THE ARMY MEDICAL DEPARTMENT 1818-1865

Mary C. Gillett

Center of Military History • United States Army

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by
Mary C. Gillett

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Foreword

The second in a projected four-volume series that will cover the history of the Army Medical Department from 1775 to 1941, this volume traces the development of the department from its establishment on a permanent basis in 1818 through the final days of the Civil War in 1865. The uninterrupted existence of the Medical Department after 1818 made possible the gradual transformation of its staff from a collection of physicians of varying skills and attitudes into a group of highly trained and disciplined medical officers, proud of their organization and of their roles in it. Although the state of the art of medicine before 1865 gave the military surgeon few effective weapons against illness and infection, after 1818, as this most recent volume in the series demonstrates, the length of the military career of the average medical officer and his professional attitude toward the challenges he met led him to concentrate his efforts on the Army's health problems and to work persistently to improvise ways in which to meet them.

The Army Medical Department, 1818–1865 is, like its predecessor, a significant and long-needed contribution to the history of military medicine.

Washington, D.C.
6 November 1986

WILLIAM A. STOFFT
Brigadier General, USA
Chief of Military History

The Author

Mary C. Gillett attended Wellesley College from 1946 through 1949 and received a B.A. degree in history from The American University in 1966. She received M.A. and Ph.D. degrees in modern European history from The American University in 1971 and 1978, respectively. Before entering graduate school, she worked from 1966 through 1969 for the Naval History Division of the Office of the Chief of Naval Operations. In 1972 she joined The Historical Unit of the Army Medical Department, which was absorbed by the Center of Military History in 1976, and is now a member of the General History Branch of the Center's Histories Division. She is the author of *The Army Medical Department, 1775–1818*, published by the Center of Military History, and of articles concerning the history of military medicine in the United States.

Preface

When the first volume of this series was started, no plans had been made to carry the history of the Army Medical Department beyond 1818, when that organization was first established on a permanent basis. Nevertheless, some of the precedents set in Volume 1 have been followed in Volume 2. Thus the coverage of military operations is limited to that necessary for an understanding of the work of the Medical Department, and the efforts of medical officers are evaluated according to the standards of their time.

Since the permanent establishment of the Army Medical Department favored the systematic maintenance of records by the Surgeon General's Office, the research involved in the writing of this volume has involved a challenge far different from that of the preceding volume. Indeed, the wealth of records deriving from a multiplicity of sources made the task of dealing with the Civil War quite complicated. The author has attempted, however, to focus primarily upon the history of the Medical Department rather than upon the medical history of the Civil War.

In dealing with the period from 1818 to 1865, the author has received invaluable assistance from too many sources for it to be possible to name them all. She is once again, however, particularly indebted to Dorothy Hanks and the staff of the History of Medicine Division of the National Library of Medicine, including Lucinda Keister of the Arts Section, and to Elaine C. Everly of the National Archives and Records Service, as well as to William A. Deiss of the Smithsonian Institution and to Carol Anderson, former Librarian of the Center of Military History, for their help in obtaining the books and documents necessary to the research phase of her work. The author is also indebted to those who helped in the search for illustrations, particularly William Straight, M.D., Stanley B. Burns, M.D., and Michael J. Winey of the U.S. Army Military History Institute at the Carlisle Barracks, Pennsylvania.

Many scholars have reviewed the manuscript of this volume in whole or in part and enriched the author's understanding of her subject by their comments and suggestions. Among them are Maj. Gen. James A. Weir, MC (Ret.); Col. Robert J. T. Joy, MC (Ret.), and Peter Olch, M.D., both of the Uniformed Services University of the Health Sciences; Jack D. Welsh, M.D., of the College of Medicine of the University of Oklahoma; professors Edward M. Coffman of the University of Wisconsin, K. Jack Bauer of Rensselaer Polytechnic Institute, and John Duffy of the University of Maryland; and Dr. Straight, who shared his considerable expertise concerning the Second Seminole War as well as his photographs.

Members of the staff of the U.S. Army Center of Military History have also contributed significantly to the current volume. Albert E. Cowdrey, Chief of the Special History Branch, reviewed all drafts of the manuscript and assisted materially in their refinement. David F. Trask, Chief Historian, Col. James W. Dunn (Ret.), then Chief of the Histories Division, and John W. Elsberg, Chief of the Editorial Branch, joined Dr. Cowdrey, Dr. Duffy, and Colonel Joy on the advisory panel that was responsible for the volume's final review before its acceptance for publication. Roger D. Clinton was responsible for the maps, which were prepared under the supervision of Arthur S. Hardyman, Chief of the Cartographic Branch, who assisted in the selection and preparation of the illustrations for this volume as he did for the first. The author is also grateful to her editor, Marilee S. Morgan, for the patience with which she gave the manuscript a final polishing as she prepared it for the printer.

Others of the author's colleagues at the U.S. Army Center of Military History have also contributed significantly to this volume. Paul J. Scheips offered helpful advice concerning Army surgeons in the West, while Kim B. Holien and Dwight D. Oland shared their Civil War expertise. Graham A. Cosmas repeatedly made his profound understanding of the history of the U.S. Army available so that the medical picture could be accurately placed into the overall military context.

The author would like to add one final word of gratitude—to R. Clark Gillett, Jr., M.D., for the patience and forbearance with which he has always answered those medical questions with which the author hesitated to bedevil anyone else.

As always, the responsibility for all errors is entirely that of the author.

Washington, D.C.
6 November 1986

MARY C. GILLETT

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THE ARMY MEDICAL DEPARTMENT
1818–1865

CHAPTER 1

The State of the Art

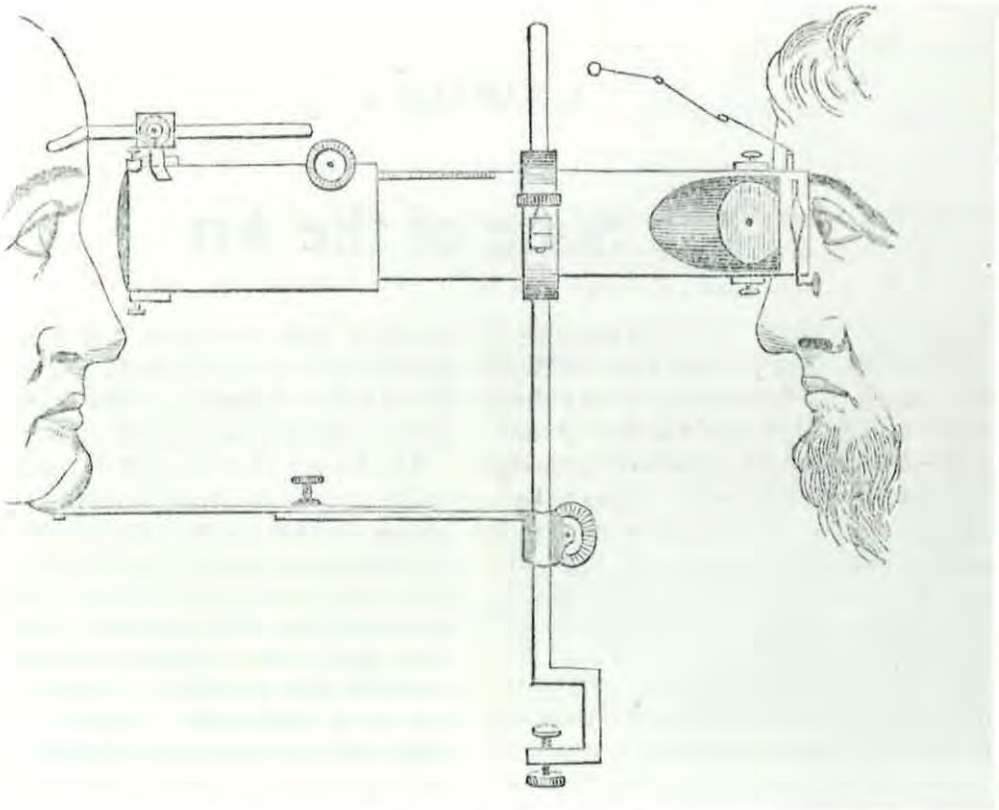
The years between 1818 and the start of the Civil War were in many ways the darkest in the history of medicine in the United States. Doubts as to the validity of time-honored medical practices were growing. Licensing requirements fell victim to egalitarianism, and medical education became a profit-making venture. In any army, disease still caused more deaths than wounds, even during wartime. A few significant new developments, however, stood in stark contrast to the generally stagnant state of the art, and disillusionment with old ways was already beginning to stimulate a search for more scientific methods. Before the start of the Civil War in 1861, an increasing awareness of the need for research and critical observation was emphasizing the Army Medical Department's potential for major contributions to medical science.

Medicine

Early in the nineteenth century, elaborate theoretical systems that used one or two principles to explain all disease and its cure began to lose popularity among orthodox physicians, who came to regard those who devised and supported such simplistic explanations as quacks and cultists. The public's distrust for conventional medicine led to increased success for homeopaths, hydropaths, thomsonians, and eclectics, some of whom had their own medical schools and journals, and many of whom had a common distrust for the traditional massive dosing with mercurials.[1]

The decline of their faith in rigid theoretical systems left many orthodox doctors confused or uncertain. Fact did not always substantiate the newer theories concerning the causes, nature, and spread of disease, but suggestions that minuscule animals or fungi might cause disease were generally ridiculed. The possibility of insect vectors was rarely mentioned. Vigorous debate raged over the question of contagion, but the most popular theory on the cause of disease attributed much sickness to malignant fumes or miasmas arising from de-

[1]Much of the background material in this chapter is based upon the works of Richard Harrison Shryock, especially *Medicine and Society in America, 1660–1860* (Ithaca, N.Y., and London: Cornell Paperbacks, 1960), *Medicine in America: Historical Essays* (Baltimore: Johns Hopkins Press, 1966), and *The Development of Modern Medicine: An Interpretation of the Social and Scientific Factors Involved* (Philadelphia: University of Pennsylvania Press, 1936), and the works of Erwin Heinz Ackerknecht, including *History and Geography of the Most Important Diseases* (New York: Hafner Publishing Co., 1965), *Malaria in the Upper Mississippi Valley, 1760–1900* (Baltimore: Johns Hopkins Press, 1945), and *A Short History of Medicine* (New York: Ronald Press Co., 1955). See also George H. Daniels, *American Science in the Age of Jackson* (New York: Columbia University Press, 1968); John Duffy, *The Healers: The Rise of the Medical Establishment* (New York: McGraw-Hill Book Co., 1976); and Martin Kaufman, *American Medical Education: The Formative Years, 1765–1910* (Westport, Conn: Greenwood Press, 1976).



OPHTHALMOSCOPE, *as illustrated in* Medical and Surgical Reporter *4 (1860):323. (Courtesy of National Library of Medicine.)*

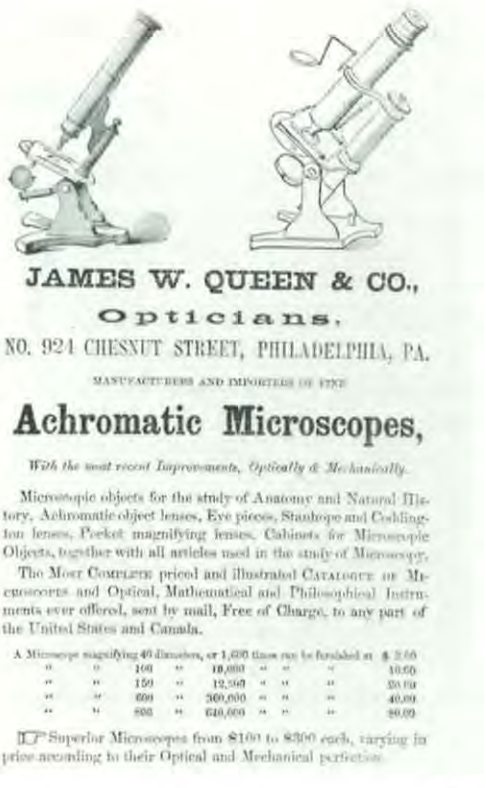
caying vegetable or animal matter. Although some regarded fever as a symptom of disease, many still believed that conditions involving fever were all merely outward manifestations of a single underlying ailment whose symptoms varied with the climate and weather, the passage of time, the medicines and treatments used, or the condition of the patient.[2]

Their loss of faith left many physicians uncertain not only about the cause of disease but also about its treatment. Critics of prevalent practice inveighed against "the tendency to self-delusion, which seems inseparable from the practice of the art of healing" and also against the tendency "to afflict" the patient "with unnecessary practice" while ignoring the fact that "some diseases are controlled by nature alone." An increasing number of doctors were aware that overmedication could cause harm, but

[2]Charles Caldwell, *Analysis of Fever* (Lexington, Ky.: Privately printed, 1825), p. 15; see also William N. Bispham, *Malaria: Its Treatment and Prophylaxis* (Baltimore: Williams & Wilkins Co., 1944); and Mark Frederick Boyd, ed., *Malariology: A Comprehensive Survey of All Aspects of This Group of Diseases From a Global Standpoint,* 2 vols. (Philadelphia: W. B. Saunders Co., 1949).

the pressure upon physicians to prescribe active treatment was great, partially because the patient himself might insist "on being poisoned." As a result, in the pre-Civil War period, practice did not quickly reflect the discoveries of researchers and statisticians.[3]

Nevertheless, as the nineteenth century progressed, many of the most prominent physicians in both the United States and Europe turned hopefully to the careful, detailed statistical studies being undertaken in the new and highly respected clinics of the Paris Medical School. Since Army surgeons were stationed at posts scattered over the entire nation and were subject to an overall discipline, their experience as a group was readily available to those gathering data for statistical studies in the United States. With the support and encouragement of civilian physicians, the Army Medical Department collected information concerning the influence of meteorological factors on health from post surgeons, who recorded the details of the weather, climate, and geographical features at the various forts and of the nature of the diseases affecting the men under their care. The science of gathering and using such data in the study of disease, however, was in its infancy. More effort continued to be expended in collecting this information than in forming valid conclusions based on it, and speculations based on personal impressions still played an important role in ostensibly scientific discussions.



ADVERTISEMENT FOR ACHROMATIC MICROSCOPES, *1859. (Courtesy of National Library of Medicine.)*

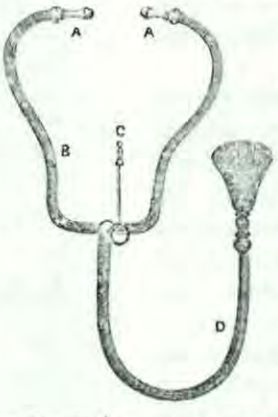
The break with the old medical theories and their one- or two-cause explanations for disease placed an increased emphasis upon finding ways to differentiate between various diseases. The new instruments and techniques that physicians began to use added to their understanding of disease as well as to the accuracy of their diagnoses. The laryngoscope and ophthalmoscope were of recent introduction and had not become popular tools by the time of the Civil War, but the microscope, while still available only to a few doctors, permitted

[3]Quotes from Oliver Wendell Holmes, "Currents and Counter-currents in Medical Science," and Jacob Bigelow, "Self-limited Diseases," both in *Medical Communications of the Massachusetts Medical Society*, 2d ser., 9 (1860):318, 319 and 5 (1836):338, 343, respectively; John Harley Warner, "The Nature-Trusting Heresy: American Physicians and the Concept of the Healing Power of Nature in the 1850s and 1860s," *Perspectives in American History* 11 (1977–78):299–300; see also "Review of *A Practical Essay on Typhous Fever* by Nathan Smith," *New England Journal of Medicine and Surgery* 13 (1824):409–10.

DR. S. A. SKINNER'S DOUBLE FLEXIBLE STETHOSCOPE,

WITH

Dr. C. C. Tafton's Improvements.



A A are two ivory ear-tips, that spring into each ear when applied, by means of a spring in the tube *B ; C*, an ivory mouth piece, taken between the teeth. The instrument is thus held to the ears firm and steady, having a solid connection between the receiving tube and teeth, and shuts out all sound except what passes through the instrument, while the physician has both hands at liberty for exposing the chest or using the other end of the instrument. *D* is a flexible tube, and is long enough to be used while sitting by the bedside in an erect position, thus avoiding the rush of blood to the head, which in some obstructs that acuteness of hearing so important in many cases. This instrument is very portable, being put up in cases that will go into the coat pocket, and are sold for half the price of other Double Stethoscopes, while it is admitted by those who use them, to be of more practical use to the country practitioner than any other now before the profession.

ADVERTISEMENT FOR STETHOSCOPE, *1858. (Courtesy of National Library of Medicine.)*

the study of cells whose very existence was unknown at the start of the century. The stethoscope was growing in popularity, while the thermometer came into its own in the great medical centers of Europe with the realization that fever was a symptom, not a disease. The old procedure of examining the urine to detect disease received new life with the growth of interest in pathological anatomy and the discovery of the relationship of albumin found in urine to disease. Following the lead of Paris-trained physicians, doctors attempted to correlate symptoms and test findings with abnormal changes found in the body's organs and tissues after death.

New medicines were also used in the treatment of disease. Most important among them was quinine, long used in the treatment of fevers but before 1820, always in the form of the bark of the cinchona tree. Not long after quinine sulfate was first extracted from cinchona bark, those using it began to comment on the ways in which its operation differed from that of the bark itself; reports maintained that quinine was more consistently retained in the stomach than bark and that it could be used in larger amounts, thus increasing its effectiveness. In the South, where malaria posed a particularly formidable problem, some physicians began to realize that as many as twenty or thirty grains of quinine at a time, a dose much larger than had been custom-

ary, were exceptionally effective. They also learned that administering this drug while the patient was in the midst of a fever paroxysm did not trigger the dire consequences that had been expected.

As a result, in 1843, shortly after the end of the Second Seminole War in Florida, the surgeon general of the Army Medical Department sent a questionnaire to the surgeons serving under him inquiring about their experiences with quinine sulfate. He asked about the exact nature of the drug they were using, the impurities present in their supply, the size and timing of the doses administered, and any adverse effects that might have resulted from its use. Although the fifty-seven replies that he received contained many subjective impressions and conclusions, they revealed that, in the case of malaria, the use of a few large doses of quinine instead of many small ones was a relatively well-accepted practice in the Army. Most Army surgeons did not blame the increase in bowel disorders among soldiers on heavy dosing with quinine. In spite of its relative scarcity and the resultant high cost, they were using the new drug almost indiscriminately for many diseases other than malaria. Its ability to reduce fever and relieve physical discomfort may well have given it an undeserved reputation for aiding the treatment of typhus and typhoid fever, cholera, pneumonia, and other illnesses.[4]

In the early years of the nineteenth century, opium was prescribed mainly for dysentery or extreme pain, many physicians deploring its constipating effects and regarding it as harmful if used alone for a fever. Nevertheless, a wider use of narcotics in general followed the refinement of morphine and codeine from opium in the first half of the century. By the Civil War era, tincture of opium, or laudanum, was a familiar household remedy. The addiction that sometimes resulted was not always condemned, even when the addict was an Army officer on active duty who spoke openly of his problem. Doctors experimented with the dosages of narcotics in an effort to obtain a maximum of benefit with a minimum of unpleasant side effects. Both new opiates were, like opium itself, given by mouth. Doctors also made attempts to administer morphine by scraping away the top layer of the skin and applying the drug to the surface thus revealed. By midcentury, a few also administered morphine by injection, initially by cutting open a vein and using a regular syringe and, after 1860, with the newly developed hypodermic. Physicians favored the new approach because it enabled them to use drugs that otherwise would be adversely affected by their passage through the digestive system. By the 1850s doctors were also resorting increasingly to alcohol, long also used to dull pain, as a stimulant for the weak and debilitated.[5]

[4]Charles McCormick, "On the Use and Action of the Sulphate of Quinine in Large Doses," *New Orleans Medical and Surgical Journal* 2 (1845–46):290; Richard H. Coolidge, "On the Medical Topography and Diseases of Fort Gibson, Arkansas," *Southern Medical Reports* 2 (1850):451; Surgeon General's Office (SGO), *Statistical Report on the Sickness and Mortality in the Army From January, 1839, to January, 1855* (Washington: A. O. P. Nicholson, 1856), pp. 644–90, passim (hereafter cited as *Statistical Report, 1839–55)*; see also Dale C. Smith, "Quinine and Fever: The Development of the Effective Dosage," *Journal of the History of Medicine and Allied Sciences* 31 (1976):343–67.

[5]Warner,"Heresy," p. 308; William W. Gerhard, "Observations on the Endermic Application of Medicine," *North American Medical and Surgical Journal* 3 (1851):459; "Injection of Opium Into the Veins," *Philadelphia Journal of the Medical and Physical Sciences* 8 (1824):456; Ltr, Thomas Lawson to Henry A. Stinnecke (31 Mar 1845), Textual Records of the Office of the Surgeon General (Army), record group (RG) 112, Letters and Endorsements Sent, entry 2, 15:437, National Archives (NA), Washington.

As far as drugs were concerned, purges and emetics were still traditional standbys. The mercurials remained the favorite purges. Calomel, in particular, had enthusiastic proponents, but as time passed, a growing number of physicians expressed reservations concerning its use. Impressed by the havoc that mercury could wreak upon the body, some began to seek ways to eliminate its horrible side effects by either reducing the dosage or eliminating its use. Some physicians also recognized the need to avoid constant irritation to the digestive system, and although emetics remained popular because of the belief that they relieved inflammation and fever, the profession in general used greater restraint in prescribing both these drugs and purgatives.

Although faith in emetics and purgatives was still strong in 1818, venesection, once the mainstay of any course of treatment, had already become somewhat controversial. Physicians used it with increasing caution as a generalized treatment for disease. By 1825, even those who favored its use against fevers and inflammations questioned the desirability of venesection in hot climates and for old, weak patients. A growing number of doctors preferred local bleeding to venesection, using for the purpose leeches or vacuum cups placed over cuts made in the skin. A controversial but influential book published in 1830, *Researches Principally Relative to the Morbid and Curative Effects of Loss of Blood* by Marshall Hall, emphasized the unfavorable short-term reactions that could follow excessive blood loss from any cause. It emphasized that very little had been done to determine the long-range effects of bleeding. In 1836 Pierre Louis, the father of the use of statistical studies in medicine and a teacher of American students in Paris, pointed out that bleeding as therapy for inflammatory disease, although possibly helpful, had been overrated. The use of venesection declined slowly throughout the 1840s and 1850s, but by the time of the start of the Civil War, many surgeons resorted to bleeding only when the desired relaxation of the body could not be achieved by cathartics or changes in the diet.[6]

The principal diseases against which Army surgeons used their remedies in the period 1818 to 1861 were those then classified as fevers. Of these, malaria represented perhaps the greatest continuing health problem facing the Army Medical Department. Although it was receding from the eastern seaboard, malaria remained to varying degrees a threat throughout the entire nation, posing a surprisingly severe problem in the Midwest. It was generally regarded as a disease of the countryside, where mosquitoes could abound in numbers almost inconceivable today, but it appeared occasionally in large towns and cities as well. The fact that a so-called animalcule-bearing mosquito (*Anopheles*) rather than evil vapors spread the disease was not definitely established, however, until near the end of the century.

In the mid-nineteenth century, malaria in its various forms had many names. It appeared in the records of the time as, among other things, remittent, intermittent, marsh, miasmatic, and autumnal fever, as well as the ague. Classified as intermittent fevers were those that followed a regular pattern of fever alternating

[6]James Jackson, Preface to *Researches on the Effects of Blood-letting . . .*, by P. C. A. Louis, trans. C. G. Putnam (Boston: Hilliard, Gray & Co., 1836), p. vi; B. M. Randolph, "The Blood Letting Controversy in the Nineteenth Century," *Annals of Medical History*, n.s., 7 (1935):180–81; Marshall Hall, *Researches Principally Relative to the Morbid and Curative Effects of Loss of Blood* (Philadelphia: E. L. Carey & A. Hart, 1830).

with a return to normal temperatures. The remittent form, in which the fever fluctuated but never quite reached normal, was presumably either typhoid fever or today's falciparum malaria, always dangerous if not treated promptly, capable of mimicking many other diseases, and most prevalent in warmer climates. Patients who were infected with malaria on separate occasions might experience symptoms that followed different cycles. Once infected by malaria, a soldier's health might be permanently threatened. The enlarged spleen and liver could be accompanied by a slight jaundice resembling that of yellow fever. A scarlatina-type rash could be present, or the patient's flushed face, reddened eyes, hot, dry skin, agonizing headaches, and aching muscles might suggest typhoid. Bronchitis or even pneumonia could develop to further complicate the diagnosis. The presence of diarrhea might be misleading; diarrhea accompanied by nausea, vomiting, and stomach pain mimicked cholera. The difficulty of distinguishing malaria from other diseases made credible a theory that malarial fevers were antagonistic to typhus and typhoid fever and that the prevalence of malaria and the typhoid-typhus types of fever varied inversely. Some authors applied this theory of antagonism also to tuberculosis, but it has been since noted that tuberculosis as a complication of malaria leads to a quick death.[7]

Relapses were frequent in all forms of malaria, even after treatment, as is typical even today in patients treated exclusively with quinine, and could be triggered by surgery. At least one Army surgeon blamed relapses on the effects of drafts when the victim was hot, overexposure to the sun, overeating, and constipation. In patients weakened by poor diet, overwork, stress, or disease, moreover, any form of malaria could be fatal. Although spontaneous recovery was possible, when chronic, malaria could lead to varying degrees of anemia, even to permanently impaired health.[8]

Before quinine sulfate became available, the treatment of choice for malaria involved various combinations of bleeding,

WILLIAM WOOD GERHARD. *(Courtesy of The College of Physicians of Philadelphia.)*

[7]Dale C. Smith, "The Rise and Fall of Typhomalarial Fever. I: Origins," *Journal of the History of Medicine and Allied Sciences* 37 (1982):191; R. La Roche, *Pneumonia: . . . Including an Inquiry into the Existence and Morbid Agency of Malaria* (Philadelphia: Blanchard & Lea, 1854), pp. 310, 314–15; Bispham, *Malaria*, p. 85; Charles Franklin Craig and Ernest Carroll Faust, *Clinical Parasitology*, 2d ed., rev. (Philadelphia: Lea & Febiger, 1940), p. 199; Maxwell Wintrobe et al., *Harrison's Principles of Internal Medicine*, 7th ed. (New York: McGraw-Hill Book Co., 1974), pp. 1020–21.

