France. It also issued policies, at the Chief Surgeon's request, concerning the

²⁸Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 59.

whole A. E. F. The Chief Surgeon's office issued all policies concerning only the S. O. S.²⁹

The medical section of the General Staff assumed responsibility for medical support of field operations. Before the medical officers officially became part of the General Staff and under Connor, problems arose in coordinating Medical Department activities with those of the G-4. However, after May, when Moseley became the Assistant Chief of Staff, G-4 at G. H. Q., the system developed to handle effectively medical issues. The next chapter will discuss the role of the medical section of G-4 during the battle of Cantigny, when Colonel Paul Hutton managed the hospitalization and evacuation of the American forces. The section handled the duties of army surgeon until Colonel Alexander N. Stark assumed that job for the First Army.³⁰

In retrospect, the organization of the Services of Supply hampered the smooth operation of medical support for the A. E. F. The Chief Surgeon needed to be centrally located where he could set policy regarding the whole force. He could have more easily delegated to a deputy the day-to-day running of the medical service than he could give up the important job of advising the commander-in-chief, A. E. F. Throughout the war, there was no one section responsible for Medical Department activities in the zone of the armies. The Chief Surgeon needed to have control over the medical support for the combat forces, instead of having to work through a deputy. The situation developed to such an extent that in October 1918, Moseley proposed a General Order that would have removed "the Chief Surgeon, A. E. F. from

²⁹Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 60-62. Historical Division, *General Orders*, 318-19, 423-24.

³⁰*Administration, A.E.F.*, 64.

all responsibility for the sick and wounded in the forward areas and to place that responsibility upon a subordinate medical officer attached to the G-4 at G. H. Q." Generals Hagood and Harbord prevented the order from being issued.³¹

The importance of the G-4 in the supply system defeated the purpose of the reorganization under the S. O. S. Each bureau chief, sent to the S. O. S., found he had to maintain a deputy at G. H. Q. to fully control his service. Wadhams, at G. H. Q. and the Chief Surgeon, Ireland, worked closely together to insure unity of purpose between the two medical staffs. Wadhams received excellent support from Moseley and the rest of the G-4 section. The ability to work together despite the official lines of responsibility allowed the system to work.³²

CHIEF SURGEON'S OFFICE AT THE SERVICES OF SUPPLY

Meanwhile, the Chief Surgeon adapted to his new position at Services of Supply. The Chief Surgeon's office absorbed the office of the Chief Surgeon, L. O. C.. The office was organized into six divisions: "general administration, records, and correspondence; hospitalization, evacuation, and hospital administration; sanitation, sanitary inspection, and medical statistics; personnel; medical supplies; finance and accounting."³³ General Orders, No. 139, on 29 August 1918 added a veterinary section to this organization. Figure 2 shows the medical organization. Examining each of

³¹*Administration, A.E.F.*, 62, 67. (Alexander N. Stark, Leon C. Garcia, Albert P. Clark), "Report on Organization, Equipment, and Functions of the Medical Department," reprinted in *Administration, A. E. F.*, 835-902 (Hereafter referred to as "Report on Organization, Equipment, and Functions"). Hagood, *The Services of Supply*, 321-334.

³²*Administration, A.E.F.*, 62, 67. "Report on Organization, Equipment, and Functions," 835-902. Hagood, *The Services of Supply*, 321-334.

³³*Administration, A.E.F.*, 52.

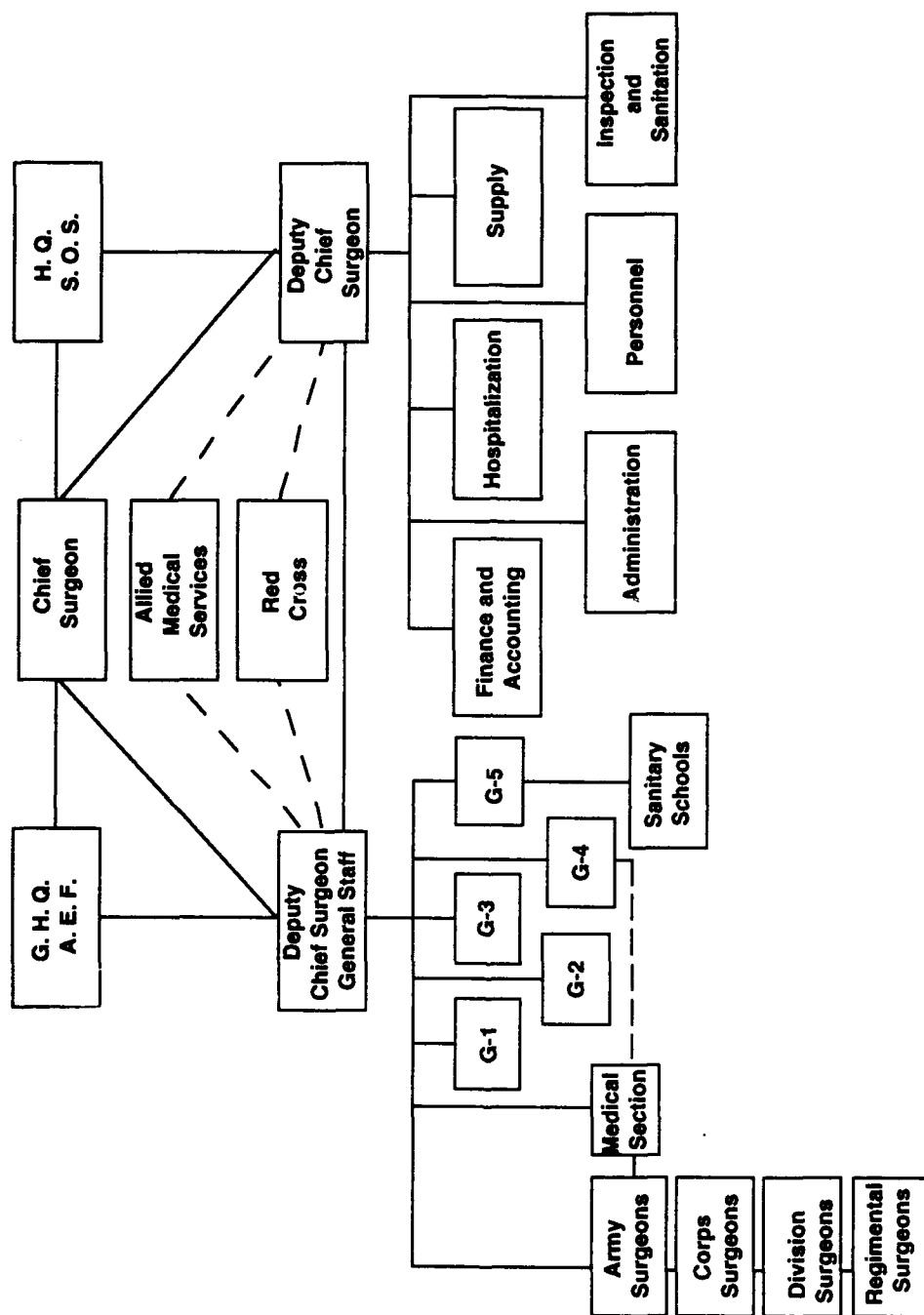


Figure 2: Organization of the Medical Department, A. E. F.³⁴

³⁴Adapted from Chart II, *Administration, A.E.F.*, 55.

these divisions and their subdivisions provides a better understanding of how medical support functioned in the A. E. F.³⁵

ADMINISTRATION DIVISION

The Administration (records and correspondence) Division was a small division, which provided the administrative and clerical support to the Chief Surgeon's office. The division constantly struggled under shortages of paper, forms, and clerical personnel. It eventually expanded to over 500 personnel under Lieutenant Colonel Robert A. Dickson. One of the most difficult jobs handled was mail delivery. When the A. E. F. deployed, the Army made inadequate preparations for mail service. All mail for Medical Department personnel arrived care of the Chief Surgeon's office and fell on the Administration division to deliver. This overworked section did not have the clerks required to perform this job. When the first American postal officials arrived in July 1918, the Medical Department had 10,000 letters awaiting them.³⁶

PERSONNEL DIVISION

Responsibility for the administrative control of Medical Department personnel lay with the Personnel Division. It controlled all matters of promotion, assignment, and occasionally appointment. To assist, it had several subsidiary sections. These were dental, veterinary, and nursing services. The largest challenge faced by the Personnel division was to

³⁵*Administration, A.E.F.*, 52-53. Historical Division, *General Orders*, 426. Historical Division, *Reports*, 371.

³⁶*Administration, A.E.F.*, 85-87.

prevent the personnel shortage to interfere with health care delivery to the soldiers.³⁷

The shortage of medical personnel had two main causes. When war appeared imminent, the Surgeon General's Office had estimated the percentage of personnel needed to support an expeditionary force. This number was about fourteen per cent of a force of a million soldiers, and used the French and British experiences as predictors of need. Unfortunately, for the Medical Department, the priority schedule adopted in August 1917 allowed only 7.65 per cent for medical units. This left a significant shortage, even if everything worked properly.³⁸

Unfortunately, not everything worked properly. This was the second cause of medical personnel shortages. The Allies wanted more infantry and machine gun units in France. The United States complied with that request sending these units to the exclusion of the support units. For example, the A. E. F. received only 600 casual medical officers 30 September 1917 and 250 more in November 1917. These were the only casual medical officers to arrive until June 1918. Many of these officers got taken by the division and regimental medical units while the officers waited for assignment at the training depots. Table 1 shows the shortages of medical personnel compared with the strength of the Medical Department and the A. E. F. It shows that the A. E. F. was often twenty-five to thirty per cent short on medical personnel.³⁹

³⁷Historical Division, *Reports*, 400. War Department, *Report of the Surgeon General, 1919*, (Washington, D. C.: Government Printing Office, 1919), 1290. *Administration, A.E.F.*, 89.

³⁸Historical Division, *Reports*, 400-01. *Report of the Surgeon General, 1919*, 1291-92.

³⁹*Report of the Surgeon General, 1919*, 1295. Harbord, *The American Army in France*, 491-492.

Date	Officers	Nurses	Soldiers	Total	Shortage
Jun 1918	5,198	2,539	30,674	38,411	13,671
Aug 1918	9,601	4,735	67,140	81,476	
Oct 1918	14,483	7,522	104,557	126,562	26,497
Nov 1918	17,487	8,951	137,403	163,841	38,552

Table 1: Medical Department Personnel Strengths and Shortages⁴⁰

The Medical Department was not alone in this, all the support services suffered. By September 1918, the A. E. F. numbered about a million and a half soldiers. This force lacked the necessary artillery, engineers, laborers, as well as medical units. G. H. Q. sent cables to the War Department requesting no more combat units and only support troops, however, the War Department could not change the priority schedule. The S. O. S. provided soldiers to the combat divisions to get them sufficient support, which greatly weakened the S. O. S.'s ability to function. In September, the situation was so serious that at the request of Harbord, G. H. Q. sent three combat divisions to the S. O. S. to use for general support.⁴¹

MEDICAL SUPPLY DIVISION

The Supply Division had responsibility for all the medical supplies that the A. E. F. used. Again preparation before the war paid great benefits. The initial medical units in France were the Red Cross base hospitals. These hospitals had acquired their equipment through donations to the Red Cross. This stockpiling of medical supplies through the base hospitals allowed the

⁴⁰From Historical Division, *Reports*, 401-02. Charles Lynch, Joseph H. Ford, and Frank W. Weed, *The Medical Department of the United States Army in the World War, Volume VIII, Field Operations*, (Washington, D.C.: Government Printing Office, 1925), 18-19 (Hereafter referred to as *Field Operations*).

⁴¹Hagood, *The Services of Supply*, 314-320.

medical department to acquire medical supplies when Congress had not appropriated any funds for their purchase.⁴²

The medical supply system suffered the same problems from lack of transportation and personnel that the rest of the Medical Department did. Medical units brought over to France the supplies called for in the *Manual for the Medical Department*. Combat in France proved more deadly and of a greater intensity than that anticipated by the authors of the manual, so the units had a relative lack of medical supplies. As with the rest of medical support, medical supplies had a low priority on the transports from the United States. The A. E. F. set up a general purchasing board to purchase supplies in Europe. A. P. Clark, assigned to the board, handled medical supply items. Unfortunately, the war had already emptied the medical supplies available in Europe and the A. E. F. relied mainly on supplies shipped from the United States.⁴³

Earlier, the discussion addressed the formation of the medical supply depot at Cosne, by Winter as the Chief Surgeon, L. O. C. This proved invaluable as an accumulating and distributing point. One problem arose; Cosne was on a secondary rail line. This railroad could not handle the increase in freight and so the Medical Department established other medical supply depots at Gievres and Is-sur-Tille. Cosne eventually expanded to 100,000 square feet, Gievres to 391,436, and Is-sur-Tille to 95,862. By the signing of the armistice, the A. E. F. had additional supply depots and storage stations in Liverpool, England; Cristo, Italy; Montierchaume, Montoir, St.

⁴²Historical Division, *Reports*, 380.

⁴³*Administration, A. E. F.*, 387-88. Wadhams and Tuttle, "Early Problems," 649-52.

Nazaire, St. Sulpice, Bordeaux, Brest, Marseille, Le Mans. Treves, Germany became an advanced medical supply depot for the Army of Occupation.⁴⁴

The War Department had the responsibility to ship the appropriate medical supplies to France according to the priority schedule. This system failed to adequately meet the requirements. The Chief Surgeon assigned Colonel A. P. Clark the duty of drawing up an "automatic supply list." This was a list of medical supplies for the War Department to send to France, based on troop strength. He based the list on the supplies needed for each 25,000 men in Europe and the necessity for establishing a ninety day reserve in France. He submitted the original list in September 1917. The list was simplified in February 1918 and further modified in April 1918 to determine supplies needed every three months rather than monthly and those that needed to be controlled by requisition.⁴⁵

The development of an automatic supply list proved an important innovation for the Medical Department. It represented the first time, the department used what is now known as "push" supply system. This system, which sends a standard package of supplies to a force based on a time schedule and the size of the force, markedly reduced the administrative requirements of providing medical supply. It works well for medical supply, because of the repetitive and routine nature for much of medical supply and is still used today.

The urgent demand for combat troops and their supplies upset the carefully planned medical supply schedule. The A. E. F. rapidly used up the small reserve of medical supplies. The situation became so bad that the

⁴⁴*Administration, A. E. F.*, 391-92. Wadhams and Tuttle. "Early Problems," 649-52. Historical Division, *Reports*, 381-82.

⁴⁵*Administration, A. E. F.*, 401. Wadhams and Tuttle. "Early Problems," 649-52.

medical officers referred to it as the "starvation period." Only through careful management of supplies did the Medical Department avoid shortages. The Surgeon General's Office had calculated that the medical units in Europe would require one per cent of the shipping. This did not take into account the need to build up a reserve and the medical planners in the Chief Surgeon's office, A. E. F. recommended 1.8 per cent of the total tonnage. This was much higher than the Medical Department ever received, so it was never able to build up even a forty-five day reserve. Despite these hardships, lack of medical supplies never interfered with medical care.⁴⁶

FINANCE AND ACCOUNTING

Closely related to the Supply Division was the Finance and Accounting Division. This small division had responsibility for money accounting, disbursing and property accounting for the A. E. F. Medical Department. It formed in the United States in the fall of 1917, with seven officers and 137 enlisted men. These deployed to France in the winter of 1918, and started work in March 1918. The division helped the Chief Surgeon's office immensely, in saving money on contracts, in collecting money due the government and similar jobs. By having a separate finance division, spared medical officers needed elsewhere.⁴⁷

SANITATION DIVISION

One of the most impressive changes in medical care from the Spanish-American War to World War I was in the general health of the soldiers. The Sanitation Division was responsible for much of this good health. It took care

⁴⁶*Administration, A. E. F.*, 401-02. Wadhams and Tuttle, "Early Problems," 649-52.

⁴⁷Historical Division, *Reports*, 382-84. *Report of the Surgeon General, 1919*, 1348-54. *Administration, A.E.F.*, 408-16.

of all preventive medical issues for the A. E. F. The division consisted of four sections: sick and wounded records; laboratories and infectious disease; inspection; epidemiology. The first head of the division was Daniel W. Harmon. McCaw replaced him, and Colonel Percy M. Ashburn took over when McCaw became Chief Surgeon.⁴⁸

The Sanitation Division faced a vast challenge. The sanitary conditions in France in 1917 and 1918 were horrendous. The ravages of four years of trench warfare had left the water supplies damaged, venereal disease rampant, muddy trenches filled with lice and other vermin. Overall, disease and non-battle injuries remained an important problem in the A. E. F. From fifty-three to ninety per cent of admissions resulted from these causes during 1917 and 1918. The wide range resulted from the variation in the amount of combat American soldiers faced. The first chapter discussed the disastrous epidemics of typhoid that decimated the Army in the Spanish-American War. In 1914, the French suffered 50,000 cases of typhoid. The American forces never suffered an epidemic. In the A. E. F., there were only 885 cases of typhoid with 148 deaths. This was because the soldiers received instruction in hygiene, vaccinations against typhoid and paratyphoid, and the Sanitation Division inspected water supplies and prevailed on commanders to enforce the sanitary regulations.⁴⁹

The worst communicable disease threats were the respiratory infections. In 1918, an influenza pandemic swept through the world. It did not spare the A. E. F. The A. E. F. had 228,461 admissions for influenza,

⁴⁸*Administration, A.E.F.*, 133-36.

⁴⁹Ashburn, *Medical Department History*, 334-35. Albert G. Love, The Medical Department of the United States Army in the World War. Volume XV, *Statistics, Part Two Medical and Casualty Statistics*, (Washington, D.C.: Government Printing Office, 1925), 87, 135 (Hereafter referred to as *Medical Statistics*). *Report of the Surgeon General, 1919*, 1309-10, 1335-36.

30,048 for pneumonias and 15,849 deaths from these. The worst month was October 1918, when the combination of the influenza epidemic and the Meuse-Argonne offensive stressed the entire medical system.⁵⁰

The Division of Laboratories and Infectious Disease had its headquarters at Dijon. Colonel Joseph F. Siler headed the division. This division centralized the control of all medical laboratories in France and standardized their operation. It also inspected them to insure that they met the standards. This promoted a high standard in the medical laboratories, which became an important adjunct to medical care.⁵¹

HOSPITALIZATION DIVISION

The Hospitalization Division was the largest division and its work was probably the most visible of all Medical Department activities in France. Before the reorganization of G. H. Q., Wadhams headed this division with Tuttle as his assistant. The first step in securing adequate hospitalization for the A. E. F. was to coordinate with the French regarding locations and facilities for hospitals. When the United States declared war, Wadhams was a liaison officer with the French. Before the arrival of G. H. Q., he made an inspection tour of French military hospitals to find out which ones the Americans could take over. This allowed the French to start work in St. Nazaire on a camp hospital for arriving Americans. Wadhams had the additional duty of liaison officer to the French to establish the hospitalization system.⁵²

⁵⁰*Medical Statistics*, 87, 95, 135, 143. *Report of the Surgeon General, 1919*, 1335-36.

⁵¹*Administration, A.E.F.*, 76-77, 229-30. *Report of the Surgeon General, 1919*, 1309-10. Historical Division, *Reports*, 382-84.

⁵²*Administration, A.E.F.*, 76-77, 229-30. Wadhams and Tuttle, "Early Problems," 645-49. James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927), 38.

The hospitalization section at G. H. Q. dealt with questions of policy and procurement of hospitals. The Chief Surgeon for the L. O. C. had responsibility for hospitals, medical supplies, and personnel in the L. O. C.. This led to considerable overlap in responsibilities. Both offices handled questions relating to placement and functioning of hospitals. When the Chief Surgeon's office, A. E. F., combined with that of the L. O. C. in the S. O. S. at Tours, the responsibilities of the hospitalization section changed again. The medical section at G. H. Q., assumed responsibility for the medical support of the armies in the field, location and procurement of fixed hospital facilities, liaison with the French and general medical policy. The Hospitalization Division at the S. O. S. worked on general matters of hospitalization, administration, and evacuation.⁵³

The Hospitalization Division played a crucial role in adapting pre-war medical doctrine to the conditions in France. The first problem addressed concerned the proper supervision of the various specialties. Other problems facing the division were the construction of adequate hospital facilities, organization of the hospitals, addition of new hospital formations to adjust to the different conditions at the front, and establishment of evacuation means throughout the A. E. F.⁵⁴

PROFESSIONAL SERVICES

One of the most significant changes affecting the medical community worldwide was increasing specialization. To provide proper specialty care required supervision by physicians trained in the various specialties. The Surgeon General's Office created divisions to advise the Surgeon General on

⁵³*Administration, A.E.F.*, 229-30. Wadhams and Tuttle, "Early Problems," 640-42.

⁵⁴*Administration, A.E.F.*, 229-30. Wadhams and Tuttle, "Early Problems," 640-42.

these subservices. These were the divisions of General Medicine, Infectious Diseases and Laboratories, Neurology and Psychiatry, Psychology, Urology, Combating Venereal Disease, Roentgenology, Reconstruction, General Surgery, Military Orthopedic Surgery, and Head Surgery. Heading these divisions were civilian physicians commissioned who had received reserve commissions in the Medical Corps. These were men like William P. Welch and Warfield T. Longcope of Johns Hopkins, Charles H. and William J. Mayo of the Mayo Clinic, all professors at prestigious medical schools throughout the country. The ability to have the advice of the finest medical men in the nation did a great deal to ensure the care given in Army hospitals met the standards of the best hospitals of the day.⁵⁵

These specialists worked with the Surgeon General to design an efficient distribution of specialties in the base hospitals. The memorandum of the Surgeon General dated 11 November 1917 described this organization. It divided the specialists into three major divisions, medical, surgical, and laboratory services. These three services had eight sub-services, five surgical, two medical, and laboratory services.⁵⁶

The A. E. F. organized its professional services similarly. Circular No. 2, dated 9 November 1917, established the division of professional services with these eight subdivisions: General Medicine, General Surgery, Orthopedic Surgery, Surgery of the Head, Venereal, Skin, and Genitourinary (Urology), Laboratories, Psychiatry, and Roentgenology. As in the Surgeon General's Office, the men who headed these sections were leaders in the medical community. Brigadier General John M. T. Finney from Johns

⁵⁵*The Surgeon General's Office*, 130, 326, 352.

⁵⁶Memorandum reprinted in *The Surgeon General's Office*, 326.

Hopkins was the director of general surgery, Colonel Hugh H. Young was the director for urology, and Colonel Joseph F. Siler was the director for laboratories named in the initial circular.⁵⁷

Professional Consultants, A. E. F.

Director of Professional Services ----- Colonel William L. Keller

Surgical Services

Chief Consultant -----	Brig. Gen. John M. T. Finney
Surgical Research -----	Col. George W. Crile
Roentgenology -----	Col. Arthur C. Christie
Neurological Surgery -----	Col. Harvey Cushing
Orthopedic Surgery -----	Col. Joel E. Goldthwait
Ear, Nose and Throat Surgery -----	Col. James F. McKernon
General Surgery -----	Col. Charles H. Peck
Venereal and Skin Diseases and Genitourinary Surgery -----	Col. Hugh H. Young
Maxillofacial Surgery -----	Lieut. Col. Vilray P. Blair
Roentgenology -----	Lieut. Col. James T. Case
Ophthalmology -----	Lieut. Col. Allen Greenwood

Medical Services

Chief Consultant -----	Brig. Gen. William S. Thayer
General Medicine -----	Col. Thomas R. Boggs
Infectious Disease -----	Col. Warfield T. Longcope
Neuropsychiatry -----	Col. Thomas W. Salmon
General Medicine for Poisoning by Deleterious Gases -----	Lieut. Col. Richard Dexter
Cardiovascular Disease -----	Lieut. Col. Alfred E. Cohn
Tuberculosis -----	Lieut. Col. Gerald B. Webb
General Medicine -----	Maj. Franklin C. McLean

Table 2: Professional Consultants, A. E. F.⁵⁸

As the medical support requirements changed, so did the division of professional services. One of the first changes was in dropping the name director and calling these men, consultants. This fit much better with their roles, as they had no directive powers, but served to advise the command on their particular specialties. General Order No. 88, G. H. Q., A. E. F., 6 June

⁵⁷Circular reprinted in *Administration, A. E. F.*, 904.

⁵⁸*Administration, A. E. F.*, 385.

1918 and Circular No. 25, A. E. F. reorganized the system of consultants, establishing chief surgical and medical consultants and increasing the total number of consultants.⁵⁹ The consultants and their specialties are listed in Table 2.

Many of these men are familiar from the discussion of the base hospital concept and its adoption. All had been active in preparing the medical community for war. Men such as Harvey Cushing, George Crile, Hugh Young, William S. Thayer had raised base hospitals at their universities that they accompanied to France. Joseph F. Siler had commanded Base Hospital No. 8 until November 1917. Again, the base hospitals had enabled the A. E. F. to provide excellent medical care, by bringing to France the finest physicians from universities throughout the United States. Without this available pool of specialists, medical care within the A. E. F. would have suffered.⁶⁰

Headquarters for the professional services division was at Neufchateau. Although Keller had responsibility for organizing the consultant service, much of the job fell on Finney and Thayer who knew the physicians and surgeons from the civilian medical community better. The consultants supervised a vast number of facilities throughout the A. E. F. Because this number was too large for any one man to monitor effectively, the professional services division appointed consultants for each of the units, division and larger, as well as each hospital center and base section.⁶¹

⁵⁹*Administration, A. E. F.*, 351-358, Circular No. 25 is reprinted on 926. Historical Division, *General Orders*, 338. Historical Division, *Reports*, 416-17.

⁶⁰*Administration, A. E. F.*, 351-358. *History of Base Hospital No. 18, American Expeditionary Forces*. (Baltimore: Base Hospital No. 18 Association, 1919), 17.

⁶¹Finney, *A Surgeon's Life*, 182-85

The consultants arranged for certain base hospitals to specialize in specific diseases. For example, Base Hospital No. 20 received many of the tuberculosis cases, while No. 8 and No. 25 were for neuropsychiatric cases. Other hospitals specialized in neurosurgical (Base Hospital No. 46), maxillofacial and ophthalmic (Base Hospital No. 115), or orthopedic injuries (Base Hospital No. 9). Specializing by hospital allowed the concentration of various scarce specialists at these hospitals. It also ensured that a patient with a rare injury would see a doctor trained in its treatment. Finally, it allowed the physicians to learn from their experience. One hundred cases spread out over fifty hospitals would give no hospital enough experience to change their methods for more successful ones. Concentrating those cases in a single hospital allowed analysis of results and improvement in methods.⁶²

GAS CASUALTIES

The consultant for medicine specializing in gas poisoning, Lieutenant Colonel Dexter, was responsible for the care of gas casualties. There were three separate parts to his duties. First, was instruction of medical personnel in treatment of gas casualties. Circular No. 34, which described in detail treatment for the different types of gases, was distributed to every medical officer in the A. E. F. Lieutenant Colonel Dexter and his assistants gave lectures at the school for medical officers at Langres and in the divisions on gas treatment also.⁶³

⁶²*Report of the Surgeon General, 1919, 1370-71, 1387-89. Administration, A. E. F., 357-58. Base Hospital N.9. A.E.F.: A History of the Work of the New York Hospital Unit during Two Years of Active Service: Written by the Padre, (New York: Privately published, 1920), 73. On Active Service with Base Hospital 46, U.S.A., Mar. 20, 1918 to May 25, 1919, (Portland, OR: Arcady Press, 1919(?)), 61. Circulars No. 33, 35, 50, reprinted in Administration, A. E. F., 939-941, 945-948, 979-981, show the designation of certain hospitals for certain injuries. Administration, A. E. F., 629-748 provides brief histories of all the base hospitals.*

⁶³Charles E. Heller, *Chemical Warfare in World War I: The American Experience, 1917-1918*, Leavenworth Papers No. 10, (Fort Leavenworth, KS: Combat Studies Institute, United

The second duty was the establishment of special gas hospitals. In this, he worked closely with Colonel Harry L. Gilchrist, the Medical Director of the Gas Service in the A. E. F. Gas casualties, in particular, recovered better when they went to hospitals specializing in their care. These soldiers required early care and treatment for their injuries, so one field hospital in each division received augmentation to become a gas hospital. Similarly, special hospitals cared for the gas patients when they were evacuated to the rear. First Army set up five separate gas hospitals in the Meuse-Argonne offensive. Frederick Pottle described the mustard gas patients as the "most painful we had to witness in all our service." His hospital only cared for these patients in the fighting at Belleau Wood, before the establishment of the separate gas hospitals. He was grateful to care for only a few gas casualties after that engagement.⁶⁴

The third duty was to supervise the treatment of the gassed patients. This duty initiated several changes in the system. The gas hospitals were often isolated and far from the railroad, making evacuation of patients difficult. The staffs were brought together just before an operation, which prevented them from training together. Colonel Gilchrist and Lieutenant Colonel Dexter changed this, so that specific evacuation hospitals became gas hospitals and evacuated their patients to special base hospitals. They also started a program to assign each division a medical officer responsible for

States Army Command and General Staff College, 1984), 53-55. Circular No. 34 reprinted in *Administration, A. E. F.*, 941-945. *Administration, A. E. F.*, 382-85.

⁶⁴ Heller, *Chemical Warfare in World War I*, 53-55. Frederick Pottle, *Stretchers, The Story of a Hospital Unit on the Western Front*, (New Haven: Yale University Press, 1929), 117-18. *Administration, A. E. F.*, 382-85.

supervising the care of gas patients in the division. The division medical gas officers improved the care of the gas casualties in their divisions.⁶⁵

ASSESSMENT OF THE CONSULTANT SYSTEM

The consultant system proved extremely successful. The Chief Surgeon's office expanded it down to hospital centers, armies, corps, and even divisions. This helped ensure that the hospital centers and the hospitals in the zone of the advance followed the recommendations of the senior consultants. The division surgeons and other medical officers benefitted greatly from the work of the consultants. Jay W. Grissinger, in his articles for *Military Surgeon*, on his duties as 42d Division, First Corps, and Third Army surgeon spent a page discussing their "sterling worth" and "splendid service." He felt the "system...was a wise one and should by all means be perpetuated."⁶⁶

The memoirs of their time in the A. E. F. provide some insight into the consultants. One of the true characters of the group was Hugh Young. Young had helped organize Base Hospital No. 18, the Johns Hopkins Unit. He volunteered to study urological problems in the British and French systems. The Surgeon General accepted his offer and Young and three assistants travelled to Europe with General Pershing on board the *Baltic*. Interestingly, Young and his three assistants were the only ones in uniform when the ship left New York. Pershing and his party had worn civilian attire to confuse any German spies. Young had never gotten the word until Harbord accosted him on board the ship.⁶⁷

⁶⁵Heller, *Chemical Warfare in World War I*, 53-55. *Administration, A. E. F.*, 382-85.
General Order No. 144, 29 August 1918 in Historical Division, *General Orders*, 432.

⁶⁶Jay W. Grissinger, "Field Service," *Military Surgeon* 61 (November 1927): 590-91.

⁶⁷Hugh H. Young, *Hugh Young: A Surgeon's Autobiography*, (New York: Harcourt, Brace and Co., 1940), 264-69.