[8]Richard P. Strong, *Stitt's Diagnosis, Prevention and Treatment of Tropical Disease*, 7th ed., 2 vols. (Philadelphia: Blakiston Co., 1944), 1:98; Craig and Faust, *Parasitology*, p. 208.

purging, and vomiting, in addition to the administration of cinchona bark. Some physicians believed that causing the patient to perspire heavily was also helpful. Cathartics and emetics continued to be administered with the quinine, but as quinine sulfate gained in popularity, bleeding became less popular. Opiates were used for pain. Army Assistant Surgeon Jonathan Letterman recorded that he believed ten to thirty drops of chloroform taken with a little water could be helpful in soothing the irritable stomach of the malaria patient, although he somewhat paradoxically warned against the use of chloroform when the patient's digestive system was inflamed.[9]

Unlike malaria, true typhus was apparently rarely seen in the United States, but the diagnosis was not uncommon because in the earliest decades of the nineteenth century, when typhoid fever was very common, the term *typhus fever* was used almost interchangeably with the term *typhoid.* Occasionally typhus fever was actually used to denote any type of fever believed to originate in miasmas. By 1837, research by William Gerhard, an American physician who was a former student of Louis' in Paris, had made it possible to distinguish between the two diseases. Even after this point, the cause of typhoid remained unclear and its treatment debatable, but the disease was probably widespread. The use of large doses of quinine was urged in 1851 in the belief that this drug had not been given a fair trial against typhoid, but it was suggested that the quinine be accompanied by opium and possibly a mercurial as well.[10]

A fourth disease described several times in Army records from the decades before the Civil War was dengue, spread by two different mosquitoes, one of which, the *Aedes aegypti*, might also carry yellow fever. In its initial stages, dengue was characterized by fever and nausea. Contemporary descriptions noted that, in this disease, vomiting generally began several days after the fever broke for the first time and that a rash then followed the nausea. The rash suggested scarlet fever rather than measles and consisted of "minute papulae of a florid red, slightly elevated, and distributed in irregularly shaped patches," appearing first on the face and trunk. After the rash was fully developed, the fever generally reappeared. The swollen glands and painful joints that also characterized dengue could persist for weeks or months. The disease tended to cause great suffering but few, if any, deaths. In the late 1820s, the recommended treatment called for antimonials in the earliest stage, bleeding in the so-called inflammatory stage, diaphoretics such as Dover's powder, which contained opium and ipecac, and of course, cathartics.[11]

[9]Thomas Neville Bonner, *The Kansas Doctor: A Century of Pioneering* (Lawrence: University of Kansas Press, 1959), p. 27; John Esten Cooke, *A Treatise of Pathology and Therapeutics*, 2 vols. (Lexington, Ky., 1828), 2:127–28; *Statistical Report (1839–55)*, pp. 77, 331–32; Thomas Lawson, quoted in Percy M. Ashburn, "One Century Ago," *Military Surgeon* 59 (July 1926):38; Bernard M. Byrne, *Proceedings of a Court Martial for the Trial of Surgeon B. M. Byrne ...* (Charleston, W. Va.: Walker, Evans & Co., 1859), p. 82.

[10]Cooke, *Treatise* 1:507; William S. Middleton, "William Wood Gerhard," *Annals of Medical History*, n.s., 7 (1935):11–12; William W. Gerhard, "On the Typhus Fever Which Occurred at Philadelphia in the Spring and Summer of 1836," *American Journal of the Medical Sciences* 19 (1837):289–91, 294, 307, 322; "Review of *On the Identity or Non-identity of Typhoid Fever, Typhus Fever, and Relapsing Fever.* By W. Jenner, M.D.," *Ohio Medical and Surgical Journal* 3 (1851):361. The probability that typhoid was widespread in the United States but often misdiagnosed is suggested in Dale Smith, "The Rise and Fall of Typhomalarial Fever. II: Decline and Fall," *Journal of the History of Medicine and Allied Sciences* 37 (1982):287–321.

[11]Samuel Forry, *The Climate of the United States and*

Yellow fever was yet another mosquito-spred disease, dreaded in northern ports as well as in the South, where it was a relatively regular visitor along the coast. During this period, through their study of pathological anatomy, scientists first began to suspect that yellow fever was a distinct disease. Although it was not found endemically where the temperature dropped below 71° F., it could be imported into areas of moderate temperatures during the summer by ships from tropical ports carrying infected *Aedes aegypti* mosquitoes, which were capable of spreading the disease for up to sixty days. The role of the mosquito was suggested as early as 1848, but authorities generally blamed yellow fever on the combined effects of heat, moisture, and decaying animal and vegetable matter. Although they recognized the fact that few ever had the disease twice, they debated its contagiousness and the value of quarantines against it. Writers urged that treatment be started early in the course of an attack of yellow fever. In addition to the usual purges, doctors might use quinine to treat it. Some also advocated the raising of blisters on the spine and upper abdomen.

A number of less devastating diseases also bore the name cholera in the nineteenth century, but only the disease known as Asiatic cholera inspired more terror than yellow fever. At their worst, the symptoms of this disease were dreadful to witness, although they could actually vary considerably in intensity. A patient with a slight case might suffer only a diarrhea so mild that, without modern techniques, the diagnosis was uncertain.

The victim of severe cholera, however, often died in hideous agony. His sunken face might be "rendered peculiarly ghastly by the removal of all the soft solids," according to a surgeon stationed at Fort Armstrong during the 1832 epidemic. His hands and feet were "bluish white, wrinkled as when long macerated in cold water," and his eyes "fallen to the bottom of their orbs," with a "glaring vitality, but without mobility." His blood was reduced by dehydration to a sludge his heart could not pump, his viscera were congested, his skin and limbs chilled and bloodless. Such a case might begin with a profuse but painless diarrhea that became progressively more liquid until it reached a stage where the stools resembled rice water. Vomiting, often projectile, followed and continued even if the patient took nothing by mouth. Muscle cramps appeared, first in the calves of the legs, then in the toes, spreading to the thighs and the arms and hands. Bowel movements might become involuntary. As the dehydration continued, the heart began to falter and circulatory failure followed. The flow of urine decreased or stopped. Exhaustion deepened; the eyes sank into the head and the skin shriveled. The temperature dropped below normal, the respiration became ever more rapid, and, in the final moments before death, the victim's dehydration might be so complete that even his diarrhea ceased at last.[12]

Its Endemic Influences . . . , 2d ed. (New York: J. & H. G. Langley, 1842), pp. 343–45, 347, quote from p. 345.

[12]Ltr, Samuel B. Smith to Capt Wilson, *Niles' Weekly Register* 43 (24 Nov 1832):203. Unless otherwise indicated, the background information on cholera in this chapter is based on Oscar Felsenfeld, *The Cholera Problem* (St. Louis: Warren H. Green, 1967); Ahmed Mohamed Kamal, *Epidemiology of Communicable Diseases* (Cairo: Anglo-Egyptian Bookshop, 1958); R. Pollitzer, *Cholera*, World Health Organization (WHO) Monograph Series, no. 43 (Geneva: WHO, 1959); Charles Rosenberg, *The Cholera Years: The United States in 1832, 1849, and 1866* (Chicago: University of Chicago Press, 1962); and G. F. Pyle, "The Diffusion of Cholera in the United States in the Nineteenth Century," *Geographical Analysis* 1 (1969):59–75.

Modern methods of restoring body fluids make the chance of surviving cholera today excellent for those fortunate enough to live where they are available. Because of the present understanding of the way in which it is transmitted and because modern sanitation methods limit a population's exposure to cholera, deaths from this disease now usually occur only in areas that are both extremely backward and crowded. A water-borne bacterium *(Vibrio cholerae)* causes cholera, entering the body through the mouth, usually in drinking water, in fish or shellfish, or on vegetables and similar foods. The organisms may also be spread by flies or by healthy human carriers and can live in moist earth one to two weeks, in shallow well water three to fifteen days, and as long as four months in ice. Heat, sunlight, or an acid medium kills the vibrio quickly. The incubation period varies, but rarely exceeds five to ten days and averages about three.

Endemic in parts of India, cholera first brought widespread fear in 1814 to 1815, when it struck Asia, the Near East, and Russia, bringing with it a death rate of from 40 to 75 percent. It began to inspire terror on a worldwide scale only after 1830, reappearing periodically in the United States from 1832 until the time of the Civil War, and striking with particular frequency in the years 1848 to 1852. The overall death rate of the first epidemic in the 1830s varied between 10 and 15 percent, although during its initial appearance in New York City in 1832, the death rate among those contracting the disease reportedly approached a frightening 50 percent. In the 1840 epidemic the national mortality rate dropped below 10 percent.[13]

Before the Civil War, Asiatic cholera was most commonly blamed on miasmas or meteorological conditions, but even in the 1830s a few scientists theorized that small living creatures played a role in this disease. Very few physicians thought that it was actually contagious, but some believed that its spread must in some way be related to its human victims rather than to the atmosphere. Others, however, doubted that Asiatic cholera existed as an entity separate from ordinary digestive upsets with similar symptoms or from fevers such as typhus or malaria. Excessive nervous strain as well as intemperance, debauchery, and filth were believed to predispose to the disease.[14]

Steps suggested to protect the population from cholera varied. Cleanliness and temperance and the avoidance of dampness, chills, and fear were often urged upon the populace as were regular exercise and a proper diet. The most popular approaches to the treatment of the disease resembled those followed for other illnesses. Many authorities undertook bleeding at the slightest sign of a fever and administered calomel and opium early in the course of an illness. Less popular remedies included cupping the temples and abdomen, giving ice internally, and administering enemas composed of such ingredients as hot water and brandy, which aided in warming the patient, or a tobacco infusion, which stimulated the circulation, eased cramps, and stopped vomiting and diarrhea. The possibility of giving intravenous treatment was

[13]John Duffy, "The History of Asiatic Cholera in the United States," *Bulletin of the New York Academy of Medicine* 47 (1971):1153–54, 1158; A. Laveran, *Traite des maladies et epidemies des armees* (Paris: G. Masson, 1875), pp. 700–701; James Joseph Walsh, *History of Medicine in New York: Three Centuries of Medical Progress*, 5 vols. (New York: National Americana Society, 1919), 1:109.

[14]Daniel Drake, *A Practical Treatise on the History, Prevention and Treatment of Epidemic Cholera* ... (Cincinnati: Corey & Fairbank, 1832), pp. 9, 34–50; John Bell and David Francis Condie, *All the Material Facts in the History of Epidemic Cholera* (Philadelphia: Thomas De Silver, Jun., 1832), pp. 48–49, 56–57.

considered during the 1832 epidemic, and the injection of a saline solution was actually tried. Although the new technique was used several times on moribund patients, whose demise it failed to prevent, several alleged successes were also reported.[15]

By 1849 cholera was once again sweeping the United States. In St. Louis it caused almost 68 percent of the deaths recorded in the period from 23 April to 6 August 1849. In 1852 it struck with force once again, only to fade out two years later. During this epidemic a British scientist, noting the relationship of cases of cholera to water drawn from a particular well, began to suspect that cholera was a water-borne disease, but animalcules and fungi were still generally dismissed as possible causes. In the United States, treatment during the second and third nationwide epidemics varied, but did not differ appreciably from that favored in 1832. The injection of a saline solution into a victim's veins remained experimental.[16]

Milder cases of cholera were sometimes mistaken for dysentery or diarrhea, both common ailments in the period preceding the Civil War. As with other diseases, the question of whether either was contagious continued to be a topic for debate. Little distinction was made between the two; an Army surgeon stated in 1852 that the principal difference between diarrhea and dysentery lay in the fact that the former affected the small intestine and the latter the large. Theories attributed the cause of this form of illness to bad air, inappropriate food, too much purging with harsh medicines, meteorological factors, especially high temperatures, and alcohol, when applied internally and too liberally. Both diarrhea and dysentery had been known as camp diseases for centuries, but it was only in 1859 that the ameba causing one form of dysentery was actually identified.[17]

The treatment for dysentery and diarrhea in many ways resembled that for other diseases: bleeding, emetics, purgatives, quinine, opium, blisters, and occasionally less common remedies such as combinations of alum with either white vitriol (zinc sulfate) or sulfate of iron, or of acetate of lead with opium and ipecac. At least one physician stated that there was no proof that mercurials were helpful in cases of dysentery. Doctors cast doubt on the possibility that a patient with either dysentery or diarrhea could be cured while remaining in a tropical climate; they suggested sea voyages, visits to mineral springs, and travel to a cooler climate for chronic cases.[18]

[15]Bernard M. Byrne, *An Essay to Prove the Contagious Nature of Malignant Cholera* . . . (Baltimore: Cary, Hart & Co., 1833), pp. 128–29, 131, 138, 140–41, 143; *Niles' Weekly Register* 42 (18 Aug 1832):439; Elam Stimson, *The Cholera Beacon* . . . (Dundas, Ontario: Hackstaff, 1835), pp. 25–26; "Saline Injections in Cholera," *Medical Magazine* 1 (1933):192–93; J. Mauran, "Case of Cholera Treated With Saline Injections With Observations Thereon," *Medical Magazine* 1 (1933):254–56; Drake, *Practical Treatise*, pp. 123–24, 144–47; Floyd T. Ferris, *A Treatise on Epidemic Cholera* . . . (New York: Harper & Bros., 1835), pp. 35–36.

[16]Samuel A. Cartwright, *The Pathology and Treatment of Cholera* . . . (New Orleans: Spencer & Middleton, 1849), pp. 30–31; Horatio Gates Jameson, *A Treatise on Epidemic Cholera* (Philadelphia: Lindsay & Blakiston, 1855), pp. 133–34; Zimri Hussey, *A Comprehensive and Practical Treatise on . . . Cholera* (Cincinnati: Gazette Office, Wright, Fisher & Co., 1949), p. 11; Duffy, "Cholera," pp. 1159, 1162–63; Edmund Charles Wendt, *A Treatise on Asiatic Cholera* (New York: William Wood & Co., 1885), pp. 28, 30; John Snow, *Snow on Cholera* (Reprint. New York: Commonwealth Fund, 1936), pp. 40, 51, 56.

[17]Forry, *Climate*, p. 298; Austin Flint, *Clinical Report on Dysentery* . . . (Buffalo: Jewett, Thomas & Co., 1853), p. 88; Nathaniel Chapman, "Remarks on the Chronic Fluxes of the Bowels," in Gert H. Brieger, *Medical America in the Nineteenth Century: Readings From Literature* (Baltimore: Johns Hopkins Press, 1972), p. 108.

[18]Chapman, "Remarks," in Brieger, *Medical Amer-*

Scurvy had by no means been eliminated in the decades immediately preceding the Civil War, although in the Army, the incidence of the disease and the number of deaths varied considerably from year to year. In 1819, for example, the Army recorded 7 cases with no deaths, but in 1820 there were 734 cases with 190 deaths. In most years during the period from 1819 to 1838, no deaths were recorded. Factors that contributed to scurvy's appearance were recognized, but the unique importance of fruits and vegetables as both preventives and cures only gradually came to be understood. Such factors as fatigue, cold, anxiety, dampness, overwork, and the excessive use of salt continued to be implicated as causes rather than merely conditions that diminished ascorbic acid reserves. The disease appeared at widely differing posts from Florida to Texas and New Mexico to Wyoming, wherever climate and isolation made an adequate diet difficult to achieve.[19]

Mercury had particularly destructive effects upon patients suffering from scurvy, but physicians of the period were beginning to recognize this fact and to seek better methods of prevention and treatment of the disease. They still placed much unwarranted faith in the antiscorbutic effects of vinegar, but more correctly inferred that potatoes relieved the symptoms of scurvy. Many posts were relatively isolated, especially during the winter, and the difficulty of bringing in antiscorbutics caused surgeons to look for native plants with such properties. In the Southwest, medical officers discovered that the plant called the maguey proved even more effective in treating scurvy than lime juice, while pokeweed, prickly pear, and wild onions were also effective antiscorbutics easily found near many forts.[20]

Among other health problems afflicting soldiers in the 1818 to 1861 period were rheumatic and respiratory conditions and venereal diseases. The number of cases of venereal disease reported in this period dropped considerably. As a result, Army records devote little space to this problem, although it appears that, without the benefit of blood tests to prove them wrong, physicians assumed that they could easily cure syphilis in its earliest stages. They still relied heavily on mercury as a treatment not merely for syphilis but for all forms of venereal disease and applied both internally and externally. A new refinement of an almost abandoned technique was introduced in this period, however, to treat respiratory disease. When a patient's pleural cavity filled with fluid, relief was provided by means of thoracentesis, a surgical puncture of the chest, which eliminated the need

ica, pp. 111–14; Flint, *Clinical Report*, pp. 84–85, 89–90; George Johnson, "Remarks on the Medical Topography of Texas, and on the Diseases of the Army of Invasion," *Saint Louis Medical and Surgical Journal* 4 (1846–47):437; William H. Richardson, *Journal of Wm. H. Richardson, a Private Soldier . . .*, 3d ed. (New York: William H. Richardson, 1849), p. 51; John B. Porter, "Medical and Surgical Notes of Campaigns in the War With Mexico . . . ," *American Journal of the Medical Sciences*, n.s., 26 (1853):331.

[19]Forry, *Climate*, pp. 332–33; John Russell Bartlett, *Personal Narrative of Explorations and Incidents in Texas*, 2 vols. (New York: Rio Grande Press, 1854), 1:237; Leroy R. Hafen and Francis Marion Young, *Fort Laramie and the Pageant of the West, 1834–1890* (Glendale, Calif.: Arthur H. Clark Co., 1938), p. 157; M. L. Crimmins, ed., "Colonel J. K. F. Mansfield's Report of the Inspection of the Department of Texas in 1856," *Southwestern Historical Quarterly* 42 (1938–39):138; John Norris, "The 'Scurvy Disposition': Heavy Exertion as an Exacerbating Influence on Scurvy in Modern Times," *Bulletin of the History of Medicine* 57 (1983):325, 338.

[20]Glover Perin, "Maguey, or Agave Americana: A Remedy for Scorbutus," *New York Journal of Medicine and the Collateral Sciences*, n.s., 7 (1851):179–83; Thomas L. Nichols, *Forty Years of American Life, 1821–1861*, 2 vols. (London: John Maxwell & Co., 1864; New York: Stackpole Sons, 1937), 2:336.

for an incision to achieve drainage. The pneumonia patient would probably still be bled, as would the patient with rheumatism or similar problems. The victim of gout might also be afflicted with blisters or dosed with colchicum, guaiacum, iodide of potash, opium, or turpentine. Another problem that was far from rare was ophthalmia, which might be treated with silver nitrate in the form of a solution called "lunar caustic in distilled water."[21]

A more unexpected health problem that also appeared in the Army during this period was lead poisoning. On one post the source of the problem was traced to drinking water collected after it had run down the surface of a lead-covered roof. At another, sheet lead covering kitchen equipment was held responsible, while at a third, white lead used to clean soldiers' gloves and boots had caused illness. Lead poisoning was treated with bleedings, purgatives, including calomel, and blisters, but some patients remained partly palsied despite all that could be done for them.[22]

Preventive medicine in the pre-Civil War period was a relatively unsophisticated art, and few American physicians displayed an interest in the growing public health movement in Europe. Outside the Army, attempts to prevent disease in the United States were handled on a local or even an individual basis and were generally ineffective. In both civilian and military life, emphasis was placed on the need for increased cleanliness and improved ventilation and water supplies.

Medical officers, like their civilian counterparts, also recognized intemperance as an important cause of ill health. Surgeons often worked closely with temperance societies to reduce the consumption of alcohol by soldiers. Post commanders tried varying approaches to the problem. In Florida in 1837, for example, double rations of sugar and coffee were substituted for liquor and, although it was impossible to prevent the soldier from purchasing liquor on his own, drunkenness was severely punished.[23]

More successful than the temperance movement was the Army's requirement that all soldiers be vaccinated. The Medical Department usually shipped material for vaccination in the form of crusts, the scabs from a cowpox pustule, although in 1849 the department also tried shipping the virus in liquid form in glass tubes. A departmental regulation issued in September 1818 specified that every soldier not already immune to smallpox be vaccinated at once and that surgeons keep the necessary material for vaccination on hand and in good condition. The regulation was rigorously enforced; in 1847 an Army surgeon maintained that he had never seen a single case of smallpox among regular troops. Epidemics among the civilian population proved, however, that vaccination did not always protect completely against this dis-

[21]Quote from George R. Melin, "Report of Ocular Diseases at the General Hospital at Fort Pitt, From 21st Dec 1822 to 20 Dec 1823," *American Medical Recorder* 8 (1825):193; Owen H. Wangensteen and Sarah D. Wangensteen, *The Rise of Surgery: From the Empire Craft to Scientific Discipline* (Minneapolis: University of Minnesota Press, 1978), pp. 188–89; Edgar Erskine Hume, *Victories of Army Medicine* . . . (Philadelphia: J. B. Lippincott Co., 1943), p. 121; Byrne, *Court Martial*, pp. 7–14, 25; Elisha Bartlett, "An Inquiry Into the Degree of Certainty in Medicine; and Into the Nature and Extent of Its Power Over Disease," in Brieger, *Medical America*, pp. 123–25; Ltr, Lawson to W. V. Wheaton (9 Sep 1843), RG 112, entry 2, 14:417.

[22]Forry, *Climate*, p. 342.

[23]"Recollections of a Campaign in Florida," *Yale Literary Magazine* 11 (1846):76; Forry, *Climate*, p. 327; Charles W. Ayars, "Some Notes on the Medical Service of the Army, 1812–1839," *Military Surgeon* 50 (1922):520; S. D. Gross, *A Manual of Military Surgery* . . . (Philadelphia: J. B. Lippincott Co., 1861), p. 141; Robley Dunglison, *Human Health* . . . , new ed. (Philadelphia: Lea & Blanchard, 1844), pp. 342, 344.

ease. The apparent failures of the procedures led to speculation that some vaccine had been improperly obtained, perhaps from an immature vesicle, or that failure to become immunized might be related in some way to the temperament of the patient. Also considered was the possibility that lymph obtained from a human patient who had himself been recently vaccinated was weaker than that obtained directly from the cow or that the passage of time might reduce the effectiveness of vaccination. Suggestions were made that the process be repeated at intervals, although at least one physician insisted that the effect of the initial vaccination was as strong after twenty-five years as after one. In the 1840s the surgeon general began urging that his surgeons time their vaccinations so that a continuous supply of fresh vaccine was always available, but requests for crusts continued to come into Washington from the field.[24]

Diet as a factor in the maintenance of health was a problem of particular concern to the Army and a matter to which Surgeon General Joseph Lovell devoted considerable thought from the beginning of his tenure in 1818. He was concerned with the state of the culinary art as practiced by the average soldier who, unaccustomed to cooking for himself, would eat salt pork raw and, when confronted with fresh meat, broil it "to a cinder." Instead of tea, the soldier "warms his stomach with a gill of diluted, corroding whiskey; and, after living a few weeks in this way, is sent to the surgeon, worn down with dysentery, diarrhea, and other complaints of the stomach and bowels." Lovell urged that the American soldier be given less meat and more bread. Believing that man was naturally herbivorous, he thought a vegetable diet best for the maintenance of health and vigor. He commented unhappily upon the fact that, although the Army allowed each man, as part of his regular rations, twenty ounces of beef, twelve ounces of pork, and a gill of whiskey a day, it made no allowances for vegetables.[25]

Lovell's specific recommendations for a soldier's diet included a warm beverage with morning and evening meals; peas, beans, and rice as dietary staples; kiln-dried cornmeal instead of flour; and as high a proportion as possible of fresh in preference to salted meat. Beer or molasses and water should be substituted for hard liquor, and a plentiful supply of pickles should be available to aid the digestion and correct any superabundance of bile. Ideally, a large proportion of the soldier's rations should be served in the form of soup. The need for fresh vegetables and ripe fruit in the diet was being emphasized by 1861, and the use of fresh fish and meat was still encouraged. By 1847 the notion that those sick with fever should be starved to reduce it and the accompanying tension had apparently been abandoned.[26]

Lovell's successor as surgeon general, Thomas Lawson, believed that most people in the United States ate more than was good for them, and certainly more than they needed to. When asked to give his opinion on decreasing the size of the Army's food allowance, he suggested that the

[24]Harvey E. Brown, *The Medical Department of the United States Army From 1775 to 1873* (Washington: SGO, 1873), p. 121; Porter, "Notes," p. 323; Ltrs, Lawson to Charles McCormick and to Samuel De Camp (both 10 Jun 1843) and to other surgeons, RG 112, entry 2, 14:309, 325, 331, 337; Henry Heiskell to Benjamin King (20 Aug 1849), RG 112, entry 2, 20:216. Immunity from vaccination varies from two to ten years or occasionally longer, and revaccination extends the immunity indefinitely.

[25]Joseph Lovell, "Report to Hon. J. C. Calhoun, Secretary of War," *National Intelligencer*, 16 Nov 1818.

[26]Ibid.; Gross, *Manual*, pp. 120, 143–44; Porter, "Notes" 26:320.

amount of food as well as the amount of clothing issued could well be reduced. The advice on diet given by Lawson and Lovell has a very modern sound, but it does not appear to have been acted upon.[27]

Surgery

The sick formed a majority of the Army surgeon's patients, but even in peacetime he occasionally cared for an injured man. In either situation he was handicapped. He did not understand the cause of the infections that so often frustrated his attempts to save lives, and in the first half of the century, he had no way to completely deaden the suffering of his patients on the operating table. As a result, for the tormented and struggling patient as well as for the surgeon, speed was of the essence and elaborate or time-consuming procedures were impossible. With its horrors and uncertain results, surgery before the era of anesthesia tended to be a procedure of last resort and a specialty to which few doctors cared to restrict themselves. Specialization within the field was only in its infancy at the outbreak of the Civil War. Nevertheless, since major surgery required skills that the quack could not pretend to possess, the surgeon's prestige did not suffer from the competition of cults.[28]

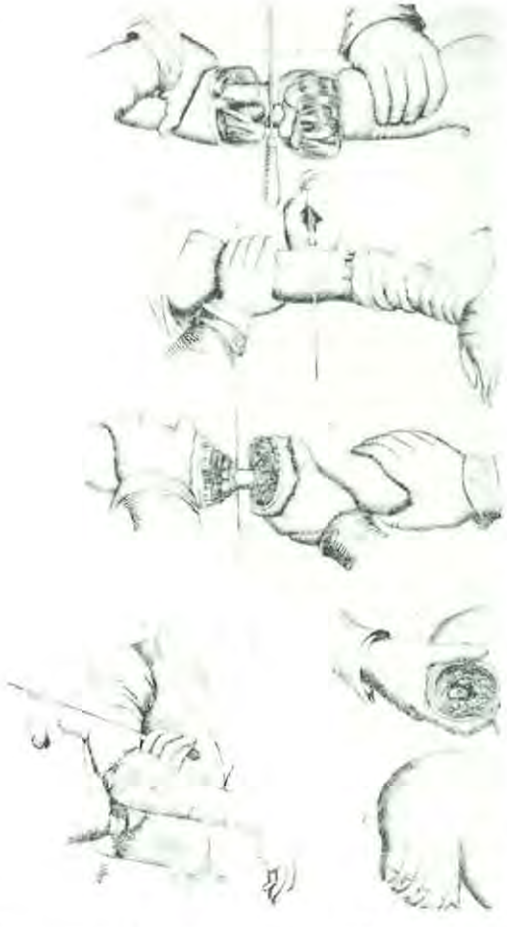
When ether was first formally and publicly used as an anesthetic in 1846, it was pronounced a success. Not all surgeons, however, recognized its introduction as a critical milestone in the history of medicine. Enthusiasm spread with time, but some surgeons remained skeptical and complained of its poisonous side effects. Chloroform was introduced not long after ether and quickly became popular, especially in the South. Those who preferred it to ether maintained that less of it was necessary to achieve the same result, that it acted more quickly, that its stage of excitation was shorter, that it was easier and more pleasant to take, and that its odor disappeared more quickly.[29]

The device initially used for the administration of ether was a somewhat complex glass container with two openings, one for the insertion of an ether-soaked sponge, the other for the admission of air. Opposite the hole for air was a glass tube fitted with a mouthpiece containing a valve that permitted the patient to draw ether vapors into his lungs from the inhaler and then exhale into the room. Authorities initially suggested that no one inhale ether vapors for longer than ten minutes at a time and, if it were to be readministered, that it be only after a five- to ten-minute rest. Some surgeons discovered that it was possible to keep a patient anesthetized as long as forty-five minutes, but experts believed that only those experienced with the procedure

[27]Ltr, Lawson to Sec War (5 May 1841), RG 112, entry 2, 12:441–43.

[28]Unless otherwise indicated, material in this section is based on Gross, *Manual*; John Hennen, *Principles of Military Surgery* (London: John Wilson, 1829); Allen O. Whipple, *The Evolution of Surgery in the United States* (Springfield, Ill.: Charles C Thomas, 1963); and Courtney Robert Hall, "The Rise of Professional Surgery in the United States, 1800–1865," *Bulletin of the History of Medicine* 26 (1952):231–62. See also Josiah Charles Trent, "Surgical Anesthesia, 1846–1946," *Journal of the History of Medicine and Allied Sciences* 1 (1946):510; Henry Burnell Shafer, *The American Medical Profession 1783 to 1850* (New York: Columbia University Press, 1936), p. 242; Walter G. Stuck, "Historic Backgrounds of Orthopedic Surgery," *Annals of Medical History*, n.s., 7 (1935):47; Austin Flint, "Conservative Medicine," in Brieger, *Medical America*, p. 135; and William G. Rothstein, *American Physicians in the 19th Century: From Sects to Science* (Baltimore and London: Johns Hopkins University Press, 1972), p. 250.

[29]Barbara M. Duncum, *The Development of Inhalation Anaesthesia* (London: Oxford University Press, 1947); M. A. Reasoner, "The Development of the Medical Supply Service," *Military Surgeon* 63 (1928):16; Trent, "Surgical Anesthesia," p. 510.



CIRCULAR AMPUTATION *as illustrated in Richard Upton Piper's* Operative Surgery *(Boston: Tichnor, Reed and Fields, 1852). (Courtesy of National Library of Medicine.)*

should attempt to do so. When the inventor of this device attempted to patent his creation, many physicians substituted a bill- or cone-shaped sponge over the patient's mouth and nose. Surgeons soon discovered that anesthetics were best administered by enclosing the sponge in a cone made of a folded towel or cut from cardboard, leather, or a similar material. Experts recommended that the patient be carefully observed while under anesthesia so that if he began to snore or his pulse became weak or slow, the sponge could be removed until he returned to a more normal state.[30]

The Army used anesthetic agents only very briefly during the Mexican War (1846-1848), trying ether but quickly abandoning it as too dangerous. One physician serving with U.S. troops in Mexico even commented that "anesthetics poison the blood and depress the nervous system, and, in consequence, hemorrhage is more apt to occur, and union by adhesion is prevented." Ether was first used in the Army with official sanction in 1849 to detect a malingerer whose supposedly immobile knee flexed readily when he was anesthetized. The standard supply table allowed two pounds of sulfuric ether for every 100 men by 1849, at which time chloroform was also added to the list of regularly used drugs, and by 1852 medical officers at many and perhaps all posts administered anesthetics during operations.[31]

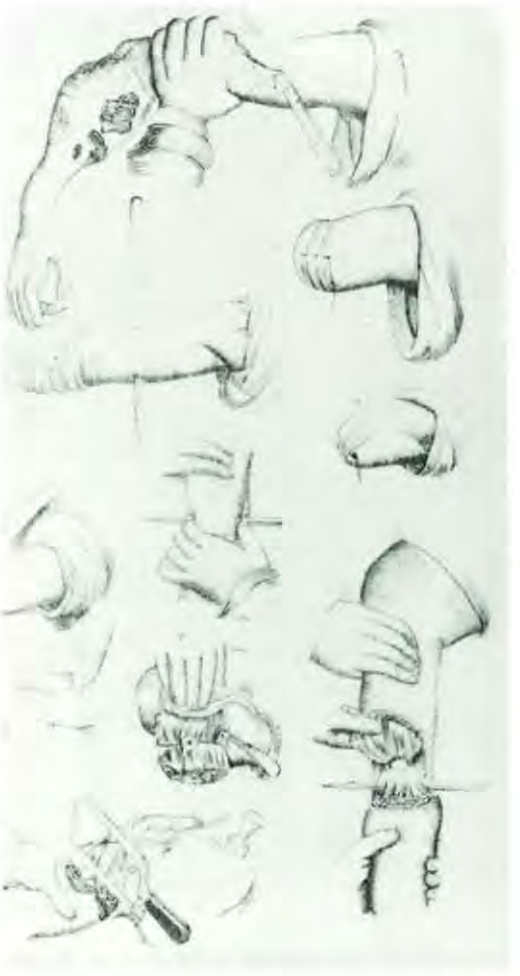
Reports of deaths resulting from anesthetics, especially from chloroform, began to appear early in the history of their use, although a physician who had administered one or the other to 600 patients recorded no fatalities. Chloroform was blamed for occasional sudden convulsions and deaths. Although no way had been

[30]Henry Jacob Bigelow, *Surgical Anesthesia, Addresses and Other Papers* (Boston: Little, Brown & Co., 1900), p. 76.

[31]Quote from Porter, "Notes" 24:30; Louis C. Duncan, "Medical History of General Scott's Campaign to the City of Mexico in 1847," *Military Surgeon* 47 (1920):439; W. T. G. Morton, *Anaesthetic Agents . . .* (Washington: Gideon, 1854), pp. 19–21, 25; Ltrs, Lawson to Morton (1 Mar 1852), in Ben Perley Poore, *Historical Materials for the Biography of W. T. G. Morton, M.D. . . .* (Washington: Gideon, 1856), p. 78; Heiskell to Lewis A. Edwards (27 Jan and 9 Feb 1849), both in RG 112, entry 2, 19:380–81 and 398, respectively; Lawson to Morton (1 Mar 1852), RG 112, entry 2, 22:276–77.

found to prevent these tragedies, some surgeons still used this anesthetic at the time of the Civil War, and it became popular during that conflict because, unlike ether, it was not flammable and it put the patient under quickly and peacefully. Chloroform remained the anesthetic of choice for eye surgery until the introduction of cocaine as a local anesthetic after the Civil War. Sulfuric ether, however, was regarded with less suspicion. Some saw its odor as its only significant drawback, and poorly trained doctors tended to prefer it because of its supposedly foolproof character. Statistics on deaths associated with the use of ether became available at midcentury. They revealed that, whatever the reason, death rates during and after surgery without anesthesia were higher than those for operations conducted upon an etherized patient.[32]

In the period before 1861, sulfuric ether and chloroform (or a combination of the two) were the two most popular anesthetics, but other forms were tried. Most often mentioned was a product misleadingly called chloric ether, which was actually chloroform dissolved in alcohol in various proportions. Many surgeons at Boston's Massachusetts General Hospital preferred chloric ether to either sulfuric ether or chloroform in its regular form. Also mentioned in the literature of the period were amylene, ethylene, and a product called "the vapor of Benzid."[33]



FLAP AMPUTATION *as illustrated in Richard Upton Piper's* Operative Surgery *(Boston: Tichnor, Reed and Fields, 1852). (Courtesy of National Library of Medicine.)*

Yet as late as 1860, some surgeons still had reservations that extended beyond chloroform to include all anesthetic agents. One such physician wrote that "if my patients will have an anesthetic agent [I] will give them as much good whiskey as they will drink," adding that if he had his way, he would have all anesthetic agents aban-

[32]Edward Treacher Collins, *The History and Traditions of the Moorfields Eye Hospital . . .* (London: H. K. Lewis & Co., 1929), p. 85; "Influence of Etherization on the Mortality of Surgical Operations," *Charleston Medical Journal and Review* 3 (1848):464; Morton, *Anaesthetic Agents*, p. 15.

[33]Quote from "A New Anesthetic Agent," *Missouri Medical and Surgical Journal* 3 (1847–48):288; Trent, "Surgical Anesthesia," p. 513; J. C. Warren, *Effects of Chloroform and of Strong Chloric Ether as Narcotic Agents* (Boston: William D. Ticknor & Co., 1849), p. 43.

WOUND CLOSURE: METHODS AND MATERIALS *as illustrated in Richard Upton Piper's* Operative Surgery *(Boston: Tichnor, Reed and Fields, 1852). (Courtesy of National Library of Medicine.)*

doned except for alcohol and opium. Other surgeons also relied heavily upon opium, believing that it had an added advantage over other drugs intended for the relief of pain because it prevented inflammation by lowering irritability.[34]

Because the danger of infection was not reduced by the introduction of anesthesia, advances in the field of surgery remained modest. Despite the willingness of younger surgeons to be more adventurous, as late as 1861 severe compound fractures or extensive damage to a joint, blood vessels, or nerves still dictated immediate amputation, particularly for a soldier wounded in the field. Each instance of compound fracture was usually considered individually, however, before a decision for or against amputation was made. The mortality rate appeared to vary with the amount of limb removed.[35]

Other types of surgery performed before the Civil War included the removal of large portions of bone from shattered limbs, a procedure used in an attempt to avoid amputation; ear and eye surgery; restorative surgery, which included the rebuilding of damaged lips and checks and the relief of the binding of burn scars; and abdominal surgery. Successful abdominal surgery to deal with intussusception (prolapse of a length of the intestine into itself) and obstructions, though rare, was reported as early as the 1830s. Doctors often dosed the victim of a penetrating abdominal wound with opium to quiet the bowel and then left him to nature's mercy, but at least one surgeon, Samuel Gross, had experimented

[34]Joseph N. McDowell, "Report on the Improvements in the Art and Science of Surgery in the Last Fifty Years," *Transactions of the American Medical Association* 13 (1860):436–37, quote from p. 436; J. N. McDowell, "The Effects of Opium in the Treatment of Wounds; or, the Use of Narcotics in Surgical Operations," *Missouri Medical and Surgical Journal* 1 (1845–46):11–12, 16.

[35]Julian John Chisolm, *Manual of Military Surgery* (Richmond: Confederate States of America [CSA] War Department, 1861), pp. 339, 363, 369–71, 374; Robley Dunglison, *An Address Delivered to the Graduates in Medicine . . .* (Baltimore: Privately printed, 1834), p. 12; O. H. Wangensteen, J. Smith, and S. D. Wangensteen, "Some Highlights of the History of Amputation," *Bulletin of the History of Medicine* 41 (1967):109–10; Henry E. Sigerist, "Surgery at the Time of the Introduction of Antisepsis," *Journal of the Missouri Medical Association* 32 (1935):172.

with animals in an attempt to determine the best way in which to handle such injuries. Venesection was customary for the victim of an abdominal wound although this practice was losing popularity by 1861.[36]

By the outbreak of the Civil War, the instruments regularly used by the military surgeon might well include at least three tourniquets, two saws of different sizes, several bone-cutters, silver catheters of varying diameters, a stomach pump, and small and large syringes. Artery forceps were used to clamp off arteries during surgery, and the tenaculum, a hooklike instrument, played a progressively more important role in surgery as greater care came to be taken in isolating blood vessels. Surgeons were beginning to use catgut for ligatures because it could be left in place and silver wire for sutures and ligatures because it seemed to promote healing and lessen the danger of hemorrhage. A new splint had been developed in 1858 that proved simpler to use and less expensive to make than its predecessors.[37]

Although the role played by germs in wound infection was not generally recognized before the Civil War, a few surgeons appear to have at least suspected the role of heat in preventing the spread of infection and took the precaution of boiling their instruments. Chlorine vapors were sometimes used to disinfect the sickroom, despite the inconvenience caused by the need to remove the patient while the room was treated. Physicians used such antiseptics as chlorine or creosote in alcohol, iodine, or even whiskey to prevent the spread of infection, without necessarily understanding how these substances worked. It was more probable, however, that wounds would be dressed with warm water, to which might be added a small amount of spirits of camphor. Regardless of the precautions taken, infection was always expected.[38]

The ignorance of physicians concerning the cause of infection and the ways in which it could spread led to complications not often seen today. With hospitals both few and small, hospital gangrene, an infection probably caused by streptococci, was not common in the United States before the Civil War. Septicemia was frequent and the outcome generally fatal despite bleedings, blisterings, and purgings. Erysipelas was also often seen during the entire period, especially in hospitals. In 1818 its treatment called for purging and the application of warm, weak mineral water to the inflamed area, but by 1861, dilute tincture of iodine and soothing lotions were favored as local applications, and quinine, tincture of iron, and nutritious food and drink were also recommended.[39]

Surgeons of the pre-Civil War period were familiar with tetanus, or lockjaw, although they did not understand its cause, and the various approaches they suggested

[36]Samuel D. Gross, *An Experimental and Critical Inquiry Into the Nature and Treatment of Wounds of the Intestines, Illustrated by Engravings* (Louisville, Ky.: Prentice & Weissinger, 1843), pp. 12, 34–35, 37–38, 42–44, 46–47, 50–51, 73, 156.

[37]Samuel Clark Harvey, *The History of Hemostasis* (New York: Paul B. Hoeber, 1929), pp. 87–88, 97, 100.

[38]Madge E. Pickard and R. Carlyle Buley, *The Midwest Pioneer: His Ills, Cures, and Doctors* (Crawfordsville, Ind.: R. E. Banta, 1945), p. 117; Robley Dunglison, *General Therapeutics, or Principles of Medical Practice* . . . (Philadelphia: Carey, Lea & Blanchard, 1836), pp. 506, 508–09, 511; G. W. H. Kemper, *Medical History of the State of Indiana* (Indianapolis: American Medical Association Press, 1911), p. 46.

[39][William M. Hand], *House Surgeon and Physician* (Hartford: Peter B. Gleason & Co., 1818), p. 36; Percy Moreau Ashburn, *The Ranks of Death* . . . , ed. Frank D. Ashburn (New York: Coward-McCann, [1947]), p. 97; August Hirsch, *Handbook of Geographical and Historical Pathology*, trans. Charles Creighton, 3 vols. (London: New Sydenham Society, 1883), 2:394, 398.

to its treatment were ineffective. Opium was popular throughout the period, applied externally or given internally. Tincture of Cannabis, a blister along the spine, and croton oil were also considered for this purpose. The inhaling of chloroform was suggested, as was the use of morphine with camphor and antimony.[40]

Even before the wounded could be treated, however, Army surgeons faced the problems of moving them from battlefield to hospital. In an era when the ill and injured were for the most part cared for at home, the problem of transporting these patients was essentially a military one, one that the Army did not face on a large scale until the war with Mexico. During the Seminole wars in Florida, there was no organized system for moving the wounded to safe and convenient places where they could be treated. During the conflict in the swamps and jungles, wagons or horse litters were used to carry those unable to walk, with the latter favored for particularly difficult terrain. Since ready-made litters were not issued to Army units, it was necessary to construct them on the battlefield. The litter was generally slung between two horses, which also required both a large number of horses and a considerable period of time to fashion the litters from blankets and rawhide; the desirability of having litters made up before the need for them arose soon became obvious. The two-horse litter was used to move the wounded after clashes with the Indians in the West and on at least one occasion in the Mexican War, but wheeled vehicles were more popular for this purpose. Until the Civil War, however, efforts to have the Army obtain the proper equipment and animals for the evacuation of the wounded were in vain.[41]

Medical Education

Growing uncertainty about the common assumptions of accepted medical practice and a legacy of contempt for intellectualism bequeathed by Andrew Jackson and his followers accompanied a rapid westward dispersal of the population, leading to a deterioration in the quality of the medical education available in the United States. The number of medical schools increased in response to the need for physicians to care for an increasingly scattered population. Most schools were designed to bring in a profit, and since licensing requirements were generally absent, the competition among them resulted in a general lowering of the demands made upon their students. Although a few institutions stood out above the others, most were, as medical historian Richard Harrison Shryock concluded, "mediocre schools ministering to mediocre personnel." Even the best schools fell short of the standard set by the best European teaching institutions, and the conscientious physician who did not go abroad for his training might be forced to attempt to complete his professional education on his own initiative after he had received his medical degree. If he wished to expand the bounds of medical knowledge through research, he would find himself almost alone.[42]

[40]Hand, *House Surgeon*, p. 33; Chisolm, *Manual*, pp. 230–31; Eugene Hillhouse Pool and Frank J. McGowan, *Surgery at the New York Hospital One Hundred Years Ago* (New York: Paul B. Hoeber, 1930), pp. 19–20.

[41]George A. Otis, *A Report to the Surgeon General on the Transport of Sick and Wounded by Pack Animals* (Washington: Government Printing Office, 1877), pp. 2n, 3–5, 9, 11n.

[42]Quote from Shryock, *Medicine and Society*, p. 137; see also William Frederick Norwood, "Medical Education in the United States Before 1900," and John Field, "Medical Education in the United States: Late Nineteenth and Twentieth Centuries," both in C. D. O'Malley, ed., *The History of Medical Education*

The relatively low caliber of many of those admitted to medical schools as well as that of the schools themselves tended to give a bad reputation to all who attended them. A prominent physician of the time, Daniel Drake, maintained that students "too stupid for the bar, or too immoral for the Pulpit chose to study medicine." Another commented that because of the deficiencies in his premedical education, such a student might be "so ignorant and illiterate as to be unable to write his own language." Although proprietary medical schools often required a three-year apprenticeship in addition to attendance at two sessions of lectures, the knowledge gained during the apprenticeship varied widely, according to the interest and competence of the preceptor. Work as an apprentice might, nevertheless, offer the future physician his only opportunity for training at the patient's bedside. Clinical instruction did not receive the emphasis in the United States that it did in Europe; as late as 1849 only nine medical schools in this country made hospital attendance a requirement, while only sixteen schools so much as offered their students an opportunity for clinical training. Few students were likely ever to have seen a stethoscope, clinical thermometer, ophthalmoscope, or microscope, since most schools did not own such instruments. Medical college libraries tended to be quite small. The training offered in anatomy was likely to be weak since cadavers were difficult to obtain, and rumors of grave robbing could still precipitate scandals.[43]

In the decades before the Civil War, increasing numbers of American medical students went abroad for some part of their training, and efforts were made throughout the period to upgrade the training available in the United States. The U.S. Army, which after 1832 accepted physicians only after they had passed an examination, found that, as late as 1860, 50 percent of the applicants were unqualified, many being defective in the areas of preparatory education, practical anatomy, pathology, and clinical medicine. The fact that these candidates had failed the Army's examination did not, of course, prevent them from practicing medicine as civilians wherever they chose, no matter how slight their skill, since very few states retained licensing requirements.

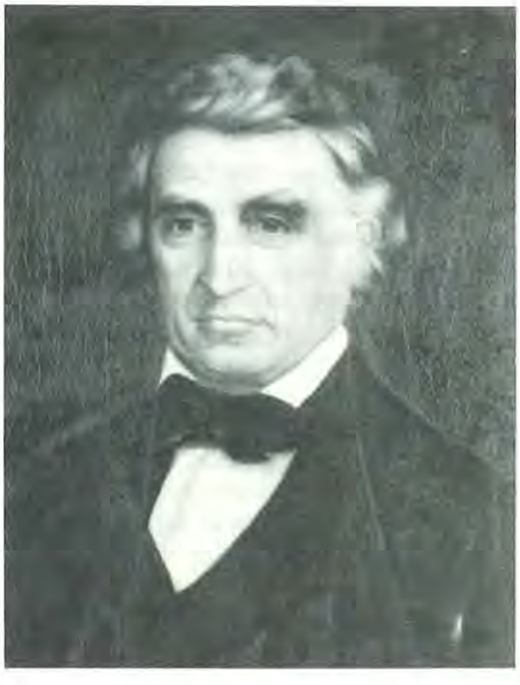
When a physician concerned by the weakness of his own professional training wished to remedy its deficiencies by private study, he often turned to medical societies and professional publications. Although their number grew with time, medical societies during the first half of the century were few and were usually located in large cities. The number of medical publications available also grew, although some journals were very short-lived. By 1851 eighteen were being published within the United States. These journals, as well as books, many from abroad, enabled the American physician to keep abreast of medical developments in the United States and in Europe.[44]

Many Army surgeons in the period con-

(Berkeley, Los Angeles, and London: UCLA Press, 1970), pp. 476, 483, 486, 501.

[43]Quotes from Daniel Drake, *Practical Essays on Medical Education, and the Medical Profession, in the United States* (Cincinnati, Roff & Young, 1832), pp. 6–7, and F. Campbell Stewart, "An Anniversary Address Delivered Before the New York Medical and Surgical Society," in Brieger, *Medical America*, p. 66; Andrew Boardman, "An Essay on the Means of Improving Medical Education and Elevating Medical Character," in Brieger, *Medical America*, pp. 25–26, 34.

[44]Edward B. Krumbhaar, "The Early Days of the *American Journal of the Medical Sciences*," *Medical Life* 36 (1929):587–88; Nathan Smith Davis, *History of Medical Education and Institutions in the United States* (Chicago: S. C. Griggs & Co., 1851), p. 167.



WILLIAM BEAUMONT. *(Courtesy of National Library of Medicine.)*

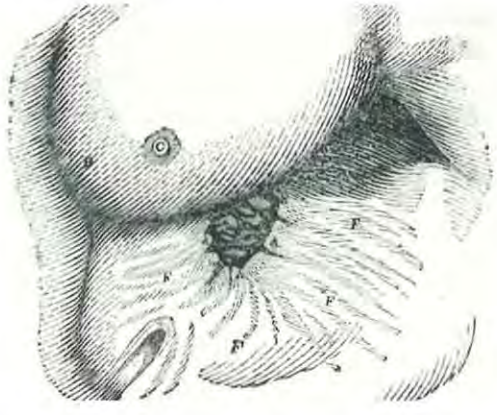
tributed to the medical literature. Their articles covered such disparate topics as cures for scurvy, medical topography, or anatomy, erysipelas of the head, amputation at joints, inflammation and fever, and vaccination. Among books by Army surgeons were Samuel Forry's *The Climate of the United States and Its Epidemic Influences* and several volumes replete with detailed statistics and other data concerning meteorology and disease published by the Medical Department. Army surgeons were also caught up in what has been called a "compulsive obsession" to learn more about natural science and anthropology and worked to catalogue or record their observations and collections made on the nation's frontiers.[45]

American physicians of the period preceding the Civil War devoted little time or interest to learning through research. One of the few exceptions to this rule was an Army surgeon, William Beaumont. Beaumont took advantage of the opportunity presented him in the form of a permanent fistula in the abdomen of a private patient, Alexis St. Martin, who was suffering from the effects of a shotgun wound. From 1822 to 1834, whenever his reluctant patient could be persuaded to remain with him long enough, the Army surgeon performed experiments aimed at discovering the secrets of human digestion.[46]

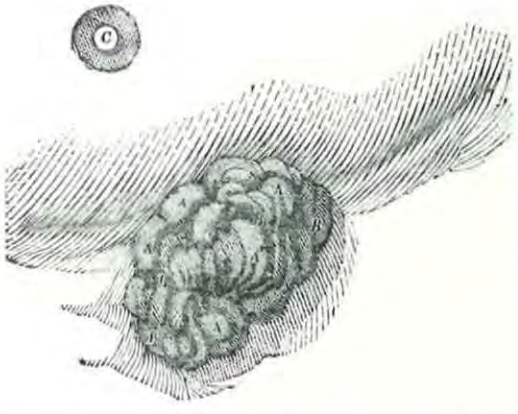
The book Beaumont published in 1833 on his experiments described how he inserted various morsels of food by means of a silk string into St. Martin's stomach and observed their fate in order to study the process of digestion. In one series of experiments Beaumont recorded the temperature of that organ during the process. It is interesting to note that he was intrigued by the possible effects of weather and soil conditions upon the digestion. He enrolled St. Martin in the Army as an orderly in 1832 to ease the burden of supporting him, but early in 1834 the unenthusiastic patient crossed the Canadian border in the general direction of his former home. On this occasion, Beaumont was able to persuade St. Martin to return to him so that he could resume his research.

[45]Edward Lurie, "An Interpretation of Science in the Nineteenth Century: A Study in History and Historiography," *Cahiers d' historie mondiale* 8 (1964–65):684.

[46]Joseph Lovell, "A Case of Wounded Stomach," *American Medical Recorder* 8 (1825):14; Harvey Cushing, "William Beaumont's Rendezvous With Fame," *Yale Journal of Biology and Medicine* 8 (1938):113–26. Unless otherwise indicated, all material on Beaumont in this chapter is based on his *Experiments and Observations on the Gastric Juice and the Physiology of Digestion* (Plattsburgh, N.Y., 1833) and Jesse S. Myer's *Life and Letters of Dr. William Beaumont* (St. Louis: C. V. Mosby Co., 1939).



BEAUMONT'S ILLUSTRATION OF ST. MARTIN'S WOUND *as ordinarily seen. (Courtesy of National Library of Medicine.)*



BEAUMONT'S ILLUSTRATION OF ST. MARTIN'S WOUND *with the stomach prolapsed. (Courtesy of National Library of Medicine.)*

Beaumont's efforts to learn the exact composition of the gastric juice he obtained from St. Martin's stomach, however, met with repeated failure. None of the experts he consulted could add much to what he was able to ascertain for himself. Even the great Swedish biochemist Jacob Berzelius disappointed Beaumont, blaming his inability to determine its exact chemical composition on the age and small quantity of the fluid sent to him. The final blow fell in the spring of 1834 when, after accompanying him on a series of visits to medical societies, Beaumont's sole source of the vital fluid left again on what was to have been a short visit to his family in Canada, but this time never returned. Repeated attempts over a period of many years to get him to do so failed, and thus Beaumont's experiments came to an end.

Beaumont was among a very few American physicians conducting research of real significance in the first half of the nineteenth century, and his work received favorable international attention. The attitude toward such endeavors prevalent in medical circles in the United States, however, was perhaps accurately reflected in the opinion of Lawson, the second surgeon general of the Army Medical Department, that Lovell's efforts to encourage and aid Beaumont's research constituted unwarranted favoritism.

Conclusion

In the period from 1818 to 1861, medicine and surgery were slowly approaching a new era. These four decades, however, were for many doctors a time of increased confusion and uncertainty. The gradual death of the dogmatic, unscientific medicine of centuries past brought both physicians and their patients face to face with the profession's ignorance and helplessness in the face of infection and disease.The use of anesthesia brought some relief from suffering in the 1850s, but it was not accompanied by a significant saving of lives. Although the life- and health-saving properties of quinine sulfate were recognized, they were not understood. The drive for the reform of medical education and the search for fact rather than theory would gain

strength in the generation after 1870 and lead to rapid progress in medical science. Only in the next century, however, would the United States assume a position of leadership in the medical world. For the patient, military or civilian, who was concerned with his health and his life, the period from 1818 to 1861 was a bleak one.

CHAPTER 2

Laying the Foundation, 1818–1835

The War of 1812 did not dispel traditional American distrust of a strong permanent military organization. At the war's conclusion, the U.S. Army was allowed for a few years to revert to its previous peacetime character as a small collection of regiments without either an overall command or a central organization. When, however, in the spring of 1818, the reform efforts of such men as Secretary of War John C. Calhoun finally bore fruit, one of the first three permanent staff departments Congress created for the Army was a Medical Department.

Organization and Administration

As formed in 1818, the new Army Medical Department strongly resembled the organization that had been created as a temporary expedient during the War of 1812. Medical officers, although commissioned, had no rank and thus remained outside the military hierarchy and without status. The principal departure from the previous pattern involved eliminating the positions of hospital surgeon and hospital surgeon's mate, changes apparently dictated by a belief that the general hospitals they staffed would not be necessary for a scattered peacetime army of 7,000 men. The head of the new department, who reported directly to the secretary of war, was given the title of surgeon general. A subordinate Apothecary Department, managed by an apothecary general, was reestablished to handle the purchasing as well as the compounding of medicines. Francis LeBaron, the same physician who had served as apothecary general during the War of 1812, was reappointed to the position. Although at this time Congress allowed the apothecary general only one assistant, during the three years that his department existed he actually had two, just as he had had during the War of 1812.[1]

The classifications of post surgeon, regimental surgeon, and regimental surgeon's mate were retained. Men serving as hospital surgeons and hospital surgeon's mates, among them some of the ablest physicians in the Army, were offered commissions as post surgeons, despite the fact that they would thereby be reduced to a position inferior to that of regimental surgeons. Congress retained the ratio of one surgeon and two mates to a regiment and placed a ceiling of forty on the number of post surgeons.

The responsibility for setting up the new medical department was given to Joseph

[1]Unless otherwise indicated, material in this section is based on SGO, *Annual Reports*, 1818–61; John F. Callan, *The Military Laws of the United States* . . . (Philadelphia: George W. Childs, 1863); War Department, *General Regulations for the Army* . . . (Philadelphia: M. Cary & Sons, 1821) and *General Regulations for the Army of the United States* . . . (Washington, 1835); War Department, SGO, *Regulations for the Medical Department*, 1818; and Brown, *Medical Department*, pp. 107–214.