He recovered from that awkward beginning and gave Pershing and his staff several "terrifying" lectures on venereal disease. Pershing attached great importance to combatting venereal diseases, as they had caused many problems on his expedition into Mexico. From this briefing, Young received Pershing's backing to do all he saw fit to prevent this scourge from destroying the health of the force. Young instituted a policy of treatment at the unit rather than in hospital, coupled with a vigorous program of education, condom distribution, and prophylaxis (irrigation of the penis with an antiseptic solution after a soldier had had sexual intercourse). Young dealt with the venereal problem effectively, but with humor. When questioned by a Regular Army Medical Corps Colonel as to what he was there for, Young replied, "To keep the underworld safe for democracy."⁶⁸

A good-natured rivalry existed between the consultants. Each one had a mess at the headquarters at Neufchateau. Young recalled that many of the younger men dined at his rather than eat at Finney's, who was the son of a minister, or Goldthwait's, who had vigorous prayers before and after the meal. Crile and Cushing also had a rivalry. Cushing was known for his slow, meticulous surgery. Crile recalled visiting a hospital where Cushing was operating and having the younger men complain that Cushing's deliberateness was too slow for battle conditions. Crile told them simply to let Cushing operate at his own pace, but that they needed to keep up with the rest of the cases, in essence ignoring their chief.⁶⁹

The consultants provided important services for the doctors throughout the A. E. F. Crile performed important work on shock, transfusion, and

⁶⁸Young, *Hugh Young*, 270-79, 281. Harbord, *The American Army in France*, 71, 73.

⁶⁹George W. Crile, *An Autobiography*, edited with sidelights by Grace Crile, 2 Vol., (Philadelphia and New York: Lippincott, 1947), 285. Young, *Hugh Young*, 270-79, 323-24.

surgical infections that saved many lives. Longcope and Thayer worked on the influenza problem. The work in venereal disease by Young kept the rate for the A. E. F well below that of any of the other Allies. The concentration of all the specialists together at Neufchateau allowed a fertile exchange of ideas and solutions that benefitted all. Perhaps the best proof of the success of the organization is that consultants in various specialties are still in use in 1991. Clearly, only a successful system survives that many changes.

HOSPITAL UNITS FOR THE A. E. F.

The chief of the Hospitalization Division had to provide medical care for the vast numbers of arriving troops with the hospital units available. The early organization of base hospital units by the Red Cross allowed these units to get to France rapidly. Of the twenty hospitals organized in 1916, ten went to France in 1917. Of the eleven organized in 1917 from January to April, eight went overseas in 1917. In contrast, one evacuation hospital reached France in December 1917. This hospital was organized in October 1917.⁷⁰

Some problems did occur in mobilizing the Red Cross hospitals. First, these were purely civilian organizations and did not always adapt rapidly to the demands of military life. They had no prior knowledge of Army procedure, so that they did not know how to requisition equipment and other necessities. The lack of a specific medical mobilization camp also handicapped hospital mobilization. The units did overcome these problems and, as shown, did get overseas rapidly.⁷¹

⁷⁰Center of Military History, United States Army, Order of Battle of the United States Land Forces in the World War. Zone of the Interior: Directory of Troops, Volume 3, Part 3 (Washington, D. C.: U.S. Government Printing Office, 1949), facsimile reprint (Washington, D. C.: U.S. Government Printing Office, 1988), 1429-55.

⁷¹*The Surgeon General's Office*, 326.

Despite the rapid arrival of base hospital units into France, the number remained woefully inadequate. The estimates based on British and French experience required hospital beds equal to 15 per cent of the troops. American estimates were higher, because the Allies could evacuate convalescent soldiers home, while the Americans had to remain in theater. The section on the Personnel Division covers the shortage in personnel and units that severely hampered medical care. The Surgeon General's Office and the Chief Surgeon's office made adjustments with the material that they had on hand. Because the Red Cross Base Hospitals arrived early in France, most of the adaptation involved these units.⁷²

First, all the base and evacuation hospitals, which had originally had 500 beds, expanded to 1000 beds. This expansion increased the number of medical officers to 35 from 26, the nurses from 65 to 100, and the enlisted men from 150 to 200. Only some of the base hospitals received these additional personnel, most of those that did got them from the Red Cross Hospital Units, which were raised in much the same manner as the base hospitals, but from smaller hospitals that could not raise a larger unit.⁷³

HOSPITAL FACILITIES FOR THE A. E. F.

A second problem was where to put these hospitals. The French and British had taken over any suitable hospital building in the years of fighting before the Americans arrived. Wadhams had to work closely with the French before the troops arrived to find any buildings that the Army could convert into hospitals and to construct new hospitals when no acceptable facility was

⁷²Historical Division, *Reports*, 400-01.

⁷³*The Surgeon General's Office*, 99-100, 326. Wadhams and Tuttle, "Early Problems," 659-60.

available. He travelled around France with Colonel Castelli of the French Army to decide which French hospitals could be turned over to the Americans. When Bradley arrived in France, he made the same trip to assess hospitalization. The Hospitalization Division estimated that a force of 500,000 men would require 125,000 beds. General Pershing initially authorized 73,000 hospital beds for a force of 300, 000. The French *Service de Santé* transferred hospitals with 6,250 beds by 20 September 1917. Construction started on the new hospitals, with 40,000 beds planned for the Intermediate Section, 20,000 in the Base Section and the rest in the Advance Section.⁷⁴

Because new construction took about six months to become available, the Medical Department took over hotels and other buildings and turned them into hospitals. Many of these buildings required extensive alterations as well. Hotels, especially, created difficulties because they had numerous halls, small rooms, and many stairs. The Americans and the French completed the alterations more quickly than they could construct new hospitals. Complicating the construction was a lack of adequate building materials overseas, so most of the building materials came from the United States. Tuttle performed the important task of designing the plan for the barracks hospitals constructed. He designed two different types of hospitals. Type A was a 1000 bed (expandable to 2000) base hospital, while type B was a 300 bed (also able to be doubled) camp hospital.⁷⁵

⁷⁴Letter, W. D. Conner to Chief, French Military Mission, A.S.G.S., 1 November 1917 reprinted in *Administration, A. E. F.*, 299-300. Historical Division, *Reports*, 384-85. Wadhams and Tuttle, "Early Problems," 656-57.

⁷⁵*Administration, A. E. F.*, 251-280. Wadhams and Tuttle, "Early Problems," 656-59. *Report of the Surgeon General, 1919*, 1338-39.

The shortage of adequate hospital buildings plagued the A. E. F. throughout the war. In February 1918, there were six combat divisions in France and approximately 250,000 American soldiers. At this time, there were 11,000 normal (non-emergency) hospital beds with approximately 5000 patients in hospital. The Hospitalization Division had ordered over 73,000 beds built by this time. The situation became so bad that Pershing wrote a letter to Premier Georges Clemenceau on 16 August 1918, requesting his assistance in getting suitable hospital buildings for the influx of troops for the upcoming offensives.⁷⁶ The construction program simply took too long to build sufficient hospitals given the short time allowed.⁷⁷

SHORTAGE OF HOSPITAL BEDS

There were three reasons that there were barely adequate numbers of hospital beds in France for the A. E. F. First was the inability to get sufficient hospital units over to Europe because of the priority schedule on shipping. Second, the sanitary estimate was too low. Finally, hospital construction progressed too slowly. Table 3 shows the increase in normal beds, emergency beds, and beds occupied during 1918 from the end of month totals. Emergency beds were hospital beds set up in tents, hallways, and anywhere else a bed could fit; they had minimal nursing care available. As the war progressed and the casualties mounted, the medical planners became increasingly anxious. McCaw, in his report after the war states,

Had hostilities continued much longer and casualties occurred at the same rate, the American Expeditionary Forces would have been confronted with the situation of having on its hands more patients than could possibly been hospitalized.⁷⁸

⁷⁶Reprinted in *Administration, A. E. F.*, 280.

⁷⁷Wadhams and Tuttle, "Early Problems," 656-59.

⁷⁸*Report of the Surgeon General, 1919*, 1453.

Date	Total Beds	Normal Beds	Emergency Beds	Beds Occupied
Jan 1918	9,377	9,377	0	5,091
Feb 1918	10,694	10,694	0	4,960
Mar 1918	22,125	22,125	0	10,723
Apr 1918	28,090	28,090	0	11,115
May 1918	37,086	33,077	4,009	15,336
Jun 1918	42,815	39,713	3,102	22,905
Jul 1918	75,793	58,687	17,106	42,470
Aug 1918	102,144	90,204	11,940	54,485
Sep 1918	148,596	110,953	37,643	79,580
Oct 1918	221,421	166,534	54,887	163,767
Nov 1918	233,092	171,830	61,262	169,235

Table 3: Hospital Beds in the A. E. F.⁷⁹

Figure 3, which charts the weekly hospital bed statistics, shows the role played by the emergency beds more clearly than the end of month statistics in Table 3. By 10 October, there were more patients in hospitals than the normal bed capacity. There were approximately 20,000 more patients than normal hospital beds by 23 October. Base hospitals in particular had only emergency beds vacant. On 31 October 1918, there were 163,767 beds occupied. At this time, there were only 166,534 normal beds available. Slightly wounded and convalescing soldiers filled 32,278 emergency beds which gave the Medical Department 35,045 empty normal beds to continue giving quality medical care. As Table 4 shows, these empty normal beds were concentrated in the Advance Section by overloading the

⁷⁹*Report of the Surgeon General, 1919, 1450.*

Base Sections. This provided the most vacant beds for the battle casualties who were the patients needing the most acute care.⁸⁰

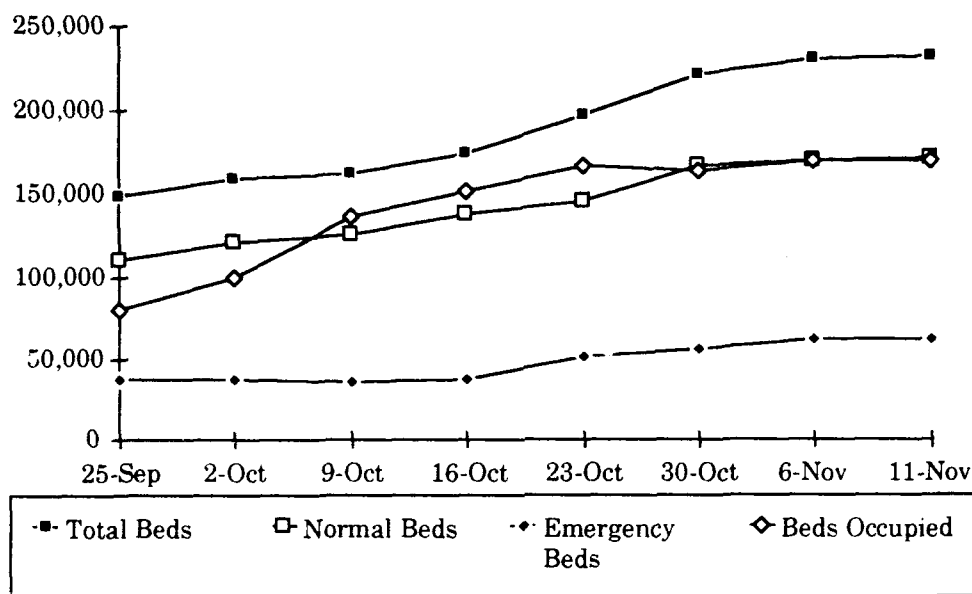


Figure 3: Hospital Beds in the A. E. F., September to November 1918⁸¹

The situation worsened starting in September from a combination of two factors. The Allies had started their offensives, with the Americans reducing the Saint Mihiel salient. In October and November was the Meuse-Argonne offensive, the largest of the war for the Americans. Offensive operations resulted in large numbers of casualties. At the same time, the influenza epidemic swept through the A. E. F. Thousands of soldiers became ill; many required hospitalization. Disease stressed the system that barely coped with the battle casualties. The system of emergency beds and the

⁸⁰Report of the Surgeon General, 1919, 1450. Administration, A. E. F., 312-313. Hagood. The Services of Supply, 344-345.

⁸¹Report of the Surgeon General, 1919, 1450. Administration, A. E. F., 312-313. Hagood. The Services of Supply, 344-345.

hospital staffs working twelve to eighteen hour shifts enabled the Medical Department to cope.⁸²

	Occupied		Vacant		Normal		Emergency	
	Base	Camp	Base	Camp	Base	Camp	Base	Camp
Advance Section	22,521	3,425	20,463	2,622	42,472	5,616	58,050	6,411
Intermediate Section	69,802	6,226	5,198	2,360	52,624	7,527	98,993	7,709
District of Paris	11,683	0	677	0	8,306	0	12,498	0
Base Section Total	49,770	6,878	5,196	2,818	43,974	9,339	61,215	9,388
Totals	153,776	16,529	31,534	7,800	147,376	22,482	230,756	23,508

Table 4: Hospital bed status on 7 November 1918⁸³

The actual numbers of beds tell only part of the story. The hospitals expanded well beyond their normal capacity to provide the normal and emergency beds listed. With no additions to the staff, and with teams sent off to the front, the normal beds were terribly understaffed. For example, Base Hospital No. 6 expanded to a normal capacity of 3,000 beds. The most patients at any one time was 4,319 at the armistice. Base Hospital No. 19 had 3,629 normal beds and 485 emergency ones scattered in twenty-two separate hotels.⁸⁴

⁸²*Report of the Surgeon General, 1919*, 1453. *Administration, A. E. F.*, 312-313.

⁸³From *Administration, A. E. F.*, 314. The emergency capacity includes normal beds.

⁸⁴[George Clymer], ed., *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*, (Boston: Privately published, 1924), 8. John M. Swan and Mark Heath, *A History of United States Army Base Hospital No. 19, American Expeditionary Forces, Vichy, France APO 781*, (Rochester: Wegman Walsh Press, Inc., 1922), 54-55.

HOSPITAL CENTERS

One important addition was the creation of the hospital center. As has been shown, medical personnel were in extremely short supply throughout the war. It became obvious that hospitals would have to expand quickly their capacities to meet peak patient loads. Wadhams and Tuttle realized that this expansion would have to occur without any major increase in personnel. Therefore, they decided to group the base hospitals together in hospital centers. This allowed a reduction in the number of administrative personnel as duties could be shared, as well as decreasing overhead. Combining two to twenty base hospitals with a convalescent camp meant that the hospitals could rapidly move their convalescent patients out of acute-care beds and have these patients available to help with non-technical work.⁸⁵

AUGMENTATION FROM THE BASE HOSPITALS

The Hospitalization Division had problems in staffing many of its hospitals, as well. The main source of manpower available to the Chief Surgeon was the Red Cross Base Hospitals. These were often broken up to staff the camp and other hospitals that formed overseas without assigned personnel. At one time, Base Hospital No. 34 had virtually ceased to exist; its personnel were serving in eleven separate camp hospitals. Adequate numbers of casual medical personnel did not start to arrive until October 1918. Until then, the base hospitals filled in. The number of the different types of hospitals in France in July 1918, when the Allies began their

⁸⁵*Report of the Surgeon General, 1919, 1340-41. Historical Division, Reports, 419. Administration, A. E. F., 253-57.*

offensive, demonstrates the importance of the Red Cross Units. Of the forty-two base hospitals overseas, thirty-six were Red Cross units.⁸⁶

The officers, nurses, and men to form the mobile hospitals also came from the base hospitals. The mobile hospital was a formation adapted from the French and British. Because it was not on the Army Tables of Organization, its staff had to come from units already in theater. Five of the first six mobile hospitals received their staff from base hospitals serving with the British. Thus, Base Hospital No. 2 staffed Mobile Hospital No. 2; Base Hospital No. 4 staffed Mobile Hospital No. 5; Base Hospital No. 5 staffed Mobile Hospital No. 6; Base Hospital No. 10 staffed Mobile Hospital No. 8; and Base Hospital No. 21 staffed Mobile Hospital No. 4. The section on organization of medical support will discuss the role of these units, but the Hospitalization Division could never have formed them without the base hospitals in France.⁸⁷

SURGICAL TEAMS FROM THE BASE HOSPITALS

The base hospitals provided the personnel for other shortfalls. By July 1918, only eight of the fifty-two evacuation hospitals called for by doctrine had arrived in France. These hospitals represented the first medical units behind the division and provided most of the life-saving surgery and shock treatment. The Medical Department, A. E. F. made up this shortfall by using

⁸⁶*Report of the Surgeon General, 1919*, 1340-41. Historical Division, *Reports*, 419, *Administration, A. E. F.*, 253-57. [Pitts, Edmund M., William T. Bauer, and Malcolm G. Sausser], *Base Hospital 34 in the World War*, (Philadelphia: Lyon and Armor, 1922), 27-28. *The Surgeon General's Office*, 102.

⁸⁷Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 402-03. Crile, *Autobiography*, 348. U.S. Army, A.E.F. Base Hospital No. 4, *Album de la Guerre*, (Cleveland: Scientific Illustrating Studios, 1919), 19-24. U.S. Army, A.E.F. Base Hospital No. 10, *History of the Pennsylvania Hospital Unit 'Base Hospital No. 10, U.S.A.' in the Great War*, (New York: P. B. Hoebner, 1921), 94-95. Historical Division, *General Orders*, 313-14.

professional teams to augment the evacuation hospitals. The idea for these teams came from the French who had depended on similar teams to reinforce the areas of heaviest casualties. The vast majority of surgeons, nurses, and men came from the base hospitals. Table 5 shows the degree that the base hospitals provided soldiers for these teams. The table is misleading, because approximately 200 teams from the base hospitals did most of the work.⁸⁸

Professional Service Teams as of 31 December 1918

		Total Personnel
Operating Teams from Base Hospitals	244	1,708
Operating Teams, Casual	95	475
Splint Teams	30	90
Shock Teams	78	390
Totals	447	2,662

Table 5: Professional Services Teams in the A. E. F.⁸⁹

These teams markedly increased the capabilities of the evacuation hospitals. Evacuation Hospital No. 6 had twenty-nine different professional teams attached at various times to augment the four surgical teams it had of its own. The hospital's original roster included twenty-one officers, twenty-four nurses and 179 soldiers. During the war it had over one hundred others attached to carry out its mission. Evacuation Hospital No. 15 kept thirteen operating tables busy during the Meuse-Argonne offensive with the nine surgical, splint, and emergency treatment teams attached to it.⁹⁰

⁸⁸*Report of the Surgeon General, 1919, 1487. Historical Division, Reports, 417.*

⁸⁹*From Report of the Surgeon General, 1919, 1487, and Historical Division, Reports, 417.*

⁹⁰*The History of Evacuation Hospital Number Six United States Army 1917-1919, (Poughkeepsie, N. Y.: Privately published, 1931), 18, 38. Walter J. Bachman, Souvenir Roster and History of Evacuation Hospital No. 15 with The Story of Verdun and the Argonne Drive, (Privately published, 1919), 29-30.*

The consultant for General Surgery sent a letter to all base hospitals requiring them to organize two surgical teams each. These teams had a surgeon, an assistant, two nurses, and two orderlies. The demand for these teams was great. A 30 July memorandum from the Chief Surgeon, A. E. F. to the A. C. S., G-4 complained that the base hospitals lost their surgical staff just when the demand for its services was greatest. Base Hospital No. 18, for example, had only one surgeon for over a month during the late summer and early fall of 1918. That these hospitals continued to function well is a tribute to the spirit and ability of their staffs.⁹¹

ORGANIZATION OF MEDICAL SUPPORT

Support doctrine divided the campaign theater into three zones, the zone of the advance, the intermediate zone, and the zone of the lines of communication. The *Field Service Regulations* of 1914 established the medical organization in the zone of the advance. The regulations list three missions for the "Sanitary Service." These were instituting sanitary measures to prevent disease, temporary care of the sick and wounded and their transportation to the line of communication, and medical supply.⁹² The regulations divide personnel into two groups: those assigned to the regiments or smaller units and those assigned to the sanitary train. (See Figure 4.) The soldiers assigned to the regiments and smaller units accompanied their units into combat and were commanded by the unit commander. Those assigned to the sanitary train worked for the division surgeon, who worked directly for the division commander. Personnel assigned to the regiments helped the unit

⁹¹*Report of the Surgeon General, 1919*, 1291. *History of Base Hospital No. 18*, 21, 99-100.

⁹²War Department, *Field Service Regulations, United States Army 1914*. Washington, D.C.: Government Printing Office, 1914). 136-143.

commanders fulfill their responsibilities for the enforcement of sanitary regulations and the maintenance of sanitary conditions in their commands.⁹³

CARE AT REGIMENTAL MEDICAL LEVEL AND BELOW

The doctrine can be understood best by tracing the wounded through the medical system in the zone of the advance. Medical care started with the individual soldier. He carried a first-aid packet to use on himself or his comrades. The sanitary detachments next came to the aid of the wounded to apply bandages and splints for first aid and administer stimulants. The sanitary personnel carried the wounded to the regimental aid station where they received emergency medical treatment. The regimental aid station provided little more than an collection point for the wounded. The regimental surgeon or other responsible officer performed triage here. This enabled the ambulances to take the patient directly to the appropriate hospital. The regimental aid station functioned under two major constraints. First, the regimental combat trains carried a limited amount of matériel, so the aid station had only limited supplies. Second, the aid station had to move with its regiment; if it got involved in providing long and detailed care, it could not move. The aid station personnel divided the patients into three groups, the slightly wounded who returned to the line, the ambulatory who went to the station for the slightly wounded, and the litter patients who were carried to dressing stations by litter bearers from the sanitary train.⁹⁴

⁹³Ibid., 138. United States War Department, *Manual for the Medical Department, United States Army, 1916. Corrected to June 15, 1918*, (Washington, D.C.: Government Printing Office, 1918), 201-205.

⁹⁴*Field Service Regulations*, 138. *Medical Department Manual*, 205-07.15.

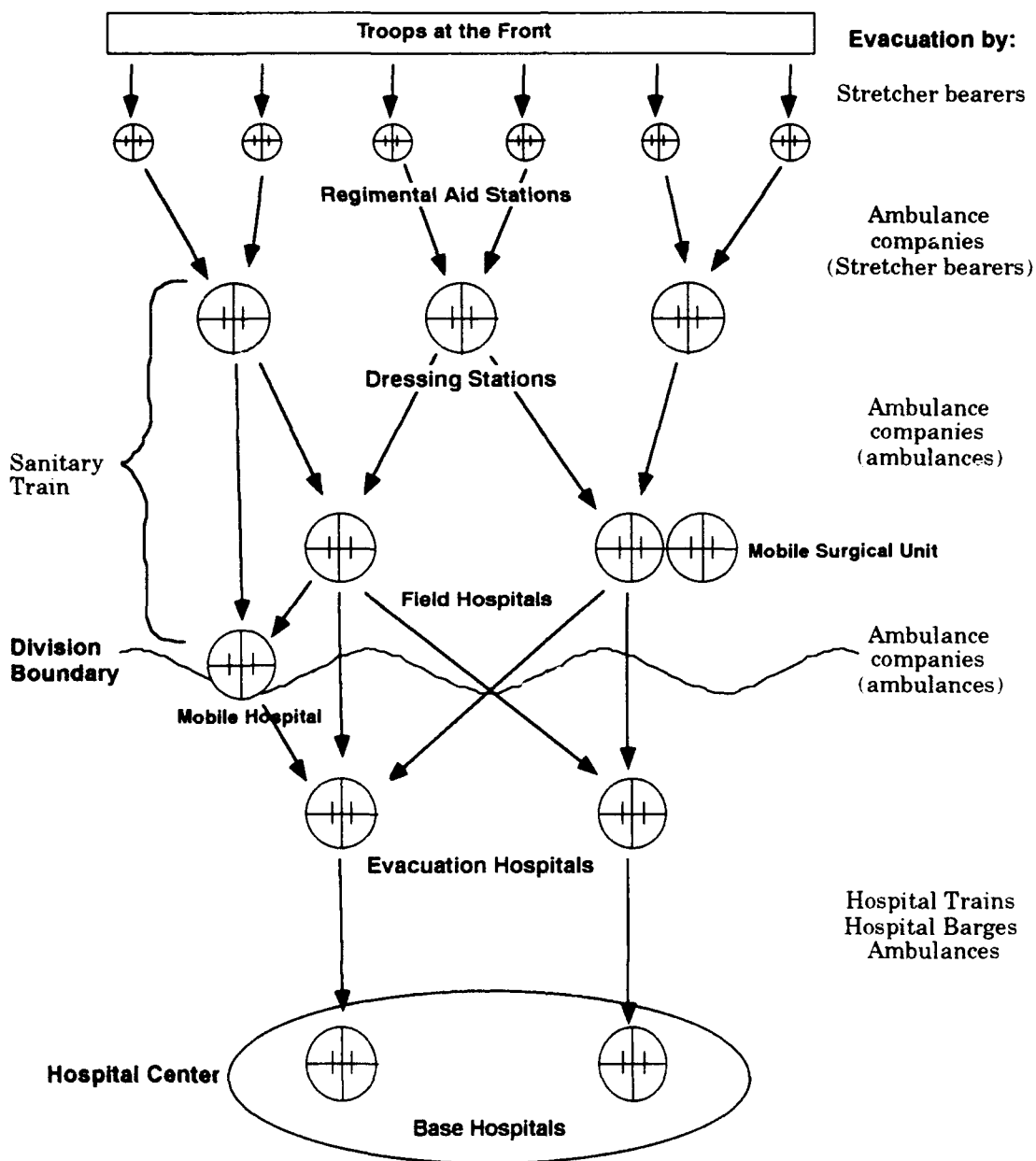


Figure 4: The evacuation system from the front line to the base hospitals

There was a constant shortage of personnel at the regimental level. This occurred as much from a shortage in the Table of Organization as from failure to fill slots. The regimental medical detachment had only fifty-five officers and men to care for the 3,600 men in the regiment. With this small

number, the medical detachment needed to evacuate the wounded to the aid station, apply dressings and splints and prepare the patient for further evacuation. The two litter-bearers assigned to each company were clearly too few for the casualties expected. To make up for this shortage, many of the corps and divisions ordered eight to twelve infantrymen be taken from each rifle company to serve as litter-bearers. Heavy bombardment, such as during the German offensive at the second battle of the Marne, worsened this shortage because the long distance back to the ambulances meant more men had to be carried and the litter-bearers tired more readily.⁹⁵

DIVISIONAL MEDICAL CARE

Ambulance companies established dressing stations to the immediate rear of the regimental aid stations. They evacuated the patients from the dressing stations to the field hospitals. In camp, they supplied the equipment for the infirmary service. At the dressing stations, the wounded received nourishments, stimulants, new dressings, and emergency surgery. The ambulance companies then transported these patients back to field hospitals. The dressing stations were from the sanitary train and came under the division surgeon and not the regimental commander. They remained mobile and close to the regimental aid stations that they supported.⁹⁶

The field hospitals, located three to four miles from the front lines, were the next portion of the sanitary train. They provided protection from the elements and more complicated treatment than the dressing stations or aid stations. They were not as mobile as the dressing stations for they might

⁹⁵Rhoads, "Principles of Evacuation, I., 132-133. T. L. Rhoads, "Principles of Evacuation, II. Division Evacuation," *Military Surgeon* 54 (March 1924) 296-300. *Field Operations*, 105-110.

⁹⁶*Field Service Regulations*, 138-39. *Medical Department Manual*, 207-14.

have to hold on to patients for some time and had several tents. The field hospital needed to move with its division, so it depended on the ambulance companies to keep it from getting overloaded with patients. The average field hospital with a capacity of 216 patients provided stabilization and life-saving intervention to enable further safe evacuation of the wounded. It was the final medical unit assigned to the division.⁹⁷

The field hospitals had changed from the demands of trench warfare. Many of these changes resulted from studying the French and British medical systems. It soon became apparent that gas victims did best when they went to a hospital that specialized in treating them. One of the field hospitals acquired gas treatment teams and specialized in treatment of gas casualties. Similarly, if the field hospitals acquired patients who were too sick to transport, they could not move with their division. So, a second field hospital received a new unit, the mobile surgical unit. This unit contained extra bedding, sterilization, X-ray, and surgical equipment. It allowed the hospital to which it was attached to treat the patients who were too severely injured to be evacuated. The other two field hospitals did not change, but were better able to respond to battlefield conditions as they no longer had the burdens of non-transportable or gas patients.⁹⁸

The mobile hospital filled the gap between the field hospitals and the evacuation hospitals. The evacuation hospitals needed to be near a railhead, because they had to evacuate rapidly the stabilized patients or they would quickly overload. Unfortunately, often the field hospitals were a long distance from the railheads. The French developed the *Auto-chir* or mobile

⁹⁷*Field Service Regulations*, 138-39. *Medical Department Manual*, 211-15.

⁹⁸*Report of the Surgeon General, 1912*, 1464-68. Historical Division, *Reports*, 418-19. *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 659-61.

hospital, which treated those patients that were beyond the capabilities of the field hospitals, but could not survive a long ambulance ride to the evacuation hospital. The A. E. F. created twelve of these units, which were under the control of the army surgeon. They were completely transportable and could be set up or taken down in only a few hours. These units gave the army or corps surgeon the ability to adjust on short notice the treatment capabilities in a division's sector to meet the changing demands of combat.⁹⁹

CARE BEHIND THE DIVISION

Behind the Zone of the Advance lay the Lines of Communications. (See Figure 5) The Lines of Communications contained an advance section, a base section, and, when necessary, an intermediate section. In the line of communications, the sanitary service had four missions: to provide treatment facilities for the sick and wounded, to evacuate the sick and wounded, to provide medical supply, and to provide preventive medicine services and sanitary conditions.¹⁰⁰

EVACUATION HOSPITALS

Closest to the front were the evacuation hospitals. Doctrine assigned each division in the advance section, two evacuation hospitals and one evacuation ambulance company. Their mission was to receive the patients from the field hospitals, freeing them so they could move with the division. The evacuation hospital provided emergency surgery and stabilization for the

⁹⁹*Report of the Surgeon General, 1919*, 1465. Historical Division, *Reports*, 418-19. *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 660. Historical Division, *General Orders*, 313-14.

¹⁰⁰*Medical Department Manual*, 224.

wounded with a capacity of 432 patients. It evacuated its patients as soon as practical to avoid getting overloaded.¹⁰¹

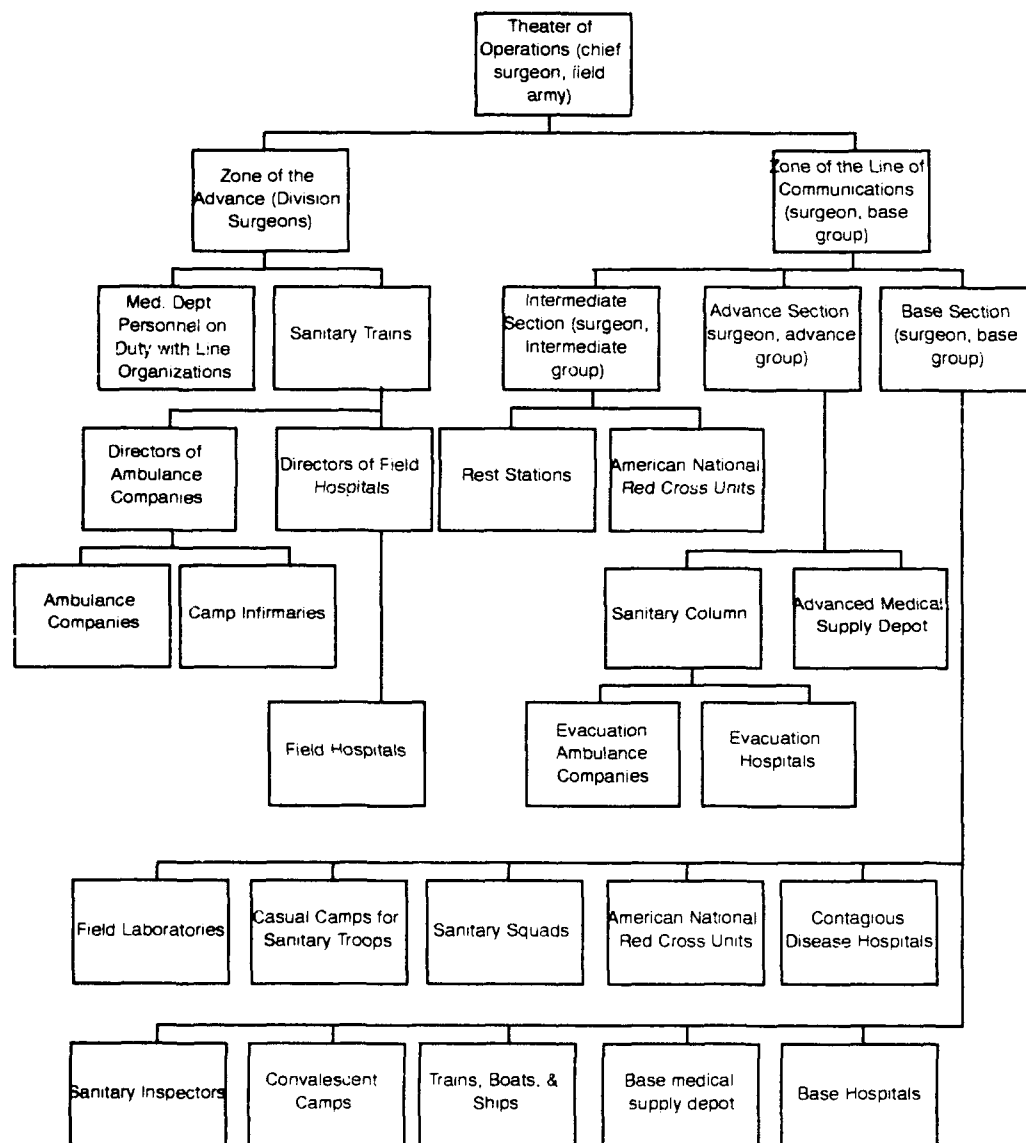


Figure 5: Organization of the Medical Department–Theater of Operations¹⁰²

The evacuation hospitals were the mainstay of resuscitation and initial treatment for the combat soldiers, serving as important relay stations

¹⁰¹*Medical Department Manual*, 231-32.

¹⁰²Based on *Field Service Regulations*, 138-39, and *Medical Department Manual*, 207 14.

between front-line and base hospitals. Under the original doctrine, these hospitals belonged to the L. O. C.. This meant that they could not respond as readily to the demands of the line. The attitude of many of the line officers worsened this problem as they felt that medical units did not need to know of upcoming combat operations. To make the evacuation hospitals more responsive to the combat unit's needs, the Chief Surgeon had the commander-in-chief reassign them to the armies. This allowed the closer coordination necessary for them to function best.¹⁰³

BASE HOSPITALS

The evacuation hospitals sent patients back to the base hospitals. The base hospitals had a capacity of 500 patients. The Army planned for one base hospital for each 20,000 soldiers.¹⁰⁴ Base hospitals performed definitive treatment, having the necessary specialists and nursing staff. The only patients sent further to the rear from the base hospitals were those requiring specialty care not available and those permanently disabled. When required by the tactical situation, base hospitals could function as evacuation hospitals, evacuating to base hospitals further back to make room for new patients.¹⁰⁵

The hospitals in the Justice Hospital Center at Toul all served as evacuation hospitals during the St. Mihiel offensive of September 1918. The hospital center at Bazoilles, approximately 60 miles behind the lines during September and October 1918, filled a similar role. The shortage of evacuation hospitals forced these hospitals to modify their care. During September and

¹⁰³*Report of the Surgeon General, 1919, 1466. Administration, A. E. F., 285.*

¹⁰⁴Munson, "Red Cross," 200.

¹⁰⁵*Medical Department Manual, 225-27.*

October 1918, these hospitals evacuated 16,552 and 31,777 patients, respectively, to base hospitals in the intermediate and base sections.¹⁰⁶

PATIENT EVACUATION

The Hospitalization Division also had responsibility for the evacuation of the sick and wounded. The evacuation system also evolved over the course of the war. It suffered under the same constraints of lack of personnel and equipment that the rest of the Medical Department dealt with. Although evacuation tended to follow doctrine when possible, the shortages of trained medical officers, nurses, and soldiers forced changes on doctrine. These changes occurred at every level of the organization. Other changes resulted, because each division surgeon interpreted the *Manual for the Medical Department* and the *Field Service Regulations* differently. Methods sometimes differed from regiment to regiment in a division.¹⁰⁷

From the aid station, the ambulance company of the sanitary train evacuated the patients. To speed evacuation, the company would establish an ambulance head only 800 to 1,500 yards behind the front line, where a small number of ambulances would wait for wounded. When conditions allowed, these ambulances might even come up to the battalion aid stations to remove patients and spare the litter-bearers. The 30th Regiment (Third Division) was typical in setting up its battalion aid stations where the ambulances could reach them. They found that the number of patients removed by litter doubled when the ambulances could not reach the aid stations. The rest of the ambulances would remain with the ambulance

¹⁰⁶*Field Operations*, 285. *History of Base Hospital No. 18*, 21.

¹⁰⁷T. L. Rhoads, "Principles of Evacuation, I. The Comprehensive Plan," *Military Surgeon* 54 (February 1924): 131-33. *Field Operations*, 94-95, 105-149, 251-53. Wadhams and Tuttle, "Early Problems," 654-55.

company headquarters about a mile further back. The ambulance companies in reserve waited at an ambulance park further back along the main supply route.¹⁰⁸

The divisions did not like the horse-drawn ambulances. Although the 1st Division Surgeon found that these ambulances allowed him to treat a patient in the moving ambulance and return him to duty while on the march, others did not see these advantages. The 26th Division Surgeon felt quite differently when he stated in his report, "Here was shown the uselessness of the horse-drawn as compared to motor transportation."¹⁰⁹ Jay W. Grissinger, the division surgeon for the 42d Division in the early part of the war recalled that all he had initially were twelve horse-drawn ambulances, he found them worthless, because of the distance to be covered and their slow speed. The Artillery regiments most often had the horse-drawn ambulances assigned, but all units tried to get the motorized ones when possible. This changed in the Meuse-Argonne operation. The roads became impassable behind the advancing troops and only the horse-drawn ambulances could get through to the battalion and regimental aid stations.¹¹⁰

The ambulance companies brought the patients to the field hospitals or the mobile surgical hospitals that supported the division. The mobile surgical hospitals treated the desperately wounded who could not tolerate further transportation. These patients were less than one per cent of the total number of casualties. The mobile surgical hospitals had their patients moved

¹⁰⁸Rhoads, "Division Evacuation," 296-97. *Field Operations*, 105-110.

¹⁰⁹Both reports are reprinted in part in *Field Operations*, 94-95.

¹¹⁰*Field Operations*, 94-95. Jay W. Grissinger, "Field Service," *Military Surgeon* 61 (September 1927): 306, (October 1927): 464. *Field Operations*, 594-598.

to the evacuation hospitals as soon as they were able. This freed the surgical hospital to move where it was most needed.¹¹¹

AMBULANCE EVACUATION

Doctrine called for the corps and army ambulance companies to evacuate from the field and mobile surgical hospitals. These companies were to be organized only in time of war, so none were available when the A. E. F. first deployed to France. The *Manual for the Medical Department* called for these evacuation ambulance companies to have twelve ambulances per section. Surgeon General Gorgas on the recommendation of the Chief Surgeon, A. E. F., Bradley, increased this to twenty. Winter, as surgeon for the L. O. C., argued strongly for centralized ambulance companies for this duty, rather than piece-mealing them out to the divisions and corps. He recommended the organization of the first evacuation ambulance company from the sanitary train of the 41st Division (the First Depot Division). The commander-in-chief approved the recommendation and the company formed 17 January 1918. Twenty-one evacuation ambulance companies arrived in France before the armistice out of the eighty-two organized.¹¹²

This shortage of transportation in the zone between the division hospitals and the evacuation hospitals hampered the Medical Department throughout the war. The main methods for remedying the shortfall were through pooling ambulance assets and by vigorous salvage and repair of those available. Jefferson R. Kean, in writing his report for the Military Board of Allied Supply estimated that the A. E. F. had a shortage of

¹¹¹Rhoads, "Division Evacuation," 296-97. *Field Operations*, 105-110. Historical Division, *General Orders*, 313-14.

¹¹²Rhoads, "Division Evacuation," 296-97. T. L. Rhoads, "Principles of Evacuation. III. Army Corps and Army Evacuation," *Military Surgeon* 54 (April 1924): 385-87. *Field Operations*, 207-212. *Administration, A. E. F.*, 342-46. Historical Division, *Reports*, 378-80.

ambulances of 40 per cent in April 1918, 50 per cent in September, and 20 per cent in October. Only during the last three months of the war did shipments of ambulances equal those needed. At the peak of the casualties from the Meuse-Argonne, the A. E. F. borrowed 180 ambulances from the Italians, 135 from the French, and 30 sight-seeing buses from the French.¹¹³

HOSPITAL TRAINS

Hospital trains carried the patients from the evacuation hospitals. These came under the responsibility of the Chief Surgeon, A. E. F. as they were line of communication units. However, having the Chief Surgeon as part of the Services of Supply and not at G. H. Q. meant that the trains answered to two masters. The G-4, G. H. Q. issued the instructions governing the use of hospital trains. In the zone of the armies, the medical section in the fourth section of the general staff, A. E. F. controlled the hospital trains. The regulating officers under this section assigned the trains to the regulating stations. The regulating stations sent the trains to the hospitals that needed patients evacuated. The medical officer in each regulating station ensured that the trains were ready for operation with appropriate stocks of medical supplies. The regulating officers coordinated the evacuation by trains from the zone of the armies to the base hospitals in the rear. The troop movement bureau in the Services of Supply had the job of supplying the hospital trains for evacuations within the intermediate and base sections. This dual system of control occasionally led to conflicts and was another consequence of not keeping the Chief Surgeon at G. H. Q.¹¹⁴

¹¹³*Administration, A. E. F.*, 342-47. Rhoads, "Army Corps and Army Evacuation," 386-87. *Field Operations*, 54-56, 207-12. Historical Division, *Reports*, 378-80.

¹¹⁴Letter of Instructions dated 29 August 1918, G-4, G. H. Q. reprinted in *Field Operations*, 266-67. *Administration, A. E. F.*, 317-18. *Field Operations*, 37-42, 263-66.

One of the early steps in setting up the evacuation system was acquiring hospital trains. The Medical Department rented two trains from the French in July 1917. The French had no more trains to lease to the Americans, so the A. E. F. placed orders with the British for the construction of forty eight standard hospital trains and twenty trains for sitting patients only. By the time of the armistice, the army had received nineteen trains. During the fighting at Saint Mihiel and in the Meuse-Argonne, when casualties mounted, the French leased the Americans forty-five trains and forty six trains, respectively. These trains were not specifically constructed as hospital trains, but were adapted to serve.¹¹⁵

These trains served as mobile hospitals as they moved the patients to the rear. The amount of time an injured soldier spent on a hospital train varied depending on his destination. These ranged from about five and a half hours for the evacuation from Toul to Vittel, to over thirty hours for the trip from the Argonne front to Bordeaux. Obviously, these freshly wounded men needed hospital care throughout their evacuation.¹¹⁶

The American hospital trains, constructed by the British, were marvels of traveling medical support. They could carry 360 litter patients and in emergencies, the train's staff would give their beds up for patients, increasing the number to 396. The beds were adjustable, so that each train could carry a mixture of litter and sitting patients. The usual arrangement had 120 beds and 480 seats. The trains had kitchens, offices, pharmacies, morgues, and all

Historical Division, *Reports*, 376-78. Edward M. Colie, "Notes on Hospital Train Service in the A. E. F.," *Military Surgeon* 45 (September 1919): 328-37.

¹¹⁵*Administration, A. E. F.*, 318-21. *Field Operations*, 37-42, 263-67. Wadhams and Tuttle, "Early Problems," 653-56. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

¹¹⁶*Administration, A. E. F.*, 322. *Field Operations*, 276. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

the supplies necessary to care for the men transported. Separate sections cared for infectious and gassed patients. The ability to supply quality care in route made evacuation safer and allowed the hospital centers to be dispersed throughout the country.¹¹⁷

Regulating Stations	Wounded	Sick	Gassed	Total Americans	Grand Total	Total Trains
Creil	3,726			3,726	3,726	95
Le Bourget	44,205	9,609	4,844	58,450	58,658	297
St. Dizier	95,909	80,076	20,033	191,965	196,018	529
Connantre	8,442			8,442	8,442	34
Dunkerque	4,611			4,611	4,611	16
Totals	156,893	89,685	24,877	267,194	271,455	971

Table 6: Hospital train evacuations from the front.¹¹⁸

Table 6 shows the numbers of patients evacuated by train. Each regulating station served a specific region. The one at Creil served the Soissons and Picardy area; that at Le Bourget served Chateau-Thierry; Saint Dizier served Saint Mihiel; Meuse-Argonne, and Toul; Connantre served the Champagne sector; and Dunkerque served Ypres. In addition to these evacuations, the hospital trains moved 67,821 patients from base hospitals in the advance section to other hospitals further to the rear. This peaked in October 1918, when fifty-six French and thirty-three American trains carried 31, 777 patients.¹¹⁹

¹¹⁷*Administration, A. E. F.*, 320-332. *Field Operations*, 37-42. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

¹¹⁸*Field Operations*, 283. Historical Division, *Reports*, 378.

¹¹⁹*Field Operations*, 278-85. Wadhams and Tuttle, "Early Problems," 653-56. Historical Division, *Reports*, 376-78. Colie, "Hospital Train Service," 328-37.

These numbers demonstrate the importance of the hospital trains to the smooth functioning of the medical service. In addition to trains, the A. E. F. used hospital barges, although the lack of loading docks and canals near many of the hospital centers prevented their widespread use. Without the steady and safe evacuation of the sick and wounded from the front, the evacuation and field hospitals would have rapidly filled to capacity. It also allowed the dispersion of the hospital centers throughout France and England which avoided overloading any single area. This improvised system met the challenge of the war.¹²⁰

MEDICAL SUPPLY AND LABORATORY ORGANIZATION

The base medical supply depot provided medical supply to all units in its area, both in the Line of Communications and the Zone of the Advance. It usually used an advanced medical supply depot to supply the Zone of the Advance, while the base depot supplied the evacuation hospitals, base hospitals and other units in the Line of Communications. The field medical laboratory handled laboratory services in the area.¹²¹

SUMMARY

As the Medical Department arrived in France, a number of problems confronted it. One of the most important was to establish an administrative organization that could work as part of the overall administration at General Headquarters. This situation became more complicated by the difficulties that the whole A. E. F. had in organizing the headquarters. After the

¹²⁰*Administration, A. E. F.*, 320-332. *Field Operations*, 46, 278-85. Rhoads, "Army Corps and Army Evacuation," 386-87.

¹²¹*Medical Department Manual*, 229-30.

establishment of the S. O. S. and the medical section, G-4-B at G. H. Q., a workable system developed.

The situation confronting the Medical Department in establishing its medical care system also went through some changes before arriving at a workable system. Initially, the medical units provided care according to doctrine. The necessities of war forced many changes upon the system. Most of the changes resulted from the shortages of personnel and equipment that hampered medical care throughout the war. The Red Cross base hospitals provided the trained medical personnel to overcome these deficiencies. The Allies also supplied better ways of providing medical care from their years of experience in the trenches. From them, the A. E. F. developed the mobile surgical hospital, the surgical teams, and the system of evacuation. Having studied the general picture for medical support, the next chapter will investigate in detail how the system functioned in the various combat operations.

CHAPTER 4

MEDICAL OPERATIONS

INTRODUCTION

The previous chapter looked at the A. E. F. Medical Department from an organizational and doctrinal viewpoint. It is equally important to study medical support by looking at combat operations and how the Medical Department supported them. The best way to study these operations is chronologically, because they fall naturally into three phases. The first phase began with the arrival of the first medical units and extended to May 1918. During this time, American medical units assisted in providing care to the Allied forces and to the arriving American troops in camps. The second phase started in May 1918 when American soldiers captured the town of Cantigny. Mainly defensive operations with the French characterize this period, which covers the three months until August 1918. American medical units became more involved in combat care, especially at division-level and below. The final phase deals with the Allied offensives that ended the war. During this phase the Medical Department delivered medical care in the mobile battles of St. Mihiel and the Meuse-Argonne. This period subjected American medical doctrine to its greatest test of trying to deliver supplies, evacuate patients, and treat sick and wounded over a rapidly advancing front.

PHASE ONE – MAY 1917 TO MAY 1918

The first phase began when American hospital units first arrived in France. These units were the Red Cross Base Hospitals, which the Army

rapidly mobilized and sent overseas. The first six to arrive in France took over British General Hospitals and provided hospital level care for the British. Other American hospitals arriving later in the summer of 1917, remained assigned to the American forces. They provided care in the camp hospitals, which treated the arriving Americans, and in base hospitals, which cared for sick American and sick and wounded French soldiers.¹

This phase was a time of training for the American medical forces. A field medical school at Langres transformed civilian physicians into military ones. It had courses on military aspects of medicine, such as field sanitation, the role of a sanitary train, and the *Field Service Regulations* and *Manual of the Medical Department*. It also used French and British doctors to lecture on the changes in medical care that had occurred during the war. Trips to the front to observe actual combat medicine supplemented the lectures. For many arriving American physicians, this was their first experience with techniques like triage, debridement, and wound irrigation with Carrel-Dakin (an antiseptic) solution that the Allied surgeons had invented during the war.²

HOSPITALS FOR THE BRITISH

As soon as the Congress declared war, the British sent a mission led by Arthur Balfour to the United States. When this commission met with the

¹ Charles Lynch, Joseph H. Ford, and Frank W. Weed, *The Medical Department of the United States Army in the World War, Volume VIII, Field Operations*, (Washington, D.C.: Government Printing Office, 1925) 84-86 (Hereafter referred to as *Field Operations*).

² William N. Bispham, *The Medical Department of the United States Army in the World War, Volume VII, Training*, (Washington, D.C.: Government Printing Office, 1927) 572-79 (Hereafter referred to as *Training*). Bailey K. Ashford, "The Preparation of Medical Officers of the Combat Division in France at the Theatre of Operations," *Military Surgeon* 44 (February 1919): 111-22. Harold Barclay, *A Doctor in France, 1917-1919: The Diary of Harold Barclay*, (New York: Privately printed, 1923), 46-48. Richard Derby, "Wade in Sanitary!": *The Story of a Division Surgeon in France*, (New York and London, G. P. Putnam's Sons, 1919), 6-9, 24-26. *Field Operations*, 84-85, 90-92.

Council of National Defense at the White House, 27 April 1917, Balfour grabbed the hand of Dr. Franklin Martin, excitedly, when introduced. He asked Martin, who served as the medical representative, if he worked with the enrollment of doctors in the Army. When Martin answered affirmatively, Balfour replied, "Our soldiers are in great need of doctors....My first request of your government would be—Send us Doctors." At the same time, the British requested six base hospitals and 116 other medical officers from the War Department.³

The telegrams from the Surgeon General mobilizing units went out at once. Harvey Cushing, the chief of Base Hospital No. 5, received his telegram at a meeting on 28 April 1917 where he was arguing to train his unit on the Boston Common. Base Hospital No. 5 got their training in France instead of Boston.⁴ George Crile of Base Hospital No. 4 got his the same day. He received a second telegram from Colonel Jefferson R. Kean, Director of Military Relief of the Red Cross, asking if the unit was ready to move in ten days. Eight days later Base Hospital No. 4 boarded the *Orduna* in New York and sailed for Europe.⁵ Other hospitals called up, Base Hospitals No. 2, 5, 10, 12, and 21, sailed later in May. Only one incident marred the

³Donna B. Munger, "Base Hospital 21 and the Great War," *Missouri Historical Review* 70 (April 1976): 275. Charles Lynch, Frank W. Weed, and Loy McAfee, The Medical Department of the United States Army in the World War, Volume I, *The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923) 101 (Hereafter referred to as *The Surgeon General's Office*).

⁴Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 96.

⁵George Crile, *George Crile, An Autobiography*, edited with sidelights by Grace Crile, 2 Vol. (Philadelphia and New York: Lippincott, 1947), 273-75. U.S. Army, A.E.F. Base Hospital No. 4, *Album de la Guerre*, (Cleveland: Scientific Illustrating Studios, 1919), 4-8. *The Surgeon General's Office*, 101, says that Base Hospital No. 4 sailed 5 May. Joseph H. Ford, The Medical Department of the United States Army in the World War, Volume II, *Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927) 632, claims that the *Orduna* sailed 7 May. (Hereafter referred to as *Administration, A.E.F.*).

mobilization and deployment of the medical units. Shortly after leaving New York, the *Mongolia*, carrying Base Hospital No. 12, had a gun explode while training. The fragments killed two nurses and injured others; the ship returned to New York. After repairs, it sailed uneventfully later in the month.⁶

These hospitals started work immediately upon arrival, as the British situation was desperate. On 28 May 1917, Base Hospital No. 4 took over British General Hospital No. 9, a 1,240 bed hospital with an additional 300 crisis beds, in Rouen. The Americans started treating patients that day. Similarly, Base Hospital No. 2 took over British General Hospital No. 1 at Etretat; Base Hospital No. 5 took over British General Hospital No. 13 at Boulogne; Base Hospital No. 10 took over British General Hospital No. 16 at Treport; Base Hospital No. 12 took over British General Hospital No. 18 at Camiers; and Base Hospital No. 21 took over British General Hospital No. 12 at Rouen. These hospitals arrived in Europe earlier than any other units of the A. E. F. and started right in performing their wartime mission. The formation of medical units before the war as a reserve, allowed these units to start work without a lengthy mobilization or training period.⁷

⁶*The Surgeon General's Office*, 101. Munger, "Base Hospital 21," X. Historical Division, Department of the Army, United States, United States Army in the World War, 1917-1919. Vol. 15 *Reports of Commander-in-Chief, A. E. F. Staff Sections and Services*, (Washington, D.C.: Government Printing Office, 1948), 370 (Hereafter referred to as Historical Division, *Reports*).

⁷W. C. Gorgas, *Inspection of Medical Services with American Expeditionary Forces: Confidential Report to Secretary of War*, (Washington, D.C.: Government Printing Office, 1919) 38. Crile, *Autobiography*, 273-75. U.S. Army, A.E.F. Base Hospital No. 4, *Album de la Guerre*, (Cleveland: Scientific Illustrating Studios, 1919), 4-8. Cushing *Surgeon's Journal*, 111. *History of the Pennsylvania Hospital Unit (Base Hospital No. 10, U.S.A.) in the Great War*, (New York: Paul B. Hoeber, 1921), 64. Munger, "Base Hospital 21," 280.

MEDICAL TEAMS TO THE FRONT

The British did not just use the Americans at the General Hospitals, but also sent medical teams throughout their system. Teams were first sent from the base hospitals to the front during the battle of Passchendaele. On 22 July 1917, American base hospitals sent operating teams to Casualty Clearing Stations (C. C. S.), which corresponded to the American evacuation hospital. At the C. C. S., teams operated twelve to sixteen hours a day and slept in tents. The sheer volume of patients was horrendous; Cushing describes expanding from a 200 bed hospital to a 1300 bed one in a day for the more than 2000 patients who passed through.⁸

The loss of many doctors had hurt the British medical system. During the Battle of the Somme, more than 400 surgeons were killed or wounded. Often the physicians in the C. C. S. had only the slightest of medical education, able to provide only simple stabilizing medical care before evacuation. Cushing recalled performing delicate neurosurgical procedures in a hospital where the Americans were the only ones who could use an ophthalmoscope to check the patients' eyes after surgery. The Americans vastly expanded the range of medical care available to the patients.⁹

Sir William Osler, the dean of the medical school at Oxford, showed the respect that the British had for their American counterparts. When his son, Revere, was wounded 29 August 1917, he wired Cushing, asking him to operate on his son. Although Cushing, Crile, and others struggled to save him, Revere Osler died the next day.¹⁰

⁸Cushing, *Surgeon's Journal*, 166-71. *Pennsylvania Hospital Unit*, 86, 141-58.

⁹Cushing, *Surgeon's Journal*, 166-71. *Pennsylvania Hospital Unit*, 86, 141-58. Woods Hutchinson, *The Doctor in War*. (Boston and New York: Houghton, Mifflin Company, 1918), 100.

¹⁰Cushing, *Surgeon's Journal*, 197.

FIRST DEATHS FROM ENEMY ACTION IN THE A. E. F.

One of the hazards was German night bomber raids, which attacked hospitals despite the red cross markings. Tragedy struck 4 September 1917, when the Germans struck Base Hospital No. 5 at Camiers, killing Lieutenant William T. Fitzsimmons and Privates Oscar C. Tugo, Rudolph Rubino, Jr., and Leslie G. Woods, who became the first A. E. F. casualties by enemy action. For the entire war, the A. E. F. Medical Department lost 47 officers and 314 enlisted men killed in action and another 35 officers and 206 enlisted men died of wounds¹¹.

SUMMARY: AMERICAN HOSPITALS WITH THE BRITISH

The British relied heavily on these American units. By 1917, their Medical Department was having trouble handling the massive numbers of casualties from the war. The numbers of casualties treated by the American base hospitals with the British demonstrates the heavy load of patients. Base Hospital No. 4 treated 82,179; No. 10 treated 47,811, and No. 21 treated about 60,000. These numbers do not include the numbers of patients the Americans treated at the C. C. S. or while working with British units. Overall, a daily average of approximately 800 officers, 600 nurses, and 1,100 soldiers was serving with the British.¹²

EARLY ACTIVITIES OF AMERICAN HOSPITAL UNITS

The first Base Hospitals to support the American Expeditionary Forces (Nos. 6, 8, 9, 15, 17, 18, 27, and 39), arrived in France during the summer of 1917. These hospitals were important role in the establishment of the A. E.

¹¹Cushing, *Surgeon's Journal*, 204-206. "First Casualties in the A.E.F." *Military Surgeon* 62 (March 1928): 383-84.

¹²Historical Division, *Reports*, 404. Munger, "Base Hospital 21," 287. *Pennsylvania Hospital Unit*, 64. Base Hospital No. 4, *Album de la Guerre*, 17.

F. hospitalization program. They also supplied vital personnel for the administrative changes in the chief surgeon's office. The War Department created a priority schedule that determined the shipping of units from the United States. It consisted of six phases which would together bring the units required for an army. The urgent requests from the Allies for machine gun and infantry units resulted in major changes to the schedule. The War Department required three to six months to prepare a medical unit for overseas. As a consequence, most of the medical units that arrived in France in 1917 and the first half of 1918, were ones that had been organized before the war. These fell into two groups, those medical units that made up the division sanitary trains and the Red Cross base hospitals.¹³

These hospitals provided care to the arriving A. E. F. troops. Often the Medical Department split the hospitals into teams to provide care in a variety of locations. Teams from the base hospitals staffed camp hospitals. Camp hospitals had no assigned personnel, so that their staffs came from Medical Department personnel already in France. Camp hospitals were 300 bed facilities with a crisis capacity of 500. They treated patients with minor illness. Anyone requiring more specialized care was evacuated to a base hospital. Very few ambulances were available initially, so these evacuations often used wagons or trucks. One problem that became obvious early in the war was that all the units required by the *Field Service Regulations* and *Manual for the Medical Department* need to be organized and staffed by specific units. The medical support that a combat division requires needs to

¹³Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December, 1919): 640-44. Center of Military History, United States Army, *Order of Battle of the United States Land Forces in the World War, Zone of the Interior: Directory of Troops, Volume 3, Part 3* (Washington, D. C.: U.S. Government Printing Office, 1949) facsimile reprint (Washington, D. C.: U.S. Government Printing Office, 1988), 1429-55. *Field Operations*, 17-18.

accompany it overseas. The failure to send the camp hospitals and ambulance companies with the divisions increased the burdens on the hospitals in France.¹⁴

The base hospitals positioned themselves in buildings supplied by the French. During the fall and winter of 1917, the hospitals adapted to the new conditions in France and prepared for the increased combat that followed. The workload tended to be light. It was not until December 1917, that Base Hospital No. 9, with a capacity of 500 beds, averaged more than 100 patients in hospital.¹⁵

MEDICAL TRAINING

The hospitals and the sanitary trains of the divisions instituted training programs, not always popular or practical. Teams went to the British and French sectors to observe the care given by the Allies. Howard Barclay, of Base Hospital No. 15, gave a class on "Demography in so far as it relates to the vital statistics of the Army;" it was, unfortunately, typical of the classes given in his unit. Not all the doctors had such worthless training. Richard Derby, who served with the Second Division, took the two-week medical officer course at Langres under Colonel Bailey K. Ashford. He noted that the course was excellent, with lectures presented by the best French doctors in their specialties.¹⁶

¹⁴*Field Operations*, 86-87.

¹⁵ [George Clymer], ed., *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*, (Boston: Privately published, 1924), 8-10. *Base Hospital N.9, A.E.F.: A History of the Work of the New York Hospital Unit during Two Years of Active Service: Written by the Padre*, (New York: Privately published, 1920), 149. *History of Base Hospital No. 18, American Expeditionary Forces*, (Baltimore: Base Hospital No. 18 Association, 1919), 15-17.

¹⁶*Training*, 572-79. *Field Operations*, 90-92. Barclay, *A Doctor in France*, 46-48. Derby, "Wade in Sanitary!", 6-9, 24-26. Ashford, "Preparation of Medical Officers," 111-22.

EARLY COMBAT OPERATIONS

The first combat operations that American troops carried out involved training in the front-line trenches with the French at the end of 1917 and early in 1918. The First Division entered the trenches in October 1917. Although there was a marked shortage of hospital units in general and evacuation hospitals in particular, the low level of combat led to minimal casualties that were easily handled by the evacuation hospitals supplemented by base hospitals. For example, the First Division Field Hospital No. 13 evacuated directly to Base Hospital No. 18 at Bazoilles-sur-Meuse. Especially in the Toul, Luneville, and Baccarat sectors, where American troops trained, most of the hospitals turned over by the French came with equipment, so the Medical Department needed only to staff them.¹⁷

Where American hospitals were not available, the wounded went to French hospitals. Having Americans in French hospitals, not cared for by Americans proved unsatisfactory. The French hospital trains were "wretchedly equipped" and misunderstandings from the differences in language often created dissatisfaction with the medical care. The French hospital trains scattered the Americans throughout France and the Medical Department spent much time and effort to bring these patients back to American facilities.¹⁸

The American divisions went up to the line according to schedule. This allowed the medical staff at G. H. Q. to anticipate hospitalization requirements and to assign adequate evacuation and mobile hospitals and evacuation ambulance companies. This changed drastically in March 1918,

¹⁷War Department, *Report of the Surgeon General, 1919*, (Washington, D. C.: Government Printing Office, 1919), 1458-59, 1469-71. *Field Operations*, 291-95.

¹⁸*Report of the Surgeon General, 1919*, 1458-59, 1469-71. *Field Operations*, 291-95.

when the Germans started their spring offensive. As the German advance threatened the French and the British lines, American units took positions in the trenches on short notice. The first action that involved significant American hospitalization was the 26th Division at Seicheprey on 20 April 1918. There were over 650 casualties triaged, which the system handled without problem. The only problem noted was a shortage of litter bearers.¹⁹

When the 26th Division went into the trenches near Seicheprey, its hospitalization fell to the French. The only American hospital nearby was the old *Ambulance Americaine*, now renamed Red Cross Military Hospital No. 1. The French agreed to send wounded Americans there. This was technically a French hospital, so the French fulfilled their responsibility to provide hospitalization for the Americans serving with them, while allowing the American patients to go to an American-staffed hospital. The American demand to hospitalize all their countrymen remained a source of friction between the two medical staffs until the Americans received their own sector.²⁰

This marked the end of the first phase in the American medical operations. It was characterized by easily planned treatment rendered from fixed facilities to soldiers in camp or in defensive positions in trenches. This time proved invaluable to the Medical Department. It enabled the medical units to train in military subjects and to learn first hand the demands of combat care without getting overwhelmed. These experiences provided a foundation for the more demanding medical challenges ahead.