JOSEPH LOVELL. *(Courtesy of National Library of Medicine.)*

Lovell, a conscientious and level-headed thirty-year-old surgeon then serving as medical director for the Army's Northern Division. A graduate of Harvard and the Harvard Medical School, Lovell had occupied increasingly responsible positions during the War of 1812. The respect his colleagues held for him appears to have eased any resentment that the selection of so young a man for so great a challenge, over more experienced surgeons, might otherwise have caused. His appointment as the first surgeon general proved a wise one.[2]

In eliminating the positions of hospital surgeon and hospital surgeon's mate, while at the same time giving specific assignments to each member of the Medical Department, Congress had placed the new surgeon general in a potentially difficult position. If he adhered strictly to the letter of the law and a war were to erupt, a possibility the legislature perhaps did not want to consider, Lovell would have no one ready to staff the general hospitals that would receive the seriously ill or wounded together with the overflow of smaller facilities. Lovell appears to have been well aware of the problems this arrangement could cause. In the regulations he issued for the department, he outlined an organizational framework different from that created by Congress, detailing the duties to be undertaken by hospital surgeons and mates and other staff members. He introduced the position of the medical director, who would be responsible for the medical care of the sick and wounded of an entire army or of a large geographical area. And for greater efficiency in the management of his staff, Lovell insisted that all surgeons, regardless of their duties, report directly to him in Washington.

In 1821 Congress abandoned its attempts to dictate the structure of the Medical Department and classified all medical officers as either surgeons or assistant surgeons. In so doing, the new legislation eliminated the Apothecary Department entirely, allowing Lovell to assign whomever he wished to handle purchasing. Although the physician appointed to serve as the chief medical purveyor in New York City continued for the remainder of his career in that post, the surgeon general was free to change the assignments of all of his purveyors as he wished.

The result of the reorganization was a medical department still too small to care for an Army divided into small units func-

[2]Ltr, Calhoun to Brown (25 Apr 1818), in *The Papers of John C. Calhoun*, ed. Robert L. Meriwether and W. Edwin Hemphill, 10 vols. (Columbia: University of South Carolina Press for the South Carolina Society, 1963), 2:259 (hereafter cited as *Calhoun Papers*).

tioning independently yet flexible enough to minimize the effects of its inadequate size. The complete solution to the problem of understaffing was not within the surgeon general's power. Already the law of 1818 had reduced by five the number of physicians serving in the Army. Although Lovell admitted that a sufficient number remained at that time to give each post one doctor, he emphasized that a single physician could not adequately serve the needs of either the very large or the very unhealthy post. Unimpressed, in the course of cutting back the size of the Army in general, Congress in 1821 again reduced the authorized size of the staff, from 64 to 53, of whom 45 were assistant surgeons. Among those the surgeon general dismissed was the once widely respected Benjamin Waterhouse, who had introduced vaccination to the United States but who had also acquired a reputation of being vitriolic and greedy, "a man of talents and sciences [who] has not made himself a good practical physician." Another physician of much military experience who was dropped was one whose "conduct for intemperance" had become "a matter of some notoriety," and whose mind was "too much affected to attend regularly to business."[3]

As the nation expanded westward and the number of posts increased, Lovell continued to make temperate but insistent protests against the inadequate size of his department. He pointed out that the standards of medical care offered to the nation's soldiers would deteriorate if the ratio of surgeons to posts and men as established in 1821 was not maintained. He emphasized to the secretary of war that, because

BENJAMIN WATERHOUSE. *(Courtesy of National Library of Medicine.)*

of the small number of physicians in the department, the unrelieved duty time of an Army surgeon exceeded that of any other Army officer; some surgeons had served as long as ten years without a furlough. Lovell reminded the secretary that the shortage of Regular Army surgeons made it necessary at times to pay private physicians to handle department duties and that in some areas doctors willing to do so were hard to find. Furthermore, they were neither as careful in their use of supplies nor as capable of supervising the sick and wounded as their military counterparts. Lovell maintained that a Regular Army surgeon should perform the physical examination of recruits because it was more likely that an Army physician rather than a private physician would spot defects that would cause a man to be unfit for military duty. Despite Lovell's arguments, it was not until June 1832

[3]First quote, Ltr, Calhoun to Monroe (18 Jun 1821), in *Calhoun Papers* 6:198; remaining quotes, Ltr, Foster Swift to Lovell (9 Jan 1821), RG 112, entry 12.

that Congress authorized the president to name four more surgeons and ten more assistant surgeons to the Medical Department.[4]

Nevertheless, the law of June 1832 only partially alleviated the shortage of physicians in the Army. To guarantee care for the Army's sick and injured, further restrictions on the leave taken by Army surgeons soon became necessary. After 1835, granting any leave longer than seven days required approval of the secretary of war.

Ironically, in the early 1830s, at the very time that Lovell was urging the appointment of more medical officers to the department, a new secretary of war, operating under the mistaken impression that the position of surgeon general was superfluous, proposed to abolish it, thus ending the Medical Department's existence as a separate entity. Secretary John H. Eaton concluded that the surgeon general's duties involved only supply and that these responsibilities were actually being handled by the Quartermaster's Department. Lovell countered by pointing out that regulations prohibited the Quartermaster's Department from buying medicines and hospital supplies, which since 1821 had been purchased by a Medical Department surgeon stationed in New York City. He also emphasized that the administrative responsibilities of the Surgeon General's Office were broad and included "securing the professional responsibility of [the department's] several officers, a strict accountability for public property and a material reduction of its expenses." Lovell's argument prevailed, and the position of the surgeon general remained at the top of the Medical Department hierarchy.[5]

The caliber of the surgeons serving under him was another of Lovell's concerns. He sought both to attract promising young physicians by increasing their salaries and to weed out incompetents by means of examinations for entry and promotion. His campaign for higher salaries was launched in the fall of 1818, when he pointed out to Secretary of War Calhoun that competent surgeons would be reluctant to join the Army or to remain long in it if their compensation was not increased above the $40 to $45 a month then offered, a sum less than that paid line officers with similar lengths of service. Calhoun's initial efforts to have the salaries of Army surgeons raised were not successful. The surgeon general was himself paid $2,500 a year, a salary lower than that of many comparable officers in other branches of the service. Urged on by the pleas of his subordinates, however, he continued to emphasize the need for higher salaries. In 1828, for example, he commented that, except for the forage allowances for their horses, the most senior assistant surgeons received only $3 a month more than the greenest second lieutenants.[6]

At last, in 1834, the Medical Department's entire pay scale, except for the salary of the surgeon general, was raised and the principle of greater pay for longer service established for its members. Congress allowed the most experienced surgeons the

[4]Ltrs, Lovell to Sec War (1 Aug 1830 and 13 Jan 1832), both in U.S. Congress, *American State Papers . . . V. Military Affairs*, 7 vols. (Washington: Gales & Seaton, 1832–61), 4:644–45 and 826–27, respectively (hereafter cited as *American State Papers: Military Affairs*); see also other Ltrs, surgeon general (SG) to various recipients (1823–33), RG 112, entry 2, vols. 5 and 6.

[5]Quote from War Department, SGO, *Annual Report* (1 Aug 1830), 1831, p. 3; Ltrs, Lovell to Calhoun (6 Feb and 21 Dec 1821), both in *Calhoun Papers* 5:597 and 6:579, respectively.

[6]Ltrs, Squier Lea to Lovell (2 Oct 1820) and William Turner to Lovell (1 Jan 1828), both in RG 112, entry 12.

pay of majors, $50 a month plus eight rations and forage for three horses, assistant surgeons with at least five years of service that of captains, and the least experienced assistant surgeons that of first lieutenants. Those who served in either rank more than ten years were to receive double rations. Nevertheless, although their pay was keyed to that of Regular Army officers, Army surgeons still had not been given rank.[7]

The shortage of Army surgeons forced Lovell to sign contracts from time to time with civilian physicians, who were paid by the department on the basis of the size of the units to which they were assigned. Those caring for the sick and wounded of a unit of 100 or more men received $40 a month. For 50 to 100 men, the fee was $30 a month; for 50 or less, $20 a month. The doctor providing his own medicines or supplies might receive 25 to 50 percent above these rates.

Although higher pay might encourage able physicians to enter the Medical Department, it obviously would neither discourage incompetents from applying nor cause those already in the department to resign. Lovell emphasized the problem he faced in this regard when he described one physician in his department as "so illiterate that he cannot spell his own name," so old that he had no intention of ever joining his regiment, and so unequal to the responsibilities of an Army surgeon that he had been forced to resign an earlier appointment as regimental mate "to avoid an arrest for incompetence." Neither the legislation of 1818 nor the department's regulations, however, made provision for weeding out such men. Appointments were made from each state according to the number of representatives it sent to Congress, but the regulations themselves required only that new members have a diploma of some type from a "respectable medical school, college, or society" or pass an examination administered by an Army medical board. Since the examination was rarely given, only Lovell's vigilance could bar entry to incompetent surgeons or eliminate those already there. Nevertheless, the department's physicians soon acquired an enviable reputation among those most familiar with their work. In 1827, for example, the inspector general of the Army, George Croghan, commented that "The army is truly fortunate in having such a medical corps . . . More than once I have questioned myself, how it could be that the government were enabled to employ such professional worth and talents at so *paltry* a price."[8]

Some question exists as to exactly when Lovell modified his regulations to include the requirement that all candidates for appointment to the department or for promotion within it pass an examination by an Army medical board. This requirement was first activated in 1832, at a time when states were beginning to eliminate licensing exams for private physicians and exams were not required for other Army officers. From that time onward, no one joining the Medical Department was spared these tests. Even former Army surgeons desiring to return to the department were required to take them. The examining board, com-

[7]Ltrs, Calhoun to Johnson (21 Dec 1818), in *Calhoun Papers* 3:413; Lovell to Sec War (8 Nov 1828) and to Thomas H. Benton (18 Dec 1828), both in *American State Papers: Military Affairs* 4:32, 64–66, respectively.

[8]Quotes from Ltr, Lovell to Calhoun (18 Jun 1818), in *Calhoun Papers* 2:344, "Regulations of the Medical Department, September 1818," in Brown, *Medical Department*, p. 120, and George Croghan, *Army Life on the Western Frontier: Selections From Official Reports Made Between 1826 and 1845*, ed. Francis Paul Prucha (Norman: University of Oklahoma Press, 1958), p. 70; Ltr, Francis LeBaron to Lovell (21 Sep 1818), RG 112, entry 12.

posed of three surgeons or assistant surgeons, was prepared to travel from post to post and city to city, if necessary, to administer the three-day examination. Physicians appointed to the department between the time when the new regulation was issued and that of the first examination a year later received conditional appointments and either took the tests when offered or left the Army. Assistant surgeons who had served five years in the department were required to take the promotion test in order to remain in the Army. They were not required to take a promotion should they pass; since assignments were based on seniority within grade, and transition from senior assistant surgeon to junior full surgeon might bring with it an undesirable change of post, refusal of promotion was not unusual. Those who failed might try the exam again after two years, but a third attempt was not permitted. To retain eligibility, any candidate who passed the examination but did not receive an appointment within two years had to repeat the process.[9]

Lovell's campaign to upgrade the department still faced serious obstacles. The relatively low salaries and the specter of months of constant exposure to disease in desolate surroundings undoubtedly discouraged many able young doctors. One department physician pointed out, "The Surgeon is more confined, than any of the other officers, and Without the prospect of *promotion, rank, or military Honors;* performs the most *important, Laborious, and Dangerous duties;* for a consideration *less* than a *Waggon Master.*" Another wrote Lovell of the deaths of two of his children, the illness of his wife, and the destroyed health of his remaining child, adding that his "mind was too much fatigued, to attempt the drudgery of making out returns" and that the only deaths at his post were those of his own children. Nevertheless, Lovell could offer intangible rewards to the ambitious. He encouraged his surgeons to send geological, zoological, and botanical specimens back to interested scientific institutions. His open and unselfish support of Army surgeon William Beaumont's pioneering work in the field of human digestion suggested that, despite the hardships, the Army Medical Department could offer opportunities to men of talent.[10]

Lovell's concern for the welfare of the department's surgeons also led him to attempt to consider the preferences of individual physicians when making assignments. The alternatives for full surgeons were few; in mid-1826, for example, Fortress Monroe, Virginia, and West Point were the only posts open to them, and the remainder were assigned to regiments. The choices available to assistant surgeons were more numerous and some medical officers remained at one post for as long as twenty years, but both surgeons and assistant surgeons, as a rule, were quick to request transfers if their assignments were not entirely to their liking. In 1825 the department initiated a requirement that Army physicians remain at least two years at their

[9]The two preceding paragraphs dealing with Medical Department examinations are based upon Rodney Glisan, *Journal of Army Life* (San Francisco: A. L. Bancroft & Co., 1874; Washington, Library of Congress [LC], microfilm 35155), pp. 3–4; Fayette Robinson, *An Account of the Organization of the Army of the United States*, 2 vols. (Philadelphia: E. H. Butler & Co., 1848), 1:42–43; Ltrs, Lovell to various recipients (1831–36), RG 112, entry 2, vols. 5–7; Records of the Adjutant General's Office, 1780s–1917, RG 94, Letters Sent by the Office of the Adjutant General, 1800–1890, microfilm publication M565, roll 8, 10:343, 395, NA; Ltr, Lovell to Samuel Beekman (24 Mar 1828), RG 112, entry 2, 4:226–27.

[10]First quote, Ltr, Lea to Lovell (2 Oct 1820), and second, Ltr, T. J. C. Monroe to Lovell (12 Nov 1829), both in RG 112, entry 12.

posts before requesting transfers. But the problem was still not entirely solved, and Lovell was irritated to learn that some medical officers, including Thomas Lawson, who would be his successor as surgeon general, were rushing to request changes of assignment as soon as the two-year period had passed.[11]

Lovell's attempts to please everyone actually led to discontent among some members of the department. Lawson, who responded to Lovell's suggestion that he was too "pugnacious" with a fourteen-page letter of 16 October 1825 reciting his superior's failings, accused the surgeon general of, among other things, favoritism in the granting of appointments. "Some of the Surgeons," Lawson wrote, were "about to apply for a Reorganization of the Medical Staff" and unless prevented from doing so by difficulty in agreeing about how to proceed, they would formally try to "effect a new organization, or to produce a change in the present system of government under the existing organization of the Medical Staff." In 1830 the secretary of war assumed the final responsibility for assignments, but some relaxation in this rule was allowed in 1834, when those with three years or more of service within grade were granted their choice of vacant posts.[12]

Despite their many duties, some surgeons, particularly those assigned to small posts, had free time. With salaries less than generous, the temptation to take on private patients must have been strong. Although for many years the department's regulations categorically forbade private practice, exceptions to the rule, while not always granted, were frequent. Early in October 1818, for example, Lovell wrote Calhoun that a surgeon at Norfolk, Virginia, was being permitted to continue treating patients who had no connection with the Army. In 1820 Beaumont mentioned seeking permission to care for sick and injured civilians at Mackinac Island, where no other physician was available for 300 miles; fortunately for American medicine, his request was granted. In 1834, although the prohibition against private practice had been reiterated, the adjutant general ruled that several military surgeons who had raised the question had permission to treat civilians as long as their doing so did not interfere with the performance of their assigned duties. This ruling appears to have

THOMAS LAWSON. *(Courtesy of National Library of Medicine.)*

[11]Ltrs, Lovell to Calhoun (26 Nov 1818), in *Calhoun Papers* 3:301; Lovell to Thomas J. Jesup (1 Sep 1818) and to Lawson (28 Apr 1827), both in RG 112, entry 2, 2:7 and 4:144, respectively; see also other Ltrs (1818–1822, 1826–1829), RG 112, entry 2, vols. 2 and 4.

[12]Ltr, Lawson to Lovell (16 Oct 1825), RG 112, Lawson Letters, entry 226.

represented the official attitude toward private practice.[13]

In the course of his private practice, the Army surgeon also often cared for civilian workers and military families on the base. The extent to which he was officially responsible for civilians in these categories, however, was not always clear, even to members of the department. By the time of Lovell's death, it was apparently understood that the surgeon was not required to care for anyone who was not in the Army, although it appears that he was permitted, as a rule, to supply medicines for the families of the soldiers at their posts and to provide hospital stores for civilian workers. In unusual circumstances, surgeons could also supply medicines to anyone in desperate need who was unable to pay for his own.[14]

Lovell's ambitions for his surgeons extended beyond the provision of the best possible medical care for the Army's soldiers. His appreciation of the new department's unique opportunity for significant contributions to medical science led to a requirement that department physicians participate in attempts to establish the relationship of meteorological factors to health, a step he had urged before he became surgeon general and one proposed during the War of 1812 by James Tilton, then head of the U.S. Army's medical services. Early in the course of his service as surgeon general, therefore, Lovell ruled that the surgeons under him must submit reports on the diseases they treated and on the weather and climate, as well as on landscape features, such as elevation, drainage, and vegetation, that might affect the health of the men. Lovell did not initially receive the cooperation he wished from his surgeons, who appear to have retained the nonchalant attitude toward reports that characterized their predecessors. Within two years, however, he was able to comment that his orders were being obeyed.[15]

With the aid of these detailed reports, it is possible to achieve some understanding of the sick rate with which the Medical Department had to contend more than 150 years ago. One author has determined that the rate of hospital admissions, largely as a result of fevers, digestive ills, and respiratory diseases, was on the average five times higher from 1819 to 1829 than, for example, it was in 1949 and that the mortality rate was fifteen times higher. Since no separate reporting category listed the number of men suffering from alcoholism and the effects of intemperance, even Lovell himself could only assume that this problem played an important role in much illness and death attributed to other causes. Although these morbidity and mortality rates seem shocking in the late twentieth century, they did not seem so to Lovell, who commented in 1822 that the death rate in the Army was less than that among young men in civilian life.[16]

Lovell's interest in the way in which his surgeons performed their duties did not blind him to the important role that nonprofessionals, such as nurses, cooks, wardmasters, and stewards, played in the care of the sick and wounded. In the earliest

[13]Ltrs, Lovell to Calhoun (2 Oct 1818), in *Calhoun Papers* 3:185; Adjutant General (AG) to J. Manney (17 Jul 1834), RG 94, M565, roll 8, 11:49; Henry Stevenson to Lovell (19 Mar 1835), RG 112, entry 12.

[14]Ltr, Benjamin King to J. M. Foltz (17 Nov 1836), RG 112, entry 2, 8:112–13.

[15]Ltrs, Lovell to Calhoun (1 Nov 1818 and 1 Aug 1819) and Calhoun to Jackson (10 Aug 1819), all in *Calhoun Papers* 3:248 and 4:224–25, respectively.

[16]Ltrs, Lovell to Calhoun (3 Oct and 1 Nov 1818), both in *Calhoun Papers* 3:186, 249, respectively; Edwin Sheffield Marsh II, "The United States Army and Its Health, 1819–1829," *Military Surgeon* 108 (1951):505.

years, civilians could be hired to fill these positions, but in 1822 the adjutant general decided, despite criticisms of the poor work performed by soldiers in hospitals, that only enlisted men selected by the surgeons for whom they would work should be assigned these responsibilities. Although the permission of the enlisted man's commanding officer was necessary for his assignment to hospital duty, once the appointment had been made, the attendant was subject only to the command of the surgeon, except in cases of great emergency. This system did not work as well as the adjutant general had assumed it would. In 1833 the secretary of war gave doctors in charge of Army hospitals permission, when absolutely necessary to obtain suitable attendants, to enlist into the Army directly from civilian life men who appeared particularly well qualified.[17]

Guidelines concerning the size of staffs required by Army surgeons to man their hospitals were set forth in the department regulations. Initially, these regulations stated that a general hospital would need a steward and a wardmaster, one nurse to every ten patients, one matron to every twenty, and a cook for every thirty. A regimental hospital staff might consist of a noncommissioned officer who served as both steward and wardmaster, two matrons, a cook, and four nurses, chosen from among the privates in the regiment. A hospital for a post garrisoned by a single company would probably have a private serving as wardmaster and steward and either two nurses or a nurse and a matron. A post of more than one company was assigned an extra nurse for every added company.

The pay of civilians working in Army hospitals varied from $10 to $16 a month for hospital attendants to $5 for matrons, while enlisted received only their regular pay for hospital work. Whether the matron at this time was still a supervisor of nurses as she was in the Continental Army is not clear, but she apparently was responsible for cooking, nursing, washing, and cleaning. The worth of an intelligent and dedicated steward or attendant was well recognized, but shortages of funds and the absence of a legislative or regulatory provision permitting an additional allowance often frustrated attempts to give enlisted men and noncommissioned officers extra pay. Nevertheless, despite the low pay, at least one steward in the Army in 1835 was himself a highly respected physician.[18]

The administrative staff assisting Lovell in his Washington office consisted of a single clerk, also a physician. He was paid $1,150 a year, and his responsibilities apparently included a small but growing collection of books and journals started by Lovell and continued by his successors, the first volumes in what would eventually become a vast medical library. The initial intention was that each post or regiment have texts on, among other things, anatomy, surgery, and medical practice, and it appears that whenever a book was sent out to sur-

[17]Ltrs, Lovell to King (11 Oct 1821), RG 112, entry 2, 2:241; John H. Eaton to Lovell (4 Feb 1822), RG 112, entry 12; Lovell to Calhoun (18 Jan 1822), in *Calhoun Papers* 6:627; Surgeon at Ft. Gadsden, Fla., to Lovell (n.d.), in Ayars, "Notes: Medical Service," p. 511.

[18]Ltrs, Lovell to Benjamin Harney (3 Jun 1824 and 15 Nov 1828) and Henry Heiskell to A. Cox, Jr. (30 Sep 1830), all in RG 112, entry 2, 3:147, 4:305, and 5:210, respectively; Thomas Mower to Lovell (2 Jun and 1 Nov 1818, and 2 Sep 1822), Swift to Lovell (5 Jan 1822), James Mann to Lovell (3 Feb 1822), Samuel Smith to Lovell (5 May and 29 Nov 1822), Edward Purcell to Lovell (6 Aug 1822), W. V. Wheaton to Lovell (24 Jan 1835), and Philip Maxwell to Lovell (8 Oct 1835), all in RG 112, entry 12.

geons in the field, a copy was retained for the Surgeon General's Office.[19]

Although Lovell's accomplishments while he was surgeon general were many, he appears to have regarded as most significant his success in the management of the department's finances. He believed that his close supervision of the work of his surgeons and, in particular, his insistence upon regular and systematic reports concerning their use of all forms of department property were responsible for important savings. In the autumn of 1822 he commented that he had succeeded in creating "a perfect system of responsibility for all public property from the period of its purchase to that of its expenditure" and that there was no longer any "possibility of fraud, extravagance or undue expenditure." The figures he cited to prove his point appear not to have included the salaries of either regular or contract surgeons but to have been limited strictly to supply and housing costs. They showed that from 1816 to 1818, $7 was paid out per man per year for medical care, but that by 1820 the figure had dropped to $3. It reached a low of $1.72 in 1824 before starting to rise again to $4.60 in both 1827 and 1828; it then dropped again to below $3.[20]

The overall annual expenses of the department during the 1820s apparently ran between $23,000 and $30,000, including the costs of hiring private physicians. (Exact figures are not easily obtained because Lovell often reported in the fall only for the preceding eight months of the calendar year, adding an estimate for the remaining four months.) As Army units were sent ever further west and the need for more surgeons grew, the department's annual expenses grew also, approaching $34,000 in 1834. Of these sums, a large proportion went to pay private physicians, an expense the surgeon general had not included in his figure for the average cost per man. In the first eight months of 1824, for example, $5,152.30 was paid out to civilian doctors, while by 30 September 1829, the figure averaged more than $1,500 a month.[21]

Until 1821 the Apothecary General's Office managed actual purchasing for the Medical Department. After the abolition of that office, supply responsibilities were given to a few surgeons and assistant surgeons. Items such as cooking utensils, hospital furnishings, and the food used for a regular diet were obtained through the commissary of purchases, the military storekeeper, or the Quartermaster's Department, as appropriate. But medicines, instruments, and special diet items were, as a rule, obtained by medical purveyors directly from merchants. In 1820 Calhoun required that the Medical Department be guided in its ordering of medicines by the "General Pharmacopoeia" then being prepared by a medical convention.[22]

The role of the Quartermaster's Department in supplying the Medical Department varied. In 1819, for example, Lovell urged that supplies be obtained through the quartermaster only when absolutely necessary, but surgeons continued to ignore this in-

[19]Ltrs, Lovell to Calhoun (24 Jan 1821) and to Sec War (9 Oct 1833), both in RG 112, entry 2, 2:111 and 6:252, respectively; Dorothy M. Schullian and Frank B. Rogers, "The National Library of Medicine," *Library Quarterly* 28 (1958):2, 5; Hume, *Victories*, pp. 12, 46.

[20]Quote from Ltr, Lovell to Calhoun (28 Nov 1822), in *Calhoun Papers* 7:358; Reasoner, "Medical Supply Service," p. 14.

[21]*American State Papers: Military Affairs* 2:125, 711; 4:32, 201–02; and 5:445.

[22]Quote from Ltr, Lovell to Calhoun (12 Jan 1820), in *Calhoun Papers* 4:568; Ltrs, Lovell to Lawson (14 Feb 1823) and to O. Tiffany (16 Apr 1831), both in RG 112, entry 2, 3:17 and 5:212–13, respectively; Lovell to Calhoun (13 Jan 1820), in *Calhoun Papers* 4:569.

struction, even during the short period when the Office of the Apothecary General existed to handle such purchases. With the abolition of the Apothecary Department, surgeons were told specifically to turn to the quartermaster for emergency or casual needs. Regardless of how supplies were obtained, however, shortages could result from problems created by distance, shipwrecks, and confusion over troop movements. Items were damaged in shipment, and delays of as much as a year between requisition and delivery occurred. Because of such difficulties, surgeons were occasionally permitted to buy what they needed directly.[23]

Lovell proved to be a talented administrator, skilled in the management of both men and supplies; one of his surgeons wrote of the surgeon general's "undeviating kindness" toward his subordinates and their problems. Nevertheless, since Lovell could exert but little control over the situations his subordinates faced in the field, the Army's physicians were to a large degree on their own in handling the varying difficulties that they encountered at their posts or while accompanying detachments on the move.[24]

Surgeons in the Field

The life of the Army surgeon and the problems he encountered varied considerably according to his assignment. In the East, a relatively civilized life was possible, but in the West, isolation and an unfamiliar environment often gave rise to situations for which the eastern-raised and trained young physician was not prepared. In the Northeast, many of the diseases he was called upon to treat were the familiar ones of the respiratory system, but in the West, he often encountered malaria and, in the winter and early spring, scurvy as well. In the deep South he fought not only malaria but also diarrhea-like diseases and quite possibly yellow fever. Moreover, the garrison of the fort to which he had been sent might have its own peculiar problems, those that resulted, for example, from bad water, lead poisoning, or alcoholism, all factors that might be included among the "morbific agents . . . which it falls to the lot of [the military doctor] to encounter."[25]

Wherever he was stationed, east or west, the Army surgeon, unlike his civilian counterpart, had to deal with men living closely together, among whom disease could spread rapidly. Once enlisted men fell ill, they would be gathered together in one place and, being subject to military discipline, were easier to treat than civilians, each in his own home. On the other hand, in the military hospital, and especially in wartime, soldiers would be exposed to cross infection, a problem that was essentially nonexistent in private homes.

Unfortunately, the facilities available for the accommodation of the Army's sick often left much to be desired, even by the standards of the time. In one instance, a "small, but conveniant [*sic*] Hospital . . . comfortably arranged and very well sup-

[23]Ltrs, Lovell to Richard Weightman (28 Apr 1819), to all surgeons and mates (27 Mar 1820), to Lea (27 Aug 1828), to James H. Sargent and to Mann (both 11 Feb 1823), to Sec War (3 Feb 1831), and to Jesup (3 Sep 1833), all in RG 112, entry 2, 2:59, 191, and 237, 3:12 and 13, 5:185–87, and 6:223, respectively; Alfred Elwes to T. M. Glassell (15 Jul 1827), John Thurston to Lovell (1 Jul 1829), and S. Shannon to H. Stanton (copy, 18 Feb 1833), all in RG 112, entry 12.

[24]Ltr, W. L. Wharton to Lovell (22 Dec 1829), RG 112, entry 12.

[25]Quote from SGO, *Statistical Report on the Sickness and Mortality in the Army of the United States From January 1819 to January 1839* (Washington: Jacob Gideon, Jr., 1840), p. 62 (hereafter cited as *Statistical Report, 1819–39*).

plied" and managed by "a competent, intelligent and faithful Steward" lacked an attending surgeon. In many more instances, the reverse was true; the surgeon was present at the post, but no hospital facilities awaited his patients. The housing that sheltered the sick and injured at such posts was often so damp, poorly ventilated, and crowded as to further threaten their health. In late 1835, of the thirty-one posts in states along the East and Gulf coasts and in the District of Columbia from which surgeons reported, twelve had no hospitals, and those at three more were rated as poor.[26]

One of the eastern posts without hospital facilities was Fort Hamilton in New York Harbor. Here the sick were housed in casemates that lacked adequate ventilation and heat. Even in moderate weather the rooms might become unbearably hot. In cold weather, the wind often drove the smoke back down the chimney; the surgeon there reported that on such occasions sulfurous clouds filled the air and only the opening of doors, which let in cold, damp drafts, could dissipate them. The dampness contributed to rheumatism and related conditions. The need for a hospital at Fort Hamilton was recognized, but none was built while Lovell was surgeon general.[27]

The hospital at Fort McHenry in Maryland, on the other hand, was described as "passable." This was fortunate, since the elderly surgeon assigned to this post in 1818, William Stewart, had to contend with a disease rate that was the highest in the entire Northern Division. Initially, Stewart blamed the most common ailment, "an *constipation of the intestines*" accompanied by fever, on the water, which tasted strongly of iron, but he later suggested that the cause was rather a steady diet of salt pork. A surgeon sent to inspect the post disagreed, stating that he believed the constipation to be "merely symptomatic, produced by a peculiar state of the bile, and of course referable to all those causes which affect the bilious secretion. At Fort McHenry these natural causes," he added, were "aided by habits of inveterate *drunkenness*; for I never, among the same number of men, heard of so many addicted to intemperance."[28]

The disease afflicting the men at Fort McHenry and nearby Fort Severn apparently grew worse with time, and by 1819 its victims were being stricken by "frequent attacks of inflammation of the brain, ending in delirium, apoplexy, and death." In the year from March 1819 to March 1820, thirty-nine men at Fort McHenry were afflicted in this manner, and sixteen died from convulsions. The number of cases dropped when a unit camped at some distance from the fort (and possibly also at some distance from the suppliers of hard liquor), and speculation arose that the cause of the illness lay in the atmosphere at Fort McHenry. The problem continued throughout the early 1820s, causing one or two deaths each year in the fifty-man gar-

[26]Quote from Ltr, William Beaumont to Lovell (30 Sep 1835), RG 112, entry 12; Ltr, Lovell to Sec War (28 Dec 1835), RG 112, entry 2, 7:339–41. Unless otherwise indicated, statistics concerning morbidity and mortality rates at the posts discussed in this chapter are based on *Statistical Report 1819–39*.

[27]Ltrs, Elwes to Lovell (28 Nov and 10 Dec 1832) and Eaton to Heiskell (7 Jul 1842), all in RG 112, entry 12; Lovell to Elwes (29 Dec 1832) and to Lawson (13 Dec 1833), both in RG 112, entry 2, 6:35 and 238, respectively; Surgeon's Quarterly Rpt, Ft. Hamilton (30 Jun 1833), and Rpt, Elwes to Lovell (6 Nov 1835), both in RG 94, Reports of Sick and Wounded, 1820–1860, entry 634.

[28]Harold Wellington Jones, ed., "A Hospital Inspector's Diary," *Bulletin of the History of Medicine* 7 (1939):231–33, quotes from pp. 231–32; Surgeon's Quarterly Rpts, Ft. McHenry (31 Dec 1818 and 31 Mar 1819), both in RG 94, entry 634; Ltr, Stewart to Lovell (16 Sep 1819), RG 112, entry 12.

HOSPITAL AT FORT MACKINAC, *as restored in 1960. (Courtesy of Mackinac Island State Park Commission.)*

rison. By 1826 it had become customary to send the troops from the fort to camp at Huntington, Maryland, in late June.[29]

Although meningitis could have caused some of the illness at Fort McHenry, it is entirely possible that chronic alcoholism was a basic part of the health problems there, accompanied, perhaps, by malaria during the summer and early fall months. Many symptoms could have resulted from lead in the cheap whiskey the men drank, since in 1829 the formation of a temperance society at the post was followed by an improvement in the health of the garrison. After they began to drink coffee instead of whiskey, the men also seemed to live together more amicably and to work more efficiently. Reports on the accomplishments of the temperance society were so glowing that the secretary of war himself expressed an interest in this experiment in sobriety.[30]

Surgeons stationed at Baton Rouge found health problems more serious than those at Fort McHenry. Until 1825, this post, the most disease-ridden in the entire

[29]Quote from War Department, SGO, *Annual Report* (1 Aug 1819), 1819, p. 2; Surgeon's Quarterly Rpts, Ft. McHenry (30 Jun, 30 Sep, and 31 Dec 1819, 31 Dec 1820, and 30 Sep 1822), all in RG 94, entry 634.

[30]Ltrs, Lovell to Robert French (3 Mar 1830), RG 112, entry 2, 5:98; French to Lovell (31 Dec 1829 and 1 Apr 1830), both in RG 112, entry 12; George N. Thompson, ed., *Alcoholism* (Springfield, Ill.: Charles C Thomas, 1956), pp. 253, 413, 476; *Aspects of Alcoholism* 1 (Philadelphia: J. B. Lippincott Co., 1963):14–15.

nation, might record in the course of any given year over 20 percent of the total deaths in the Army. In the second quarter of 1822, for example, twenty-eight of the Army's total of forty-one deaths took place there. Dysentery, diarrhea, and malaria, all complicated by intemperance, took a high toll at Baton Rouge, where, in 1819, 1822, 1827, and 1830, the threat of yellow fever also added to the sufferings of the garrison. Despite the post's notorious reputation, its hospital facilities were entirely inadequate.[31]

The surgeons who struggled to deal with the problems at Baton Rouge blamed the poor health of the garrison on the lack of acclimatization of the recruits, the intemperance of the men, their long work in the hot sun, their poorly constructed barracks, and even, in June 1822, on the "entire absence of rain." Lovell, on the other hand, eventually concluded that the presence of ponds, old buildings, and a graveyard located south of the barracks was responsible for the high rate of disease, apparently because of the miasmas they engendered.[32]

The problem of inadequate housing for the men at Baton Rouge was solved in 1824 with the construction of a new barracks, and it appears that by 1825 the health of the men was improving. Whether the improvement resulted from the new barracks, a final acclimatization of the men, an easing of their workload in hot weather, or possibly a combination of these three factors is unknown. It would appear, however, that by the time the hospital was completed in 1839, the need for such a facility was no longer as great as it had been in the 1820s when Lovell first urged that it be built.[33]

In contrast to Baton Rouge and Fort McHenry, Fort Mackinac, on Mackinac Island in Lake Michigan, was representative of the healthiest posts in the nation. *(Map 1)* In a cool climate and cut off from the rest of the world from November through the winter, the fort shared the island with 500 French Canadians and half-breeds who lived in the village of Mackinac, one of a chain of trading posts that lay along the Mississippi River and the shores of Lakes Michigan, Superior, and Huron. From Mackinac each fall, voyageurs, among them at one time Beaumont's famous patient, Alexis St. Martin, set out in boats laden with goods to trade with the Indians for furs, returning in June and July of each year. Indians also came to Mackinac to trade, and the population fluctuated by several thousand, according to the season.[34]

In 1821 Fort Mackinac consisted of three intersecting lines of blockhouses and a wall of ten-foot-high pickets, placed at the top of a steep hill. The earliest hospital at the fort, like the facilities at so many other

[31]John Duffy, ed., *The Rudolph Matas History of Medicine in Louisiana*, 2 vols. (Baton Rouge: Louisiana State University Press, 1958), 1:484; Surgeon's Quarterly Rpts, Baton Rouge (1821–36), RG 94, entry 634; Records of the Office of the Inspector General, RG 159, Report on Condition of Troops and Posts, 1823, M624, roll 1, p. 10.

[32]Quote from Surgeon's Quarterly Rpt, Baton Rouge (30 Jun 1822), RG 94, entry 634; Rpt, Lovell to Calhoun (1 Nov 1822), in *Calhoun Papers* 7:325; Ltr, Lovell to Harney (12 Apr 1823), RG 112, entry 2, 3:42; SGO, *Annual Reports* (Aug 1821, Nov 1822, and Nov 1823), pp. 3, 1, and 1–2, respectively.

[33]Ltrs, Lovell to Calhoun and to Harney (both 11 Jul 1821), both in RG 112, entry 2, 2:229; SGO, *Statistical Report on the Sickness and Mortality in the Army of the United States from January 1839 to January 1855* (Washington: A. O. P. Nicholson, 1856), p. 254.

[34]Willard B. Robinson, *American Forts, Architectural Form and Function* (Urbana: University of Illinois Press, 1977), p. 61; Myer, *Beaumont*, pp. 94–95; John Reed Bailey, "Army Surgeon," *Physician and Surgeon* 22 (1900):574–75; Keith R. Widder, *Reveille Till Taps . . .* (Mackinac Island, Mich.: Mackinac Island State Park Commission, 1972), p. 69; Ltr, Beaumont to Mrs. Lucretia Beaumont (16 Jun 1836), Papers of Wm. Beaumont, M.D., Ms. Collection, doc. 36, folder 2, microfilm reel 1, Washington University, School of Medicine Library, St. Louis, Mo.


LAKE SUPERIOR
Red R
MICHIGAN TERRITORY
Fort Mackinac
LAKE HURON
LAKE MICHIGAN
Minnesota R
Fort Snelling
Mississippi R
Fort Winnebago
MICHIGAN TERRITORY
Fort Gratiot
Detroit
Fort Crawford
UNORGANIZED TERRITORY
Fort Armstrong
Fort Atkinson
OHIO
INDIANA
ILLINOIS
Missouri R
Fort Leavenworth
St. Louis
Jefferson Barracks
Ohio R
Louisville
MISSOURI
KENTUCKY
Arkansas R
ARKANSAS TERRITORY
Fort Gibson
Fort Smith
THE FRONTIER
1818-1835
0
200
Miles
Note: Boundaries as they existed in 1830.

MAP 1

posts, left much to be desired. It was located in an old, one-story storehouse, divided into two wards and a small kitchen, where in the summer the roof leaked and in the winter the rooms filled with smoke. The surgeon lived in a stone house built into the side of the hill. The fort's isolation made supply particularly difficult, the post medical officer occasionally having to provide medical services as long as eighteen months without receiving new stocks of medicine. Surgeons ensured a proper diet for their patients by establishing a hospital garden on part of the post's open ground, growing vegetables as well as opium poppies.[35]

Its best known Army surgeon, William Beaumont, arrived at Fort Mackinac in 1820, shortly after he was commissioned in the Army for the second time. Because Fort Mackinac was a healthy post, much of Beaumont's work involved maintaining the health of the 50- to 100-man garrison and treating the victims of various mishaps. These responsibilities were not overly demanding, and Beaumont, like his predecessor, was able to gain permission to conduct a private practice, since no other physician lived nearby.[36]

From the outset, Beaumont's concern that the post should have a garden to ensure the continued health of the garrison antagonized both the Indian agency on the island and the fort's commanding officer, who had given the agency permission to erect a building in the middle of the garden plot. But because Beaumont believed so strongly in the importance of the garden for the health of the men, he wrote the War Department to complain; his plea was apparently heeded, and the garden remained.[37]

Partially as a result of his concern for the prevention of disease, many of Beaumont's patients were the victims of mishap rather than illness. Among those he treated was an artillery private who had been clubbed in a brawl. Although the surgeon trephined the victim's skull in an attempt to relieve the pressure on the brain and to remove bone fragments, he was unable to save this patient's life. He was more successful with a would-be deserter who had survived a week wandering without food, drink, shelter, or a source of warmth at a time when the nighttime temperatures ranged from 20° to -14° F. A visitor who had experienced a relapse of what he reported as "lake fever" (presumably malaria) while traveling from Detroit to Mackinac was one of Beaumont's few patients suffering from disease. Although he had initially appeared to be hopelessly ill, under Beaumont's care the newcomer recovered.[38]

Although the demand placed on the hospital at Fort Mackinac did not equal that at such posts as Baton Rouge and Fort McHenry, Lovell, Beaumont, and Beaumont's successor at Fort Mackinac in 1825 all urged the construction of a new hospital. Lovell pointed out that the old structure was not fit for the use of healthy men, much less for the sick, who, because of the leaky roof, occasionally had to abandon their beds during heavy storms. In 1827 a new hospital was finally erected, only to

[35]Ltr, Beaumont to Lovell (1 Nov 1820), RG 112, entry 12; Surgeon's Quarterly Rpt, Ft. Mackinac (30 Jun 1820), RG 94, entry 634; Bailey, "Army Surgeon," p. 574. Unless otherwise indicated, material on Ft. Mackinac is based on Myer, *Beaumont*; Widder, *Reveille*; and Ella Hoes Neville, Sara Greene Martin, and Deborah Beaumont Martin, *Historic Green Bay, 1634–1840* (Green Bay, Wis.: Privately printed, 1893).

[36]Surgeon's Quarterly Rpts, Ft. Mackinac (1820–21), all in RG 94, entry 634; Ltr, Richard Satterlee to Lovell (3 Sep 1835), RG 112, entry 12.

[37]Ltr, Beaumont to Lovell (1 Nov 1820), RG 112, entry 12.

[38]Albert G. Ellis, "Fifty-Four Years' Recollections of Men and Events in Wisconsin," *Wisconsin Historical Collections* 7 (1873–76):213.

burn down shortly after its completion. When rebuilt on the same foundation, this facility was capable of sheltering up to fourteen patients and remained in use as a post hospital until 1859.[39]

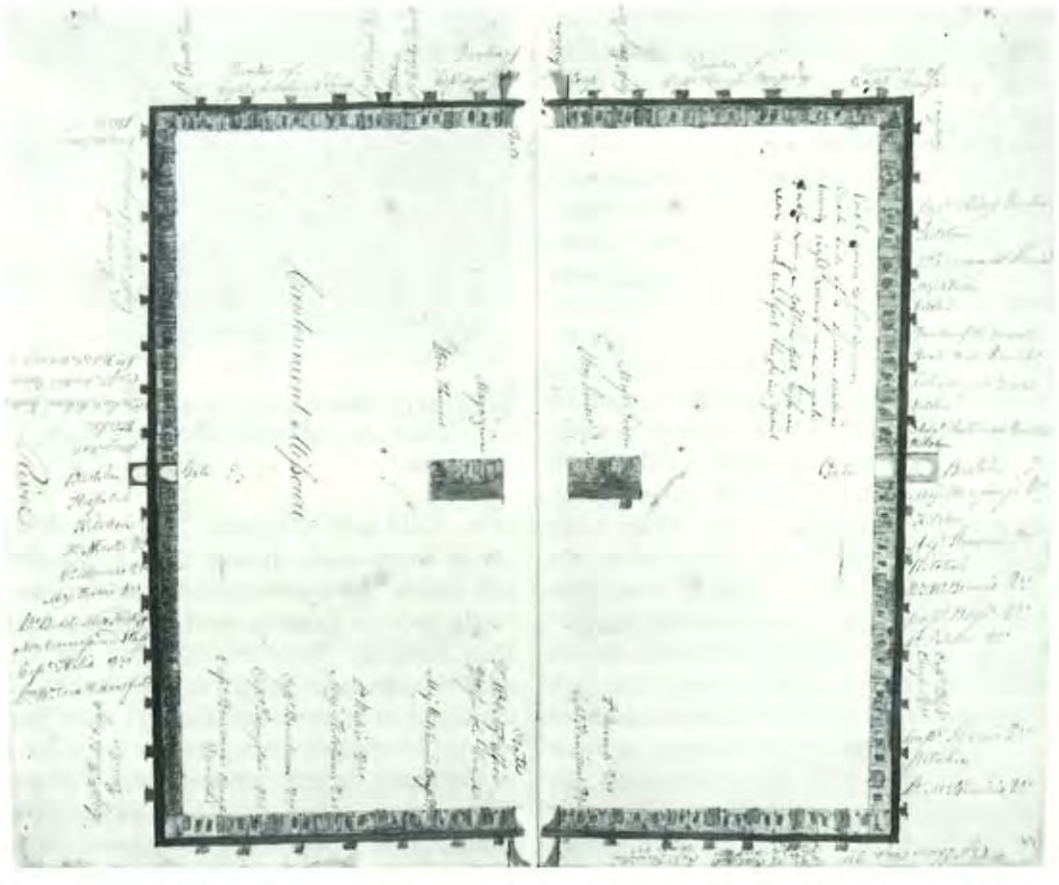
The life of the surgeon whose assignment sent him to the farthest reaches of the western frontier could be particularly grim. Many posts were even more isolated than Fort Mackinac and yet they suffered disease rates that at one time or another rivaled those at Baton Rouge and Fort McHenry. Isolated garrisons might be spared the inroads of such diseases as cholera or typhoid fever but suffer terribly from scurvy during the winter and early spring, when fresh vegetables and fruits were unobtainable, and from malaria in the summer and early fall. Disease often decimated expeditions sent out from Western forts to explore unfamiliar territory, escort traders, or contact Indian tribes. Although some surgeons might regard an assignment to a frontier post as a challenge, at least one mourned the necessity of spending "his best years . . . on a pestilential frontier, with no incentives to honorable ambition, & no society save that of drinking, swearing, tobacco chewing companions."[40]

Among the frontier posts established early in the period when Lovell was surgeon general was Fort Snelling, located in present-day Minnesota at the confluence of the Mississippi and Minnesota rivers. One of a chain of forts designed to guard against the inroads of both Indians and British fur traders, Fort Snelling occupied a site of great natural beauty and, initially, of great isolation. Isolation during the winter, however, could lead to disaster, and in the winter of 1819–1820, disease took a frightful toll at two new posts, Cantonment Missouri, soon to become Fort Atkinson, and Fort Snelling. Supplies intended for the men who were to build Fort Snelling were damaged in transit, and the fort itself had not yet been built when, despite the efforts of the Army surgeon who accompanied the men, disease struck the 228-man garrison. It appeared "in almost malignant form, and raged so violent that, for a few days, garrison duty was suspended, there being barely well men enough in the command to attend to the sick, and to the interment of the dead." Symptoms appeared so suddenly that a man who went to sleep apparently healthy might never awaken. The surgeon general, assuming the problem to be scurvy, blamed the absence of vegetables, but he considered hard work and sleeping in wet clothes to be additional factors contributing to the sickness that swept the camp. Others, however, blamed the lack of fresh food and bread covered with mold. From the suddenness with which the disease produced fatalities, something other than scurvy may have also been afflicting the garrison. Given the inadequate

SKETCH OF FORT SNELLING *by Nathan Jarvis. (Courtesy of New York Academy of Medicine.)*

[39]Ltrs, Lovell to Sec War (14 Jul 1826), RG 112, entry 2, 4:82; Satterlee to Lovell (5 Jun 1826), RG 112, entry 12; Erastus Wolcott to Lovell (15 Nov 1835), RG 94, entry 634.

[40]Ltr, Richard N. Duggan to Lawson (18 Feb 1832), RG 112, entry 12.



CANTONMENT MISSOURI: *Sketch dated 23 November 1819. (Courtesy of Western Americana Collection, The Beinecke Rare Book and Manuscript Library, Yale University.)*

diet, it is possible that the sudden deaths were related to a thiamine deficiency. But surgeons of the period were too familiar with scurvy and its causes to have entirely misdiagnosed the problem, and sudden death can result from scurvy after any sudden and marked fall in blood pressure. Reports on the number of deaths vary, but it appears that as many as 40 or more out of the 100 men in the 5th Infantry died in the cold of 1819 to 1820, before the use of remedies such as "strong decoctions of hemlock boughs" and the arrival of supplies from the South brought the problem to an end.[41]

[41]First quote, H. H. Sibley, "Reminiscences, Historical and Personal," *Minnesota Historical Collections* 1 (1872):473; second quote, James Duane Doty, "Official Journal, 1820," *Wisconsin Historical Collections* 13 (1895):214; Norris, " 'Scurvy Disposition,' " pp. 325–26; Wintrobe et al., *Harrison's Principles*, pp. 430–31; Ltr, Purcell to Lovell (29 Apr 1820), RG 112, entry 12. Unless otherwise indicated, material on Ft. Snelling is based on Doty, Sibley, and John M. Armstrong, "An Introduction to the History of Medicine in Minnesota," *Minnesota Medicine* 21 (1938):41–43; Marcus L. Hansen, *Old Fort Snelling, 1819–1858* (Iowa City: The State Historical Society of Iowa, 1918); and

With the arrival of warmer weather, the ten-foot walls of Fort Snelling finally began to rise. Six of the ten rooms in a stone barracks became the home of the hospital. The lesson of the preceding winter had not been forgotten, however, and the soldiers took time off from the construction work to plant ninety acres to corn, potatoes, wheat, peas, and other crops. The availability of fresh vegetables no doubt played a role in the fact that the annual death rate from 1822 through 1825 was 1 to 4 in a garrison of 250 to 300 men, and that most of these deaths resulted from respiratory diseases rather than dietary deficiencies.[42]

The physicians assigned to Fort Snelling during the 1820s and 1830s included several who gained distinction for reasons not directly related to their professional talents. The first officer to die while on duty at Fort Snelling, for example, was the post surgeon, Assistant Surgeon Edward Purcell, who fell victim to an unspecified illness in 1825. A second surgeon, Robert C. Wood, gained a small amount of fame by marrying a daughter of the future president of the United States, Zachary Taylor, the colonel commanding Fort Snelling in 1828. In so doing, Wood also became for a brief time brother-in-law to the future president of the Confederate States, Jefferson Davis, whose first wife was also a daughter of Zachary Taylor. Another doctor, John Emerson, assigned to Fort Snelling in the late 1830s, brought with him from an earlier assignment in slave territory a slave, Dred Scott, who later claimed before the Supreme Court that his sojourn at Fort Snelling had made him a free man.

The surgeon was often the best-educated man at a post; hence it is not surprising that one of the finest accounts of life at Fort Snelling came from the pen of yet another medical officer there, Nathan Jarvis. Jarvis was also reputed to be a gifted caricaturist as well as an artist with pencil and sketch pad. To his responsibilities as post surgeon he added those of teacher of the fort's children and librarian for a garrison library of over 400 volumes, newspapers, and periodicals. He was also, it would seem, a musician; he once wrote his brother requesting that he be sent an accordian, "for amusement," which, Jarvis was confident, could be purchased for "$3 or 4."[43]

Jarvis' letters to his family suggest that, despite the fort's isolation, life was not entirely unpleasant at Fort Snelling in the 1830s. One Christmas Eve, for example, a major entertained "with a splendid supper consisting among other delicacies of the season of venison, roast pig sausages, mince & pumpkin pies . . . and many other kickshaws too numerous to mention." On Christmas Day, after an "excellent dejeuner [a] la fourchette [substantial breakfast with eggs, meat, etc.] at 11 o'clock," the company went in sleighs to the nearby waterfalls. Upon their return, Jarvis and his fellow officers had a supper "which was superb," while "Music & Songs clos'd the amusement of the day." Also during the holiday season, Jarvis "for the first time rode in a dog train. It was drawn by 4 dogs harnes'd ahead of each other the leader

Evan Jones, *Citadel in the Wilderness: The Story of Fort Snelling and the Old Northwest Frontier* (New York: Coward-McCann, 1966). At Ft. Atkinson, 15 miles north of Omaha, Nebr., on the Missouri River, 160 men died of scurvy and many of the survivors were permanently mutilated in the winter of 1819–20: John Gale, *The Missouri Expedition, 1818–1820: The Journal of Surgeon John Gale, With Related Documents*, ed. Roger L. Nichols (Norman: University of Oklahoma Press, [1969]).

[42]Ltr, Nathan Jarvis to Lovell (16 Jan 1836), RG 94, entry 634.

[43]Ltr, Jarvis to William Jarvis (2 Oct 1834), Papers of Nathan Jarvis, New York Academy of Medicine, New York, N.Y. (hereafter cited as Jarvis Papers).

NATHAN JARVIS. *(Courtesy of National Library of Medicine.)*

having a string of small silver bells around his neck . . . The body of the train is made of deer skin something in the shape of a shoe large enough to stretch yourself at length [*sic*]."[44]

Almost a year later, in a cold November 1835, Jarvis, his sense of isolation heightened by the infrequency with which he heard from his family, was still able to write his brother a vivid description of

a most beautiful display of the Aurora Borealis . . . Broad sheets of light shot from the zenith directly overhead to the edge of the horizon in every direction like radii from a centre illuminating the heavens like noonday and affording one of the most beautiful displays I have ever witnessed. To increase the beauty of the spectacle the light of the Aurora was ting'd of a most beautiful orange color.[45]

Jarvis' record of his expenses throws some light on the finances of a post surgeon in this period. His pay may have been deficient in relation to his responsibilities, but at a time when a physician trying to establish a new civilian practice might contract with an entire family for a year's care for $10, Jarvis reported that his total income from the Army, which presumably included both pay and allowances, was a relatively munificent $82 a month. In addition, he received $100 a year from the Indian agency for caring for Indian patients—his predecessor had also received 25 cents an Indian for vaccinating 500 against smallpox. Another medical officer estimated that $100 a year came from his private practice, giving him an income of approximately $1,200 a year. Of this total he paid out about $25 a month for food, his servant, laundry, the maintenance of a horse, and similar expenses. His income may appear modest, but when Purcell wrote his brother about his own assignment to Fort Snelling, he confessed that although "You may think it strange that I have consented to go with the Regiment out of the world, as you may call it, the fact is that I go, not because I like it, but because of thinking that I can make money."[46]

At Fort Snelling, as at other early posts established in the winter, scurvy was the principal health threat, and the greening of the vegetable garden spelled an end to

[44]Ltr, Jarvis to William Jarvis (31 Dec 1834), in Jarvis Papers.

[45]Ltr, Jarvis to William Jarvis (30 Nov 1835), in Jarvis Papers.