¹⁹Report of the Surgeon General, 1919, 1469-71, 1580-81.

²⁰Report of the Surgeon General, 1919, 1458-59, 1469-71. *Field Operations*, 986-87.

PHASE TWO – MAY TO AUGUST 1918

The German Spring Offensive in 1918 severely strained the Allied forces. The situation became so desperate that American units fought into active sectors as part of the French armies. This second phase involved providing medical care to the divisions in their operations with the French. The combat operations that make up the second phase are the Cantigny, Aisne, and Aisne-Marne Operations.

The first major engagement that American troops fought was the attack on Cantigny. In that battle, a reinforced regiment of the First Division captured the town of Cantigny and held it against German counterattacks as part of the French Sixth Corps. There was no American hospitalization in the area, so responsibility for the American forces fell to the French. Despite, this arrangement in the orders, the American Medical Department, felt uneasy about trusting the evacuation and care of the wounded to the Allies. They proposed setting up an American evacuation hospital at Beauvais to evacuate patients to the American base hospitals. The French refused this arrangement because it required American hospital trains to move against the flow of the rest of the evacuation, further confusing a difficult operation.²¹

Cantigny was the first battle for the A. E. F. The Medical Department tried many of the innovations it had developed after arrival in France. First, the division surgeon assigned specific field hospitals for gas, triage, and non-transportable wounded. Second, the field hospital treating the non-transportable wounded received operating teams from the base hospitals. Third, a field medical supply depot set up in the immediate rear of the division. Fourth, the ambulances carried out resupply by backhauling

²¹*Report of the Surgeon General, 1919, 1459-60, 1471-73.*

medical supplies when they returned to the front. Finally, a medical officer served as the regulating officer for the railroad evacuations.²²

CANTIGNY SECTOR 25 APRIL TO 4 JUNE 1918

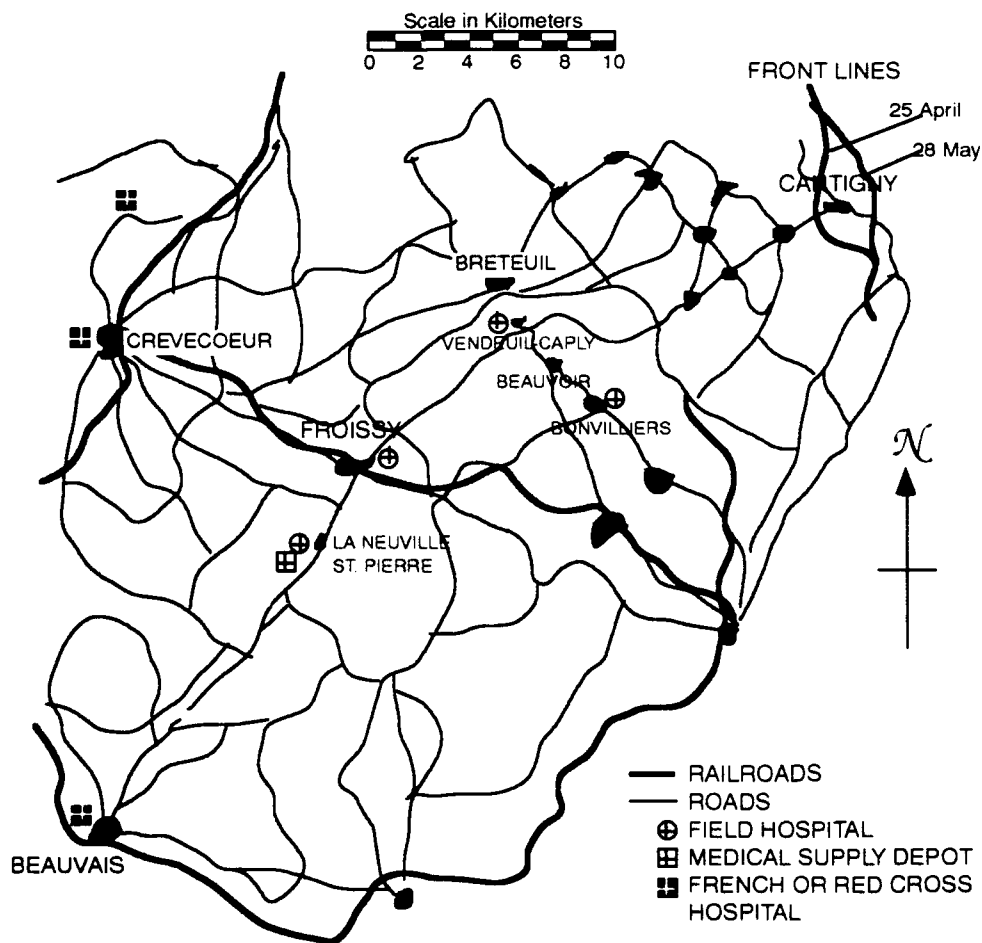


Figure 6: The Cantigny sector with evacuation routes and hospitals.²³

The command and control for the operation was complicated. The First Division was assigned to the French Sixth Corps. The Chief Surgeon, A. E. F.

²²*Field Operations*, 298-99.

²³Adapted from *Field Operations*, Plate III opposite page 296.

assigned Colonel Paul C. Hutton as the medical liaison officer with the French Army. During the offensive, Hutton, who was a member of the medical section at the G. H. Q., served in the role of corps surgeon for the First Division. He supervised its medical activities to include, evacuation of casualties, provision of supplies, and served as the medical liaison between the division and G. H. Q. These duties evolved into the responsibilities of the corps and army surgeons later in the war.²⁴

The First Division Surgeon located the divisional hospitals, while the surgeon of the Sixth Corps (French) established the evacuation system. Field Hospital No. 13, at Vendeuil-Caply, served as the triage and gas hospital. It received all patients, except those that went from the dressing station directly to the Field Hospital No. 12 at Bonvillers, which treated the non-transportable wounded. From Field Hospital No. 13, the slightly wounded went to a French hospital at Crèvecœur. The seriously wounded went to an American Red Cross Hospital at Beauvais. Field Hospital No. 12 received those that were too sick for further transportation. Five surgical teams from base hospitals augmented this hospital to supplement its surgical capability. Field Hospital No. 2 at La Neuville-St. Pierre, received the sick and slightly gassed as it was a horse-drawn unit. Field Hospital No. 3 at Froissy cared for the more seriously gassed patients.²⁵

The medical system worked well within the division. The hospitals for the gassed and the non-transportable patients proved their worth. The total casualties in the Cantigny operation were 199 killed and 652 wounded.

²⁴*Field Operations*, 299. *Report of the Surgeon General, 1919*, 1510.

²⁵*Field Operations*, 298-305. *Report of the Surgeon General, 1919*, 1510.

However, during the entire period that the First Division remained in the sector, the division's field hospitals admitted 7,689 patients.²⁶

Problems arose after the patients left the field hospitals and entered the French system. The Americans continued to complain about the French hospital trains and medical care. American patients sent to French hospitals were difficult to track and return to American care. Two solutions developed to these problems. First, the Red Cross Military Hospital No. 1, in Paris, received many of the American wounded. The Red Cross established a second hospital at Beauvais. This hospital had a French commanding officer to keep the hospital under French control. This meant that the French controlled its evacuation. However, the hospital had an American staff, which reassured the A. E. F. The second solution involved removing all American patients from the French hospital trains at a station near Paris. From there, they went by ambulance to American hospitals. Col. Hutton, worked at the station with a detail of sanitary personnel to coordinate the evacuation and appropriate hospitalization of these patients.²⁷

The Cantigny operation was a success for the Medical Department. The basic medical doctrine with the changes adopted in France had handled the casualties well. The system only had problems in liaison with the French and Hutton handled these well. This success established a foundation for the medical support of the more complicated operations that followed.

²⁶*Field Operations*, 298-305. *Report of the Surgeon General, 1919*, 1510.

²⁷*Report of the Surgeon General, 1919*, 1459-60, 1471-73. *Field Operations*, 306-08.

AISNE-MARNE OPERATION

The Aisne-Marne operations stressed the system more drastically. On 27 May 1918, the Germans reached the Marne east of Chateau-Thierry. On 31 May, the American Second and Third Divisions rushed forward to stop the advance. The hurried deployment of these divisions did not allow the establishment of a proper evacuation system behind them. As the French retreated, they lost the evacuation hospitals that had supported their troops in the region, a loss of about 45,000 beds. Without any means to provide these facilities for the American units, the French, for the first time, allowed the Americans to furnish the medical support for units serving in French Armies. This decision, although welcomed by the Americans, complicated the work of the Medical Department. First, the A. E. F. was dreadfully short of evacuation hospitals with only eight in Europe, instead of the fifty called for by doctrine. Second, the fixed base hospitals that the Americans had built were in the originally selected American sector in Lorraine, where they were not well situated to support the troops near Paris.²⁹

The fighting took a heavy toll in the Second Division, and its medical personnel struggled to provide care to the wounded. Derby, who was the assistant division surgeon during this period, recalls visiting aid stations that had treated over 750 casualties in thirty-six hours, where the staff worked until they dropped of exhaustion. These aid stations were close to the front line and under enemy shell fire. Navy Lieutenant Commander Joel T. Boone, who won a Medal of Honor a month later, had his regimental aid station destroyed by artillery on two consecutive days and ten men killed. He earned

²⁹J. R. Kean, "Evacuation of the American Wounded in the Aisne-Marne Battles, June and July, 1918," *Military Surgeon* 56 (April 1925): 473-77. Derby, "Wade in Sanitary!," 49-51. *Field Operations*, 320-29.

a Distinguished Service Cross for continuing to provide care to the wounded marines throughout this shelling.³⁰

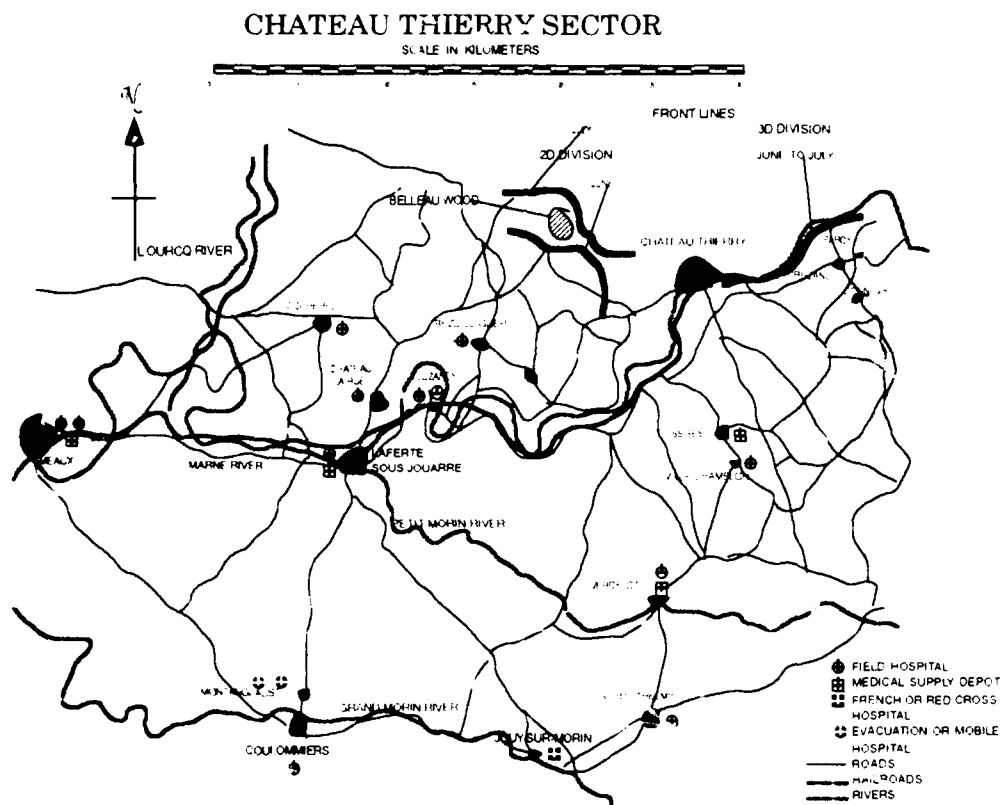


Figure 8: Chateau-Thierry Sector, June to July 1918³¹

ESTABLISHMENT OF HOSPITAL FACILITIES

The Medical Department worked to establish adequate medical care behind the divisions. This work occurred at several levels. First, G. H. Q. had established a headquarters in Paris called G-4, Paris group, which had responsibility to supervise supply and evacuation for the American divisions in its area. Colonel Hutton became the surgeon for this group as this

³⁰Derby, "Wade in Sanitary!," 68-72. Edgar E. Hume, "The Medical Book of Merit: United States Army and Navy Decorations Awarded to Medical Officers for Distinguished Service in the World War," *Military Surgeon* 56 (March 1925): 292-93.

³¹Adapted from *Field Operations*, Plate IV opposite page 312.

continued his work during the Cantigny operation. He met with Colonel Charles R. Morrow, the Second Division Surgeon, and Colonel William R. Eastman, the Third Division Surgeon, to coordinate with them the plan for evacuation and treatment of the casualties. After this meeting, Hutton wired the G-4 medical section for urgently needed evacuation and mobile hospitals, hospital trains, operating teams, surgical units, and any miscellaneous medical personnel available.³²

The second step to provide adequate medical care involved coordinating evacuation and hospitalization with the French. Hutton continued in his job as liaison officer and requested hospitalization for our wounded in French hospitals. Colonel Arnold D. Tuttle went from the medical section of G-4 to request assistance from the Sixth French Army. The French had trouble caring for their own casualties at this point and asked the Americans to provide hospitalization themselves.³³

SECOND DIVISION

This left the Medical Department to arrange hospitalization as best it could. In the Second Division, the field hospitals set up according to doctrine. Field Hospital No. 1 carried out triage at Bezu-le-Guery only one to eight kilometers behind the battalion aid stations. It served initially as the hospital for the non-transportable wounded. The division surgeon tried using Field Hospital No. 15 as an alternate triage station, to rest the staff of Field Hospital No. 1, but the experiment confused the ambulance drivers as to where to bring patients and was discontinued. At first, Field Hospital No. 23

³²*Field Operations*, 311. 320. Kean, "Evacuation in the Aisne-Marne," 473-77.

³³Kean, "Evacuation in the Aisne-Marne," 473-77. *Report of the Surgeon General, 1919*, 1460-61, 1473-75, 2025-29.

established a relay station at Meaux between Bezu and Juilly and treated sick and slightly wounded. It moved forward on 9 June and treated the seriously injured at La Ferte-sous-Jouarre. The horse-drawn field hospital, No. 16, assisted Field Hospital No. 23 at Meaux. It moved to Luzancy on 11 June, where it joined Field Hospital No. 15.³⁴

EVACUATION HOSPITALS

The biggest problem was to supply hospitalization behind the divisions. The surgical consultant for the Second Division, Major Burton J. Lee, evaluated the situation and found that the only hospital in the area that could serve as an evacuation hospital in the initial fighting was Army Red Cross Hospital No. 7 at Juilly. This was a 280-bed hospital under the direction of Red Cross Hospital No. 1 and headed by Dr. Charles G. Mixter of Boston. On 2 June 1918, the G-4 Medical Section augmented it with supplies and personnel to increase its bedspace to 800. Three surgical teams arrived the next day, but the wounded quickly swamped the hospital.³⁵

On 4 June, Colonel Sanford H. Wadhams, the head of the medical section at G. H. Q. and A. E. F. Chief Surgeon Ireland went to the Second Division headquarters to meet with the Chief of Staff (the division commander was unavailable) to discuss the situation and optimize medical support. They next visited the Chief Surgeon for the French Sixth Army, Medecin Inspecteur Lasnet, and the Red Cross Hospital at Juilly. Although both approved of the steps taken to remedy the deficiencies, they realized

³⁴Derby, "Wade in Sanitary!," 70-79. *Field Operations*, 315-17.

³⁵Kean, "Evacuation in the Aisne-Marne," 473-77. *Field Operations*, 320-29. *Report of the Surgeon General, 1919*, 1460-61, 1473-75, 2025-29. Frederick Pottle, *Stretchers, The Story of a Hospital Unit on the Western Front*, (New Haven: Yale University Press, 1929), 127-30. Arthur M. Shipley and Agnes T. Considine, *The Officers and Nurses of Evacuation Eight*, (New Haven: Yale University Press, 1929), 9. *History of Base Hospital No. 18*, 76-77.

that more evacuation hospitals were sorely needed. The Chief Surgeon requested the G. H. Q. send Evacuation Hospital No. 8 to Juilly immediately. This hospital had just arrived in Brest and was the only American evacuation hospital readily available. The French could not provide the necessary transportation, so Colonel George Van Horn Moseley, the Assistant Chief of Staff, G-4, G. H. Q., urgently requested of the chief of the French mission to expedite the movement. Although cars became immediately available, the hospital did not reach Juilly until the morning of 8 June.³⁶

Evacuation Hospital No. 8 operated using Red Cross equipment as there had not been time to bring its own to the front. They arrived to find the personnel at the Red Cross Hospital, "too weary to lift a litter to the upper tier of the ambulance." A detachment from the Second Division relieved the exhausted staff until Evacuation Hospital No. 8 arrived. The Red Cross Hospital treated about 1,700 patients before it was relieved. In the next week, Evacuation No. 8 treated an equal number. Colonel John M. T. Finney, the chief consultant in surgery, sent surgical teams from Base Hospital No. 18, No. 35, and a Navy team. Six surgical teams assisted Evacuation No. 8 during the fighting. Evacuation No. 7 and Mobile Hospital No. 1 arrived on 12 June, and started treating patients the next day. These two hospitals worked under a consolidated command and tentage. They treated approximately 2,700 patients over the next six weeks. Evacuation No. 7 had not received its operating equipment, so the surgeons performed all their operations on the four tables of Mobile Hospital No. 1. Back in Paris, the

³⁶Kean, "Evacuation in the Aisne-Marne," 473-77. *Field Operations*, 320-29. *Report of the Surgeon General, 1919*, 1460-61, 1473-75, 2025-29. Pottle, *Stretchers*, 127-131. Shipley and Considine, *Evacuation Eight*, 9-11.

medical staffs worked for three days without sleep to try to treat the tremendous number of patients.³⁷

The Medical Department established an evacuation system for the sick and wounded behind the Third Division also. One of the first steps was to get the Red Cross to establish a hospital at Jouy-sur-Morin. Both the Army and the Red Cross staffed this hospital, with the Army supplying the commissioned personnel. Designated American Red Cross Hospital No. 107, it had a 700 bed capacity. During the fighting at Belleau Woods, it received patients from Evacuation No. 7 and Mobile Hospital No. 1.³⁸

PATIENT EVACUATION

The rapid German advance disrupted the railroads, which forced patient evacuation from the evacuation hospitals by ambulance and truck. Colonel Ernest G. Bingham who was responsible for the hospital center in Paris, worked with Colonel Percy L. Jones, who headed the U. S. Ambulance Service with the French Army, to obtain sufficient ambulances to make the evacuation system work. The A. E. F. borrowed approximately 200 ambulances from the French for the Second Division and another 100 for the evacuation back to Paris. The Second Division used Ford ambulances for the evacuation to Field Hospital No. 1, which served as the triage. It used the larger General Motors ambulances for the longer evacuations to Juilly. Despite the augmentation, there were still not enough ambulances. The shortage of vehicles meant that trucks and buses also evacuated patients. This trip of 40 to 100 kilometers (25 to 63 miles) over rough cobbled roads by

³⁷Pottle, *Stretchers*, 127-131. *Field Operations*, 320-29. Shipley and Considine, *Evacuation Eight*, 9-11. *Report of the Surgeon General, 1919*, 1703. Kean, "Evacuation in the Aisne-Marne," 476-81

³⁸*Field Operations*, 320-29. Kean, "Evacuation in the Aisne-Marne." 476-81.

any vehicle available was the only way to clear the battlefield of wounded. Unfortunately for the seriously injured, it decreased the chance of survival. For example, on the night of 7 June 1918, more than 700 cases arrived at Red Cross Military Hospital No. 2 in Paris, of these about 500 had not yet received an operation, many died along the way back.³⁹

THE INSPECTOR GENERAL'S INVESTIGATION

Through this hastily gathered collection of medical assets, the Medical Department managed to provide care to the Second Division at Belleau Woods. The situation clearly demonstrated the problems caused by the severe shortage in evacuation hospitals and the reliance on the Red Cross for supplies and hospitals. The consultant system had worked well in finding facilities for the wounded and in supplementing those facilities with surgical teams from the base hospitals. After the battle, a newsman, Mr. Whitney, wrote that the Medical Department had failed to provide proper medical care. The Inspector General of the A. E. F. made a complete investigation that concluded, "the care received by the wounded during the period in question was as good or better than that received by the soldiers of the other allied armies under similar battle conditions." Whitney acknowledged that he had written his report on hearsay evidence and concurred in the findings of the Inspector General. One of the Inspector General's recommendations was for fuller representation of the Medical Department on the General Staff. The final one and most important, recommended an urgent increase in number of sanitary personnel and establishment of more hospitals.⁴⁰

³⁹Kean, "Evacuation in the Aisne-Marne," 473-77. *Report of the Surgeon General, 1919*, 1460-61, 1473-75, 2025-29. Derby, "Wade in Sanitary!," 60-62. *Field Operations*, 320-29.

⁴⁰*Field Operations*, 329-38 (This section contains reprints of the response of the medical section of the G-4, General Brewster's conclusions, and Mr. Whitney's letter in response). Report reprinted in part in Kean, "Evacuation in the Aisne-Marne," 481-83.

SECOND BATTLE OF THE MARNE

The last phase of the German offensive fell on the French Sixth Army from 15 to 17 July 1918. The main American units engaged were the Third Division, Fourth Division, Forty-second Division, and the First Corps with the Twenty-sixth Division and the French 167th Division. The brunt of the attack fell on the right wing of the French Sixth Army where the American Third and the French 125th Divisions held the line. Fortunately, the fighting of the previous month had allowed the Medical Department to prepare for the casualties.⁴¹

Colonel Jay Grissinger, the First Corps surgeon, recalled taking over a quiet sector on 4 July. In his diary for 11 July, he described, "an ominous quiet prevails everywhere. No one seems to know where the Germans will strike next." Grissinger organized the corps surgeon's office similarly to the divisions, with an assistant, an executive, and consultants for the specialties. The surgeon set up with the rest of the corps headquarters at La Ferte-sous-Jouarre. Orders No. 6, First Army Corps, 9 July 1918, detailed the medical evacuation plan. This established the location of the triage for the 26th Division at Bezu-le-Guery, provided for evacuation back to Evacuation Hospital No. 7 and located the hospital for the non-transportable at La Ferte-sous-Jouarre.⁴²

The Twenty-sixth Division plans supplemented the corps plan. They set up their field hospitals according to doctrine. The terrain defended,

⁴¹The German leaders ordered a cessation of the attack 16 July, however attacks continued through 17 July. Edward M. Coffman, *The War to End All Wars: The American Military Experience in World War I*, (New York: Oxford University Press, 1968), 227. *Field Operations*, 341-42.

⁴²*Field Operations*, 342-44. Jay W. Grissinger, "Field Service," *Military Surgeon* 62 (February 1928): 157-58, 161-62. Field Orders, First Army Corps, Nos. 2 to 95 incl., TMs, United States Army Command and General Staff College Library, Fort Leavenworth, KS.

helped the sanitary train provide medical care also. There were many well-constructed farmhouse cellars where the regiments set up their aid stations. This provided excellent medical care for the division as demonstrated by handling approximately 2,000 casualties without strain. The same set up served for the follow-up offensive by the Allies.⁴³

THIRD DIVISION, "THE ROCK OF THE MARNE"

Further to the east, the Third Division suffered the brunt of the German bombardment and offensive. The division surgeons, Colonel William R. Eastman and Colonel Frederick S. Wright, had set up the aid stations and field hospitals to effectively support the front line.⁴⁴ The two regiments that suffered the heaviest casualties were the 30th and 38th Infantry. The 30th Infantry set up its regimental and battalion aid stations near Crezancy. The fighting was so severe, that the majority of the 450 casualties who received treatment at the regimental aid stations were seriously wounded. The slightly wounded and gassed had to find their own way to the rear. The 38th Infantry provided care under even more trying conditions. The heavy casualties it suffered required increased medical support. One officer and twenty men from Ambulance Company No. 5 reinforced the regimental aid station from 15 to 17 July.⁴⁵

This was a particularly difficult and dangerous regiment to support medically. The force of the German attack forced some of its elements to fall back. This allowed an aid station at Paroy to fall into enemy hands. Captain Hoddie W. Daniels, responsible for the aid station, returned with an infantry

⁴³*Field Operations*, 342-44. *Report of the Surgeon General, 1919*, 1583-84.

⁴⁴Colonel Wright took over as division surgeon on 15 July 1918. *Field Operations*, 979.

⁴⁵*Field Operations*, 344-46. *Report of the Surgeon General, 1919*, 1548-49.

patrol, two ambulances and a YMCA truck. They recaptured the aid station until they evacuated all the patients. Daniels was killed treating the wounded on 19 July. Similarly, when a medical officer and ten men went on 17 July to the regimental aid station of the 38th Infantry at Connigis, ten became casualties.⁴⁶

DIVISIONAL MEDICAL CARE

The thorough preparations made before the German attack helped the Medical Department handle the heavy load of patients. Fortunately, the sector had a well-developed road network for evacuation. The division had sixty ambulances available, but they were insufficient for the massive casualties. The division transportation officer provided eighty trucks to serve as supplementary evacuation vehicles. These enabled the division's sanitary train to evacuate over 8,000 casualties from 15 to 18 July.⁴⁷

The field hospitals suffered under the heavy load of patients. Field Hospital No. 27 worked with a French hospital that set up with it at Verdelot; it provided triage, and cared for the non-transportable, sick, and slightly wounded. The consultants sent one shock team, four surgical teams, and nine nurses to reinforce it. During the period from 15 to 27 July, it admitted 4,512 patients, three-quarters of whom were from the Third Division and the rest from the Twenty-eighth.⁴⁸

MEDICAL CARE IN THE REAR OF THE DIVISIONS

Behind the field hospitals, the Medical Department had established a well-staffed group of hospitals under the direction of Colonel Hutton. These

⁴⁶*Field Operations*, 344-46. *Report of the Surgeon General, 1919*, 1435, 1548-49.

⁴⁷*Field Operations*, 344-47. *Report of the Surgeon General, 1919*, 1474-75, 1548-49.

⁴⁸*Field Operations*, 348. *Report of the Surgeon General, 1919*, 1548-49.

hospitals were: Evacuation Hospital No. 7 with Mobile Hospital No. 1 at Chateau Montanglaust; Army Red Cross Hospital No. 107 at Jouy-sur-Morin; Evacuation Hospital No. 8 at Juilly; and Army Red Cross Hospital No. 105 at Juilly. Most of these hospitals had arrived in the sector to support the fighting in June. Because Jouy-sur-Morin and Chateau Montanglaust were closest to the fighting, most of the casualties arrived there. Colonel Hutton moved the surgical teams from Evacuation Hospital No. 8 and sent them to Evacuation Hospital No. 7 and Army Red Cross Hospital No. 107. These hospitals suffered under the huge number of patients. The operating teams and litter bearers worked twenty hours out of each twenty-four. To complicate matters further, during the night of the 15th, German planes bombed the hospitals causing one death and wounding eighteen, four mortally. By the evening of 17 July, all transportable wounded had left the field hospitals. Evacuation Hospital No. 7, alone, sent 3,564 patients to the rear during 16 and 17 July.⁴⁹

ASSESSMENT

The Medical Department succeeded in meeting the challenge of the German offensive in July better than it had in June. This success resulted from adaptations made at many levels. At the lowest levels, the battalion and regimental medical personnel were more experienced. They had been in the same location for over a month and had time to organize aid stations and evacuation plans. The divisional medical assets similarly knew the medical plan. The field hospitals received proper augmentation to allow them to handle the large numbers of casualties. The ambulance companies responded

⁴⁹*Field Operations*, 353-54. *Report of the Surgeon General, 1919*. 1474-75.

promptly to the increased number of evacuations by securing additional vehicles from the division transportation officer. Evacuation proved much easier over the shorter distances and better roads west of Chateau Thierry.⁵⁰

Behind the divisions, the system worked more effectively, as well. The evacuation hospitals were in place, along with evacuation plans and means. The hospitals survived the test of the June fighting and developed effective systems for triage and treatment of casualties. The management of the hospitals became more efficient with the appointment of Colonel Hutton as the surgeon for the Paris Group, reporting to the medical section, G-4. He served in the role of army surgeon for the medical units involved. With this experience, the American Army showed that it could handle the demands of providing medical care in the defense. The next challenge would be to provide medical care in the mobile warfare during the Allied offensives of the second half of 1918.

THE AISNE-MARNE OPERATION (SOISSONS)

After the Allies stopped the German offensive, they shifted to the offense. This was the beginning of the second phase of the A. E. F.'s involvement in the war, when the fighting shifted to mobile warfare. One of the first operations was to reduce the Marne salient. This would free the Paris-Nancy Railroad and reduce pressure on Paris. The American First and Second Divisions with the First French Moroccan Division were the spearhead of the attack. They each drove the Germans back, capturing the heights south of Soissons. The French threw these divisions into the line

⁵⁰*Report of the Surgeon General, 1919, 1548-49.*

without first notifying the American command that they had committed the divisions to combat.⁵¹

ADAPTING TO MOBILE OPERATIONS

The First and Second Division medical units had to adapt to different conditions than those of their previous battles. Battalion aid stations set up in cellars, shell holes, caves, old gun emplacements, or anywhere else that they could shelter the wounded and the medical staff. These stations needed to be mobile to keep up with the advancing troops. The regimental aid stations struggled to keep the wounded evacuated to the rear. A tremendous shortage of litter bearers resulted. Medical units used soldiers from the infantry companies and enemy prisoners of war as litter bearers.⁵²

FIRST DIVISION

The First Division suffered from lack of coordination of its medical efforts. The division commander had removed the sanitary train from the control of the division surgeon during the march toward Soissons. The French had established the evacuation routes and dressing station locations. Because of this confusion, the division had only one dressing station in operation when it attacked. This was nine kilometers behind the lines in a barn shared with the French. The rapidity of the movement prevented the designation of evacuation routes. This confusion hampered effective medical care in the initial hours of the attack.⁵³

⁵¹*Field Operations*, 357-60. *Report of the Surgeon General, 1919*, 1473-75, 1511-13. Kean, "Evacuation in the Aisne-Marne," 484-88.

⁵²*Field Operations*, 360-62. Kean, "Evacuation in the Aisne-Marne," 484-88.

⁵³*Field Operations*, 362-63. Kean, "Evacuation in the Aisne-Marne," 488-90.