[46]Quote from Ltr, Purcell to his brother (20 Mar 1819), in John M. Armstrong, "Edward Purcell, First Physician of Minnesota," *Annals of Medical History* 7 (1935):169; David S. Wiggins, *Service in "Siberia"* (St. Paul: Minnesota Historical Society, 1977), p. 4; N. S. Jarvis, "An Army Surgeon's Notes on Frontier Service, 1833–1848," *Journal of Military Service Institute* 39 (1906):132; Shryock, *Modern Medicine*, p. 258.

bleeding gums, loosened teeth, and multiple bruises. Even cholera, striking in 1833, caused no deaths. For many other forts in the West, where malaria was endemic, the trial was unending, repeated every summer and fall. Such a post was Fort Leavenworth, established in 1827 to protect the Santa Fe Trail and to serve as a base in what is now Kansas for expeditions along both the Santa Fe and Oregon Trails. The Medical Department quickly established a hospital at the new fort, but, like many other post hospitals, it left something to be desired, since it was badly arranged and its chimneys smoked. A minimum of two surgeons was assigned to Fort Leavenworth at all times, a step made doubly necessary by the repeated illness of the surgeons themselves. So severe were the health problems, however, especially those caused by fevers, that the inspector general recommended the post's abandonment. Although its garrison was at times drastically reduced to protect the health of the men, Fort Leavenworth remained in use. In an attempt to minimize the onslaught of disease, an "admirable police [was] maintained, [and much] attention paid to the health of the men," but heavy drinking complicated efforts to improve the command's health.[47]

The men of Fort Smith, founded late in 1817 on the right bank of the Poteau River, near its union with the Arkansas, also suffered from a disease that apparently was malaria. Although the men were spared scurvy despite their relative isolation (probably because of their successful garden), fevers of one kind or another so severely afflicted them that, in a bad season, one to five in each company might die. In August 1822, malaria sent half of one company to the post hospital, and the year as a whole saw 47 of the 206-man garrison die. Many men, trusting neither the surgeon, Thomas Lawson, nor the post hospital, attempted to treat themselves; some of those who blamed the water for their problems undertook to purify it with rye whiskey. Colonel Matthew Arbuckle, commander of the post in the early 1820s, blamed the purifying agent for the health problem at Fort Smith. Calomel was used as a preventive during the sickly season, but medicines disappeared rapidly because of disease's heavy onslaught and supply was a problem. In the period from 1831 to 1833 alone, eight privates and an assistant surgeon died at Fort Smith, and the survivors were weakened by repeated bouts of fever and possibly by heavy dosing with calomel as well. As a consequence, in 1834 the fort was abandoned, only to be reoccupied four years later.[48]

Surgeon Lawson appeared to have added considerably to the troubles at Fort Smith,

[47]Quote from Surgeon's Quarterly Rpt (30 Jun 1830), RG 94, entry 634; Surgeon's Quarterly Rpts, Ft. Leavenworth (1827–36, esp. 30 Jun, 30 Sep, and 31 Dec 1830, 30 Sep 1831, and 30 Sep 1833), and Ltrs, Edward Macomb to Lovell (1 Dec 1835) and Gale to Lovell (1 Oct 1828), all in RG 94, entry 634; Ltrs, Lovell to P. G. Randolph (27 Dec 1827), to T. S. Bryant (9 Feb 1828), and to Macomb (29 Jul 1832), all in RG 112, entry 2, 4:198 and 211 and 7:527, respectively; David S. Wiggins, "Minnesota's First Hospital . . . ," *Minnesota Medicine* 59 (1976):871; Croghan, *Army Life*, p. 10; Robert W. Frazer, *Forts of the West: Military Forts and Presidios and Posts Commonly Called Forts West of the Mississippi River to 1898* (Norman: University of Oklahoma Press, 1965), pp. 56–57; Francis Paul Prucha, *The Sword of the Republic: The United States Army on the Frontier 1783–1846* (New York: Macmillan Co., 1969), pp. 179, 224, 236–37.

[48]Edwin C. Bearss and Arrell M. Gibson, *Fort Smith: Little Gibraltar on the Arkansas* (Norman: University of Oklahoma Press, 1969), pp. 28–29, 37, 83–84, 136, 160; Frazer, *Forts of the West*, pp. 16–18; Kent Ruth, *Great Day in the West: Forts, Posts, and Rendezvous Beyond the Mississippi* (Norman: University of Oklahoma Press, 1963), p. 14; Ltrs, D. Holt to Lovell (12 Oct 1833), Thomas O'Dwyer to Lovell (25 Jul 1833), and C. B. Welch to Lovell (13 Feb 1834), all in RG 112, entry 12.

both through his failure to gain the confidence of the men and through his quarrelsome disposition. Even before his arrival, he was involved in a wide-ranging feud with his colonel. Highlights of this feud included the trouncing of Lawson in a fistfight by a lieutenant who supported Arbuckle, the bringing of charges against Arbuckle by Lawson and Lt. Col. Zachary Taylor, the placing of charges against Lawson by Arbuckle, and the filing of countercharges against Arbuckle by Lawson. At least one modern authority on the subject believes that Lawson resented Arbuckle's popularity with the women at the post. In the final analysis, all parties concerned survived the charges with their careers intact, including Taylor, who later became president, and Lawson, who succeeded Lovell as surgeon general.[49]

Men from Fort Smith were among those who established Fort Gibson, Oklahoma, in the 1820s. This post was yet another where health problems were frequent and severe, but it could not easily be abandoned. It was a base from which important expeditions set out and to which came many refugees, including Indian women and children seeking shelter from tribal warfare engendered by the federal government's removal policy. From 1824 through 1835, 561 enlisted men and 9 officers died at Fort Gibson, described by one surgeon as "the charnel house of the Army." More than half of the deaths occurred in 1834 and 1835 alone, years when the more dangerous form of malaria, remittent fever, was more prevalent than usual, and tuberculosis was also causing deaths. Although cholera did appear at the fort, it was probably not a major factor in the mortality rate; most of the patients at the post hospital seem to have been the victims of malarial fevers. The surgeons also cared for the victims of respiratory diseases, drunkenness, and the harsh physical punishments meted out to enlisted men. So great was the rate of sickness and disability that in 1831 an addition was ordered for the log hospital that had been completed only four years earlier. The commanding officer, Colonel Arbuckle, apparently had little enthusiasm for the hospital addition, and its completion was long delayed.[50]

Disease and the remedies used to combat it also plagued the many expeditions that set out from Fort Gibson. Among the most unfortunate of these undertakings was one led by Brig. Gen. Henry Leavenworth, who in the spring of 1834 joined dragoon units that had already arrived there from Jefferson Barracks. Assigned to the newly formed Regiment of Dragoons were a surgeon, Clement A. Finley, who later served briefly as surgeon general in the early months of the Civil War, and two assistant surgeons. The men under their care were already sickly, and at least one soldier blamed an unnamed medical attendant at the fort for their condition. It may have been this medical officer who had fallen into the habit of treating almost every complaint with calomel, his favorite mercurial remedy, with-

[49]Bearss and Gibson, *Fort Smith*, pp. 55–56, 70, 74–75; Ltrs, AG to Lawson (27 Aug 1823), RG 94, M565, roll 6, 6:374; Lawson to Lovell (31 Mar 1821) and to Edmund R. Gaines (12 Oct 1823), both in RG 112, entry 12.

[50]Quote from Leonard C. McPhail journal, Ms C88, National Library of Medicine (NLM), Bethesda, Md., p. 19; Philip St. George Cooke, *Scenes and Adventures in the Army* (Philadelphia: Lindsay & Blakiston, 1857), p. 227; Ltrs, Lovell to Zina Pitcher (21 Oct 1831 and 2 Sep 1833), both in RG 112, entry 2, 5:261 and 6:221, respectively; AG to Mrs. Eliza Shaw (4 Dec 1834), RG 94, M565, roll 9, 11:157; Pitcher to Lovell (7 Jan 1830 and 3 Sep 1831), both in RG 112, entry 12; Rpt, Samuel DeCamp (30 Sep 1835), RG 94, entry 634; *Statistical Report 1839–55*, p. 267. Unless otherwise indicated, material on Ft. Gibson is based on the journals of Hugh Evans and on books and articles by Frazer, Prucha, James Hildreth, and Louis Pelzer.

out being careful of the dosage. Soldiers might come to him with a minor complaint, but, after repeated visits, the mercury would begin to take its toll. His patients would

> gradually decline, their countenances merging from the rosy hue of healthfulness into the sallow and ghastly likeness of disease, their firm step giving way to the totter of decrepitude; their strong arms shaking with a nervous tremour; their bright eyes become sunken and dilated, and, in fact, through a cause of either willful neglect or gross mal-practice, brought down within a short period of time from the health, and buoyancy, and joyousness of youth, to a premature grave.[51]

The dragoons were already six weeks behind schedule when they finally set out from Fort Gibson on 15 June to bring peace treaties ready for signing to the villages of the Pawnee and Comanche Indians near the headwaters of the Red River. Sickness caused 68 of the expedition's 588 men to be left behind at Fort Gibson. As the dragoons left the post, temperatures were climbing toward 105° F. even in the shade. As an officer described it,

> Nature would seem to have conspired with an imbecile military administration for the destruction of the regiment. On, on they marched, over the parched plains whence all moisture had shrunk, as from the touch of fire; their martial pomp and show dwindled to a dusty speck in the midst of a boundless plain; disease and death struck them as they moved; with the false mirage ever in view, with glassy eyes, and parched tongues, they seemed upon a sea of fire. They marched on, leaving three-fourths of their number stretched by disease in many sick camps; then, not only destitute of every comfort, but exposed with burning fevers to the horrors of unnatural heat—it was the death of hope.

In the heat even the horses and mules fell sick and died. General Leavenworth himself was fatally injured when his horse fell during a buffalo hunt. Fewer than 200 men actually reached their goal at the Indian villages and one of the assistant surgeons left behind with patients at a sick camp was extremely ill himself by the time the returning troops reached him.[52]

In early August, as the dragoons began their return to Fort Gibson, the sick list continued to grow. One soldier wrote, "The sickness is now becoming verry [*sic*] alarming as we have a great many deaths every day." Four or five died daily, and the mortality rate averaged 21 percent. The cause of their sufferings, according to artist George Catlin, who accompanied the expedition, was fevers "of a bilious nature, and contracted by exposure to the sun, and the impurity of the water," among which could have been hepatitis and typhoid fever as well as malaria.[53]

The dragoons were ordered out from Fort Gibson on another expedition shortly after their return, but from 140 to 150 men were still too sick to march; 3 to 4 died each day. It was hard to say which was worse, the fort or the road, since a high rate of disease characterized both. In the summer of 1835, Fort Gibson was described as "the worst and without doubt the hottest and most unhealthy in the U. States," where the families of the men were constantly sick and the quarters of the men themselves rotten, leaking, and crowded.

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[51]James Hildreth, *Dragoon Campaigns to the Rocky Mountains: Being a History of the Enlistment, Organization, and First Campaigns of the Regiment of United States Dragoons* (Wiley & Long, 1836. Reprint. New York: Arno Press, 1973), pp. 115–16.

[52]Philip St. George Cooke, *Scenes*, p. 225.

[53]First quote, "The Journal of Hugh Evans, Covering the First and Second Campaigns of the United States Dragoon Regiment in 1834 and 1835: Campaign of 1834," *Chronicles of Oklahoma* 3 (1925):215; second from "Letters of Geo Catlin, 13 June and Sept 1834," in Hildreth, *Dragoon Campaigns*, p. 187.

From 1825 to 1835, according to one source at the time, 500 men died at Fort Gibson, and in the fall of 1835, 4 of every 6 officers were sick, as was the assistant surgeon. The surgeon had reportedly been overheard to state that there had been 600 cases of illness at the fort in the quarter ending 30 September 1835. By the early months of 1836, the commanding general of the Army was strongly urging the abandonment of the fort. In the summer of 1836, however, it was still in use, too sickly to occupy yet too strategic to desert.[54]

The Black Hawk War

In 1832 men and surgeons from many Army posts joined the successful campaign to prevent the return of members of the Sac and Fox tribes led by Black Hawk to their former lands east of the Mississippi. To meet this threat, the secretary of war ordered 200 men from Jefferson Barracks, near St. Louis, Missouri, to move north, and 1,000 men stationed in the east to move west via the Great Lakes under Maj. Gen. Winfield Scott. Still more men came in from Fort Leavenworth and were joined by others from Forts Winnebago and Crawford in modern Wisconsin.

Surgeon General Lovell ordered one of his surgeons, Josiah Everett, to leave his post at Fort Monroe, Virginia, to serve as medical director for General Scott's men and sent other Army physicians to join him from such posts as New Orleans, Baton Rouge, and Forts Niagara and Gratiot. Others were called back from furloughs to meet the need. Surgeon Thomas Mower, handling medical supply in New York City, was warned to be ready to supply the needs of surgeons ordered to the front and to prepare, in addition, "a full supply of medicines, Hospital Stores Dressings and Bedding for 1,000 men according to the supply table, with such addition to the essential medicines and to the dressings as you think advisable for active service." By 20 June sixteen Army surgeons had been ordered to the Northwest frontier, their specific assignments being left in the hands of the commanders in the field.[55]

The real enemy these surgeons soon faced, however, was not Black Hawk and his warriors, but cholera. In the two battles fought with the Indians, regular troops suffered only minor losses, but cholera, moving west, first with General Scott's men and then with those who came into contact with them, overwhelmed the surgeons and decimated the forces they served.[56]

The first man reported to have contracted cholera in the Army appears to have been a passenger on the transport *Henry Clay*. After he became ill on 4 July when the ship was near Detroit, because of the disease on board, city authorities refused to permit the men on the *Henry Clay* to land. Two men from an eighty-man artillery unit that had landed a day earlier came briefly on board, however, and both men died three days later of cholera. By the evening of the same day, five more cases had appeared among the artillerymen.

The *Henry Clay* anchored two miles above the city, and Surgeon Everett, who had traveled with General Scott on the *Sheldon Thompson*, a vessel that had previously carried cholera-infected immi-

[54]*Army and Navy Chronicle* 1 (1835):279, 357, 397, quote from 279.

[55]Quote from Ltr, Lovell to Thomas Mower (16 Jun 1832), RG 112, entry 2, 5:378; Ltrs, Lovell to Sec War (10 and 20 Jun 1832) and to J. Everett (22 Jun 1832), all in RG 112, entry 2, 5:375, 381, and 382, respectively.

[56]Unless otherwise indicated, material on the effects of cholera in the Black Hawk War is based on John Sharpe Chambers, *The Conquest of Cholera . . .* (New York: Macmillan Co., 1938).

grants from Montreal to Niagara, joined Robert Kerr, the assistant surgeon on the *Henry Clay*. The number of cases rapidly multiplied, and Everett warned that all on board might die if they were not landed. At last the men were put ashore near Fort Gratiot and tents and beds set up, and a large barn was taken over for use as a hospital. Some men fled the camp in total terror not long after landing, only to die in the nearby woods, where wolves waited to devour their bodies. Thirty-nine perished in camp, Everett among them. Despite Kerr's unflagging efforts, by 10 July, between disease and desertion, a detachment of 400 men had been reduced to 150. Although Scott's men had not been taken into Fort Gratiot itself, cholera began to appear among the men of the garrison, and by 14 July, despite the best efforts of assistant surgeon Henry Steinecke, 21 inhabitants of the fort had died.[57]

On board the *Sheldon Thompson*, cholera did not appear until after a stop at Fort Gratiot, where some of her passengers were put ashore because of serious overcrowding on board. On 8 July she stopped at Fort Mackinac and left off four more who were sick. She then proceeded to Fort Dearborn, at Chicago, where three passengers died, their illness not immediately recognized as cholera. The day after the ship left Fort Mackinac, more passengers fell ill, and the diagnosis of cholera became unavoidable. By the time the ship reached Chicago on 10 July, seventy-seven cases of cholera had been identified. Fort Dearborn was quickly converted into a hospital and its garrison ordered to pitch camp several miles away. While his men were being cared for by two assistant surgeons, General Scott warned all comers away from the fort in order to prevent the spread of the disease to troops actually engaged in fighting. At the fort, however, 200 men had been taken into the hospital in the space of a week, and 58 died.[58]

An increasing number of men from the artillery unit that arrived at Detroit early in July were becoming ill, and the city authorities finally insisted that they, too, leave the immediate area. On 9 July these men were moved to a site about thirteen miles from Fort Gratiot. The vessel that had brought them picked up the men General Scott had left behind, all of whom still appeared healthy, and continued on toward Fort Mackinac. The artillerymen, meanwhile, were moved once again to a spot three miles from Detroit. By 12 July, 17 or 18 of them were dead, and before the epidemic abated, 21 had died and 4 deserted. In August 1832 a newspaper reported that of a total of 850 men who had left Buffalo to join the fight against Black Hawk, only 200 remained strong enough to participate in military operations.[59]

General Scott finally arrived at Fort Crawford, at Prairie du Chien in Wisconsin, five days after the last successful battle against Black Hawk, to assume command. The wounded from the campaign were left at Fort Crawford while, in late July, the rest of the army moved on to Fort Armstrong, at Rock Island in present-day Michigan, with cholera following in their footsteps. Within five days in late August, the dread

[57]James M. Phalen, "The Cholera Epidemic During the Black Hawk War," *Military Surgeon* 83 (1938):454, 456; *Niles' Weekly Register* 42 (1832):391; Ltrs., John Norvell to Robert Morris (12 Jul 1832), in *Niles' Weekly Register* 42 (28 Jul 1832):390–91; A. Walker to R. C. Bristal (30 Oct 1860), in John Wentworth, *Early Chicago: Fort Dearborn* (Chicago: George H. Fergus, 1881), p. 72.

[58]Forry, *Climate*, pp. 321–22; Ltr, Robert McMillan to Lovell (24 Jul 1832), RG 112, entry 12.

[59]Ltr, Norvell to Morris (12 Jul 1832), in *Niles' Weekly Register* 42 (28 Jul 1832):390–91; see also *Niles' Weekly Register* 42 (11 Aug 1832):423.

disease struck; 146 of about 300 men at Fort Armstrong fell ill, and 26 died. Among the dead was another Army doctor, but Surgeon Clement Finley and two assistant surgeons continued to care for those who fell ill.[60]

The entire fort at Rock Island soon resembled a hospital; deaths occurred so rapidly that no time was available to dig individual graves. Bodies were "thrown confusedly—just as they died, with or without the usual dress—into trenches, where a working party was in constant attendance; and it is a fact that an officer in charge of it, making inquiry as to some delay on one occasion, was answered that there was a man who was moving, and they were waiting for him to die."[61]

Sometimes with the unwitting aid of the veterans of the Black Hawk War, cholera then spread to other forts across the nation in 1832 and 1833. Baton Rouge was spared until 1833, when 8 died from this disease. In the third quarter of 1833 there were 150 cholera cases at Fort Gibson, with 16 deaths. The toll taken in the Army in 1832 alone, however, was 686 cases with 191 deaths; and there was a possibility that some cases had not been reported or were misdiagnosed.

The impact of cholera was far greater than that of the Black Hawk War that had helped to spread it. The best efforts of both Lovell and the Army's surgeons were of no avail in the face of a devastating disease that the physicians of the period were powerless to prevent or cure and of the widespread panic it caused.

Conclusion

Nevertheless, Lovell's unceasing effort to improve the number and caliber of the surgeons in his Department, to regulate the Department's expenditures, and to guard the health of the nation's soldiers had begun to show positive results. Although prevention and cure remained often impossible, better care brought a death rate among the nation's soldiers that compared favorably with that among young men in the civilian population. The consequences of Lovell's work became clearer when the Army was called upon to meet its first prolonged challenge since the War of 1812, the Second Seminole War of 1835–1842.

[60]Phalen, "Cholera Epidemic," p. 455; *Military and Naval Magazine* 1:332.

[61]Cooke, *Scenes*, p. 193.

CHAPTER 3

Indian Removal in the Southeast: The Second Seminole War

The growing determination of both state and federal governments to remove the Creeks, Cherokees, Choctaws, Chickasaws, and Seminoles to new lands west of the Mississippi encountered varying degrees of resistance from the members of these Five Civilized Tribes. Even before 1818 the pressures brought to bear upon them had induced some groups to undertake the long journey to a land inhabited by unfamiliar and hostile Indians. Others had delayed, hoping that they would never actually have to leave, but by December 1835 representatives of all five tribes had officially committed their peoples to the move west, and the Choctaws had already completed their emigration to lands beyond the Mississippi. In the years that followed, except for many members of the Seminole tribe and, to a lesser degree, of the Creek, even the most reluctant of the forced migrants left the lands of their forefathers without violent resistance to follow the long and wretched trail to the western territories.[1]

New Leadership for the Medical Department

The struggle to remove the Creeks and, above all, the Seminoles, from their eastern homes brought large numbers of soldiers into an area where malaria would prove to be the most dangerous enemy. Its inroads placed a great strain on the Medical Department, but just as the magnitude of the problem was becoming obvious and when the conflict was less than a year old, Surgeon General Lovell died. His successor, the Department's senior surgeon, Thomas Lawson, was neither as talented a physician nor as level-headed an administrator.

Lawson was already familiar with the situation in the southeast, however. "More soldier than doctor," he had served as a lieutenant colonel with a Louisiana volunteer unit in the early months of the war, resuming his medical duties as the department's senior surgeon in March 1836. He had served as temporary head of the general hospital at Tampa Bay, Florida, in April, in May joining the troops at Fort Mitchell, Alabama, who would be sent to Florida when they were no longer needed to enforce Creek emigration. When Lovell died in the fall of 1836, Lawson was serving as medical director for the units fighting the Seminoles. Not eager to take up his duties as surgeon general, he remained in Florida for several months before traveling to Washington to escort retiring President Andrew Jackson to his home in Tennessee. He remained in Tennessee a short while before returning to Washington, but soon left once again for Florida, abandoning his

[1]Grace Steele Woodward, *The Cherokees* (Norman: University of Oklahoma Press, 1963), pp. 131, 158–59, 161, 174–75, 190, 195; Prucha, *Sword*, p. 258.

EUGENE ABADIE. *(Courtesy of National Library of Medicine.)*

medical responsibilities in favor of the command of a volunteer unit late in 1837 or early in 1838.[2]

Lawson retained the overall organization of the Medical Department that Lovell had created, but his direction of the Department's work in Florida soon demonstrated that he was a different man from his predecessor. Throughout his years as surgeon general, Lawson's occasional temperamental outbursts suggested that time had neither thickened his skin nor lengthened his temper since his days on the frontier. Apparently convinced that the best defense was a strong offense and ever jealous of his own authority, he did not suffer criticism or frustration lightly.

Removal of the Creeks

Lovell was still surgeon general, however, when President Jackson decided that it was necessary to move Army units into Georgia, Alabama, and Florida to force the removal of the Seminoles and Creeks, a step that had the added effect of intimidating the most reluctant members of the other three tribes. Although the Creeks put up less resistance to removal than the Seminoles, the possibility of wholesale active resistance caused the Army to order sixteen companies of regular troops from artillery and infantry regiments, more than 1,000 men, south by mid-1836 to assist over 9,000 state troops in rounding up the reluctant members of this tribe in preparation for their removal. In the course of the following six months, over 14,000 Creeks left the area under Army escort.[3]

The Medical Department provided medical supplies for some of those going west, including the Cherokees, Choctaws, and Chickasaws, for which it was reimbursed from a special fund by the "Indian department," and medical officers also vaccinated large groups from the various tribes for smallpox. At least one Army surgeon, Eugene Abadie, was sent with the Creeks and specifically designated "Surgeon to Emigrating Indians" although, except for

[2]Quote from Percy Moreau Ashburn, *A History of the Medical Department of the United States Army* (Boston: Houghton Mifflin Co., 1929), p. 66; U.S. War Department, *Proceedings of the Military Court of Inquiry in the Case of Major General Scott and Major General Gaines* (n.p., n.d.), pp. 224, 469; Ltrs, Lovell to Lawson (26 May and 23 Sep 1836) and Benjamin King to Lawson (3 Nov 1836) and to Thomas Lee (28 Feb 1837), all in RG 112, entry 2, 7:460 and 8:53, 89, and 243, respectively; Macomb to Lawson (20 Sep 1837) and Smith to Lawson (6 Mar 1838), both in Lawson Papers, LC; Lawson to King (28 Mar 1837), in Benjamin King Papers, LC.

[3]*American State Papers: Military Affairs* 7:115; Prucha, *Sword*, p. 260.

surgeons assigned to Army escorts, physicians accompanying groups of migrating Indians were apparently usually civilians. Abadie reported that many Indians fell sick during their march, fevers, dysentery, and diarrhea being the most common ills, and that many died, especially the very old and the very young. Abadie appears to have left the Creeks shortly after their arrival in the West, for he was at Fort Brooke, Florida, in August 1837.[4]

Some of those whose duty it was to assist in the removal of the members of these tribes were well aware of the tragedy involved. Although he was not assigned to accompany the Creeks as they moved west, Assistant Surgeon Jacob Rhett Motte, who was then attached to one of the artillery units in the territory of the Creeks, studied their language and learned to respect them as a people. He watched at least 500 Creeks being brought in chains to Fort Mitchell, Alabama, and deplored the

melancholy spectacle as these proud monarchs of the soil were marched off from their native land to a distant country, which to their anticipations presented all the horrors of the infernal regions. There were several who committed suicide rather than endure the sorrow of leaving the spot where rested the bones of their ancestors. The failure of his attempt to escape the round-up drove one warrior to self-destruction; the fact that the only weapon at his disposal was an extremely dull knife did not deter him. With it he made several ineffectual efforts to cut his throat, but it not proving sharp enough, he with both hands forced it into his chest over the breast bone, and his successive violent thrusts succeeded in dividing the main artery, when he bled to death.[5]

The troops based at Fort Mitchell during the Creek removal suffered primarily from dysentery and diarrhea, which Motte blamed on "the rotten limestone water of the country." The sick were sheltered in two small buildings, each with a ten-foot-wide piazza shading it from the summer's sun. Both structures were in poor condition, with split floor boards and rooms without ceilings. Neither had been intended to serve as a hospital, but the building constructed for this purpose was on private land and had been taken over as a home, apparently by the family owning the land. The diseases endured by the men who came to the facility were, for the most part, fevers, probably malarial, and, in hot weather, diarrhea and dysentery. An epidemic of measles broke out in the fall of 1836, and the surgeon was occasionally called upon to treat the victims of delirium tremens or even of poison ivy. By the summer of 1836 the facility was serving as a general hospital, taking in both Regular Army patients from the garrison and men from the Alabama volunteers, recently

[4]Quotes from Ltrs, Lawson to T. H. Crawford (24 Jan 1839), RG 112, entry 2, 10:107, and Eugene Abadie to [George?] Gibson (20 Oct 1836), in Grant Foreman, *Indian Removal: The Emigration of the Five Civilized Tribes of Indians* (Norman: University of Oklahoma Press, 1932), p. 156; Ltrs, Lawson to Abadie (3 Aug 1837) and Benjamin King to Joel Martin (26 Apr 1838), both in RG 112, entry 2, 8:432 and 9:238, respectively; Crawford to Lawson (26 Jan 1837), Martin to Lawson (4 Jan and 21 Oct 1838), and J. Walker to Lawson (18 and 31 Dec 1841), all in RG 112, entry 12; Foreman, *Removal*, p. 100n; Prucha, *Sword*, pp. 260–61; R. Palmer Howard, "Cherokee History to 1840; A Medical View," *Journal of the Oklahoma Medical Association* 63 (1970):77; *American State Papers: Military Affairs* 7:15; Woodward, *Cherokees*, pp. 196, 200, 208.

[5]Jacob Rhett Motte, *Journey Into Wilderness: An Army Surgeon's Account of Life in Camp and Field During the Creek and Seminole Wars 1836–1838*, ed. Janus F. Sunderman (Gainesville: University of Florida Press, 1953), pp. 4, 19–20, 27, quote from p. 20.

back from Florida and the war against the Seminoles.[6]

Character of the Second Seminole War

A brief show of strength served to eliminate Creek resistance, but an increasing number of attacks on white families and ambushes of small Army units emphasized the determination of the Seminoles never to leave their homes. In the last weeks of 1835, the conflict erupted into open warfare. In the guerrilla struggle that followed, Army regulars and members of various state units sent to subdue the Seminoles fought in an unfamiliar and dangerous land, "healthy in winter but sickly in summer; . . . a most hideous region," where insects and bacteria alike throve and multiplied.[7]

The growing threat from the Seminoles caused the Army to establish two new posts in peninsular Florida, Fort King near today's Ocala and Fort Brooke on Tampa Bay. *(Map 2)* In 1834 both were reinforced. By late 1835 six companies of regulars were stationed at Fort King, three at Fort Brooke, one at St. Augustine, and one at Key West, for a total of over 500 men and officers. No Regular Army surgeon was available for Key West, where a contract with a civilian doctor had already become necessary, and a second assistant surgeon had been ordered to Fort Brooke.[8]

The open hostility of the Seminoles who resisted removal came to a head on 28 December 1835, when all but 3 of a 110-man detachment led by Bvt. Maj. Francis L. Dade were killed in an ambush not far from Fort King. Among the dead was the medical officer with the detachment, Assistant Surgeon John S. Gatlin, who thereby became the Medical Department's first casualty in the Seminole War, and the only surgeon lost to enemy action.

The Army's response to the Dade Massacre developed into a full-scale military campaign to force the Seminoles to cease their violence and agree once again to removal. For the first five years of a struggle described by one surgeon as an "inglorious, unthankful and hopeless war," the high incidence of fevers and diarrhea-like diseases necessitated an end to active campaigning during the summer months. The Seminoles were thus able to devote the hottest months to planting and harvesting the crops that sustained them and their families through the balance of the year. Since each of the four generals who came and went as overall commanders in Florida adopted this policy in turn, Seminole resistance continued. In 1841, however, the Army placed Col. William J. Worth in command of the troops in Florida. Refusing to be intimidated by the disease rate, Colonel Worth waged war throughout the summer against Seminole homes, crops, and warriors and in a year

[6]Quote from Motte, *Journey*, p. 34; Surgeon's Quarterly Rpts, Ft. Mitchell (30 Sep, 31 Dec 1836 and 31 Mar, 30 Jun, and 30 Sep 1837), and Ltrs, Madison Mills to Lovell (6 Nov 1835), all in RG 94, entry 634; Ltr, Leonard McPhail to Lawson (2 Jul 1847), RG 112, entry 12.

[7]Quote from Motte, *Journey*, p. 199; Ltrs, Benjamin King to J. Martin (26 Apr 1838) and Lawson to Crawford (24 Jan 1839), both in RG 112, entry 2, 9:236 and 10:107, respectively; Crawford to Lawson (26 June 1837), Martin to Lawson (4 Jan, 30 Mar, and 21 Oct 1838), and J. Walker to Lawson (18 and 31 Dec 1841), all in RG 112, entry 12; War Department, *Seminole Hostilities: Message From the President of the United States* (n.p., n.d.), p. 234.

[8]Ltrs, Lovell to Heiskell (25 Sep 1835) and to B. Alvord (29 Dec 1835), both in RG 112, entry 2, 7:264 and 334, respectively; Woodward, *Cherokees*, p. 161; Prucha, *Sword*, pp. 273–74. Unless otherwise indicated, all material on the Seminoles and the Second Seminole War is based upon John K. Mahon, *History of the Second Seminole War, 1835–1842* (Gainesville: University of Florida Press, 1967), and John T. Sprague, *The Origin, Progress, and Conclusion of the Florida War* (Gainesville: University of Florida Press, 1964).


Camp Townshend
Suwannee R
Micco
Garey's Ferry
Fort Heilman
Fort Marion
Picolata
St. Augustine
Fort Harlee
St. Johns R
Fort Peyton
Newnansville
Palatka
Micanopy
Fort Drane
Ocala
Fort Clinch
Cedar Key
Withlacoochee R
Fort King
Volusia
New Smyrna
Fort Mellon
Indian R
Fort Lane
Fort Dade
Hillsborough R
Fort Foster
Fort Gardner
Fort Brooke
Mullet Key
Tampa Bay
Fort Pierce
Fort Floyd
Charlotte Harbor
Caloosahatchee R
Fort Jupiter
Fort Denaud
Lake Okeechobee
Fort Lauderdale
Key Biscayne
Key West
THE SEMINOLE WAR
1835-1842
0
100
Miles

MAP 2

DADE MASSACRE *by James Hutchinson. (Photograph by Mark Driscoll, courtesy of the Museum of Florida History, Tallahassee, Florida.)*

brought the survivors of that tribe to the point where they could no longer continue their struggle.[9]

The conflict with the Seminoles was responsible for almost 1,200 of the 1,500 deaths occurring in the Army between mid-1835 and the summer of 1842. More than 75 percent of the military deaths in Florida, an average of 15 each month, resulted from disease. From 1835 through 1839, an average of almost 19 percent were sick at any one time. The disease rate increased when campaigning was continued throughout the summer. From 1 June 1841 to 28 February 1842, for example, 5,000 men suffered almost 16,000 cases of disease, nearly 2,200 in June alone. Army surgeons treated an additional 2,428 in July, over 2,000 in August, and more than 1,800 in September 1841. An average of 26 men died each month during the nine months beginning in June 1841, a rate almost twice that for the entire war. Ten of the medical officers who served in Florida lost their lives as a result of the war, but only Gatlin's death came at the hands of the Seminoles.[10]

[9]Quote from Ltr, Nathan Jarvis to Benjamin Jarvis (6 Sep 1839), in Jarvis Papers; Thomas Sidney Jesup, *Seminole Saga; The Jesup Report* (Ft. Myers Beach, Fla.: Island Press, 1973), p. 12.

[10]Ltrs, Heiskel to R. Jones (15 Jun 1842), RG 112, entry 2, 13:415; Benjamin Harney to Lawson (2 Jun 1841), RG 112, entry 12; *Statistical Report 1819–39*, pp. 306, 315.

Assignment of Surgeons

Despite the fact that many tribes were being displaced by the white man in decades that preceded the Civil War, only the struggle against the Seminoles developed into a major war. Since it was, even so, a guerrilla war, the requirement for physicians was greater than it would have been had a similar number of men been engaged in conventional warfare. The many small units conducting operations in Florida could not easily share surgeons, isolated as they often were by distance, the primitive terrain, and the enemy's skill at attack from ambush. The high rate of disease made it difficult for a unit to go long without a physician. Although the organization of the Medical Department was basically suited to this type of warfare, its size was not; the number of available surgeons was not sufficient to permit one to accompany each separate detachment at all times. In the attempt to meet the need, some medical officers were called upon not only to move about with one detachment but also to change from one unit or post to another at short intervals.

To gain maximum advantage from the flexibility he had introduced into the department's structure in 1818, Surgeon General Lovell decided that the senior surgeon assigned to Florida should serve as medical director. This officer could move the surgeons under him from one position to another at the direction of the commanding general without prior consultation with the surgeon general and require the surgeon or assistant surgeon at a supply depot to serve as purveyor. As a result, the more routine requirements of the war could be managed quickly and efficiently.[11]

[11]Ltr, Lawson to Edward Macomb (19 Oct 1840), RG 112, entry 2, 12:86.

LYMAN FOOT. *(Courtesy of National Library of Medicine.)*

Nevertheless the shortage of physicians was increasingly irritating to Lawson when he became surgeon general. To the secretary of war in 1839 he bristled, "Now a days an officer cannot march eight miles with a Sergeants Guard without having a Surgeon attached to his Command, in other words without his own special staff." In 1840 he lashed out at Lyman Foot, then the medical director in Florida, apparently because Foot, in letting surgeons leave after only two years of service, was adding to Lawson's difficulties in providing adequate medical support. Lawson brushed aside Foot's statement that he understood that two-year assignments were official policy, and accused Foot of being concerned only with popularity. When, a few months later, the general then commanding in Florida

publicly and wholeheartedly praised Foot's work, Lawson raged at what he said was interference with his management of his department.[12]

Although well aware of the difficulties he faced, Lawson, like Lovell, used every resource at his command to bring adequate care to all who fell ill or were wounded. As early as April 1836, Lovell was able to state that "every disposable officer of the Department" had been assigned to duty in Florida, but more were almost continually being requested. When, early in 1837, Maj. Gen. Thomas S. Jesup, then commanding the effort against the Seminoles, added crewmen from a naval squadron to his force, he made a Navy surgeon his medical director, apparently because not enough Army medical officers in Florida had the rank of full surgeon. In this capacity, John A. Kearney was stationed at Fort Brooke much of the spring of 1837.[13]

Even with help from the U.S. Navy, the shortage of medical officers remained acute. In May 1837 a surgeon wrote Lawson that Jesup had ordered that the surgeon general be informed of the "destitute condition of the Medical Department in this country," where half the nation's army was being cared for by only a sixth of the department's surgeons, many of whom were themselves ill. According to Lawson, Kearney added his complaint that there was "not a medical officer of the first grade in Florida." In December 1839, by which time disease had already killed three of his physicians, Lawson confessed that he could not meet the demands for Regular Army surgeons. By late 1839, although at least nineteen surgeons were serving in Florida, some were responsible for two or more posts. From the outset, therefore, the Medical Department was forced to hire contract physicians to serve as acting assistant surgeons in Florida. Some were assigned to militia units there and one was ordered by the War Department to accompany a small group of Seminoles emigrating to the West in 1836.[14]

Lawson's frustration at his impotence in the face of the lack of manpower caused him to turn imperiously upon any surgeon who so much as appeared to be avoiding duty in Florida, where little but "Privations, hardships, sickness and murder" awaited. To a surgeon who complained that service in Florida was bad for his "constitution," Lawson wrote, "it will not do for officers to talk about *constitutions* or *climates* . . . you have received your orders and must obey." To another, who had left Florida maintaining that he was ill and did not hasten to return, Lawson stated, "If you possess not the exalted sentiments of a soldier whose pride it is to perform his duty with alacrity and cheerfulness, then you may as well understand, once for all, that

[12]Quote from Ltr, Lawson to Sec War (9 Mar 1839), RG 112, entry 2, 10:197; Ltrs, Benjamin King to J. H. Chambers (26 Nov 1836) and Lawson to De Camp (23 Aug 1838), to Lyman Foot (5 Dec 1840), and to Jones (6 May 1841), all in RG 112, entry 2, 8:120, 9:408, and 12:196 and 416–17, respectively; Foot to Lawson (8 Sep 1840), RG 112, entry 12.

[13]Quote from Ltr, Lovell to Edward Worrell (4 Apr 1836), RG 112, entry 2, 7:410; Ltrs, Lovell to Joseph Eaton (17 Aug 1836), Benjamin King to John Kearney (24 Mar 1837), and Lawson to Kearney (16 May and 2 Jun 1837), all in RG 112, entry 2, 8:16, 276, 347, and 370–71, respectively; Kearney to AG (9 May 1837), RG 112, entry 12; Thomas Jesup to R. Jones (7 Feb 1837), in Sprague, *Florida War*, p. 173.

[14]Quotes from Ltrs, Charles S. Tripler to Lawson (31 May 1837), RG 112, entry 12, and Lawson to Kearney (2 Jun 1837), RG 112, entry 2, 8:370–71; Ltrs, Lawson to R. M. Kirby (11 Dec 1838), RG 112, entry 2, 10:31, Kearney to AG (9 May 1837) and to Lawson (3 Jul 1837) and De Camp to Lawson (2 Mar 1839), all in RG 112, entry 12; War Department, *Seminole Hostilities*, pp. 271–72; SGO, War Department, *Annual Report* (6 Nov 1839), p. 14.

you will be made to do it." To assistant surgeon William S. King, whom he had accused—as he was later forced to admit, unjustly—of scheming to sneak out of Florida, Lawson's apology was principally a defense of his own conduct. The facts as they were known at the time, he maintained, amply justified his conclusions.[15]

Lawson wanted his subordinates to see the war against the Seminoles not as a privation but as a golden opportunity since, if assignments were properly rotated, a surgeon could gain valuable experience in the field. He wrote both the medical director and the commanding general there, urging rotation. The frequent illness of surgeons in Florida made systematic rotation impossible, but Lawson became furious when they appeared to ignore his wishes. The medical director's suggestion that matters of assignment, as well as those of supply and the establishment of hospitals, were better managed by someone on the scene further irritated the surgeon general. The war was almost over, but the spring of 1842 found him once again raging, this time to the adjutant general, because Colonel Worth, then commanding in Florida, had ordered nine more medical officers out of Florida than Lawson believed wise, and had granted leaves of absence to other surgeons, all without consulting Lawson.[16]

WILLIAM S. KING. *(Courtesy of National Library of Medicine.)*

Supply

Except for the heavy demand for quinine, supply problems do not appear to have triggered Lawsonian rage. The medicines and other items that surgeons in Florida needed came from as far away as New York City, New Orleans, Charleston, and Savannah. The extensive use of steamboats in support of operations against the Seminoles reduced the likelihood of severe or prolonged shortages in spite of the unusually heavy demand caused by the high disease rate. But transportation problems within some parts of Florida slowed deliveries inland from the principal supply

[15]Quotes from Ltrs, Nathan Jarvis to Nathaniel Jarvis (1 Aug 1839), in Jarvis Papers, and Lawson to Stinnecke (12 Jun 1836) and to William W. Hoxton (29 Jan 1841), both in RG 112, entry 2, 8:376 and 12:279, respectively; Ltrs, Lawson to William King (19 Jul and 4 Sep 1839), both in RG 112, entry 2, 10:38 and 461, respectively. It should be noted, however, that when Lawson was but a surgeon himself, he, too, complained about the effects of an unfriendly clime upon his constitution. Ltr, Lawson to Lovell (5 Oct 1824), RG 112, entry 12.

[16]Ltrs, Lawson to De Camp (15 May 1839), to Walker K. Armistead (20 Aug 1840), to Edward Macomb (19 Oct 1840), and to Benjamin Harney (8 Jun 1841) and Heiskell to Sec War (21 Jun 1842), all in RG 112, entry 2, 10:211, 11:485, 12:86 and 462–63, and 13:427, respectively; Rpt, Lawson to AG (1 Apr 1842), RG 112, entry 12.

depots at Palatka, St. Augustine, Tampa Bay, Garey's Ferry, and Cedar Key.[17]

Some minor shortages stemmed from the unpredictability of the need for certain medicines or stores. In the spring of 1841, inroads of disease upon the men in Florida were apparently greater than anticipated. The prevalence of a mild form of scurvy in the Tampa Bay area in a season when the Subsistence Department did not issue lime juice made it necessary for the Medical Department purveyor there to order this antiscorbutic on his own. Additional problems stemmed from the fact that dampness spoiled many of the medicines packaged in paper rather than in bottles or canisters. On at least one occasion, surgeons discovered that a shipment of olive oil was polluted with linseed oil. Localized shortages might oblige a surgeon to try one depot after another. Still further minor difficulties were caused by the discovery that in the climate of Florida, "comfort and cleanliness" dictated that hospitals use bed sheets, which apparently were not generally provided. Despite the greater demand the war created for hospital supplies and medicines, however, no significant increase in the Department's cost per man resulted.[18]

Perhaps the greatest supply problem occurred because some surgeons in Florida were beginning to discover that quinine in large doses was effective against the paroxysms of malaria. The demand for this expensive drug was so great as to trigger another belligerent reaction from Lawson, who apparently concluded that surgeons had become soft and frivolous. To Brig. Gen. Zachary Taylor he wrote in 1839:

> A Physician never shows to greater advantage than when he is operating successfully with a few materials, we do not want men in the Army who cannot combat disease with success unless surrounded by every article in the materia medica.—Our surgeons must learn to substitute in extreme cases one medicine for another; finery or furbelows [ruffles] at any rate cannot be tolerated in Field Hospitals or other sick Station in the theatre of War. [19]

Lawson's attitude toward quinine surfaced again with characteristic vigor in 1840, when the medical purveyor at Fort Brooke made the error of ordering a second supply of quinine before he had received the first. Lawson stated authoritatively that other "tonics" would serve quite as well; perhaps his failure to realize that this was not so may again be attributed to the fact that he was not on the scene. He informed the purveyor that "the reckless use of that medicine to the exclusion almost of every other Tonic" was prohibited. There is no indication that the problem was ever resolved. Lawson was still complaining in 1841, when he commented to the medical director: "Some years ago when the Army was as efficient, or had at least as high a character as now, the Soldiers could . . . take Peruvian Bark . . . but nowadays they have become so refined and delicate of

[17]Ltrs, Lovell to Heiskell (29 Jun 1836), to Lawson (26 May 1836), to Richard Clark (30 Jun 1836), and to Hamilton Hawkins (9 Jul 1836), all in RG 112, entry 2, 7:374, 460, 495, and 507, respectively; Lovell to Lawson and to Worrell (both 16 Jul 1836), both in RG 112, entry 2, 7:576; Benjamin King to J. P. Russell (19 Jan 1837), to W. H. Shelton (23 Nov 1837), and to Thomas Henderson (11 Apr 1838) and Lawson to Zachary Taylor (18 Nov 1839) and to A. K. Parris (17 Nov 1843), all in RG 112, entry 2, 8:135, 9:57 and 210, 11:73, and 14:474, respectively; Worrell to Lawson (14 Jun 1836), De Camp to Lawson (26 Dec 1838) and to D. E. Twiggs (15 Jan 1839), Foot to Lawson (17 Aug 1840), and W. T. Leonard to Lawson (2 Aug 1841), all in RG 112, entry 12.

[18]Quote from Ltr, B. M. Byrne to Lawson (21 May 1841), RG 112, entry 12; Ltr, Benjamin King to Sec War (17 Apr 1838), RG 112, entry 2, 9:219.

[19]Quote from Ltr, Lawson to Taylor (18 Nov 1839), RG 112, entry 2, 11:73; see also Smith, "Quinine," pp. 361, 363, and Ltrs, Lawson to Sec War (18 Jul 1837) and to R. C. Wood (11 Jul 1838), both in RG 112, entry 2, 8:418 and 9:949, respectively.

stomach, that they can take down nothing but . . . Sulphate of Quinine as a Tonic."[20]

General Hospitals

The location of many of the general hospitals that cared for the sick and wounded of the war in Florida at or near major depots to some degree eased transportation problems. In these institutions, men with chronic illnesses and severe wounds, together with the patient overflow from crowded post hospitals, could be cared for. Not long after the start of the war, this type of facility was established at Fort Brooke, on Tampa Bay, and in St. Augustine. At about the same time, a convalescent hospital was set up at Mullet Key, southwest of Tampa.

The general hospital at Fort Brooke was located on a hill above the Hillsborough River and surrounded by a grove of live oak. It could easily shelter 100 patients, but it was occasionally called on to care for twice that number. Hospital attendants were chosen from the units represented among the patients: a unit with 12 to 24 patients at this facility would provide 2 attendants; one with over 24 would provide 3. Men who were only slightly disabled but not well enough to march were sometimes assigned to remain at the hospital to care for the more seriously ill. The Fort Brooke unit continued in operation until 1840, when it was closed in favor of general hospitals established at Picolata and Cedar Key. Supplies that could not be used at Fort Brooke's post hospital were then sent to Cedar Key if that facility could use them.[21]

The sites of the general hospitals at Picolata and Cedar Key were considered to be healthy and convenient to the line of forts as it existed in 1840. The medical director in Florida hoped that, because of the good reputation of these sites, the opening of the two new general hospitals there would bring about a saving in expenses for the Medical Department. The hospital at Picolata on the St. Johns River was set up, apparently in 1837, in the upper part of the former hotel where troops used the basement as a barracks. The unit at Cedar Key opened in the summer of 1840 at a "*beautiful* location," initially in a temporary building and some hospital tents, while the construction of the permanent building, 160 by 30 feet and shaded by a 10-foot piazza, was underway. In the autumn of 1842, however, a severe storm blew the new hospital from its foundations and caused so much destruction that the Army abandoned the island.[22]

The Picolata general hospital was apparently moved to St. John's Bluff, five miles from the mouth of the St. Johns River, sometime in the summer of 1841, where it remained until it was closed in the spring of 1842. The St. John's Bluff hospital may have been slightly larger than the one at

[20]Quotes from Ltrs, Lawson to John B. Porter (15 and 21 Aug 1840) and Lawson to Benjamin Harney (8 Jun 1841), all in RG 112, entry 2, 11:470 and 486 and 12:465, respectively.

[21]Surgeon's Quarterly Rpts, Ft. Brooke (30 Jun and 30 Sep 1837 and 31 Dec 1839), all in RG 94, entry 634; Orders (no. 23, 9 Apr 1836), in *American State Papers: Military Affairs* 7:267; Order (no. 21, 22 Jun 1840); filed with Ltr, Foot to Lawson, (16 Aug 1840) and Ltr, Foot to Lawson (22 Jun 1840), both in RG 112, entry 12; Ltrs, Lawson to Lee (3 Aug 1837) and to A. T. Suter (30 Aug 1837), both in RG 112, entry 2, 8:433 and 474, respectively; *Statistical Report, 1819–39*, pp. 299, 304–05.

[22]Quote from Ltr, Foot to Lawson (16 Aug 1840), RG 112, entry 12; Ltrs, Benjamin King to Tripler (17 Jan 1838), RG 112, entry 2, 9:118; Foot to Lawson (22 Jun 1840), RG 112, entry 12; "Campaign in Florida," *Yale Literary Magazine* 11 (1846):77.

Cedar Key, although neither unit cared routinely for more than fifty patients at a time.[23]

The general hospital at St. Augustine was established in the summer of 1836, initially in two buildings, one near the barracks and the other near the center of town, and later in three more. To this facility shortly after its opening came the sick from several posts in that section of Florida, particularly Fort Mellon and Volusia, both temporarily abandoned because of the high disease rate that afflicted their garrisons. The sick from Micanopy, many originally from Fort Drane, were also moved to St. Augustine in the belief that their chances for recovery at Micanopy were poor. As many as 150 sick were gathered at the St. Augustine general hospital shortly after its opening, among them one of the survivors of the Dade Massacre, a man whose eventual death evidently resulted more from his heavy drinking than from wounds suffered in the massacre. By September 1836, 225 patients shared the hospital, and three Army physicians, assisted by a civilian acting as assistant surgeon, were busy caring for them. After 1836, however, the largest number there at any one time apparently rarely exceeded 65. The facility evidently closed sometime during the second half of 1838, torn in its closing weeks by controversy between surgeons and line officers over the acceptability of removing experienced men from positions as hospital stewards in order to return them to their units.[24]

Not all of the seriously sick or wounded from the war were retained in Florida's general hospitals. The Army evacuated many to such East Coast posts as Fort Monroe in Virginia or Fort Hamilton in New York Harbor, in the belief that a change of climate would be particularly helpful for those with dysentery and recurrent fever. In the fall of 1840, patients whose recovery was supposedly being retarded by the effects of the Florida climate were also sent to Fort Columbus, a second New York Harbor post. There was a risk that some patients who were sent north might die along the way, but Medical Director Foot believed that these were men who would have died even if they had been retained in Florida.[25]

Not all those who were evacuated were actively ill. The Florida climate was considered to be so unhealthy that in 1841 an entire regiment was sent north because of its poor health and lack of vigor. The unit was dispersed among northern posts, where it was hoped that its overall health would improve.

Although the chronically ill and the seriously disabled were eventually sent on to general hospitals or even evacuated, those with lesser health problems often remained at post hospitals until they were ready to rejoin their units. At the time the Second Seminole War began, permanent post facilities existed at Forts Brooke, Marion (at

[23]Surgeon's Quarterly Rpts (31 Mar and 30 Jun 1841) and Consolidated Monthly Rpts, Army of Florida (Apr and Jul 1841), all in RG 94, entry 634; see also other Rpts, St. John's Hospital (1841–42), RG 94, entry 634.

[24]Ltrs, Lovell to Russell (20 Aug 1836), RG 112, entry 2, 8:18; H. S. Hawkins to Lovell (27 Jul and 8 Aug 1836 and 7 Sep 1836), G. F. Turner to Hawkins (6 Sep 1836), and Richard Weightman to Benjamin King (7 Jun 1838), all in RG 112, entry 12; Surgeon's Rpts, St. Augustine General Hospital, RG 94, entry 634; N. S. Jarvis, "Notes" 39:276, 279. There are no reports that can definitely be attributed to the general hospital at St. Augustine held in RG 94 for dates later than June 1838 and apparently no mention of a general hospital there after that date in other collections.

[25]Ltrs, Lawson to Robert Archer (27 Jul 1837), Tripler to Russell (26 Aug 1837), and Lawson to L. R. Arnold (12 Sep 1837), all in RG 112, entry 2, 8:425, 469, and 486, respectively; SOs, Brig Gen Armistead (no. 60, 18 Sep 1840) and Ltrs, Harney to Lawson (2 Jun 1841) and Foot to Lawson (30 Jul 1841), all in RG 112, entry 12.

St. Augustine), and King. Reports from Forts Marion and King at the end of 1835 described their hospitals as satisfactory, and it would appear that the condition of the Fort Brooke unit was also acceptable.[26]

The site chosen for Fort Brooke itself was initially reported to be healthy, and vegetables and fish were available in sufficient quantity for a good diet. By the spring of 1836, diarrhea, blamed on the water and its high sulfur content, and respiratory ills were appearing in the garrison, and among the volunteers, measles and mumps as well. At the end of April of that year, 80 of the 802 men there were reported to be hospitalized, and the quarterly report dated 30 June 1836 listed 516 treated in the course of the April through June quarter, a time of much illness at Fort Brooke.[27]

In the first quarter of 1839, the garrison at Fort Brooke was moved to an "elevated" ridge where the water was considered to be good and the quarters comfortable. The hospital here would comfortably hold only twelve patients, but fortunately, diarrhea disappeared as a serious problem after the move. In November, however, the water was again causing comment, and the surgeon observed that it was "either saturated with rotten limestone or the brackish water of the river." Fever was the most common complaint, and he noted that "an offensive and most deleterious malaria" appeared to characterize the area. Overcrowding quickly reappeared as a problem, and the surgeon had to treat many patients in their quarters. Although the coming of cooler weather caused a drop in the number of sick from the Fort Brooke garrison, troops marching north in January 1840 left twenty of their sick there, and the hospital remained crowded.[28]

The area in which Fort Marion was located was also reported to be relatively healthy by comparison with other southern posts. Since the disease rate varied widely, and the number of men assigned to this post changed often, the number hospitalized also fluctuated. Yellow fever struck Fort Marion in the fall of 1839, causing 12 deaths in the 24 cases reported in November alone, and again in 1841, when 25 of 56 cases were fatal.[29]

The site of Fort King was not as healthy as those of Forts Brooke and Marion, despite its apparent beauty. "The live oak, with other species of the same genus, the cypress, magnolia, cabbage-tree, and several varieties of hickory, (*carya*), all united by a cordage of vines and brambles, extending from trunk to trunk and from limb to limb, constituting an immense net-work of vegetation" surrounded the post. Malaria was the principal health problem and led to the temporary evacuation of the fort sometime in the late spring or summer of 1836.[30]

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[26]Rpt, Lovell to Sec War (28 Dec 1835), RG 112, entry 2, 7:340.

[27]Ibid.; John K. Mahon, ed., "The Journal of A. B. Meek and the Second Seminole War, 1836," *Florida Historical Quarterly* 38 (1960):309; James W. Covington, ed., "Life at Fort Brooke, 1824–1836," *Florida Historical Quarterly* 36 (1957–58):321, 323; War Department, *Proceedings*, p. 339; Surgeon's Quarterly Rpt, Ft. Brooke (30 Jun 1836), and other quarterly and monthly Rpts, Ft. Brooke (1835–36), RG 94, entry 634.

[28]First quote, Surgeon's Quarterly Rpt, Ft. Brooke (31 Mar 1839), RG 94, entry 634; second and third quotes, Surgeon's Monthly Rpt, Ft. Brooke (30 Nov 1839), entry 634; Surgeon's Monthly Rpt, Ft. Brooke (Feb 1840), RG 94, entry 634.

[29]*Statistical Report, 1839–55*, p. 309; Surgeon's Monthly Rpt, Ft. Marion (30 Nov 1839), and Surgeon's Quarterly Rpts, Ft. Marion (Jun 1840 and Jun 1841), all in RG 94, entry 634; Rogers W. Young, "Fort Marion During the Seminole War, 1835–1842, "*Florida Historical Quarterly* 13 (1935):205, 218.