This confusion complicated care by the field hospitals. Field Hospital No. 3 served as the triage hospital at Mortefontaine. The division surgeon requested that it move farther forward to Coeuvres-et-Valsery where he had established a large collection point. The division G-1 disapproved this move, because he felt that Coeuvres-et-Valsery was vulnerable to shell fire. This meant that the patients at the collection point required evacuation further back, causing the ambulances to travel an extra 4,000 miles. Shell fire did not hit the collection point. Field Hospital No. 3 treated and evacuated over 5,000 patients. Field Hospital No. 12 received extensive augmentation from Field Hospital No. 2, surgical teams, and X-ray equipment. It treated 3,385 patients until the Fifteenth Scottish Division relieved the First Division. Field Hospital No. 13, functioned as an improvised evacuation hospital, until evacuation hospitals arrived to support the division. It transferred 2,987 patients to French hospitals and to hospital trains. Evacuation Hospital No. 5 relieved it on 20 July.⁵⁴

The experience of the surgical teams from Base Hospital No. 46 illustrates the chaotic conditions. This hospital had just arrived at Bazoilles, and its surgeons had started a two-week familiarization at Evacuation Hospital No. 1. Two days into the course, Colonel William L. Keller, chief of the consultants ordered their immediate return. Within one hour of their return, three surgical teams from Base Hospital No. 46, six from Mobile Hospital No. 1, and two from Base Hospital No. 42 were driving madly through the night. Despite a five-car collision, they arrived at Field Hospital No. 12 the next day. Here, 1,500 patients littered the ground awaiting

⁵⁴*Field Operations*, 364. Kean, "Evacuation in the Aisne-Marne," 491.

surgery, while the surgeons struggled through twenty-four hour shifts. They remained there eight days until the hospital was relieved.⁵⁵

EVACUATION BY THE FIRST DIVISION

Evacuation of the wounded remained a problem. The number of ambulances was inadequate. The Red Cross obtained forty ambulances to help, which the division supplemented with trucks. Because the animal-drawn ambulances proved unsatisfactory, those personnel worked as litter bearers.⁵⁶

The division had not designated evacuation routes before the operation. In the advance that followed, the few roads quickly became crowded with ammunition and artillery moving forward. The evacuation routes were long, fifty-five kilometers to Senlis and Chantilly. The division surgeon instituted three separate evacuation circuits. The first used the General Motors and Ford ambulances and evacuated from as far forward as possible to the dressing stations and triage. This stage worked exceptionally well, with the wounded removed from the battlefield within six hours. The second circuit used the few remaining General Motors ambulances to evacuate from triage to Field Hospital No. 12, which cared for non-transportable wounded. It used trucks and animal-drawn ambulances to evacuate patients to Field Hospital No. 13, which acted as an evacuation hospital. The third circuit carried patients by trucks to the French evacuation hospitals at Senlis and Chantilly. The lack of adequate corps ambulance support from the French, forced the divisional units to evacuate

⁵⁵*On Active Service with Base Hospital 46, U.S.A., Mar. 20, 1918 to May 25, 1919.* (Portland, OR: Arcady Press, 1919(?)), 100-01.

⁵⁶*Field Operations*, 362-63. Kean, "Evacuation in the Aisne-Marne," 488-90.

beyond the division rear. This added considerable difficulty to an already stressed system.⁵⁷

The failure of the French to evacuate the hospitals quickly led to overcrowding. The French established a holding area at Crepy-en-Valois for evacuation by hospital train. Unfortunately, the French had not provided sufficient hospital trains, so many of the wounded waited at Crepy with minimal care. The First Division called urgently to the American G. H. Q. and on 20 July, Evacuation Hospital No. 5 started to receive patients at Crepy. This hospital, augmented by surgical teams from the base hospitals, provided urgently needed medical care. Many of the patients had waited two days for operation until Evacuation Hospital No. 5 arrived.⁵⁸

SECOND DIVISION

The Second Division suffered from the inadequate preparation by the French as well. The battalions set up their aid stations as close to the enemy lines as possible before the attack. Some of these were as close as fifty yards from the German lines. Once the attack opened, the advance proved too rapid for the aid stations to keep up. The only medical care that they provided during the advance were collection points for the wounded at crossroads or where shelter was available. The aid stations suffered under the heavy shelling.⁵⁹ On 19 July 1918, Navy Surgeon Joel T. Boone, Acting Regimental Surgeon for the Sixth Marines, described the battle as follows:

⁵⁷*Field Operations*, 364-66. Kean, "Evacuation in the Aisne-Marne," 492-94. *Report of the Surgeon General, 1919*, 1473-75, 1511-13.

⁵⁸*Field Operations*, 364-66. Kean, "Evacuation in the Aisne-Marne," 492-94. *Report of the Surgeon General, 1919*, 1473-75, 1511-13.

⁵⁹*Field Operations*, 368-69. Kean, "Evacuation in the Aisne-Marne," 494-95. Derby, "Wade in Sanitary!," 88-93.

The darkest day in my whole career at the Front.... I accompanied the regiment afoot about three miles, passing through an area saturated with gas....

While at the colonel's P. C. on the Vierzy-Tigny road,... we were observed by enemy planes and attracted considerable fire. There were several men killed and wounded in this area....

Shortly after this, a call came from the Front that the regimental headquarters company was suffering very heavy casualties from high explosive shells.... I rushed to do what I could for the wounded. The only shelter I could find was a cemetery wall about four feet high, behind which I had the wounded brought that I might apply most meager first aid. It looked while occupying this place, as though our work might terminate momentarily. The shelling was terrific; fragments of shell chipping out portions of the wall right behind us. One hospital corps man and I remained here until we had all the wounded cared for. We successfully got these men into a ravine just in time to avoid a complete wiping out....

Our medical supplies were about exhausted.... I obtained a side car from the colonel and went to the other side of Vierzy which, at the time, was being heavily bombarded and saturated with gas. I fortunately made this trip successfully bringing up a car full of surgical supplies....

I then manned the cave in which I had established my battalion aid station, and began caring for the several hundred wounded that I had there for the greater part of ten hours. There was no evacuation during the day until sometime late in the evening. Dressings ran out and there was no food. While toiling at this station and handling about a thousand men, the mental strain was terrific.... A number of my best friends in the regiment were lying here wounded during this long period of time.⁶⁰

For his gallantry, Boone earned the only Medal of Honor awarded a medical officer in the war.⁶¹

⁶⁰Derby, "*Wade in Sanitary!*," 89-93.

⁶¹Hume, "*The Medical Book of Merit*," 292-93.

EVACUATION

As with First Division, evacuation was difficult. The roads were so congested that an ambulance sent to provide evacuation for the Fifth Marines did not reach its station until noon on the day after the start of the attack, although the distance travelled was only twenty kilometers. The roads were very narrow, with shoulders of soft mud. Many vehicles skidded off the road, further complicating evacuation. The situation improved after the military police took charge of traffic flow 19 July. The Second Division still suffered from a severe shortage of ambulances, with only thirty-two serviceable General Motors ambulances and twenty-one trucks available. Like the First Division, divisional ambulances evacuated the field hospitals, because the French could not supply this service.⁶²

FIELD HOSPITALS

The field hospitals had to serve in place of evacuation hospitals. Field Hospital No. 1 served as the division evacuation hospital, and took care of the non-transportable wounded. Triage was the responsibility of Field Hospital No. 23, which initially located at Haramont, but moved to Taillefontaine at noon of the first day. The facilities were poor, wounded soldiers received their treatment in tents or in the open. Field Hospital No. 15 ran a second sorting station in Bois de Brassois. These three hospitals cared for 3,213 patients in the five days they participated in the operation.⁶³

⁶²*Field Operations*, 369-70. Kean, "Evacuation in the Aisne-Marne," 495-97. Derby, "Wade in Sanitary!," 95-96.

⁶³*Field Operations*, 370-72. Kean, "Evacuation in the Aisne-Marne," 497-99. Derby, "Wade in Sanitary!," 88-93.

MEDICAL DEPARTMENT SUPPORT ABOVE THE DIVISIONS

The First and Second Divisions were administratively part of the American Third Corps. For this operation, they were under tactical command of the French. The Third Corps staff were officially observers, but Colonel James L. Bevans, the corps surgeon tried to improve the medical care for his two divisions. The corps G-1 refused to tell him the evacuation plan, as this was a military secret. Col. Bevans then visited the field hospitals of the First Division. On seeing conditions there, he sent corps headquarters troops to help and requested ambulances and medical support from the Paris group headquarters, then arranged with Evacuation Hospital No. 5 to go to Crepy-en-Valois to treat the wounded who waited there.⁶⁴

Colonel Hutton and the rest of the A. E. F. Medical Department did their best to improve the situation at Soissons. As mentioned, the French had not notified anyone in the Medical Department of the planned use of the First and Second Divisions. They had not adequately prepared hospitals for the operation and the wounded Americans suffered. Therefore, the American Medical Department scrambled to support its divisions.⁶⁵

SUPPORT FOR THE DIVISIONS

The first unit to respond was the Red Cross Hospital at Beauvais, which sent personnel to Chantilly to its hospital for the French. This hospital received supplies and personnel to expand to 400 beds. Six surgical teams drove up from Chaumont by automobile to boost the surgical capability of the field hospitals for the non-transportable wounded. Field Hospital No. 120,

⁶⁴*Field Operations*, 378-79.

⁶⁵*Field Operations*, 372-75. Kean, "Evacuation in the Aisne-Marne," 499-503. *Report of the Surgeon General*, 1919, 1512.

from the Thirtieth Division, sent its personnel to care for the wounded accumulating at Crepy-en-Valois.⁶⁶ On 20 July, Evacuation Hospital No. 5, arrived and started medical care near Crepy-en-Valois. Colonel Hutton selected this site for the evacuation hospital as it was the closest that hospital trains could get to the front. In its first night of operations, Evacuation Hospital No. 5 admitted 477 patients; for the entire operation, it handled 2,626. Although it arrived too late to help the American First and Second Divisions, "its presence proved a godsend to a Scotch division rushed in to relieve the 1st and 2d Divisions with such haste its sanitary train was left far behind."⁶⁷

WHAT WENT WRONG

The medical operations in the Aisne-Marne operation (Soissons) were disastrous. First, the French failed to notify the Assistant Chief of Staff, G-4, the American Medical Department, or the Paris group, which had responsibility for all the divisions operating in the region. The French refused to allow the division surgeon of the Second Division to communicate with the Services of Supply to get an evacuation hospital, because the French claimed adequate hospital facilities were available and to prevent information of the attack leaking to the Germans. If he had, Evacuation Hospital No. 5 could have been ready for casualties when the operation started. When the operation started, the French could not handle the large number of their own, much less American casualties. Eventually, the

⁶⁶As with all the divisions in the Second Corps, the Medical Department detached the 105th Sanitary Train from the Thirtieth Division on its arrival in France. The field hospitals and ambulance companies provided augmentation to other units and camp hospitals while the division trained, after which only half of the sanitary train rejoined the division. *Field Operations*, 21-22, 875, 991-92. Derby, "Wade in Sanitary!," 88-93.

⁶⁷*Field Operations*, 372-75. Kean, "Evacuation in the Aisne-Marne," 499-503. *Report of the Surgeon General*, 1919, 1512.

Americans instituted their own hospitals and evacuation assets to care for the wounded.⁶⁸

AGREEMENT WITH THE FRENCH ON MEDICAL CARE

The situation was so bad that Colonel Hutton wrote to the Assistant Chief of Staff for the Paris Group, about problems with the French. Brigadier General George Van Horn Moseley, the Assistant Chief of Staff, G-4 wrote to the Chief of the French Mission on 31 August 1918. He proposed that whenever American divisions served under French command the A. E. F. establish its own hospitalization and evacuation behind the divisions, the French permit access of American hospital trains to the hospitals, and the French supply timely notification to the Americans as well as sites for at least two evacuation hospitals. The French accepted these propositions, which provided a sound basis for evacuation and hospitalization of American divisions with the French.⁶⁹

AISNE-MARNE OPERATION, PHASE TWO

In the second phase of the Aisne-Marne campaign, the American First Corps participated in the attack by the French Sixth Army that drove the Germans back across the Vesle River. The American Twenty-sixth Division attacked first, followed by the Forty-second, and finally, the Fourth Divisions. The American Third Corps, with the Third and Thirty-second Divisions, also participated in this attack. This operation showed that the Army Medical Department adjusted to the problems that it encountered in the previous

⁶⁸*Field Operations*, 375. Kean, "Evacuation in the Aisne-Marne," 502-04. Derby, "Wade in Sanitary!," 87. *Report of the Surgeon General, 1919*, 1462, 1474, 1512.

⁶⁹*Field Operations*, 375-77. Kean, "Evacuation in the Aisne-Marne," 502-04.

months' fighting as it started to work out the provision of medical care to an advancing force.⁷⁰

TWENTY-SIXTH DIVISION

The initial division engaged in First Corps was the Twenty-sixth. From 18 July to 25 July, it advanced about eighteen kilometers. There was no doctrinal basis for how to supply medical care to an advancing unit. The ambulance companies advanced with it, setting up dressing stations in a leap frog fashion where one company runs a dressing station while the other moves ahead. When the advancing company sets up its dressing station it starts receiving all the wounded freeing the company in the rear to start moving forward. This system worked well and was used throughout the A. E. F.⁷¹

Initially, evacuation worked well, as the roads were good and the distances short. The division received Ambulance Section No. 502 and the 162d Ambulance Company, so it had seventy-one ambulances and forty trucks for evacuation. Later in the attack, the distance increased to over sixty kilometers from the front lines to the evacuation hospital and the wounded started to accumulate at the triage hospital at Bezu-le-Guery and at the hospitals for the slightly wounded at Luzancy.⁷²

Poor liaison between the ambulance holding points and the battalion aid stations made it difficult for the ambulance drivers to find the advancing battalions. Normally, the ambulance company litter bearers provided this liaison, but these had all gone to reinforce the regiments. The shortage of

⁷⁰*Field Operations*, 381-83, 403-05. *Report of the Surgeon General, 1919*, 1584-85.

⁷¹*Field Operations*, 391-93. *Report of the Surgeon General, 1919*, 1584.

⁷²*Field Operations*, 391-93. *Report of the Surgeon General, 1919*, 1584.

litter bearers was so acute that each company detailed twelve infantrymen as litter bearers.⁷³

FORTY-SECOND DIVISION

The Forty-second Division passed through the Twenty-sixth and continued the attack. It pressed forward, advancing about fifteen kilometers before the Fourth Division relieved it the night of 2-3 August. The Medical Department faced the same problems caring for both these divisions. When the aid stations advanced, they left their patients behind with a small contingent of men until the ambulances completed the evacuation. The long distances and crowded roads meant that evacuation lagged. The battalion aid stations sent the walking wounded back to the dressing stations on their own; only the litter cases went by ambulance.⁷⁴

The Forty-second Division placed the triage station at Epieds, which was on the main road through the division sector. This station soon accumulated over 400 patients, when evacuations to the rear stopped so every available ambulance could clear the battlefield of wounded. Clearing the aid stations allowed them to move forward and keep up with their battalions, so this was the first priority. The ambulances worked twenty-four hours a day, with the drivers working sixteen hour shifts. One company carried 2,527 soldiers while travelling 15,546 miles. This was typical.⁷⁵

The problem of getting the patients from the division hospitals to the rear was even greater. The advance, coupled with the overcrowding of the hospitals available meant that evacuations ranged from 33 to 140 kilometers.

⁷³*Field Operations*, 391-95. Grissinger, "Field Service," *Military Surgeon* 62 (February 1928): 167. Grissinger, "Field Service," *Military Surgeon* 62 (March 1928): 343-45.

⁷⁴*Field Operations*, 395.

⁷⁵*Field Operations*, 396. Herbert George, *The Challenge of War*, (New York, Washington, and Hollywood: Vantage Press, 1966), 90-91.

The Medical Department used trucks, ambulances, barges and trains to make these evacuations. The problems of evacuation demonstrated the importance of corps augmentation of divisional ambulances during combat, as well as the difficulties imposed on the system by the inadequate numbers of evacuation hospitals.⁷⁶

FIELD HOSPITALS

The field hospitals also had increased demands placed on them by the mobile warfare. Field Hospital No. 165 started at Luzancy on 23 July. On 27 July, it moved to Villiers-sur-Marne, the next day to Chateau Thierry. On 29 July, it took over the triage station at Epieds, and the next day, moved to Bezu-St. Germain. Herbert George, who served with this hospital, recalled running low on supplies and using captured German ones. The shelling from the Germans, coupled with the constant flow of patients and movement forward, made this the worst time in the war for him.⁷⁷

The other field hospitals were equally busy. Field Hospital No. 168 had five operating teams busy working on the 350 patients it received in the first four hours. This hospital moved three times during the operation. Field Hospital No. 166 performed as an evacuation hospital, as the closest evacuation hospital was Evacuation Hospital No. 7, fifty kilometers further back at Montanglaust.⁷⁸

⁷⁶*Field Operations*, 398.

⁷⁷*Field Operations*, 397. Herbert George, *The Challenge of War*, (New York, Washington, and Hollywood: Vantage Press, 1966), 90-93.

⁷⁸*Field Operations*, 397-98.

Aisne-Marne Operation 26th, 42d, & 4th Division Area

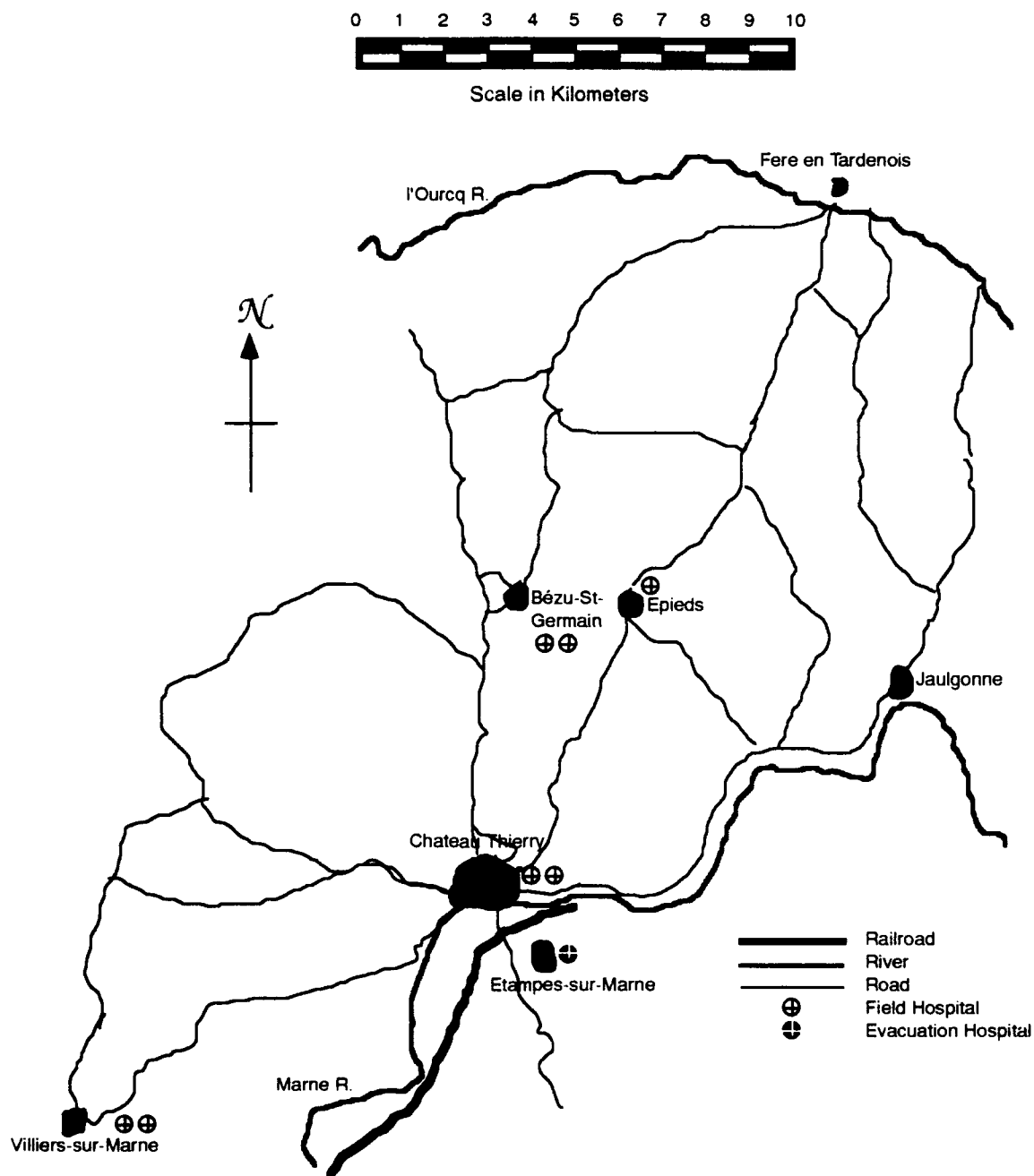


Figure 9: Aisne Marne Operation⁷⁹

⁷⁹Adapted from *Field Operations*, Plate X opposite page 396.

FOURTH DIVISION

The Fourth Division carried out the final stage of the attack, 28 July to 12 August. It advanced almost ten kilometers in the fighting. It suffered the same problems in providing medical care as the other divisions in the corps. One problem it experienced that had not troubled the other two divisions occurred because the Fourth Division used the ambulance companies to supplement the regimental litter bearers instead of taking men from the line. This left the ambulance companies understrength, decreasing their efficiency when conditions challenged it most. Further complicating ambulance evacuation of the aid stations was the German shell fire. For the first part of the advance, the litter bearers had to carry the patients about one kilometer back from the aid station as this was as close as the ambulances could go.⁸⁰

EVACUATION HOSPITALS

The evacuation hospitals were equally busy during the offensive. Evacuation Hospital No. 7 supported the First Corps. On 22 July, Colonel Hutton reported that the Paris hospitals were full and he had no trains with which to evacuate them. At Crepy-en-Valois, 1,000 patients awaited evacuation. The medical group in the G-4 section sent Evacuation Hospitals No. 4 and 6, and Mobile Hospital No. 2 into the sector to help. These hospitals provided much needed capability.⁸¹

Evacuation Hospital No. 7 was exceptionally busy during the offensive. It evacuated 8,689 patients between 16 and 24 July and a total of 15,871 by 30 July. Evacuation Hospital No. 8, at Juilly, evacuated 1,199 and the Red

⁸⁰*Field Operations*, 400.

⁸¹*Field Operations*, 416. *Report of the Surgeon General, 1919, 1692-95. The History of Evacuation Hospital Number Six United States Army 1917-1919*, (Poughkeepsie, N. Y.: Privately published, 1931) 12-13.

Cross Hospital at Jouy-sur-Morin another 1,000 during the same period. One of the problems that made the work difficult was the lack of rail service closer to the front. The hospitals could not move to these advanced sites until railways restored service.⁸²

Evacuation Hospital No. 6 started operations 20 July at Meaux and began receiving patients from the front immediately. It moved to Chierry near Chateau Thierry, 29 July, where it combined with Mobile Hospital No. 1. Here it treated over 3,500 patients, evacuating them to Paris by train and barge. It mainly cared for the seriously wounded, and received augmentation with surgical teams. Evacuation Hospital No. 4 moved to Ecury-sur-Coole where it operated steadily for seventy-two hours with no rest for its surgical teams. It then moved to Chateau Pereuse where it remained until 6 August, caring for 1,427 patients.⁸³

By 29 July, Evacuation Hospital No. 3 had started work at La Ferte-Milon. Evacuation Hospital No. 5 arrived at Chateau Thierry on 2 August. These hospitals increased the capability in the region greatly. From this point on, the system handled the casualties without difficulty. Problems continued to arise in moving the hospitals closer to the front, because the destruction from the offensive ruined buildings that the evacuation hospitals could set up in and destroyed the railheads necessary to evacuate from.⁸⁴

CHANGES IN MEDICAL SUPPORT

These problems led to changes in the way that the Medical Department provided support to the divisions. One of the solutions was the

⁸²*Field Operations*, 416-18. *Report of the Surgeon General, 1919*, 1700-01.

⁸³*Report of the Surgeon General, 1919*, 1692-95. *History of Evacuation Hospital Number Six*, 13-14.

⁸⁴*Field Operations*, 416-19. *Report of the Surgeon General, 1919*, 1681-83, 1692-97.

establishment of a corps sanitary train. In the earlier engagements, the corps surgeon had no assets to assist the divisions. The corps sanitary train evacuated from the field hospitals and relieved the divisions of all responsibilities behind the division rear. Its sanitary personnel assisted the division, as the number of casualties received in combat, especially during attacks, was more than the division hospitals could handle without augmentation.⁸⁵

The long hauls from the front to the evacuation hospitals complicated evacuation as well. To counter this, the medical planners worked on devising ways to make the evacuation hospitals more mobile and to increase the number of these hospitals. They had trouble advancing because of the lack of facilities for shelter and rail evacuation.⁸⁶

Road congestion was harder to solve. The vast numbers of vehicles going both directions in the advance slowed the ambulances. The lack of alternate routes forward added to the difficulties and the routes available were often narrow country lanes. This problem would worsen as the size of the offensives increased.⁸⁷

ANALYSIS OF THE OPERATION

The operations demonstrated the importance of prior planning for evacuation. At Soissons, the medical system broke down and the Medical Department had to send in units urgently. During the rest of the Aisne-Marne offensive, the Medical Department provided adequate hospitalization, which, although stressed, handled the patient load. The sheer number of

⁸⁵*Field Operations*, 383. Field Orders, First Army Corps, 18, 35, 46.

⁸⁶*Field Operations*, 388.

⁸⁷*Field Operations*, 388.

casualties, combined with the shortage of evacuation hospitals in theater severely handicapped the medical planners.⁸⁸

The Aisne-Marne Offensive ended the second phase of medical operations. The A. E. F. Medical Department had modified doctrine to provide comprehensive medical care in defensive operations from fixed facilities. The difficulties of the First and Second Divisions at Soissons stressed the importance of prior planning and coordination for medical operations. The Americans developed medical staff positions for organizations above the division to better plan medical support. At the same time they provided these corps and army surgeons with sanitary trains to assist the divisions and better anticipate support requirements. The biggest problem affecting medical support was the shortage of medical units, especially evacuation hospitals. This would hamper medical operations until the Armistice.

The offensive operations at the end of the period provided new challenges that the Medical Department would attempt to handle throughout the rest of the war. Problems arose in moving hospitals forward where most needed, and carrying out evacuation over the long, crowded supply routes. These problems recurred in the major American offensives at Saint Mihiel and the Meuse-Argonne.

PHASE THREE – AUGUST 1918 TO THE ARMISTICE

After the Aisne-Marne operation, the Americans received their own sector, which was the responsibility of the First Army. The two main American operations in this period were part of the general Allied offensive.

⁸⁸*Field Operations*, 383.

The first was the offensive to reduce the Saint Mihiel salient. The last was the largest battle of the war for the Americans, the Meuse-Argonne. Medical operations during this time showed the increasing sophistication and complexity of the American Army. The careful planning before the reduction of the Saint Mihiel salient made it one of the most successful operations of the war. In contrast, the huge battle in the Meuse-Argonne stressed the medical system at every level.

SAINT MIHIEL

The first operation planned for the First Army was at Saint Mihiel. The First Army, consisting of the First, Fourth, and Fifth Corps and the French Second Colonial Corps was to clear the Germans from the salient. This allowed opening the Paris-Nancy railway and protected the region from Nancy to Bar-le-Duc and Verdun. It also threatened Metz and the Briey iron region. The reduction of the salient was a necessary step before commencing an offensive between the Meuse and the Argonne.⁸⁹

The attack consisted of two subsidiary attacks, one from the south and one from the west. The First Army planned to follow these attacks with a holding attack at the point of the salient, followed by an exploitation. The American Fourth Corps on the left, and the First Corps on the right, made the southern attack. The American Fifth Corps made the one in the west, while the French Corps attacked in the center.⁹⁰

The First Army Surgeon, Colonel Alexander N. Stark controlled the medical assets of the army. He had responsibility for medical care given in

⁸⁹*Field Operations*, 449-50.

⁹⁰Hunter Liggett, A. E. F., *Ten Years Ago in France*, (New York: Dodd, Mead and Company, 1928), 146-149. Coffman, *The War to End All Wars*, 282-283.

all regiments, divisions, evacuation and mobile hospitals in the sector. The only medical assets in his sector not under his control were base hospitals, laboratories, and medical supply depots belonging to the S. O. S.⁹¹

This operation was the first by an American field army since 1865. It was an army vastly larger than any previous army that the United States had ever fielded before then. The First Corps, alone, was larger than the combined forces of Lee and Meade in the Wilderness. It succeeded dramatically. The First Army reduced the salient in two days. The overwhelming success of the operation proved that the Americans could plan and execute a complex operation.⁹²

MEDICAL PLAN FOR THE OPERATION

The Medical Department prepared well for the offensive. Shipments of supplies, personnel, and hospitals from the United States had increased, giving a reserve not available previously. These still did not reach the levels desired or even promised in the priority schedule, but they did ease the critical shortages in evacuation hospitals and medical supplies. The Department worked through its representatives in the G-4 section to coordinate with Colonel Stark, the First Army surgeon. The first step in the planning process was to formulate a casualty estimate. These ranged from 30,000 to 75,000. Colonel Stark's estimate was 33,000. Accordingly, the medical planners at G-4 arranged for hospitalization for this number of casualties. Interestingly, the French predicted 125,000 casualties for the campaign.⁹³

⁹¹*Field Operations*, 452-59.

⁹²Liggett, A. E. F., 146-49; Coffman, *The War to End All Wars*, 282-83.

⁹³Alexander N. Stark, "Explanation and Execution of Plans for Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive," *Lectures, 1st Army Staff*, TMs, United

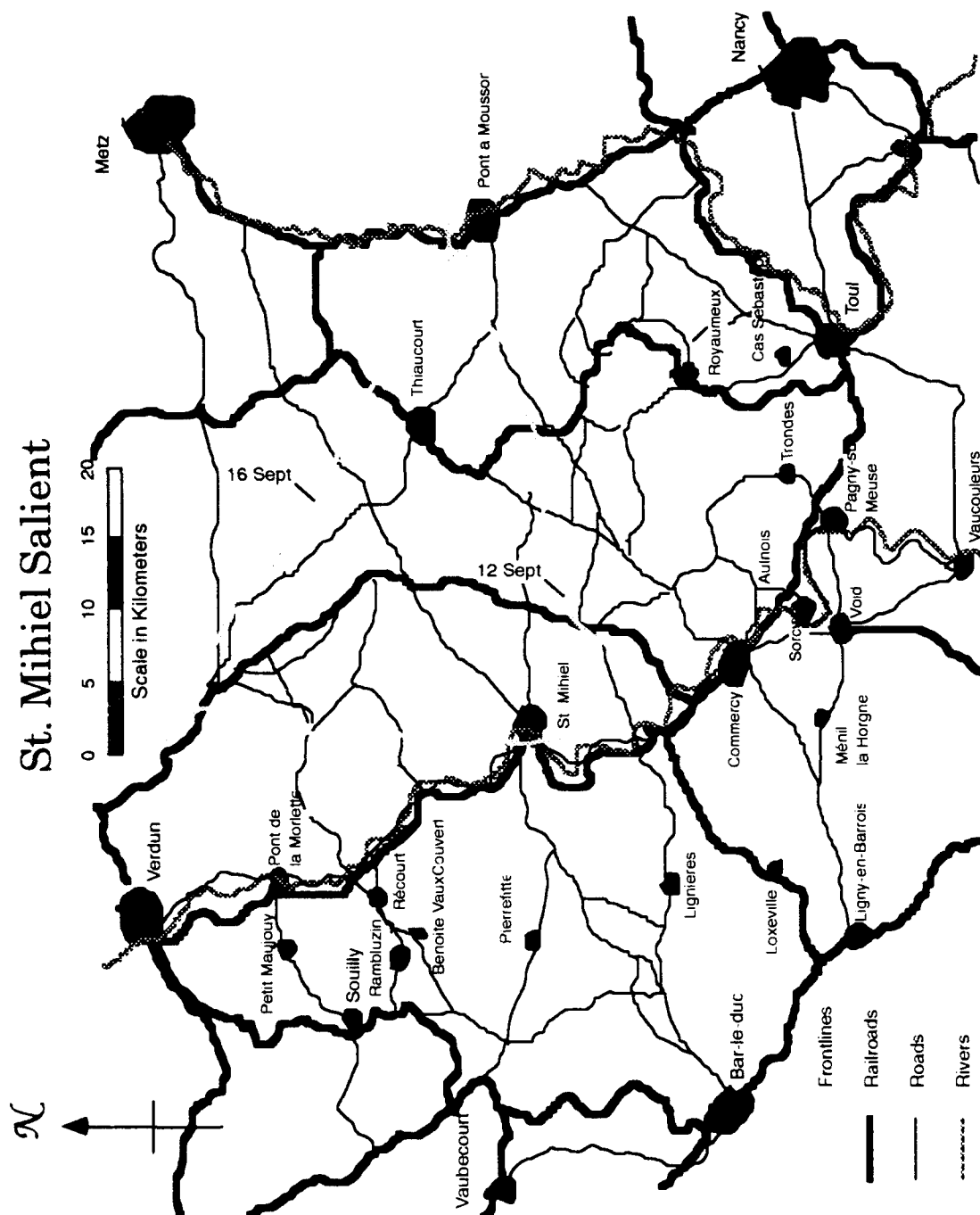


Figure 10: St. Mihiel Salient, September 1918⁹⁴

States Army Command and General Staff College Library, Fort Leavenworth, KS. *Field Operations*, 452-54. *Report of the Surgeon General*, 1919. 1514.

⁹⁴Adapted from *Field Operations*, Plate XV opposite page 450.

To provide care, Stark devised a "triple system" of hospitalization. He divided the zone into three and placed an officer in charge of each zone. He had one officer at Toul, responsible for the southern front, one at Souilly, for the western front, and one from the French Second Corps, for the French troops. Each of the areas had hospitals in its rear. The Toul area had 15,000 beds; Verdun had 4,500; and behind the French were 6,000. The French did not provide any hospitalization for their forces; the Americans supplied these beds.⁹⁵

Stark located his hospitals throughout the sector. In the Toul sector, for example, were six evacuation hospitals (plus two base hospitals that acted as evacuation hospitals), three mobile hospitals, twelve ambulance companies and sections, one Red Cross hospital, two neurologic units, and five field hospitals. Similarly, in the western sector, he placed four evacuation hospitals, two mobile hospitals, one neurological unit, and one gas hospital. There were seven ambulance companies and sections. To supply these units, he set up medical supply depots at Toul in the south and Souilly in the west.⁹⁶

In his order of 6 September (Annex No. 6, Field Order No. 9), Stark detailed the plan for evacuation of the sick and wounded. He anticipated that the First Division would suffer greatly in trying to take Mount Sec, so he assigned Mobile Hospital No. 39, expanded to 700 beds, to take patients from the First Division. This hospital was about twelve kilometers behind the lines at Aulnois-sous-Vertuzey. At Sorcy, he established Evacuation Hospital No. 11 and Field Hospital No. 41, expanded to 500 beds, for the slightly

⁹⁵Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Field Operations*, 454. *Report of the Surgeon General, 1919*, 1514.

⁹⁶Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Field Operations*, 455-56. *Report of the Surgeon General, 1919*, 1514.

wounded of the division. Evacuation Hospital No. 1 and Mobile Hospital No. 3 would receive all the wounded from the rest of the troops west of the Moselle. These hospitals had expanded to 3,000 beds. The overflow from these hospitals would go three miles further back to the Justice Hospital Center, where Evacuation Hospital No. 14 and Evacuation Hospital No. 3 were. Also in this hospital center were Base Hospitals No. 45 and 51, which were to care for the sick, nervous, and shell concussions. For the troops east of the Moselle River, Evacuation Hospital would take the severely wounded, while Field Hospital No. 163, acting as an evacuation hospital would take the slightly wounded.⁹⁷

The French would be evacuated to hospitals at Void, Commercy, Vaucouleurs, Loxeville, and Menil-la-Horgne. They had one half of the hospital at Bar-le-Duc for overflow. For the western sector, Evacuation Hospitals No. 6 and 7, with 1,200 and 1,000 beds respectively, set up at Souilly. They had responsibility for the slightly wounded. To assist, Evacuation Hospital No. 9, at Vaubecourt, had 1,500 beds. The seriously wounded went to Evacuation Hospital No. 8 at Petit Maujouy and Mobile Hospitals No. 1 and 2 at La Morlette and Recourt.⁹⁸

To care for this many casualties would require evacuating approximately 10,000 a day to the intermediate and base sections. The Americans had seventeen hospital trains and three trains borrowed from the British. To augment these, the French lent them forty-five of their trains. The French trains were smaller, so they performed the evacuations to the

⁹⁷Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." Annex No. 6 (Field Order No. 9), Headquarters First Army, A. E. F. reprinted in *Field Operations*, 456-58.

⁹⁸Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." Annex No. 6 (Field Order No. 9), Headquarters First Army, A. E. F. reprinted in *Field Operations*, 456-58.

base hospitals in the advanced section, while the longer and roomier American trains took patients on the longer trips, of eight to twenty-four hours, to the intermediate and base sections.⁹⁹

A SUCCESSFUL OPERATION

The fighting opened on 12 September and succeeded beyond all expectations. The hospitalization proved much more than required, which helped medical care and evacuation proceed more smoothly than in any previous operation. The total number of casualties was 5,231, including 401 German prisoners. This was much less than the estimates for the Germans were preparing to pull back when the attack came. The Americans also had the benefit of surprise, which lessened their casualties. With these few casualties, the evacuation system worked as planned. In the Ninetieth Division, patients were at triage an hour and a half after arriving at the battalion aid stations. In at least one instance, wounded reached Evacuation Hospital No. 1 within three hours of injury.¹⁰⁰

Richard Derby's experiences as the assistant division surgeon in the Second Division provide an insight into divisional medical support. He collected ambulances, loaded them with food and supplies and led them to the front. The three ambulances crawled along the only undamaged road left behind the advancing troops. Work crews made up of German prisoners took stones from the ruined towns to fill the craters in the road and keep it open. It took five hours to travel a few kilometers. Because the roads were so bad, he and the division surgeon, Colonel Morrow, brought the whole sanitary

⁹⁹Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Field Operations*, 455-56. *Report of the Surgeon General, 1919*, 1514.

¹⁰⁰Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Field Operations*, 459, 468. *Report of the Surgeon General, 1919*, 1514-16. Coffman, *The War to End All Wars*, 278-79, 283.

train to Thiaucourt, which was only six kilometers from the front. By having the medical facilities so close spared the wounded an evacuation of many hours. The field hospital for the severely wounded operated on seventeen patients with six deaths. More would have died, if they had needed to go all the way back to Toul for care.¹⁰¹

The hospitals varied in the number of patients they received. Harvey Cushing, at Field Hospital No. 101, found instead of the hospital overcrowded and full of wounded, "A mere handful were dribbling through." While at Evacuation Hospital No. 8 things "were busy for a few days," at Evacuation Hospital No. 14, the teams worked through the night, taking off only fifteen minutes at midnight for food. Evacuation Hospital No. 3 had its twelve operating tables full for about a day, but found that the number of wounded rapidly dropped off. Base Hospital No. 45 received many patients from the evacuation hospitals as well as the ones it received directly from the front. These casualties kept the operating rooms busy for days. When Evacuation Hospital No. 3 transferred all its patients to Base Hospital No. 45 on 18 September, "the limit had been reached, there was not an unoccupied bed or cot in the hospital." Clearly, each hospital experienced the battle differently.¹⁰²

SHELL SHOCK CASES

Stark experimented during the offensive. Too many mild cases of shell-shock, exhaustion, and other minor problems ended up at the

¹⁰¹Derby, "Wade in Sanitary!," 114-21.

¹⁰²Cushing, *Surgeon's Journal*, 439. J. R. Darnall, "War Service with an Evacuation Hospital," *Military Surgeon* 80 (April 1937): 265. Shipley and Considine, *Evacuation Eight*, 22. *Report of the Surgeon General, 1919*, 1683-84. [Geisinger, Joseph F.], ed., *History of U.S. Army Base Hospital No. 45 in the Great War (Medical College of Virginia Unit)*, (Richmond, VA: William Byrd Press, 1924) 62.

evacuation hospitals. This overloaded those already busy hospitals and the evacuation system. To screen the neurologic and shell-shock cases close to the front, he placed the division psychiatrist at each divisional triage. Before, the "neurologic" casualties would get sent back to the evacuation and neurologic hospitals. At St. Mihiel, most of them remained in the division. There were 282 cases of shell-shock in the operation; 225 of these returned to their units within three days. This contrasted markedly with the British practice of evacuation and hospitalization of these soldiers. Many of whom remained hospitalized months later. The practice of treating these casualties close to the front and returning them within three days to their units became standard practice.¹⁰³

PROBLEMS IN THE OPERATION

Problems were slight. The roads became congested during the advance, but not as badly as during the Aisne-Marne operation. There were shortages of litter bearers in the regiments, as some of the divisions did not augment the ambulance companies with litter bearers. The shortages in evacuation hospitals required the use of field hospitals and base hospitals in this role. Although not optimal, it worked in providing care for the wounded. The Medical Department remedied other shortages by using non-medical personnel in non-professional jobs, borrowing ambulances from the French and American base hospitals, and raiding other hospitals and divisions in the A. E. F. for medical officers, nurses, and enlisted men to provide care at the

¹⁰³*Report of the Surgeon General, 1919*, 1515. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive."

front. This augmentation greatly increased the capacity of these units, Evacuation Hospital No. 6, for example, received nine surgical teams.¹⁰⁴

THE MEUSE-ARGONNE

The A. E. F. moved rapidly from the success at St. Mihiel to planning the largest battle for the American Army in the war, the Meuse-Argonne offensive. The operation took place in three phases. The first lasted from 26 September to 3 October, the second from 4 to 31 October, and the third from 1 to 11 November. The overall plan was an ambitious one. The First Army attacked over a front stretching from the Argonne Forest to the Meuse River. Hugh A. Drum, the chief of staff of First Army, described the sector as "the most ideal defensive terrain I have ever seen."¹⁰⁵

MEDICAL PLANNING

The plan called for an attack by three corps abreast, from left to right, the First, Fifth and Third Corps. Each corps attacked with three divisions on line with one in reserve. There were three divisions in the First Army reserve. Medically to support this massive army, taxed the planners, for the operation followed so soon after St. Mihiel. The medical section of G-4 and the Army and corps surgeons coordinated the locations and movements of the hospitals between themselves and with the French. They met on 24 September to finish the coordination of hospitalization for the campaign.¹⁰⁶

Colonel Alexander N. Stark, First Army Surgeon, ordered the divisions to establish their field hospitals for triage and non-transportable wounded

¹⁰⁴*Field Operations*, 499-523. *Report of the Surgeon General. 1919*, 1514-16. *History of Evacuation Hospital Number Six*, 15.

¹⁰⁵Coffman, *The War to End All Wars*, 299-305.

¹⁰⁶*Field Operations*, 530-543, 553-54.

close to the front. The front from west to east had the divisions with their triages as follows:

Third Corps:

33d Division-----Glorieux, near Verdun
80th Division -----Fromereville
4th Division -----Sivry-la-Perche

Fifth Corps:

79th Division -----Les Clairs Chenes
37th Division -----Brabant
91st Division-----Brabant

First Corps:

35th Division -----Neuvilly
28th Division -----La Croix de Pierre
77th Division -----Florent.¹⁰⁷

The terrain worked against medical support. Two roads were available for use as supply and evacuation routes. These were the road to Grand Pre and the road through Avincourt to Malincourt, which went through the sectors of First and Third Corps.. Fifth Corps, especially, had a difficult sector, with woods, ravines, and no roads suitable for evacuation. This forced the divisions in Fifth Corps to locate their triages half the distance from the front as the other two corps.¹⁰⁸

Colonel Stark and the other medical planners modified the deployment of the hospitals to make up for this lack of evacuation routes. Along the evacuation routes, the division sanitary trains, with the help of the Red Cross, set up evacuation points and rest stations. These were places where the ambulances and litter bearers brought the wounded while waiting transportation further to the rear. The corps surgeons placed their hospitals

¹⁰⁷*Field Operations*, 530.

¹⁰⁸*Report of the Surgeon General, 1919*, 1515. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Field Operations*, 530-2.

midway between the division and army hospitals. These hospitals were for the slightly wounded patients that could return to duty within three days.¹⁰⁹

Behind the corps hospitals were the evacuation hospitals. They stationed themselves from five to twelve kilometers from the triages. The evacuation hospitals were all within twenty kilometers of the front, except for Evacuation Hospital No. 9 at Vaubecourt and Evacuation Hospital No. 15 and Base Hospital No. 83 at Revigny.¹¹⁰

The medical section at G-4 had to bring all the necessary medical assets into position for the operation. The shortage of hospitals, especially of evacuation hospitals, meant that the same ones at St. Mihiel salient now had to move to support the Meuse-Argonne. These hospitals evacuated their accumulated patients and moved into the crowded area behind the lines. As seen earlier, this left a heavy patient load on the base hospitals.¹¹¹

This movement could not jeopardize the element of surprise. All units moved into position at night and remained concealed during the day. One measure adopted specifically for the Medical Department prevented any nurses from arriving in the area until the last moment. The First Army commander and staff thought that nurses would go sight-seeing and souvenir collecting and that the Germans might notice them and deduce that increased hospitalization had arrived for an attack.¹¹²

¹⁰⁹*Field Operations*, 530-31.

¹¹⁰*Field Operations*, 530-31.

¹¹¹*Field Operations*, 534. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." J. R. Darnall, "War Service with an Evacuation Hospital," *Military Surgeon* 80 (April 1937): 265. Shipley and Considine, *Evacuation Eight*, 22. *Report of the Surgeon General, 1919*, 1683-84. *History of Base Hospital No. 45*, 62.

¹¹²*Field Operations*, 534. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive."

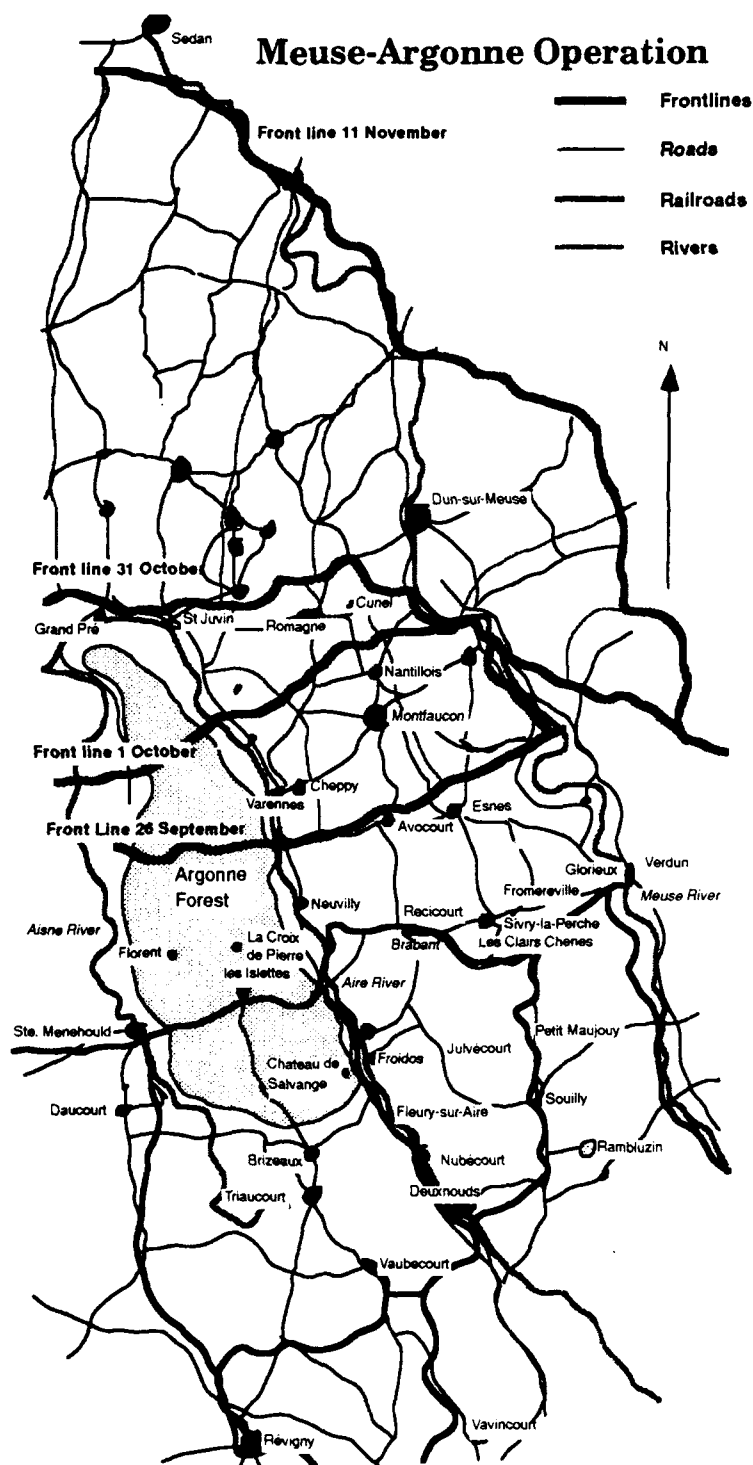


Figure 11: Meuse-Argonne Offensive, September to November 1918¹¹³

¹¹³Adapted from *Field Operations*, Plate XXV opposite page 526, Plate XXXV opposite page 630, Plate XLIV opposite page 730.

The Medical Department assigned hospitals with 16,130 beds to the region. This represented a hospitalization of 1.8 per cent of the soldiers involved. At Soissons, the First and Second Divisions had loss rates of about 7 per cent; two-thirds of these casualties required hospitalization behind the division. Hospitalization available for the Meuse-Argonne was much less than half that required. The Medical Department used all its available resources for the offensive, demonstrating the critical shortages in equipment, personnel, hospitalization, and ambulances.¹¹⁴

Colonel Stark, organized the hospitals to minimize the effects of a bed shortage. He had available on 26 September eleven evacuation hospitals, two Army Red Cross hospitals, five Mobile Hospitals, one base hospital, one field hospital, two neurologic hospitals, four gas hospitals, three infectious hospitals. To augment these hospitals, the Services of Supply had hospital centers at Toul and Bazoilles, and Base Hospital No. 81 at Revigny. He divided these among the three corps, assigning the evacuation hospitals for the seriously wounded and the mobile hospitals for the non-transportables. The other hospitals received the sick, slightly wounded, and gassed. First Corps received support from Evacuation Hospital No. 11 at Brizeaux Forestieres, Mobile Hospital No. 2 at Chateau de Salvange, Army Red Cross Hospital No. 110 at Villers-Daucourt, and Base Hospital No. 81. Fifth Corps had Evacuation Hospital No. 9 at Vaubecourt, No. 10 at Froidos, No. 3 at Fleury-sur-Aire, and Army Red Cross Hospital No. 114 at Fleury. First Corps had hospitals that had served at St. Mihiel. Evacuation Hospitals No.

¹¹⁴Report of Evacuation Branch G-4 Argonne-Meuse Operation. TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. M. A. W. Shockley, *An Outline of the Medical Services of the Theatre of Operations*, (Philadelphia: P. Blakiston's Son and Company, 1922), 28-29, *Field Operations*, 537-538. P.M. Ashburn, *A History of the Medical Department of the United States Army*, (Boston and New York: Houghton Mifflin Company, 1929), 342-43.

3 and No. 5 remained in reserve, ready to move forward when the offensive progressed.¹¹⁵

FIRST PHASE

The first phase of the battle started with an attack across the entire First Army front. By the end of the first day, the Third Corps and the two left divisions of First Corps reached their objectives. The attack bogged down in the center in the Fifth Corps area. Three more days of attacks captured Montfaucon, however, the first Army needed to pause to reorganize.¹¹⁶

THIRTY-SEVENTH DIVISION

The experiences of the Thirty-seventh Division in the first phase provide an example of the problems in medical care during the operation. This division was the center division in the Fifth Corps for the first phase. It advanced steadily in the first four days, fighting off German counterattacks until the Thirty-second Division relieved it on the night of 1 October.¹¹⁷

The division located its triage at Brabant with two field hospitals and a medical supply depot. It held the other two field hospitals here in reserve. Because of the lack of available roads in the Fifth Corps Sector, it shared the town with two field hospitals of the Ninety-first Division. The two reserve ambulance companies established a dressing station in Avocourt 26 September. Beyond Avocourt, the road was impassable to motor vehicles. This complicated evacuation of the battalion and regimental aid stations as all patients had to walk or be carried to the dressing station. For the first

¹¹⁵*Field Operations*, 537-38. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1517-21.

¹¹⁶Coffman, *The War to End All Wars*, 299-305. *Field Operations*, 525-30.

¹¹⁷*Field Operations*, 592-94. Ralph D. Cole and W. C. Howells, *The Thirty-seventh Division in the World War, 1917-1918*, (Columbus, OH: The Thirty-seventh Division Veterans Association, 1929), 185-88.

twenty-four hours of the attack, ammunition and artillery had the right of way, so over 300 patients accumulated at Avocourt awaiting transport further back. On the field conditions were even worse, for the litter bearers missed many of the wounded who accumulated in dugouts and the aid stations. Because the battalion aid stations had so many wounded that remained with them, they could not move fast enough to keep up.¹¹⁸

By 28 September, the situation had worsened. Wounded lay scattered over the field; so many gathered at the divisional headquarters that the sanitary train had to set up a forward dressing station there. Every wagon in the division hauled patients to the rear. Ambulances attempted to get through the blocked roads, two got through from Avocourt, six from the Thirty-second Division arrived from Varennes. These ambulances helped only a little, because they took seventy-two hours to go the twenty kilometers to Brabant.¹¹⁹

Because the ambulances could not get back to the field hospitals, the two reserve field hospitals were ordered forward. Field Hospital No. 146 made it through and set up at Ravin de Chambronne. Although dangerously close to the front lines, this was the only suitable site available. It started trying to clear the battlefield of wounded. Transportation proved so bad, that on 30 September the division commander ordered every wagon assembled for evacuation of the wounded. The sanitary train remained on the field a full day after the division was relieved trying to finish treating the wounded.¹²⁰

¹¹⁸Report of Fifth Corps Both St. Mihiel and Argonne-Meuse Operations, Report of G-3 Chief Surgeon, TMs, File 6014.01 Army War College Historical Section, Carlisle, PA. *Field Operations*, 595-96. Cole and Howells, *The Thirty-seventh Division*, 187-88, 203-04.

¹¹⁹*Field Operations*, 596-97. Cole and Howells, *The Thirty-seventh Division*, 203-04.

¹²⁰*Field Operations*, 597-98.

37th Division - 26 to 30 September

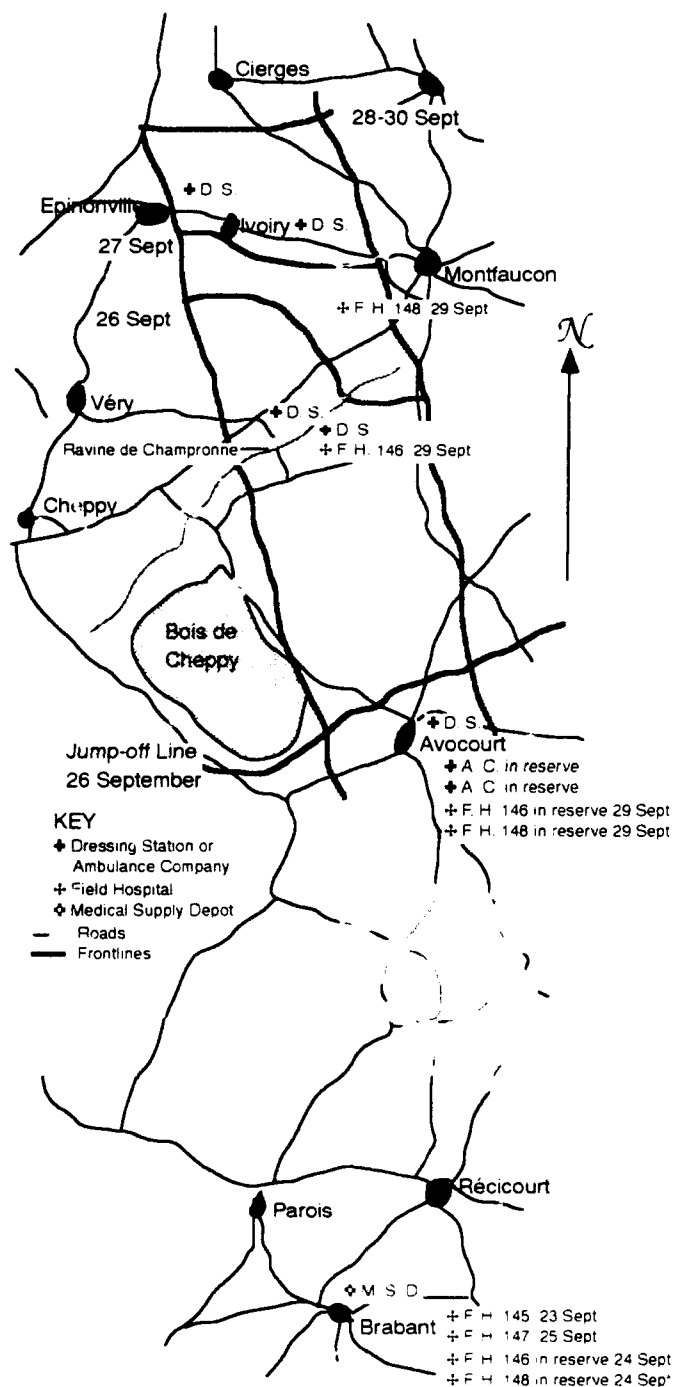


Figure 1-1: Thirty-seventh Division in the Meuse-Argonne¹²¹

¹²¹Adapted from *Field Operations*, Plate XXX opposite page 592.

SECOND PHASE

The second phase of the operation started after the reorganization period of the first phase. During this phase the First Army attacked to seize the Cunel and Romagne Heights. The First Corps then cleared out the Argonne Forest. It included attacks on the east bank of the Meuse. This phase of the operation included steady fighting as the American divisions battled it out with the retreating Germans. The Germans used the terrain effectively, making the Americans pay for each advance.

For the Medical Department the situation grew more difficult. The distances for evacuation increased with the advancing front line. The fighting destroyed the roads, so motor ambulances could not travel them. Horse-drawn wagons were the primary means of evacuation from the front. In Fifth Corps, there still were no suitable evacuation routes, which stressed the already crowded roads through the First and Third Corps.¹²²

INFLUENZA

On top of the battlefield casualties pouring through the hospital system, came the influenza epidemic. In First Army alone, 68,760 soldiers required hospitalization for treatment. Evacuation Hospital No. 6 admitted 1,100 cases in a single day. The hospital had 1,600 patients in the hospital the next day, despite its nominal bed capacity of 900. The "flu" took a double toll, because it sickened the hospital staffs at the same time that it increased the patients requiring treatment. General Erich von Ludendorff noted on 17 October, "The enemy did not come on with his usual ardor....At these points

¹²²Report of Fifth Corps Both St. Mihiel and Argonne-Meuse Operations, Report of G-3 Chief Surgeon, TMs, File 6014.01 Army War College Historical Section, Carlisle, PA. *Field Operations*, 634-36.

the fighting power of the Entente has not been up to its previous level.

Further the Americans are suffering severely from influenza."¹²³

EVACUATION HOSPITAL NO. 8

Frederick Pottle's book, *Stretchers*, helps give a better understanding of the conditions during this phase of the battle.

The great battle of the Argonne was on, ...a steady desperately contested, inexorable advance.... The stream of wounded flowed without break through the efficient mill of Evacuation Eight.

Trucks, coming down the road from Ancemont in an endless line, pull up on the hard curved roadway....

The last week has been the busiest I have seen in the operating room. Our plant has worked wonderfully.... We made a record for the A. E. F.—something over 200 cases operated in one shift of twelve hours.... Now we are getting some horrible cases—men who have been wounded four or five days.¹²⁴

Evacuation Hospital No. 8 kept its six operating teams busy the entire fifty days of the battle. It stayed at Petit Maujouy throughout, so it did not have to try to move forward as well. Evacuation Hospitals No. 14 and 15 both moved during this phase of the operation. to help care for the wounded arriving from the east side of the Meuse.¹²⁵

THIRD PHASE

On 1 November, the third phase started with a two hour artillery barrage. Third Corps and Fifth Corps drove through the German lines with the right half of First Corps. The Americans pursued the retreating

¹²³*Report of the Surgeon General, 1919*, 1312, 1476, 1517-23, 1691-1705. *Field Operations*, 810-837. *History of Evacuation Hospital Number Six*, 18. Stark. "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." Lyle. "Evacuation in the Meuse-Argonne," 589-90.

¹²⁴Pottle, *Stretchers*, 221-222, 233.

¹²⁵*Field Operations*, 632-33.

Germans, driving to the outskirts of Sedan and across the Meuse. The fighting continued until 11 November when the Germans signed the Armistice.¹²⁶

This ended the operation and the war. During the operation, the Medical Department treated 72,467 wounded, 18,664 gassed, and 2,029 neurological cases. In addition, the hospitals admitted 68,760 medical patients. The large numbers of patients and rapidly advancing front tested the medical system most severely and by the end it was near collapse. The situation became so bad, that by the Armistice, Colonel Stark said, "On the last day of the offensive if I had been called upon to advance another evacuation hospital it would have been absolutely impossible, for the simple reason that transportation did not obtain for that purpose." Problems arose in evacuation and hospitalization. Examining these for the battle helps understand the medical support.¹²⁷

EVACUATION

Overall, the evacuation service managed to get the wounded and sick out. In his report after the battle, Major General A. W. Brewster, the A. E. F. Inspector General, found that evacuation was satisfactory overall. He noted that delays occurring initially improved as the engineers rebuilt roads and the hospital and ambulance personnel became more efficient. During the offensive, the ambulances travelled 907,910 kilometers or over 20,000 kilometers per day. The ambulance service brought 132,065 sick and

¹²⁶*Field Operations*, 729-731.

¹²⁷Letter, Alexander N. Stark, Chief Surgeon First Army, to Assistant Chief of Staff, G-4, First Army, 4 November 1918, Subject: Moving of Evacuation Hospitals. TMs, Army War College Historical Section, Carlisle, PA. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1476, 1691. *Field Operations*, 809.

wounded patients to the railhead hospitals. From these, it evacuated 151,045 patients back to the base hospitals on 408 trains. For part of the offensive, evacuations progressed at the rate of a division/week. To compare this evacuation with others in the war, in the week from 17 to 23 October, the hospital trains evacuated 29,426 patients. This equalled the number evacuated by the French during the most intense month of fighting at Verdun in 1916. The evacuation service had problems handling this huge number of patients.¹²⁸

Three problems confronted the evacuation service. First, the lack of adequate roads, and the severe congestion on those available made evacuation slow and travel difficult. Second, were the long distances, the ambulances travelled to bring the wounded back from the front. Third, was the shortage of ambulances and hospital trains. Three things contributed to the road congestion. First there was a lack of traffic control, so that the roads became solid lines of stopped vehicles. Second, the shortage of adequate roads meant that all traffic took the same road into and out of the corps areas. Finally, the damage from the battle itself closed roads while the engineers repaired them.¹²⁹

The worst problem with the evacuation was the shortage of ambulances and hospital trains. The First Army used every available truck in bringing supplies up to the front line. As these returned, they often carried the slightly wounded and the gassed patients. When the Ambulance

¹²⁸Report of Evacuation Branch G-4 Argonne-Meuse Operation. TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 531-41, 634-35, 810. "Notes Made by the Inspector General, A. E. F., During Active Operations from September 12 to November 11, 1918," reprinted in *Field Operations*, 838-42. *Report of the Surgeon General, 1919*, 1517-23.

¹²⁹Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 531-41, 554-55. Cushing, *Surgeon's Journal*, 463. *Report of the Surgeon General, 1919*, 1693.

Director, Colonel Henry H. M. Lyle, assumed command on 20 September, he had only ninety-three ambulances available. He prevailed on Colonel Stark and the Chief Surgeon, Brigadier General Ireland, to get him any support they could. By 26 September, he had four hundred ambulances and sixty trucks. He had even borrowed thirty sightseeing buses from the French to carry wounded. Although these vehicles had a capacity of 1,813 stretcher and 400 sitting patients, there was still a shortage of over three hundred vehicles.¹³⁰

This shortage forced an important change on the management of the ambulances. Where before, each unit controlled its own small number of cars, now they were centralized. This prevented ambulances from sitting idle while wounded men lay awaiting evacuation. The idea to centralize the ambulance service originated with several officers about the same time. Colonel Grissinger, the First Corps Surgeon, had instituted this policy in his corps for the Meuse-Argonne offensive. Colonel Lyle had worked in the medical section of the G-4 to make this change.¹³¹

From the central army pool, the director divided the ambulances between the three corps. Each corps was responsible for evacuations within its area. The corps would temporarily assign ambulances to the divisions as they went into the lines. The corps sanitary trains held other ambulances for evacuations. For example, the Thirty-fifth Division had only eight Ford and four General Motors ambulances at the start of the offensive. They had to

¹³⁰Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 732-33. *Report of the Surgeon General, 1919*, 1517-21.

¹³¹Grissinger, "Field Service," *Military Surgeon* 62 (February 1928): 163-77. Lyle, "Evacuation in the Meuse-Argonne," 585-91.

augment these with twenty-two trucks from the division and Ambulance Service Sections No. 520 and 649.¹³²

In parts of the sector was a 60-cm railway. The evacuation service used this line to evacuate patients from the field to the evacuation hospitals. It could not take the usual hospital trains, so the patients travelled in boxcars and flatcars modified to hold stretchers. The poor railbeds limited the use of these railways. The trains often derailed. There were a total of ten trips, with 655 patients carried.¹³³

The only way to prevent the hospitals from overflowing with patients was rapidly to move the patients back to base hospitals. These evacuations depended on hospital trains. Unfortunately, the Americans had only seventeen of their own trains and three borrowed from the British. They borrowed forty-six more from the French to try to keep up with the patients flowing in.¹³⁴

The Medical Department needed to innovate to provide care through this battle. One of the innovations was the establishment of evacuation centers. The poor transportation network in the region meant that many evacuation and special hospitals were located far from a railhead. The evacuation centers coordinated the evacuations from the hospitals in the sector. First Army established two of these centers, one on each major

¹³²Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 554-55, 569-72.

¹³³Memorandum from C-in-C, to C. G., First Army, 12 October 1918, in Report of Evacuation Branch G-4 Argonne-Meuse Operation, TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. Memorandum from Chief Engineer, First Army, to A. C. S. G-4, First Army, 18 October 1918, in Report of Evacuation Branch G-4 Argonne-Meuse Operation, TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. *Field Operations*, 535-36.

¹³⁴Memorandum from Evacuation Officer, First Army, to Medical Section, G-4, G. H. Q., through Chief Surgeon, First Army, 23 September 1918, in Report of Evacuation Branch G-4 Argonne-Meuse Operation, TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 531-41. *Report of the Surgeon General, 1919*, 1517-21.

railroad out of the area. One at Souilly served Third Corps , overseeing hospitals at Souilly, Vaubecourt, Revigny and Vadelaincourt. One at Fleury served First and Fifth Corps and covered hospitals at Fleury, Froidos, Villers-Daucourt, and Varennes.¹³⁵

Under these evacuation centers were railhead hospitals. These hospitals had loading platforms built that accommodated an entire hospital train. These hospitals at Souilly, Fleury, Froidos, Villers-Daucourt, and Varennes, received patients from hospitals within their area. Vadelaincourt, Vaubecourt, and Revigny had railheads, and served as railhead hospitals. There were 7,000 beds located from nine to thirty-five kilometers from these railheads. The railhead hospitals each had an evacuation ambulance company assigned to transport patients within the evacuation area. The only exception was the Souilly area, which needed two ambulance sections for its 4,130 beds. The need to move patients to a rail line for evacuation, further stressed an ambulance system that lacked sufficient transport for the demands of the offensive. Problems arose when evacuation hospitals at railheads failed to emphasize evacuation over hospitalization one. They rapidly filled as patients poured in.¹³⁶

HOSPITALIZATION IN THE MEUSE-ARGONNE

Hospitalization faced many problems in the Meuse-Argonne. First was the inadequate number of hospitals available to serve as evacuation hospitals. This forced the Medical Department to use field, Red Cross, and mobile hospitals in their place. Evacuation hospitals received massive

¹³⁵*Field Operations*, 539-40. H. H. M. Lyle, "The Principles of the Surgery, Hospitalization and the Evacuation of the Wounded in the Meuse-Argonne Offensive," *Military Surgeon* 84 (June 1939): 585-87.

¹³⁶Lyle, "Evacuation in the Meuse-Argonne," 585-87. *Field Operations*, 531-41.

augmentation from base hospitals. Evacuation Hospital No. 14 had its surgical staff doubled; No. 15 received nine teams and twenty nurses. Over one hundred officers, nurses, and soldiers augmented Evacuation Hospital No. 6. Although this strained the staff of the base hospitals, it allowed the evacuation hospitals to provide initial surgical care.¹³⁷

The hospitals struggled with massive numbers of wounded. At Evacuation Hospital No. 14, "streams of ambulances rolled back from the forward medical installations, loaded with casualties." The wounded "crowded" Evacuation Hospital No. 8 until the armistice. The situation got so bad, that each surgical team covered three operating tables, so that no time was wasted. Evacuation Hospital No. 6 set a record for operating on 350 cases in one day. Almost every other evacuation hospital involved saw their busiest times during the Meuse-Argonne fighting.¹³⁸

The deaths in hospitals increased during this battle. From June to August, these averaged between four and five per cent of admissions for battle injuries. In October and November, the percentage of deaths in hospital increased to over 6.6 per cent. This increase was probably from a combination of the heavy workload and the delays in evacuation.¹³⁹

¹³⁷Lyle, "Evacuation in the Meuse-Argonne," 585-91. *Field Operations*, 531-41, 634-35, 810-837. "Notes Made by the Inspector General, A. E. F., During Active Operations from September 12 to November 11, 1918," reprinted in *Field Operations*, 838-42. *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. Darnall, "War Service with an Evacuation Hospital," 270. Walter J. Bachman, *Souvenir Roster and History of Evacuation Hospital No. 15 with The Story of Verdun and the Argonne Drive*, (Privately published, 1919) 29-30. Shipley and Considine, *Evacuation Eight*, 33-34. Pottle, *Stretchers*, 226-27. *History of Evacuation Hospital Number Six*, 18.

¹³⁸*Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 810-837. Darnall, "War Service with an Evacuation Hospital," 270-274. Bachman, *History of Evacuation Hospital No. 15*, 29-35. Shipley and Considine, *Evacuation Eight*, 23-25. Pottle, *Stretchers*, 226. *History of Evacuation Hospital Number Six*, 13-14.

¹³⁹Albert G. Love, *The Medical Department of the United States Army in the World War*, Volume XV, *Statistics, Part Two Medical and Casualty Statistics*, (Washington, D.C.: Government Printing Office, 1925), 1025, 1026 (Hereafter referred to as *Medical Statistics*).

To minimize the load on the evacuation system and on the hospitals, treatment for the slightly wounded changed. These soldiers received care back in the evacuation or base hospitals by doctrine. With the strains the offensive and the influenza epidemic placed on the evacuation system and hospitals, and the urgent need for soldiers at the front, the A. E. F. could no longer afford this luxury. These men needed to get back quickly to their units. Brigadier General Finney, the consultant in surgery, and Colonel Stark, the First Army Surgeon, placed more experienced surgeons forward with the triage stations. These surgeons screened out those patients who could return to their units in three days. Other medical officers screened out the lightly wounded gas, sick, and other casualties. This screening decreased the percentage of minor casualties evacuated, while increasing the number of men returned to their units.¹⁴⁰

MOVING THE HOSPITALS

The advance by the American troops forced the hospitals to move in order to prevent evacuation distances from becoming too long. Doctrine recommended moving evacuation hospitals to keep about twenty-five kilometers behind the front. During the November offensive, Colonel Stark had the evacuation hospitals move forward in a "leap-frog" fashion, with one hospital receiving patients while the one behind it prepared to move. All but one of the mobile hospitals and all but two of the evacuation hospitals moved at least once during the operation.¹⁴¹

¹⁴⁰Report of Evacuation Branch G-4 Argonne-Meuse Operation, TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. Lyle, "Evacuation in the Meuse-Argonne," 587-88. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1517-23. *Field Operations*, 531-41, 634-35.

¹⁴¹Letter, Alexander N. Stark, Chief Surgeon First Army, to Assistant Chief of Staff, G-4, First Army, 4 November 1918, Subject: Moving of Evacuation Hospitals. TMs, Army War College Historical Section, Carlisle, PA. Stark, "Hospitalization for St. Mihiel Operation and

The biggest problem in moving the hospitals was a lack of transportation. Each division and corps suffered from a shortage of trucks and horses. The sanitary trains could not help, because they needed all their trucks to evacuate patients. The other units in the Army needed trucks for hauling ammunition, supplies, troops, and artillery forward. Hospitals were a lower priority.¹⁴²

The divisions required care forward and the Medical Department developed two solutions for the problem. First, field hospitals set up along evacuation routes to provide rest stations for the casualties as they went back to evacuation hospitals. These hospitals treated shock, redressed wounds, and provided necessary care for the wounded. As an ambulance returned from the front, if the patient developed signs of distress, the ambulance would drop him off at the field hospital for stabilization. It would then pick up another patient who could stand the journey back to the evacuation hospitals. This allowed the ambulance to keep moving in its convoy without jeopardizing the lives of the wounded by delaying their care. The second modification was to assign the surgical and X-ray trucks from mobile hospitals to divisional triage hospitals. These teams had their own trucks so that they could keep up with the triage as it moved forward.¹⁴³

Problems arose in the coordination between the evacuation system and the hospitals. One problem occurred from trying to keep the ambulances

ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 531-41, 634-35, 810-837.

¹⁴²Letter, Alexander N. Stark, Chief Surgeon First Army, to Assistant Chief of Staff, G-4, First Army, 4 November 1918, Subject: Moving of Evacuation Hospitals. TMs, Army War College Historical Section, Carlisle, PA. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 531-41, 634-35, 810-837.

¹⁴³Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 531-41, 634-35, 734-35, 810-837.

going to hospitals which had beds available or treated a particular class of patient, while the hospitals were moving, filling up, and evacuating patients. At one point, the First Corps had patients going to eleven different hospitals in eleven different places. To solve this, Stark had the corps surgeons assign an officer to regulate the flow of the ambulances. He changed the routing of the ambulances as hospitals filled and emptied. The system used traffic signs, couriers and military police. It allowed the balanced use of all the evacuation hospitals, so none were overloaded while others were empty.¹⁴⁴

A second problem was that too many unoperated cases were arriving at base hospitals. This markedly increased the morbidity, predisposing the soldier to infection and gangrene. Finney and Stark helped by assigning these cases to more experienced surgeons at the front. These special teams rapidly treated these lightly wounded cases, while the slower operators worked on other cases requiring detailed care. This allowed the rapid treatment of many soldiers who would otherwise have had to wait until after their evacuation for operation. The number of unoperated cases evacuated to the base hospitals dropped from 11,370 during the first phase of the offensive to 293 in the second.¹⁴⁵

Some of the consultants tried to have special hospitals at the front, similar to the specialized base hospitals. The Medical Department tested this system with a specialized neurosurgical hospital at Mobile Hospital No. 6. It rapidly became apparent that this hospital required its own ambulance service to insure the delivery of its patients from the other hospitals. It also needed special triage to separate the neurosurgical cases and send them to

¹⁴⁴ *Field Operations*, 542-43, 634-38.

¹⁴⁵ Lyle, "Evacuation in the Meuse-Argonne," 587-88. *Report of the Surgeon General*, 1919, 1517-23. *Field Operations*, 531-41, 634-35.

Mobile Hospital No. 6. The consultants solved the problem of getting specialized care for the patients by assigning specialists to each evacuation hospital.¹⁴⁶

THE ARMISTICE

The Meuse-Argonne offensive and the First World War ended 11 November 1918. The Medical Department was exhausted. Its job was not yet over. Almost ten per cent of the A. E. F. was in the hospital. The hospitals in France continued to care for the convalescing patients. As the hospitals emptied, they went back to the United States. Evacuation hospitals accompanied the Third Army to Germany as part of the occupation force.¹⁴⁷

The Medical Department supported the largest Army that the United States had fielded overseas, 1,910,934 men in Europe in November 1918. The A. E. F. suffered 224,089 wounded, 36,694 killed in action, and 13,691 died of wounds during the war. In addition, it had 1,000,683 soldiers admitted to hospitals for disease and non-battle injuries, while 23,998 died. To treat this force, the A. E. F. Medical Department had 18,146 officers, 10,081 nurses, and 145,815 enlisted men. The casualty figures represented the lowest mortality rates both from wounds and from non-battle causes in any previous American war.¹⁴⁸ Major General Johnson Hagood summed up the performance of the Medical Department when he said:

I am absolutely certain they [our soldiers] had better medical attention [than any other soldiers in Europe]. In fact, one of the worst things that could be said about a sick or wounded man in France was

¹⁴⁶Lyle, "Evacuation in the Meuse-Argonne," 587-88. *Report of the Surgeon General, 1919*, 1517-23. *Field Operations*, 531-41, 634-35. Cushing, *Surgeon's Journal*, 458-60.

¹⁴⁷Albert G. Love, *War Casualties: Their Relation to Medical Service and Replacements*, Army Medical Bulletin No. 24, (Carlisle Barracks, PA: Medical Field Service School, 1931), 44.

¹⁴⁸*Medical Statistics*, 82, 103, 147. *Administration A. E. F.*, 93.

that he had not yet been taken to the American hospital. To many this sounded almost as bad as to say that he was still lying on the battlefield.¹⁴⁹

The Medical Department could not rest on its success. The war demonstrated strengths and weaknesses of its organization. It now had to analyze its performance to improve it.

¹⁴⁹Hagood, *Services of Supply*, 346.

CHAPTER 5

ASSESSMENT AND CONCLUSIONS

INTRODUCTION

In World War I, the Army Medical Department matured into a modern medical service. The system developed has survived with minor modifications down to the present. The ability to implement a successful health care system for a mass army overseas challenged the Medical Department. Through effective preparation and skillful adaptation of doctrine, it succeeded. A brief analysis of the achievements and failures during the war helps to understand how that success evolved.

MEDICAL PREPARATION AND ORGANIZATION

Before the war, the Medical Department prepared to support the Army by building on the experiences of the Civil War, the Spanish American War, and the Indian Wars. It allowed for rapid expansion by using the civilian medical community and a Medical Reserve. For the battlefield, the medical planners developed a comprehensive medical doctrine, which established levels of care from front to rear and had systems for handling medical supplies, and infectious disease. After the United States entered the war, it adapted its doctrine to the changing conditions overseas. This allowed the Medical Department to furnish excellent medical care to the A. E. F., which was the largest force ever fielded by the United States up to that time.

MOBILIZATION

The Medical Department had to raise, equip, and send overseas a larger medical force than any previous one in its history. World War I was the first major overseas conflict that the United States fought, so there was no existing doctrine on how to create and move such a force. Despite this, by the end of the war, the A. E. F. Medical Department had 17,487 officers, 8,951 nurses, and 137,403 enlisted men.¹

To raise this force was one of the Medical Department's successes. However, the inexperience in medical mobilization caused undue reliance on those units that the Army organized early in the conflict, while other units remained either unformed or in the United States. The greatest successes lay in the area of civilian-military cooperation that led to the formation of the Red Cross Base Hospitals and in the Medical Officers Reserve Corps. The worst failures were the neglect by the Army to raise any non-divisional medical units in peacetime.

CIVILIAN-MILITARY COOPERATION

One of the most important developments was the close relationship between the Medical Department and the American National Red Cross, which provided a link between the Army and the civilian medical community. The Red Cross helped coordinate the civilian volunteer efforts for the Army. When war came, this proved of incomparable value in enabling the Medical Department to expand.

Medical volunteers, such as George Crile, went to France to work with the French and British in Red Cross hospitals. The civilians who worked as

¹Joseph H. Ford, *The Medical Department of the United States Army in the World War, Volume II, Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 93. (Hereafter referred to as *Administration, A.E.F.*)

volunteers in France supplied the impetus for the civilian medical community to mobilize in support of the military. In particular, Crile proposed organizing hospitals from university hospitals. These units eventually became Red Cross Base Hospitals. Brigadier General Jefferson R. Kean who served as the director of military affairs at the Red Cross had responsibility for raising these units. He raised fifty hospitals, forty-nine of which served overseas. At Kean's retirement, Surgeon General Merritte W. Ireland remarked that these hospitals made up "one leg of the tripod forming the foundation of the Medical Department in the World War."²

Why were these Red Cross hospitals such an essential aspect of the medical care? First, they represented a reserve of medical units that the Army could rapidly mobilize and deploy. For example, Base Hospital No. 4 mobilized and departed for Europe ten days after receiving orders. These were the only units other than the Regular Army that could respond that quickly. Rapid response meant that when the initial calls came for hospitals overseas, these hospitals went.³

Second, base hospitals were the source for many of the augmentation teams and units formed in Europe. The only medical units in France that could spare personnel were base hospitals. This borrowing from base hospitals occurred even more dramatically in forming units that were not in the *Manual for the Medical Department*. For example, of the first six mobile hospitals formed, five came from the companies of the first six base hospitals in France.⁴

²James A. Tobey, *The Medical Department of the Army Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1927) 37.

³George W. Crile, *An Autobiography*, edited with sidelights by Grace Crile, 2 Vol., (Philadelphia and New York: Lippincott, 1947), 273-75.

⁴Harvey Cushing, *From a Surgeon's Journal: 1915-1918*, (Boston: Little, Brown, and Company, 1936), 402-03. Crile, *Autobiography*, 348. U.S. Army, A.E.F. Base Hospital No. 4,

The vast majority of surgical, shock, and splint teams that reinforced the evacuation and field hospitals came from base hospitals as well. Without these teams, the evacuation hospitals could not have handled the demands placed on them during battles such as the Aisne-Marne campaign or the Meuse-Argonne offensive. Base hospitals supplied these teams at the same time that increased fighting placed heavier demands on their own staffs.⁵

The A. E. F. Chief Surgeon's office did not limit its borrowing of base hospital personnel only to staff medical units. It also depended heavily on base hospitals to supply administrative help as well. When the first base hospitals arrived in France, the adjutants all went to the Chief Surgeon's office to expand that office. When the A. E. F. established a professional service to supervise specialty care, all the men who served as consultants initially served with one of the base hospitals. The consultant system and base hospitals gave the A. E. F. the finest medical expertise available.⁶

The third reason that base hospitals were important to the A. E. F. and the Medical Department was that they were organized and functioned as units. All other Army Reserves were individuals. Base hospitals, in contrast, worked together, trained together, and knew each other before they went to war. This allowed them to start work immediately on mobilization, avoiding lengthy train-up.⁷

Album de la Guerre, (Cleveland: Scientific Illustrating Studios, 1919), 19-24 U.S. Army, A.E.F. Base Hospital No. 10, *History of the Pennsylvania Hospital Unit (Base Hospital No. 10, U.S.A.) in the Great War*, (New York: P. B. Hoebner, 1921), 94-95.

⁵War Department, *Report of the Surgeon General, 1919*, (Washington, D. C.: Government Printing Office, 1919), 1487. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 15, *Reports of the Commander-in-Chief, A.E.F., Staff Sections and Services*, (Washington, D.C.: Government Printing Office, 1948), 417 (Hereafter referred to as *Historical Division, Reports*).

⁶Joseph H. Ford, *The Medical Department of the United States Army in the World War, Volume II, Administration American Expeditionary Forces*, (Washington, D.C.: Government Printing Office, 1927), 351-358, (Hereafter referred to as *Administration, A.E.F.*).

⁷Crile, *Autobiography*, 276.

MEDICAL RESERVE CORPS

The Medical Department was the first branch of the Army to have a Reserve Corps. The founding of the Medical Officers Reserve Corps in 1908 proved the forerunner for the entire Army Reserve system. The reserves had two important benefits for the Army and the Medical Department. First they furnished a pool of at least partially trained officers to staff the rapidly forming units. Second, the system allowed an administrative way to recruit, commission, and promote medical officers during the rapid expansion of 1917 and 1918. This prevented much of the confusion and disorder that occurred in 1898 when the Army tried to mobilize doctors for the Spanish-American War.⁸

LACK OF NECESSARY HOSPITAL UNITS

The dependence on base hospitals points out one of the failings of the pre-war planning. The Medical Department failed to establish many of the units that it needed to support an army. When the United States declared war, the only medical units formed with personnel assigned were base hospitals, field hospitals, and divisional and regimental sanitary trains. All the evacuation hospitals, medical supply depots, evacuation ambulance companies had to form, organize, and train before they could get overseas. This led to an imbalance in the medical support units in the A. E. F., with the divisions with their full complement of medical support and little behind them.⁹

⁸Charles Lynch, Frank W. Weed, and Loy McAfee, *The Medical Department of the United States Army in the World War, Volume I, The Surgeon General's Office*, (Washington, D.C.: Government Printing Office, 1923), 60, (Hereafter referred to as *The Surgeon General's Office*).

⁹*Surgeon General's Office*, 65-66.

The Medical Department failed to raise many units required by the *Manual for the Medical Department* even after the declaration of war. No camp hospitals, convalescent camps, and similar units formed in the United States. All these units formed in Europe using casual medical personnel and officers, nurses, and men from other units. The failure to organize these necessary medical units weakened the hospitals that supplied personnel. The camp hospitals and other new units struggled, because they never worked or trained as a unit.¹⁰

ALLIED EXPERIENCE

The Army also learned from the experience of the Allies. The lessons learned helped the United States coordinate its medical effort as part of the Allied. The lessons also stimulated the Americans to change their medical doctrine to adapt to changes that the French and British had made. Before the United States entered the war, the Medical Department sent officers to Europe to observe the medical support that the combatants used. These men became leaders in the A. E. F. Brigadier General Alfred E. Bradley, a liaison officer with the British, became the first Chief Surgeon. Colonel Sanford H. Wadhams, who worked with the French, served as the deputy to the Chief Surgeon. The close relationship that Wadhams established with the French helped him coordinate medical support with them.¹¹

The Allies fought for three long years before the United States entered the war. They developed a system that handled the casualties generated in the trench warfare. It relied on triage stations near the front to send patients

¹⁰Sanford H. Wadhams and Arnold D. Tuttle, "Some of the Early Problems of the Medical Department, A.E.F.," *Military Surgeon* 45 (December, 1919), 640-44. *Administration, A.E.F.*, 19-23, 39.

¹¹Wadhams and Tuttle, "Early Problems," 640-44. *Administration, A.E.F.*, 19-23, 39.

to the appropriate facility. Behind these were field and evacuation hospitals. The Allies used mobile surgical hospitals to supplement surgical capability at the front. From these and evacuation hospitals, patients returned to base hospitals for definitive care.¹²

The Americans adjusted their pre-war doctrine to approximate that of the Allies. The French *Auto-chir* became the American mobile hospitals.¹³ American medical officers toured French and British facilities to learn first hand about wartime medical care. French and British doctors lectured at the medical training school at Langres. Similarity in doctrine allowed the medical services of the Allies to work well together. It also enabled the American medical units to minimize their learning time by profiting from the Allied experiences.¹⁴

The medical system they developed worked well for both the French and the British. The static conditions of the trench warfare made it easy to establish hospitals near the front lines with set evacuation routes for the wounded. The general staff planned offensive operations well in advance, so medical planners could easily make sufficient hospitalization available. The lines never moved more than a few kilometers at a time, which spared the medical services from long evacuation distances or having to move hospitals.

PROBLEMS WITH THE ALLIES

All was not perfect, however. Allied doctrine's reliance on fixed facilities impaired medical care in 1918. The nature of the war changed from

¹²*Report of the Surgeon General, 1919*, 1464-68. Historical Division, *Reports*, 418-19, *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 659-61.

¹³The *Auto-chir*, or *Ambulance Chirurgicale Automobile* was the French mobile surgical hospital.

¹⁴*Report of the Surgeon General, 1919*, 1464-68. Historical Division, *Reports*, 418-19, *Administration, A. E. F.*, 284-85. Wadhams and Tuttle, "Early Problems," 659-61.

trench stalemate to mobile and fluid warfare. As the French and British retreated in the face of the German assault, they left behind many of their fixed hospitals. The French alone lost 45,000 beds. When the Americans started in combat, they attached their divisions to the French, with the French to supply hospitalization for the Americans. The loss of so many hospital beds prevented the French from providing this care. American hospitals had to rush to the front to care for the wounded.¹⁵

Another problem that affected medical support was the great distance back to the United States, compared with the shorter distances to England or the rest of France. Neither American nor Allied doctrine made allowance for holding soldiers while they convalesced. Both the British and the French sent them home to heal. The long distance across the Atlantic prevented the Americans from using that method. The Medical Department had to construct and staff convalescent camps. The requirement for unplanned medical facilities stressed the system by using personnel and equipment needed elsewhere. Again, lessons learned by the Allies misled the medical planners in the A. E. F.¹⁶

HOSPITALIZATION

The A. E. F. Medical Department established a complete hospitalization system in France. By the Armistice, the American Army had 276,347 hospital beds in France, 192,844 normal and 83,503 emergency capacity beds. It had 153 base hospitals, 66 camp hospitals and 12

¹⁵J. R. Kean, "Evacuation of the American Wounded in the Aisne-Marne Battles, June and July, 1918," *Military Surgeon* 56 (April 1925): 473-77. Derby, "Wade in Sanitary!," 49-51. Charles Lynch, Joseph H. Ford, and Frank W. Weed, *The Medical Department of the United States Army in the World War, Volume VIII, Field Operations*, (Washington, D.C.: Government Printing Office, 1925) 320-29 (Hereafter referred to as *Field Operations*).

¹⁶*Administration, A. E. F.*, 286.

convalescent camps. At the front, thirty-nine evacuation hospitals worked (nine of these arrived in November 1918). The Medical Department furnished this massive hospitalization capability through an aggressive construction program, modification of existing buildings, and addition of emergency beds. This hospitalization capacity was barely enough. During the Meuse-Argonne offensive, the influenza pandemic struck the A. E. F. The number of patients overloaded the medical system, by 23 October 1918, there were 20,000 more patients than normal bed capacity in the A. E. F. The Medical Department handled the emergency well by rapidly expanding the bed capacity through emergency beds and accelerated construction of new hospitals. The staffs of these expanded hospitals often stretched to dangerous levels. At Base Hospital No. 45, each ward physician had 250 patients under his care, more than were in the largest hospital in Richmond, Virginia, where it had formed, at the time.¹⁷

The shortage of Medical Department personnel and units caused medical units constantly to work over their expected capacities. The Medical Department had estimated that fourteen per cent of the force needed to be medical to supply adequate medical care. Instead, it received authorization for only 7.65 per cent and it did not reach this percentage until October 1918. Infantry and machine gun units had displaced the medical units on the ships from the United States. This shortage in medical units and personnel forced the Chief Surgeon's office to move hospitals constantly to provide help where the situation was worst. Units in France constantly expanded their bed space

¹⁷*Report of the Surgeon General, 1919*, 1341, 1343. [Geisinger, Joseph F.], ed., *History of U.S. Army Base Hospital No. 45 in the Great War (Medical College of Virginia Unit)*, (Richmond, VA: William Byrd Press, 1924) 71.

without significant increase in their staffs. Base Hospital No. 6, originally designed for 500 patients, had 4,319 at the Armistice.¹⁸

SLIGHTLY WOUNDED

The inability to handle the slightly wounded and sick increased overcrowding in hospitals. There was no place to care for these soldiers closer to the front than base hospitals. Often these patients filled the ambulance services and evacuation hospitals; both of which were designed for and needed by the more seriously wounded. The soldiers were lost to their units for weeks, instead of the few days that their conditions merited. The number of these soldiers needlessly sent to the rear ran as high as 50,000. This added to the bed shortage in the A. E. F. Major Roger I. Lee wrote about this problem in *Military Surgeon*, in March 1918. He recommended establishing an "out-patient" department for each hospital, to hold patients until they were able to return to their units. The situation worsened in the Meuse-Argonne offensive. During this operation, corps hospitals and rest camps formed to hold and treat these patients close to the front and their units.¹⁹

MOVING HOSPITALS

The inability of hospitals to move further complicated the shortage. Hospitals designed for trench warfare could not move rapidly where needed. When they did move, it took days and required finding new buildings to use in a crowded combat zone. This relative immobility led to casualties

¹⁸[George Clymer], ed., *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*, (Boston: Privately published, 1924), 8.

¹⁹Roger I. Lee, "The Case for More Efficient Treatment of Light Casualties in Military Hospitals," *Military Surgeon* 42 (March 1918) 287-86. Report of Evacuation Branch G-4 Argonne-Meuse Operation, TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA. Lyle, "Evacuation in the Meuse-Argonne," 587-88. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1517-23. *Field Operations*, 531-41, 634-35.

overloading certain hospitals while hospitals in other sectors remained idle. The inability to transfer hospitals quickly further complicated the shortage of hospitals and personnel.

Hospitals lacked sufficient organic transportation to move with the troops. This problem peaked in the Meuse-Argonne offensive, where the First Army Surgeon felt that he could not have moved another hospital if the armistice had not intervened. Evacuation and field hospitals lacked sufficient trucks and depended on the army or corps transportation assets to move. The army and corps needed these trucks for other supplies. Medical units tended to be low priority. The distance lengthened from the front to evacuation hospitals, which could not move to keep up. The longer distances complicated and delayed evacuation. Severely wounded soldiers were less likely to survive the longer trips. The Medical Department devised three stopgap measures. It created rest stations to resuscitate patients having problems along the evacuation routes. The surgical and X-ray sections of the mobile hospitals, which had sufficient trucks, moved forward while the rest of the hospital remained behind. Finally, field hospitals received augmentation to allow them to care for those patients who could not survive the trip to the rear. The Medical Department constantly compensated for a shortage of units, and personnel as it adapted to a war on a scale never before imagined.²⁰

²⁰Letter, Alexander N. Stark, Chief Surgeon First Army, to Assistant Chief of Staff, G-4, First Army, 4 November 1918, Subject: Moving of Evacuation Hospitals. TMs, Army War College Historical Section, Carlisle, PA. Alexander N. Stark, "Explanation and Execution of Plans for Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive," *Lectures, 1st Army Staff*, TMs, United States Army Command and General Staff College Library, Fort Leavenworth, KS. *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 531-41, 634-35, 810-837.

Modern medical planners face many of the same problems as their counterparts in World War I. Medical units must move forward with the combat units. They need to have the assets to do so. Many of our modern hospitals lack sufficient assets to move themselves and must have augmentation to do so. The demands for transportation assets are possibly greater today than in World War I.

EVACUATION

The Army had mixed success with its evacuation system. Medical doctrine described the evacuation of patients from the front line to hospitals in the United States. It prescribed units to carry out each step of the evacuation. The failure of the Army to raise and transport adequate numbers of these units to France created severe problems for the Medical Department. The Medical Department proved innovative in adapting to this shortage. It procured hospital trains and barges in Europe to transport the patients. Medical regulating officers directed the flow of these patients to the rear to prevent overloading any one base hospital or hospital center. The French lent the Americans hospital trains to make up for the shortage.

The patient distribution during the Meuse-Argonne offensive demonstrates the effectiveness of the regulating system and the hospital trains. The Medical Department had 170,305 patients in camp and base hospitals on 7 November 1918. The Advance Section, closest to the front, had only about forty per cent of its beds occupied while the base sections had over eighty per cent occupied. This allowed rapid treatment and hospitalization of battle casualties near the front despite the drastic patient overload.²¹

²¹*Administration, A.E.F.*, 314-15.

At the front, problems with evacuation proved more difficult to solve. To carry out the massive evacuations required in battles like the Meuse-Argonne, the Medical Department borrowed trains, ambulances, trucks, even sight-seeing buses. Since the roads in the combat areas were often crowded and in poor shape, ambulances had to make longer hauls over congested roads, which further increased the number of ambulances required.

The ambulances available had to use roads, so when roads were impassable, such as in the Meuse-Argonne, the ambulance companies used horse-drawn wagons. There were only twelve of these in a division. Combat unit commanders used the wagons they had to carry ammunition and other supplies. The Medical Department failed to provide adequate cross-country transportation. This inability to move off the road slowed evacuations and forced medical officers to improvise to transport the wounded.

Much of the doctrine the Americans and Allies developed was for trench warfare in fixed formations. Evacuations took place over good roads and were relatively short. In the offensive, evacuation distances stretched as the front moved farther from evacuation hospitals. The longer distances required more ambulances than trench warfare, with its fixed evacuation routes. The road congestion as men, artillery, ammunition, and other supplies rushed to the front delayed evacuation and increased the number of ambulances needed. The A. E. F. had an ambulance shortage; decreased demand for ambulances in trench operations had masked this shortage.²²

²²Letter, Alexander N. Stark, Chief Surgeon First Army, to Assistant Chief of Staff, G-4, First Army, 4 November 1918, Subject: Moving of Evacuation Hospitals. TMs, Army War College Historical Section, Carlisle, PA. Stark, "Hospitalization for St. Mihiel Operation and ARGONNE-MEUSE Offensive." *Report of the Surgeon General, 1919*, 1476, 1517-23, 1691-1705. *Field Operations*, 531-41, 634-35, 810-837.

SANITATION

Field sanitation was a triumph of the Medical Department. The Army had learned the lessons of the Spanish-American War. Typhoid, which ravaged the Army in 1898, was rarely seen in 1917 and 1918. The A. E. F. had an efficient and thorough vaccination system for typhoid. It also aggressively sought carriers and infected water supplies, which prevented spread of the disease.²³

The A. E. F. had the lowest rate of venereal disease among the Allied Armies. This resulted from the integrated treatment and prophylaxis plan developed. General Pershing, himself, emphasized the importance of the prevention of venereal disease. General Orders, A. E. F. Nos. 2, 34, and 77 all concern the prevention of venereal disease. This command emphasis helped immeasurably in the enforcement of the prophylactic measures employed. The A. E. F. treated soldiers with venereal disease at their units. The patients did not get evacuated from the front. The British treated their soldiers in the rear; venereal disease proved an easy way to get out of the trenches in the British Army. The combination of command emphasis, soldier education, and aggressive treatment and prophylaxis prevented much illness and suffering in the A. E. F.²⁴

²³Weston P. Chamberlain and Frank W. Weed, *The Medical Department of the United States Army in the World War, Volume VI, Sanitation*, (Washington, D.C.: Government Printing Office, 1926) 534 (Hereafter referred to as *Sanitation*).

²⁴*Sanitation*, 899-970. Hugh H. Young, *Hugh Young: A Surgeon's Autobiography*, (New York: Harcourt, Brace and Co., 1940), 264-69. Historical Division, Department of the Army, United States, *United States Army in the World War, 1917-1919*, Vol. 16, *General Orders, G.H.Q., A.E.F.*, (Washington, D.C.: Government Printing Office, 1948), 11-12, 71-72, 144-46. (Hereafter referred to as Historical Division, *General Orders*).

STAFF ORGANIZATION

Both the A. E. F. and the Medical Department struggled to establish the optimum administrative system. The original staff organization of the A. E. F. had the Chief Surgeon at G. H. Q. This worked well for the Medical Department, for it allowed the Chief Surgeon direct medical input concerning operations, locations of units, and similar concerns. The Hagood Board recommended limiting the size of G. H. Q. and moving all the administrative and technical staff services to the Services of Supply. This moved the Chief Surgeon's office to the supply services of the S. O. S.²⁵

This new organization created problems for the Medical Department. First, it removed all medical personnel from the General Staff. Second, because it removed the medical units in the Zone of the Armies from the control of the Chief Surgeon, he no longer had any official say in the deployment or use of hospitals and other medical units in combat. Only through liaison officers with the General Staff did the Chief Surgeon maintain the ability to give medical concerns and advice. These officers eventually became part of the General Staff G-4 section. This solution functioned only because men like Brigadier General George Van Horn Moseley, the Assistant Chief of Staff, G-4, worked to keep the channels open between the G. H. Q. and the S. O. S.²⁶

After the war, army doctrine changed to reflect the need for medical staff at G. H. Q. In a letter to the A. E. F. chief of staff, 24 March 1919, Brigadier General Walter D. McCaw emphasized the need for medical

²⁵Johnson Hagood, *The Services of Supply, A Memoir of the Great War*, (Boston and New York: Houghton Mifflin Company, 1927), 129-147. James A. Huston, *The Sinews of War: Army Logistics 1775-1953*, Army Historical Series, (Washington, D. C.: Office of the Chief of Military History, United States Army, 1966), 360-61. Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 60-62.

²⁶Wadhams and Tuttle, "Early Problems," 643-45. *Administration, A.E.F.*, 60-62.

representation on the general staff and gave a proposed table of organization with the Chief Surgeon at G. H. Q. He wrote, 29 May 1919, that "medical care had suffered by being treated as a supply service." He pointed out that medical support required much more than simply supplying the soldiers with medical supplies, but that it involved detailed technical and administrative decisions that needed to be made by the General Staff at General Headquarters.²⁷

Surgeon General Ireland emphasized the G. H. Q. policy-making role in an address published in the *Military Surgeon* in 1928. He stated unequivocally, "It is...necessary that the chief surgeon maintain his office... at General Headquarters and keep in close touch with the commander-in-chief and his General Staff." M. A. W. Shockley wrote extensively on the organization of medical support in the theater of operations. His book, *An Outline of the Medical Service of the Theatre of Operations*, served to codify much of the medical doctrine derived from the war. He considered having the Chief Surgeon away from G. H. Q. in an organization like the S. O. S. to be the second choice.²⁸

Neither the Chief Surgeon, nor the medical section at G. H. Q. was able to act as the medical staff officers for the armies or corps. The Medical Department assigned a medical officer to advise the commander and run the evacuation hospitals, evacuation ambulance companies, and other army and corps medical assets. This markedly improved the control and utilization of medical units. The Army used the lessons learned in the war to institute the

²⁷United States War Department, *Report of the Surgeon General*, 1919, 2 Vol. (Washington, D.C.: Government Printing Office, 1919), 1439. Letter, chief surgeon, A. E. F., to chief of staff, A. E. F., reprinted in *Administration, A.E.F.*, 67-69.

²⁸Merritte W. Ireland, "The Medical Service in a Theater of Operations," *Military Surgeon* 62 (May 1928), 574-576. M. A. W. Shockley, *An Outline of the Medical Service of the Theatre of Operations*, (Philadelphia: P. Blakiston's Son and Co., 1922), 8.

current system of having the surgeon as a special staff officer at each command headquarters.

APPLICATION TO MODERN MILITARY MEDICINE

The successes and the problems from World War I served as the basis for medical doctrine after the war and the Medical Department up to the present. Some names have changed, but the functions remain unchanged from World War I. Mobile hospitals became mobile army surgical hospitals (MASH), field hospitals became divisional clearing companies, and base hospitals became general and station hospitals. The flow of patients from the front back through the medical system differs today only through more efficient means of evacuation.

The base hospitals raised by the Red Cross functioned as the first reserve units available to the Army. Before the raising of these units, all units belonged to either the Regular Army or the National Guard. The success of these units foreshadowed the change in the Army Reserve from individual soldiers to organized units that train and fight together. The Army raised general hospitals in World War II by the same method of organizing them from the staffs of the university hospitals. This provided personnel who had worked together in the same unit without being in the Reserves. Since then, the rise of the Army Reserves has reduced the need for raising hospital units this way.²⁹

The lessons learned by the Medical Department in World War I provided the basis for the medical system in World War II, Korea, Viet Nam, and the present. Currently, all medical units called for by doctrine are

²⁹Richard B. Crossland and James T. Currie. *Twice the Citizen, A History of the United States Army Reserve, 1908-1983*. (Washington, D.C.: Office of the Chief, Army Reserve. 1984). 18-20.

organized, either in the Reserves or the Active Army. Medical units train for their wartime missions as well as providing peacetime medical care. The success in preventing disease has expanded and remains one of the major missions of the Medical Department.

Modern doctrine emphasizes that future wars will probably be contingency in nature. American forces will likely fight overseas as part of an international force. World War I provides the first example in American history of the United States sending a major expeditionary force overseas as part of an international effort. The problems of adapting to the Allies medical system, providing support over long lines of communication, and the limited shipping assets going to combat units rather than support units trouble today's medical planners as much as they did those in 1917. The study of medical support in World War I serves as an example of how to overcome these hardships.

APPENDIX

ABBREVIATIONS USED

A. C. S.	-----	Assistant Chief of Staff
A. E. F.	-----	American Expeditionary Forces
C. C. S.	-----	Casualty Clearing Station
G. H. Q.	-----	General Headquarters
G. Q. G.	-----	French General Headquarters
L. O. C.	-----	Line(s) of Communication
S. O. S.	-----	Services of Supply

BIBLIOGRAPHY

BOOKS

- Ashburn, P. M. *A History of the Medical Department of the United States Army*. Boston and New York: Houghton Mifflin Company, 1929.
- Barclay, Harold. *A Doctor in France, 1917-1919: The Diary of Harold Barclay*. New York: Privately printed, 1923.
- Bicknell, Ernest Percy. *With the Red Cross in Europe 1917-1922*. Washington, D.C.: American National Red Cross, 1938.
- Bunts, Alexander T. and George Crile, Jr. *To Act as a Unit: The Story of the Cleveland Clinic*. Cleveland: Cleveland Clinic Foundation, 1971?
- Coffman, Edward M. *The War to End All Wars: The American Military Experience in World War I*. New York: Oxford University Press, 1968.
- Crile, George W. *George Crile, an Autobiography*. ed. with sidelights by Grace Crile. 2 Vol. Philadelphia and New York: Lipincott, 1947.
- Crossland, Richard B. and James T. Currie. *Twice the Citizen A History of the United States Army Reserve, 1908-1983*. Washington, D.C.: Office of the Chief, Army Reserve, 1984.
- Cushing, Harvey Williams. *From a Surgeon's Journal*. Boston: Little Brown, 1936.
- Davison, Henry P. *The American Red Cross in the Great War*. New York: Macmillan Co, 1919
- Dulles, Foster Rhea. *The American Red Cross: A History*. New York: Harper and Brothers, 1950.
- Derby, Richard. *"Wade in, Sanitary!": The Story of a Division Surgeon in France*. New York and London: G/ P. Putnam's Sons, 1919.
- Engelman, Rose C. and Robert J. T. Joy. *Two Hundred Years of Military Medicine*. Fort Detrick, MD: The Historical Unit, U. S. Army Medical Department, 1975.
- Finney, John M. T. *A Surgeon's Life*. New York: G. P. Putnam's Sons, 1940.
- [Garrison, Fielding H.] *Our New Army Medical Department*, New York: Paul B. Hoeber, 1918.
- George, Herbert [C.]. *The Challenge of War*. New York, Washington, Hollywood: Vantage Press, 1966.

- Gillett, Mary C. *The Army Medical Department, 1818-1865*. Army Historical Series. Washington, D.C.: Center of Military History, United States Army, 1987.
- Gorgas, William Crawford. *Inspection of Medical Services with American Expeditionary Forces. Confidential Report to Secretary of War*. Washington, D.C.: Government Printing Office, 1919.
- Grissinger, Jay Weir. *Medical Field Service in France*. Washington, D.C.: Association of Military Surgeons, 1928.
- Hagood, Johnson. *The Services of Supply: A Memoir of the Great War*. Boston: Houghton Mifflin, 1927.
- Harbord, James G. *The American Army in France, 1917-1919*. Boston: Little, Brown, 1936.
- Heller, Charles E. *Chemical Warfare in World War I: The American Experience, 1917-1918*. Leavenworth Papers No. 10. Fort Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1984.
- Historical Branch, War Plans Division, General Staff. *Organization of the Services of Supply American Expeditionary Forces*. Washington, D.C.: Government Printing Office, 1921.
- Huston, James A. *The Sinews of War: Army Logistics, 1775-1953*. Army Historical Series. Washington, D.C.: Government Printing Office, 1966.
- Hutchinson, Woods. *The Doctor in War*. Boston: Houghton, Mifflin Company, 1918.
- Kreidberg, Marvin A. and Merton G. Henry. *History of Military Mobilization in the United States Army 1775-1945*. Washington, D.C.: Government Printing Office, 1955.
- Liggett, Hunter. *A.E.F. Ten Years Ago in France*. New York: Dodd, Mead and Company, 1928.
- Love, Albert Gallatin. *War Casualties: Their Relation to Medical Service and Replacements*. Army Medical Bulletin No. 24. Carlisle Barracks, PA: Medical Field Service School, 1931.
- Olmsted, Frederick Law. *The Papers of Frederick Law Olmsted*. ed. Charles Capen McLaughlin. series ed. Charles E. Beveridge. Vol IV, *Defending the Union*. ed. Jane Turner Censer. Baltimore and London: The Johns Hopkins University Press, 1986.

- Owen, William O. *A Chronological Arrangement of Congressional Legislation Relating to the Medical Corps of the United States from 1785 to 1917*. Chicago: American Medical Association, 1918.
- Schaffer, Ronald. *The United States in World War I: A Selected Bibliography*. Santa Barbara, CA and Oxford, England: Clio Books, 1979.
- Shockley, M. A. W. *An Outline of the Medical Service of the Theater of Operations*. Philadelphia: P. Blakiston's Son and Company, 1922.
- Strott, George G. *The Medical Department of the United States Navy with the Army and Marine Corps in France in World War I*. Washington, D.C.: Government Printing Office, 1947.
- Thomas, Shipley. *The History of the A. E. F.* New York: George H. Doran Company, 1920.
- Tobey, James A. *The Medical Department of the Army - Its History, Activities and Organization*. Baltimore: Johns Hopkins Press, 1927.
- Wiley, Bell Irvin. *The Life of Billy Yank: The Common Soldier of the Union*. Baton Rouge and London: Louisiana State University Press, reissued, 1978.
- Woodward, David R. and Robert Franklin Maddox. *America and World War I: A Selected Bibliography of English-Language Sources*. New York and London: Garland Publishing, Inc., 1985.
- Yerkes, Robert M. *The New World of Science; Its Development During the War*. New York: The Century Company, 1920.
- Young, Hugh H. *Hugh Young: A Surgeon's Autobiography*. New York: Harcourt, Brace and Company, 1940.

UNIT RECORDS

BASE HOSPITALS

- U.S. Army, A.E.F. Base Hospital No. 4. *Album de la Guerre*. Cleveland: Scientific Illustrating Studios, 1919.
- [Clymer, George], ed. *The History of U.S. Army Base Hospital No. 6 and Its Part in the American Expeditionary Forces*. Boston: Privately published, 1924.
- Base Hospital N.9, A.E.F.: A History of the Work of the New York Hospital Unit during Two Years of Active Service: Written by the Padre*. New York: Privately published, 1920.

- U.S. Army, A.E.F. Base Hospital No. 10. *History of the Pennsylvania Hospital Unit (Base Hospital No. 10, U.S.A.) in the Great War*. New York: P. B. Hoebner, 1921.
- History of Base Hospital No. 18, American Expeditionary Forces*. Baltimore: Base Hospital No. 18 Association, 1919.
- Swan, John M. and Mark Heath. *A History of United States Army Base Hospital No. 19, American Expeditionary Forces, Vichy, France APO 781*. Rochester: Wegman Walsh Press, Inc., 1922.
- Hitz, Benjamin D., ed. *A History of Base Hospital 32 (Including Unit R)*. Indianapolis: Privately published, 1922.
- [Pitts, Edmund M., William T. Bauer, and Malcolm G. Sausser], *Base Hospital 34 in the World War*. Philadelphia: Lyon and Armor, 1922.
- [Cooper, Alice E.], ed. *A History of the United States Army Base Hospital No. 36 (Detroit College of Medicine and Surgery Unit)*. Detroit: Privately published, 1922.
- Coplin, W.M. L. *American Red Cross Base Hospital No. 38 in the World War*. Philadelphia: Privately published, 1923.
- Combs, Josiah H. *Siege of Salisbury Court Which Chronicles the Feat of Base Hospital 40 Winning the War*. Lexington, KY: Hurst and Byars, 1923.
- [Cabell, Julian M.] . *Staff, etc. of Base Hospital No. 41, by the Commanding Officer*. Washington, D.C.: Privately published, 1925.
- [Geisinger, Joseph F.], ed. *History of U.S. Army Base Hospital No. 45 in the Great War (Medical College of Virginia Unit)*. Richmond, VA: William Byrd Press, 1924.
- On Active Service with Base Hospital 46, U.S.A., Mar. 20, 1918 to May 25, 1919*. Portland, OR: Arcady Press, 1919(?).
- Matheson, Martin. *48: An Informal and Mostly Pictorial History of U.S. Base Hospital 48, 1918-1919*. New York: Veterans U.S. Base Hospital No. 48, 1939.
- Official Committee of Base Hospital Fifty. *The History of Base Hospital Fifty: A Portrayal of the Work Done by This Unit While Serving in the United States and with the American Expeditionary Forces in France*. Seattle, WA: Privately published, 1922.
- History of Base Hospital Number Fifty-three, Advance Section, Services of Supply*. Langres, Haute-Marne: 29th Engineers Printing Plant, 1919.

EVACUATION HOSPITALS

- The History of Evacuation Hospital Number Six United States Army 1917-1919.* Poughkeepsie, N. Y.: Privately published, 1931.
- Pottle, Frederick Albert. *Stretchers, the Story of a Hospital Unit on the Western Front.* New Haven: Yale University Press, 1929. [Evacuation Hospital Number Eight].
- Shipley, Arthur M. and Agnes T. Considine. *The Officers and Nurses of Evacuation Eight.* New Haven: Yale University Press, 1929.
- Bachman, Walter J. *Souvenir Roster and History of Evacuation Hospital No. 15 with The Story of Verdun and the Argonne Drive.* Privately published, 1919.

FIELD HOSPITALS

- [Binswanger, Alvin O., et al.] eds. *Chronological History of the 364th Field Hospital Company.* Portland, OR: Press of Portland Printing House Company, 1929.

DIVISIONS

- Cole, Ralph D. and W. C. Howells. *The Thirty-seventh Division in the World War, 1917-1918.* Columbus, OH: The Thirty-seventh Division Veterans Association, 1929.

PERIODICALS

- Ashford, Bailey K. "A Lecture on Field Hospitals." *Military Surgeon* 44 (June 1919): 558-70, *Military Surgeon* 45 (July 1919): 44-58.
- . "The Preparation of Medical Officers of the Combat Division in France at the Theatre of Operations." *Military Surgeon* 44 (February 1919): 111-22.
- Ashford, Marlon "The Most Practicable Plan for the Organization, Training, and Utilization of the Medical Officers of the Medical Reserve Corps of the United States Army and Navy and of the Medical Officers of the Officers' Reserve Corps of the United States Army, in Peace and War" *Military Surgeon* 40 (February 1917): 123-155.
- Bevan, Arthur Dean. "The Organization of the Medical Profession for War." *Science* 47 (21 June 1918): 597-603.
- "The Problem of Hospital Organization with Special Reference to the Coordination of General Surgery and the Surgical Specialties." *Military Surgeon* 45 (August 1919): 150-57.

- Blake, Joseph A. "Early Experience in the War." *Military Surgeon* 45 (December 1919): 626-635.
- Blech, Gustavus M. "The Military Aspect of Base Hospitals." *Military Surgeon* 45 (November 1919): 508-513.
- Burrage, Thomas J. "An American World War Hospital Centre in France." *Military Surgeon* 80 (May 1937): 352-60.
- Church, James Robb. "Notes on the Organization of the French Sanitary Service." *Military Surgeon* 40 (May 1917): 531-48.
- Coe, Henry C. "The Inactive Medical Reserve Corps in War." *Military Surgeon* 39 (1916): 244-52.
- _____. "The Wellcome First Prize Essay, 1916," *Military Surgeon* 40 (February 1917): 317-25.
- Colie, Edward M. "Notes on Hospital Train Service in the A. E. F." *Military Surgeon* 45 (September 1919): 328-37.
- Crile, G.W. "The Unit Plan of Organization of the Medical Reserve Corps. United States Army for Service in Base Hospitals." *Surgery, Gynecology and Obstetrics* 22 (1916): 68-69.
- Darnall, J. H. "War Service with an Evacuation Hospital." *Military Surgeon* 80 (April 1937): 261-76.
- "First Casualties in the A. E. F." *Military Surgeon* 62 (March 1928): 383-84.
- Ford, Joseph H. "The Sanitary Service of the Austro-Hungarian Army in Campaign." *Military Surgeon* 40 (June 1917): 645-65.
- Frescolin, L. D. "Preparing the Medical Reserve Corps of the Army." *Military Surgeon* 40 (February, 1917): 146-49.
- Garrison, F. H. "Medical and Surgical History of the War." *Military Surgeon* 43 (September 1918): 347-50.
- "General Ireland discusses Army Reorganization." *Journal of the American Medical Association* 73 (18 October 1919): 1224-1226.
- Gilmour, John. "Transportation of the Wounded." *Military Surgeon* 42 (January 1918): 19.
- Grissinger, Jay W. "Field Service." *Military Surgeon* 61 (1927): 293-316, 461-76, 581-97, *Military Surgeon* 62 (1928): 157-77, 343-60, 475-98.

- Hume, Edgar Erskine. "The Medical Book of Merit: United States Army and Navy Decorations Awarded to Medical Officers for Distinguished Service in the World War." *Military Surgeon* 56 (March 1925): 241-307.
- "Information Regarding the Correlated Activities of the Council of National Defense and the Advisory Commission, the Medical Departments of Government and the Committee of American Physicians for Medical Preparedness." *West Virginia Medical Journal* 11 (May 1917): 400-05.
- Ireland, Merritte W. "The Achievement of the Army Medical Department in the World War." *Journal of the American Medical Association* 76 (19 March 1921): 763-769.
- _____. "Memorandum on Medical Reserve Corps." *The Pennsylvania Medical Journal* 23 (April 1920): 387-92.
- _____. "The Medical Service in a Theater of Operations." *Military Surgeon* 62 (May 1928): 573-91.
- Ivy, Robert H. "The Influenza Epidemic of 1918: Personal Experience of a Medical Officer in World War I." *Military Medicine* 125 (Sept. 1960): 620-22.
- Jones, Daniel Fiske. "The Rôle of the Evacuation Hospital in the Care of the Wounded." *Annals of Surgery* 68 (August 1918): 127.
- Kean, Jefferson R. "Evacuation of the American Wounded in the Aisne-Marne Battles, June and July, 1918." *Military Surgeon* 56 (April 1925): 473-508.
- _____. "Lessons of the Great War." *Military Surgeon* 39 (October 1916): 311-20.
- _____. "The New Role of the American Red Cross." *Military Surgeon* 38 (May 1916): 539-44.
- Keen, W. W. "Military Surgery in 1861 and 1918." *The Annals* 80 (Nov. 1918): 11-22.
- Kilgore, Eugene S. "Evacuation System for a Base Hospital." *Military Surgeon* 44 (March 1919): 230-33.
- Lee, Roger I. "The Case for the More Efficient Treatment of Light Casualties in Military Hospitals" *Military Surgeon* 42 (March 1918): 283-86.
- Lockwood, Ira H. "A Brief Résumé of the X-ray Work in an Evacuation Hospital." *Military Surgeon* 44 (April 1919): 389-92.

- Lyle, H. H. M. "The Principles of Surgery, Hospitalization and the Evacuation of the Wounded in the Meuse-Argonne Offensive" *Military Surgeon* 84 (June 1939): 580-91.
- "Medical Preparedness in San Francisco." *Military Surgeon* 40 (February 1917): 344-350.
- Munger, Donna B. "Base Hospital 21 and the Great War" *Missouri Historical Review* 70 (April 1976): 272-90.
- [Munson, E. L.] "Organization of Base Hospitals." *Military Surgeon* 39 (1916): 107-08.
- _____. "The Red Cross." *Military Surgeon* 39 (1916): 200-213.
- Osgood, Robert B. "Medical Work with the American Expeditionary Forces." *Military Surgeon* 43 (October 1918): 369-76.
- Phelan, James M., compiler. "Chiefs of the Medical Department, U. S. Army 1775-1940, Biographical Sketches." *Army Medical Bulletin* 52 (April 1940).
- "Preparing the Medical Profession of the Country for War," *Military Surgeon* 40 (January 1917): 74-76.
- Rhoads, T. L. "Principles of Evacuation, I. The Comprehensive Plan." *Military Surgeon* 54 (1924): 129-48, 284-318, 385-418, 513-41.
- Richards, T. W. "The Organization and Equipment of Navy Hospital Units." *United States Naval Medical Bulletin* 12 (April 1918): 184-95.
- Shattuck, George Cheever. "Medical Work in the British Armies in France." *Military Surgeon* 45 (September 1919): 248-56.
- Shockley, M. A. W. "The Correspondence Course for Officers of the Medical Reserve Corps." *Military Surgeon* 38 (January 1916): 64-67.
- Stark, Alexander. N. "A Wartime Memorandum of a Chief Surgeon" *Military Surgeon* 62 (May 1928): 679-80.
- Stoner, Willard C. "A Review of the Base Hospital Medical Problem in America, France, and the Army of Occupation." *Military Surgeon* 62 (February 1928): 178-84.
- Tarnowsky, George de. "Advance Surgical Formations — Modifications which seem necessary in the Light of the German Offensive of March-July 1918." *Military Surgeon* 44 (March 1919): 245-57.
- Tenney, C. F. "A Base Hospital Post-graduate Course." *Military Surgeon* 45 (September 1919): 257-61.

Wadhams, Sanford H. and Arnold D. Tuttle. "Some of the Early Problems of the Medical Department, A. E. F." *Military Surgeon* 45 (December, 1919): 636-662.

Zinsser, Hans. "The Sanitation of a Field Army Part I." *Military Surgeon* 44 (1919): 445-64, 570-81.

GOVERNMENT DOCUMENTS

Act of April 24, 1912, 62d Congress, 2d Session, "An Act to provide for the use of the American National Red Cross in aid of the land and naval forces in time of actual or threatened war."

United States Army. *Field Service Regulations*. Washington, D.C.: Government Printing Office, 1914.

United States Army. *Course of Instruction for Medical Officers of the National Guard and Officers' Reserve Corps at Medical Officers' Training Camps 1917*. Washington, D.C.: Government Printing Office, 1917.

United States Army. *Lectures on Military Sanitation and Management of the Sanitary Service, Army Service Schools, Field Service and Correspondence School for Medical Officers*. Fort Leavenworth, KS: The Army Services Schools Press, 1918.

United States Army, Center of Military History. *Order of Battle of the United States Land Forces in the World War: Zone of the Interior: Directory of Troops*. Vol. 3, Part 3. Washington, D.C.: Government Printing Office, 1931-1949, reprint Washington, D.C.: Government Printing Office, 1988.

United States Bureau of Medicine and Surgery. *Report on the Medico-military aspects of the European war from observations taken behind the allied armies in France*. Washington, D.C.: Government Printing Office, 1915.

United States Congress. House. *Eleventh Annual Report of the American National Red Cross for the Year 1915*. 64th Congress, 1st Session. 1916. House Document No. 1307.

United States Congress. House. *Twelfth Annual Report of the American National Red Cross*. 64th Congress. 2d Session. 1918. House Document No. 2131.

United States Congress. House. *Report of the Secretary and Treasurer of the American National Red Cross for the Period January 1 to June 30, 1917*. 65th Congress, 2d Session. 1918. House Document No. 1249.

- United States Congress. Senate. *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War with Spain*. 56th Congress, 1st Session. 1900. Senate Document No. 221.
- United States, Department of the Army, Historical Division. *United States Army in the World War, 1917-1919*. 18 vols. Washington, D.C.: Government Printing Office, 1948.
- United States, Surgeon General's Office. *The Medical Department of the United States Army in the World War*. 15 vols. Washington, D.C.: Government Printing Office, 1923.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1901*. Vol I, Part 2. Washington, D.C.: Government Printing Office, 1901.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1905*. Vol I, Part 2. Washington, D.C.: Government Printing Office, 1906: 91-183.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1908*. Vol II. Washington, D.C.: Government Printing Office, 1909: 89-153.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1911*. Vol I. Washington, D.C.: Government Printing Office, 1912: 389-636.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1912*. Vol I. Washington, D.C.: Government Printing Office, 1913: 611-867.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1913*. Vol I. Washington, D.C.: Government Printing Office, 1914: 401-686.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1914*. Vol I. Washington, D.C.: Government Printing Office, 1914: 333-444.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1915*. Vol I. Washington, D.C.: Government Printing Office, 1916: 377-675.
- United States War Department. "Report of the Surgeon General" *Annual Reports, 1916*. Vol I. Washington, D.C.: Government Printing Office, 1916: 463-803.

United States War Department. "Report of the Surgeon General" *Annual Reports, 1917*. Vol I. Washington, D.C.: Government Printing Office, 1918: 335-790.

United States War Department. "Report of the Surgeon General" *Annual Reports, 1918*. Vol I. Washington, D.C.: Government Printing Office, 1919: 329-1041.

United States War Department. "Report of the Surgeon General" *Annual Reports, 1919*. Vol I, Parts 2, 3. Washington, D.C.: Government Printing Office, 1919: 1429-3865.

United States War Department. *Report of the Surgeon General, 1919*. 2 Vol. Washington, D.C.: Government Printing Office, 1919.

United States War Department. *Manual for the Medical Department, U.S. Army, 1916, corrected to June 15, 1918*. Washington, D.C.: Government Printing Office, 1918.

MANUSCRIPTS

Brewster, A. W. Memorandum for Commander-in-Chief, 3 October 1918. TMs. Army War College Historical Section, Carlisle, PA.

DeWitt, J. L. "Explanation and Execution of Plans for Supply and Evacuation for ST. MIHIEL Operation and ARGONNE-MEUSE Operation to November 11, 1918." Lecture given at Headquarters, First Army, A. E. F., 23 December 1918. TMs,

Field Orders, First Army Corps Nos. 2 to 95 incl. TMs, United States Army Command and General Staff College Library, Fort Leavenworth, KS.

Foreman, A. W. "Administration and Supply of the Fifth Army Corps during the ST. MIHIEL Operation and ARGONNE-MEUSE Operation 1918." Lecture given at Headquarters, Fifth Army Corps., 27 January 1919. TMs.

Report of Evacuation Branch G-4 Argonne-Meuse Operation. TMs. File 191-41.6 Army War College Historical Section, Carlisle, PA.

Report of Fifth Corps Both St. Mihiel and Argonne-Meuse Operations. Report of G-3 Chief Surgeon TMs. File 6014.01 Army War College Historical Section, Carlisle, PA.

Stark, Alexander N. "Explanation and Execution of Plans for Hospitalization for ST. MIHIEL Operation and ARGONNE-MEUSE Operation." Lecture given at Headquarters, First Army, A. E. F., 13 January 1919. TMs. in *Lectures, 1st Army Staff*. United States Army Command and General Staff College Library, Fort Leavenworth, KS.

_____. Memorandum for Assistant Chief of Staff, G-4, 1st Army, 4
November 1918. Subject: Moving of Evacuation and Mobile Hospitals.
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