[30]*Statistical Report, 1819–39*, pp. 293–94, quote from p. 291; John Bemrose, *Reminiscences of the Second Seminole War*, ed. John K. Mahon (Gainesville: University of Florida Press, 1966), pp. 103, 103n; John W. Churchman, "The Use of Quinine During

At the start of the Second Seminole War, the hospital at Fort King was located on the "declivity of a hammock about 40 yards from the barracks and officers Quarters," and was constructed of "hewn logs, chinked and plastered; one storey high, 35 feet long by 20 wide." The largest of the building's two rooms could hold as many as six patients, and the other was used as a dispensary. The entire hospital was surrounded by a piazza eight feet wide, but half of it had been recently enclosed and the facility could shelter a maximum of twenty patients. Attached to the main building was a small kitchen made of logs.[31]

The patient load of this facility was larger than one might expect from a garrison whose size rarely rose above 210. Volunteers, camp followers, and occasional Indians found shelter at the fort, as did the sick and wounded from smaller posts. In 1840 and 1841, patients at the Fort King post hospital suffering from repeated "attacks of disease & . . . entirely broken down" were periodically sent on to the general hospital at Picolata. Although from October through March in the years 1838 through 1841, their number tended to be less than six in a quarter, from April through September, when diarrhea and malaria were common, the quarterly average might approach fifty.[32]

Care of the Sick and Wounded at a Temporary Fort

The problems posed by the sick and wounded at the relatively short-lived wartime forts that appeared and disappeared during the course of the Second Seminole War (thirty-one in 1838–1839 alone) were greater than those at the few permanent posts. It appears that when there was a surgeon at such posts, he often managed without the services of anything resembling a hospital. Even at the major temporary posts, facilities for the sick and wounded were likely to be makeshift and less than satisfactory.

One temporary post, Fort Drane, was a base of operations for Regular Army efforts against the Seminoles until the summer of 1836, when the unhealthiness of the site, in an area of many small ponds, forced its abandonment by regular troops. A high rate of sickness characterized the garrison here from the beginning. On 28 December 1835, when 250 men left the fort for the battle of Withlacoochee, the first major engagement of the war, 100 more men were too ill to accompany them. On 31 December, six surgeons, two of them Regular Army physicians, accompanied the troops into action, leaving a hospital surgeon behind in camp with five more men, victims of malaria.[33]

Since caring for the 100 casualties at or near the site of the battle would have been imprudent, as soon as their wounds had been dressed, the most seriously injured were placed on stretchers made of blankets fastened to pine saplings. These litters were then suspended between two horses for the return to the relative safety of Fort Drane. Men with lesser wounds who were unable to walk were moved in springless wagons and their "shrieks told of the great anguish" their journey caused them. The convoy spent several nights on the road, and each night the able-bodied had to cut brush

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the Civil War," *Johns Hopkins Hospital Bulletin* 17 (1906):177; Surgeon's Quarterly Rpts, Ft. King (1837–41), all in RG 94, entry 634.

[31]Ltr, Archer to Lovell (17 Nov 1835), RG 94, entry 634.

[32]Quote from Surgeon's Quarterly Rpt, Ft. King (Jun 1841), RG 94, entry 634; Surgeon's Quarterly Rpts, Ft. King (1838–41), all in RG 94, entry 634.

[33]Bemrose, *Reminiscences*, pp. 2, 4, 35–36, 40, 43, 48, 104n.

for beds. One night six attendants went off without leave, increasing the burden on those who remained. Wounds began to stiffen as the journey progressed, so that before the sufferers reached Fort Drane, their "cries and shrieks" had become almost constant.[34]

The tents set up at Fort Drane to shelter the sick and wounded from the elements were scarcely better accommodations than if they had been set up in the forest. Patients lay two to a bed. Two nurses plus one attendant cared for every ten wounded while twelve cooks prepared the diet believed necessary for proper healing. As soon as the patients were settled, surgeons began to probe wounds. In recalling the five-hour ordeal, steward John Bemrose, an Englishman of some education who left a valuable account of his experiences, wrote later that "The grinding of the knife through the sound flesh edged on" his teeth. Since Indian rifles had small bores, only one wound proved fatal. One patient, however, became obsessed with a desire for vengeance and begged to be shown an Indian scalp. At last the desired treasure was brought to him, and he burst into "antics of delight . . . over this small portion of flesh belonging to a poor dead Indian."[35]

Although the number of physicians caring for the patients at Fort Drane in the spring of 1836 appears to have been adequate (Bemrose mentions four Regular Army surgeons by name and refers to a fifth as "the pragmatical assistant surgeon"), the accommodations still were not. Of the shelters available for the sick and wounded, one tent and a lean-to shed were actually outside the protective pickets of the fort, at sites considered more healthful than those available inside. During a Seminole attack, however, musket balls pierced the walls of the tent, and surgeons had to move it to a safer location, even though it was "neither so pleasant nor so healthy." Patients in the shed, which was open along one side to both sun and rain, were "in a deplorable condition."[36]

As spring progressed toward summer, the rate of disease increased. Half of the 274-man garrison was sick in June, and in time a total of seven buildings within the bounds of Fort Drane were filled with patients. Conditions became deplorable for everyone. "All suffered from the malignancy of disease and the comfortless state in the fort," wrote Bemrose. "Some were filthy in the extreme, others without the necessary clothing." Insects of all sorts and descriptions joined them, undeterred by either pickets or guards. "Sand flies and mosquitoes were innumerable. . . . Centipedes, cockroaches, scorpions, with immense spiders, were daily tenants of the place. . . . The sand of the fort was full of chigoes [chiggers], and a sort of black flea. This latter was the greatest [pest] to all of us."[37]

Some of the men stationed at Fort Drane (where, in Bemrose's words, "the misery of soldiering was certainly very great") developed emotional problems. The ever-present fear of Indians, who "had a constant habit of prowling around our sentinels for the purpose of picking them off," the exhaustion brought on by guard duty under these circumstances, the equally constant danger of disease, the isolation, all added to the strain on the occupants of the fort in the spring and early summer of 1836.[38]

[34]Ibid., pp. 47–48, 51, 54, 57–58, quotes from pp. 54–55.

[35]Ibid., pp. 51, 58, 61–62, quotes from pp. 58, 61.

[36]Ibid., pp. 94–96, quotes from p. 95.

[37]Quotes from ibid., pp. 96, 103, 104n; Ltr, Weightman to Lovell (3 Jul 1836), RG 112, entry 12.

[38]Bemrose, *Reminiscences*, p. 103.

Among those for whom the pressures became intolerable was a West Point-trained officer who escaped what he could not endure by placing the muzzle of his pistol in his mouth and pulling the trigger. He "thus blew out his brains, hurrying his soul into perdition." An enlisted man was led in from his post, shrieking "Indians, Indians," to die, raving mad, "the dread of Indians being so great upon him as to affect his brain." One of the fort's surgeons withstood the strain with difficulty. He became increasingly irritable, erupting into threats of physical violence, including an offer to "give the stupid mortals a drubbing," whenever a patient gave him the smallest difficulty. Although he survived his tour at Fort Drane, by the time he left, his depression had become so deep that "A continual dark hour seemed to be upon him. He . . . passed through his multifarious cases with scarcely cognizance of his duty."[39]

The principal health problems at Fort Drane, however, were not mental but physical. Surgeons used great quantities of quinine daily to combat the fever that afflicted many within the fort, often causing delirium and even death. Up to five might die from it in the space of twenty-four hours; some bled from the nose in the hours immediately before their deaths. The implied ineffectiveness of quinine suggests the problem may have been typhoid fever. Among those disease killed in May was the fort's commanding officer, Col. Julius F. Heilman.[40]

Overcrowding exacerbated the health problems at Fort Drane in the last months before its evacuation in July 1836. In March men from volunteer and regular units that had barely escaped annihilation at the hands of the Seminoles in the course of a brief and unfortunate campaign arrived, all in poor condition, half starved, some barely able to stand, many sick or wounded. By the middle of that month, over 3,000 shared the protection of the post. The expansion of the fort in April and the repeated evacution of patients whose prompt recovery could not be expected alleviated some of the crowding. But for those leaving the fort, danger waited. In June a convoy of the sick and wounded was twice attacked, ten to twelve were wounded and two killed. The surgeon accompanying the group was wounded.[41]

An Army Surgeon in the Field

A majority of the Medical Department's surgeons in Florida during the Second Seminole War worked without the advantages offered by general and permanent post hospitals. Many moved about repeatedly from temporary forts to even more temporary camps that rarely had facilities of any kind in which patients could be segregated from their healthy comrades and kept both comfortable and safe. In Florida the surgeon's

> post was always that of danger too; during winter, in the field sharing alike with all his brother officers their fatigues, privations, and perils. In summer, while his fellow campaigners were resting from their past toils and dangers, in anticipation of new ones the coming winter, . . . he was pressing the pulse of languid sickness, and breathing the pestiferous exhalations of crowded hospitals in some unhealthy "Ultima Thule" of the wilderness. He had but one consolation; the consciousness of doing good.[42]

[39]Ibid., pp. 93–94, 102–03, quotes from pp. 93, 94, 102.

[40]Ibid., pp. 94, 96–99.

[41]Ibid., pp. 77–78, 83, 96–97, 99, 103–04; Ltr, Hawkins to Lovell (27 Jul 1836), RG 112, entry 12.

[42]Motte, *Journey*, pp. 106–08. Unless otherwise indicated, all material concerning Motte's work in Florida is based on this work.

Assistant Surgeon Jacob Rhett Motte's experiences and peregrinations in the Southeast from 1836 to 1838 suggest the nature of the challenge faced by the Army surgeon assigned to that part of the country during the Second Seminole War. Motte was at Fort Mitchell, Alabama, in the early summer of 1836. In July he was sent to Tuskegee to care for the men of an artillery battalion. Scarcely had he arrived there, however, when he was ordered to a camp fifteen miles from Tuskegee to cover for Surgeon Elwes, who was once again ill. Here Motte treated the victims of what he called typhoid fever as well as sufferers from dysentery. In September he was ordered to join an artillery unit on its way to Fort Mitchell where forces were gathering to join the fight against the Seminoles. Here he encountered Lawson, who as medical director for the Army in the South promptly ordered Motte to accompany units going to the southern counties of Georgia, "a low, swampy part of the country . . . [with] the worst possible reputation for health."[43]

On the way to his new assignment, Motte came down with fever. When he finally became too ill to ride his horse, he was placed in a wagon whose "thick covering," he later recalled, "afforded my burning brain no protection against the heat of the vertical sun in this latitude . . . the constant jolting over rugged roads and roots of trees was fast driving me into a dreadful tempest of delirium." At last he could go no further. The convoy left him at a log house ten miles from the Florida border, to be cared for by its owner. By the end of October he had recovered sufficiently to rejoin his unit in Lowndes County, Georgia, and to camp with them in a pine barren, at Camp Townshend, Georgia.[44]

Camp Townshend appears to have made a strong impression upon Motte; although he did not remain there long, he described it in lively detail in his memoirs. The scenery consisted of "burned and decaying trees, pig-pens, pine-flats, and log-huts." By day he enjoyed watching "the little tadpoles and polywogs as they frisked and frolicked in the muddy pools." At night his "attentive neighbours the screech-owls and whooping cranes would commence entertaining us in the most delicate manner, at the expense of their melodious voices. These flattering attentions, however, were not properly appreciated by us, owing no doubt to our not possessing a correct taste for music." The nightly forays of the pigs of the area, however, particularly appealed to Motte's dry sense of humor.

> In their comings they displayed the wisdom of Solomon. Not a snout was visible before tatoo (tattoo) [*sic*]; but as soon as that signal for an exit into retiracy was completed, on they came, grunting, snorting, and squeaking,—old boars, little pigs, and all; forming a concert of sweet sounds. . . . Their serenades were met on our part with base ingratitude; by the shade of Mozart! instead of listening to their dulcet tones with marked applause, and inviting them to partake of refreshments after such exertions, as is usual among a refined and serenaded people, we impolitely and ungratefully gave the sentinels peremptory orders to expel them at the point of the bayonet.[45]

For several months after his stay at Camp Townshend, Motte accompanied expeditions seeking out Creek troublemakers in southern Georgia and northern Florida. In May 1837 he briefly came to rest at the town of Newnansville, Florida. His enjoy-

[43]Ibid., p. 34.

[44]Ibid., p. 40.

[45]Ibid., p. 44.

ment of the fine airs affected by the populace of this town was not to last long, however, for in June he was ordered to Fort Mellon, Florida, to replace yet another sick surgeon, but the health of the men at Fort Mellon was so bad that he could see no alternative to its abandonment, which took place a week after his arrival there. So Motte was once more on the move—but before he could reach his destination at St. Augustine, he was again sick. Leaving the boat that was taking the men from Fort Mellon north, down the St. Johns River, Motte recuperated for a week on shore before resuming his journey. When he finally did arrive at St. Augustine, he was immediately given orders for Fort Harlee, where the surgeon had fallen ill. In August, when he left Fort Harlee, Motte was sent to Fort Peyton, near St. Augustine.

In September, an expedition was formed to capture some of the Indians near Fort Peyton, and Motte was assigned to accompany the 170-man detachment, which included two dragoon companies, an artillery company, and two companies of Florida volunteers. No casualties resulted from this operation, but a second shortly thereafter resulted in the death of an officer. By the time a third such foray was undertaken, Motte was once again sick, and another assistant surgeon at the post took his place with the men.

In November Motte accompanied a detachment going south on U.S. Navy vessels to New Smyrna, on the east coast. While on the journey, Motte served as fleet surgeon for the crews of ten to twelve "Mackinac boats" and a sloop-rigged flagship. In January 1838 he was again moving south, this time to Fort Pierce, located on the west bank of the Indian River, with a dense palmetto forest at its back. When an expedition was sent up the Indian River shortly after his arrival, Motte was left behind. He was not idle, however, for twenty-two wounded from a combined Army-Navy expedition were brought in and he joined the dragoon surgeon at the post in caring for them.[46]

In late January, since the dragoon surgeon was still exhausted from the long march from Missouri's Jefferson Barracks, Motte accompanied the cavalry into the field. He was present at a skirmish with the Seminoles on the shores of the Loxahatchee River in which Maj. Gen. Thomas S. Jesup, then in command of the army in Florida, was wounded in the face. Seven men were killed in this engagement and thirty wounded. The casualties were carried

> to the foot of a spreading oak, beneath whose widely-flung branches were strewn a score of dead and dying. There before us lay death in his most horrible forms; bodies pierced with ghastly wounds, and locks begrimed with gore. In one direction, leaning against a tree, there reclined a soldier of the Artillery; his face pale, and o'erspread with an expression of anguish; one hand pressed to his side, from which the blood slowly oozed. In another direction lay stretched upon the ground, with face turned upwards, and glazed eyes wide open, one whose marble cheek too plainly told that the rifle ball which had entered his temple had truly done its mission; . . . In one spot sat a party of wounded upon the ground, a surgeon binding up their bleeding wounds, with hasty but skilful hands; a little farther off, reclined one upon a cloak; his closed eyes, and calm smiling expression of features like that of a sleeping man, indicated an exemption from pain; true, his sufferings were over; he had gone to that place where physical pain is unknown.[47]

After the battle, Motte apparently returned to Fort Pierce with the wounded, but the rest of the force pushed southward

[46]Ibid., p. 155.
[47]Ibid., p. 197.

to establish Fort Jupiter in "a most hideous region, in which nothing but serpents and frogs can exist. The Indians themselves say they cannot live there after March." In February, however, Motte was also on his way to Fort Jupiter. He felt ill even before starting out but remained silent for fear that he would be left behind. Before long he again found himself suffering the tortures of travel in an Army ambulance wagon. When he reached the new post on 11 February 1838, he was forced to take to his bed, one that consisted of a single "blanket beneath separating me from the bare ground, my saddle for a pillow to my aching head," with nothing "but a thin and threadbare old tent, of the smallest dimension to protect me from the maddening rays of the sun above."[48]

After two weeks of suffering, Motte was on the way to recovery and by the end of March was able to join a fifty-man dragoon detachment moving further south in an attempt to capture the Seminole chief known as Abiaka or Sam Jones. The men on this expedition reached Fort Lauderdale in April. Joined there by several companies from the artillery regiment, they proceeded by boat to Key Biscayne.

For several weeks the search for Abiaka continued, both among the islands and on the mainland at its southern tip. At last, however, Motte had found a part of Florida that appealed to him. One camp was located, for example, in an area that could, in Motte's opinion,

> with very little trouble be converted into a perfect Eden. The cocoanut, the banana, the orange, the lime, and tamarind flourished around us, the spontaneous growth of the soil. Swarms of deer abounded in the forests close by; and most delicious spring water flowed from the rock under the bluff of the shore. This was indeed the land of flowers, and no wonder that the Seminoles desired to remain in a country where food was as plentiful, and as easily procured as manna by the Israelites.[49]

By the end of the month the food supply was running out, and the expedition's leaders were considering abandoning the search. One company of artillerymen was sent back to Tampa Bay while the dragoons and a regiment of artillerymen remained for one last search. Although this attempt to capture Abiaka also failed, the Army mistakenly believed the war to be drawing to an end at this time and several regiments were ordered north to Cherokee territory. Motte accompanied the 1st Artillery regiment on its journey to St. Augustine and thence to Charleston, South Carolina. On 16 May 1838, a joyous Motte arrived safely at Charleston, the town of his birth.

Motte was, of course, but one of many surgeons the Medical Department sent to Florida in the period 1835 to 1842. By June 1842, however, Colonel Worth's relentless campaign was obviously bearing fruit, and by August the war would be officially over. Most of the twenty-six surgeons still in Florida in June were soon reassigned to other parts of the country, since only two regiments were required to watch over the less than 300 Seminoles who remained east of the Mississippi.[50]

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[48]First quote, Ltr, from an Army officer at Jupiter Inlet (Jan 1838), in Theodore Francis Rodenbough and William L. Haskin, *The Army of the United States: Historical Studies of Staff and Line* (1896. Reprint, New York: Argonaut Press for University Microfilms, 1966), p. 30; second quote, Motte, *Journey,* p. 206.

[49]Ibid., p. 229.

[50]Ltrs, Benj. King to Martin (14 Apr 1838) and Heiskell to Jones (25 Jun 1842), both in RG 112, entry 2, 9:214 and 13:434–35, respectively; Prucha, *Sword,* p. 300.

Conclusion

The basic problems the Medical Department had encountered in the Southeast during the period from late 1835 to the summer of 1842 originated in factors beyond its control. The nature of the conflict, which involved many small units frequently on the move and often isolated in primitive terrain, and the climate, which favored the development of both fevers and diseases of the digestive system, placed demands upon the small medical staff that it could not completely meet, especially when surgeons themselves were falling ill again and again.[51]

In spite of the stress that the Second Seminole War placed on the Medical Department, the confusion, the feuds, the shortages, and the serious inadequacies that had haunted both the Continental Army's Hospital Department during the American Revolution and the short-lived U.S. Army Medical Department during the War of 1812 did not reappear. The permanent but flexible nature of the Medical Department's organization made it possible to assign and quickly reassign all surgeons and to establish without delay or difficulty a chain of command that eliminated serious conflicts of authority and permitted swift reactions to changing needs and circumstances. Although some surgeons sought excuses to avoid service in Florida, most, as career military surgeons, accepted Lawson's insistence upon discipline. Their caliber was such that few, if any, major complaints arose about their professional abilities or their devotion to duty while in Florida. The requirement for a strict accounting of the use of supplies and medicines together with systematic planning for their future use prevented the development of significant shortages, despite the fact that medicines and stores often had to be moved over long distances and the needs of individual posts could not always be precisely predicted.

Even in the hands of others, the Medical Department created by Lovell functioned well. Medical science was still unable to deal effectively with the diseases that afflicted armies in hot climates, but the department's success as an organization during the course of the Second Seminole War justified the faith of those who had supported its establishment as a permanent staff department and had favored the appointment of the young Lovell as its first surgeon general.

[51] Even in World War II, after weeks of treatment with sizable doses of either quinine or Atabrine, 30 to more than 80 percent of the victims of *Plasmodium vivax* suffered the relapses characteristic of chronic malaria within four months of the end of the course of medication: W. Paul Havens, Jr., ed., *Infectious Diseases*, vol. 2 of *Internal Medicine in World War II* (Washington: Office of the Surgeon General, Department of the Army, 1963), pp. 513–14, 532, 534, 568–69, 583–84, 590.

CHAPTER 4

Lawson's First Years as Surgeon General, 1836–1845

Although the Second Seminole War in Florida was Lawson's greatest concern during most of his first decade as surgeon general, he could not ignore the needs of the men stationed at the posts scattered about the rest of the nation. As increasing numbers of Indians from the Southeast as well as white settlers moved west of the Mississippi, the Army's responsibilities in that part of the country grew. The need to protect white traders and settlers and Indians from one another and the newly arrived Indians from those indigenous to the area dictated the maintenance of distant posts, even in the most unhealthy areas of Arkansas and the Oklahoma Territory.

Administration in Washington

In the early years of Lawson's service as surgeon general, the need for surgeons was great west of the Mississippi, and until 1842 the demands of the Second Seminole War were even greater. Under these circumstances, the Army Medical Department more than ever needed a strong central administration to assign its small staff as effectively as possible, to manage the purchase and distribution of medicines and other supplies to posts from the Atlantic to Oklahoma, and to anticipate future needs.

Lawson, however, was not enthusiastic about office work. In 1839 he complained:

> I am continuously engaged in answering calls from Congress and the Secretary of War, and in disposing of references made to the department, by any body and every body and so incessantly annoyed with the trumped up accounts coming in upon the office from every section of the Country and every division of the Army that I cannot bestow that attention upon the general interests of the Medical department which I desire to do and ought to do.

He had one or more surgeons assisting him in his office at various times, and on occasion, despite his usual resentment for those who might seem to be encroaching upon his prerogatives, he willingly delegated his authority in the central office to such men as Benjamin King, Richard Coolidge, and Henry Heiskell in order to go out into the field or to free himself from the more tedious demands of his position.[1]

In other ways, however, Lawson made the most of his Washington assignment. He did not let his eagerness for more active life blind him to the sedentary joys of verbal "tilts" or his scorn for "finery and fur-

[1]Quote from Ltr, Lawson to Mower (21 Mar 1839), RG 112, entry 2, 15:75. Unless otherwise indicated, material in this chapter is based on War Department, SGO, *Annual Reports*; Brown, *Medical Department;* Callan, *Military Laws;* War Department, *General Regulations*, 1841 and 1847; and Ayars, "Notes."

BENJAMIN KING. *(Courtesy of National Library of Medicine.)*

RICHARD H. COOLIDGE. *(Courtesy of National Library of Medicine.)*

belows" inhibit his enjoyment for the refinements of the capital's society. A young lieutenant whom Lawson had invited to dinner and who shared his bachelor host's hospitality with, among others, the commander in chief of the Army, Lt. Gen. Winfield Scott, reported that "the Doctor had a dinner of thirteen courses, provided by the prince of restaurant caterers. The wines were old and rare."[2]

Except for the problems arising directly from the Seminole wars, most of those Lawson faced in his first years at his Washington desk had been faced by Lovell before him: the inadequate size of the department, the need to establish high standards for the staff and to improve its status, the inadequate number and quality of hospitals and attendants, and the difficulties involved in maintaining the health of the Army at a time when recruits were often in poor condition and the art of medicine was almost primitive. Lawson generally followed his predecessor's approach to these common problems, but his style of management was radically different from that of the quiet-spoken and unassuming Lovell.

When Lawson became surgeon general, the Medical Department consisted of fifteen surgeons and sixty assistant surgeons, in addition to a clerk who worked in the Washington office. In 1838 the demands of

[2]First quote, Ltr, Lawson to AG (copy, 17 Aug 1841), RG 112, entry 12; second quote, Ltr, Lawson to Taylor (18 Nov 1839), RG 112, entry 2, 11:73; third quote, Samuel Gibbs French, *Two Wars, an Autobiography of Gen. Samuel G. French* (Nashville, Tenn.: Confederate Veteran, 1901), p. 28; see also invitations to Lawson in Lawson Papers, LC.

the Second Seminole War led Congress to allow the appointment of seven more surgeons. In 1841 a second clerk joined the Washington office, but in 1842, despite the fact that the Army then manned seventy-five posts, Congress ordered the dismissal of two surgeons and ten assistant surgeons, reducing the total number of Regular Army physicians to seventy. A wise provision of this law, however, required that each man who left the department be individually selected out on the basis of his value to the Army, regardless of his seniority.[3]

The shortage of surgeons forced Lawson to restrict the granting of leave, generally to medical officers who were ill. Even then, he granted leave only to those who had long been in the field on active duty. This policy did not condemn a surgeon to remain forever at one post, however. Lawson believed that medical officers should be moved about so as to become familiar with the climate and "diseases of every section of the Country."[4]

Under the circumstances, the low attrition in the Medical Department might appear surprising. Many graduates of West Point, faced with low salaries, slow promotions, and assignments in primitive locations that were scarcely suited to the raising of a family, resigned their commissions. Most surgeons, however, apparently found the limited opportunities available to them in civilian life, where the ratio of doctors was high, less lucrative than those available to West Point-trained engineers and stayed in the Army. From 1841 through 1842, of seven department vacancies, only three resulted from resignations and the remaining four from disease contracted in Florida. From 1843 through 1845, there were but six vacancies, two of them caused by deaths, in a department of seventy men.[5]

Ironically, at a time when the shortage of surgeons in the Army was acute, the individual medical officer was not necessarily overworked, and Lawson permitted his subordinates to concern themselves with matters that did not directly involve sick or injured soldiers. The variety of duties and professional opportunities that continued to be available may, indeed, have been part of the attraction of the hard, isolated Army life for young physicians. During the 1836 to 1845 period, when the Army made it clear that surgeons were not required to care for anyone but soldiers, it was customary for medical officers to offer their services to wives, children, and other civilians at their posts. In addition, three Medical Department doctors were working, apparently full time, on the problem of choosing and buying sites for two hospitals that were to serve disabled merchant seamen, at the direction of the surgeon general in response to a request from the adjutant general.[6]

The professional and military pride that

[3]Ltr, Lawson to J. K. Spaulding (15 Apr 1845), RG 112, entry 2, 15:457–58.

[4]Quote from Ltr, Lawson to D. C. M. Arbuckle (22 Oct 1840), RG 112, entry 2, 12:107; Ltrs, Lawson to Satterlee (27 Mar 1839) and King to Charles McDougal (7 Jun 1839), both in RG 112, entry 2, 10:223 and 337, respectively.

[5]"The Requirements of the United States Army and Navy Boards of Medical Examiners. Also those of the British Army and Navy," *Transactions of the American Medical Association* 2 (1849):317; Sprague, *Florida War*, p. 548; Duffy, *The Healers*, p. 9.

[6]Ltrs, King to J. M. Foltz (17 Nov 1836) and Lawson to AG (1 May 1837), both in RG 112, entry 2, 8:112–13 and 328, respectively; King to Sec War (28 Nov 1837 and 5 Jan 1838), both in RG 112, entry 2, 9:65 and 103, respectively; Lawson to E. B. Birdsall (31 Dec 1838), to Burton Randall (2 Feb 1839), to William Maynadier (25 May 1840), to Lyman Foot (27 Jul 1840), to J. Martin (9 Jul 1841), and to R. S. Baker (7 Aug 1841), all in RG 112, entry 2, 10:62 and 133, 11:351 and 429, and 13:7 and 54, respectively; Heiskell to M. E. Tyler and to D. S. Kimball (both 4 Jun 1845), both in RG 112, entry 2, 16:33 and 34, respectively.

Lawson inculcated in his subordinates were also inducements to remain in the Army. The surgeon general expected his surgeons, however heavily burdened, to work without complaining and to exhibit great resourcefulness and unfailing energy under all circumstances. He also insisted that they bear themselves proudly and not submit to indignities or encroachments upon their rights and privileges. "Although in the eye of the law and regulations," Lawson maintained, surgeons were "noncombatants," they were obliged to "prove themselves to possess the ambition and the feelings of the proudest officers & soldiers."[7]

The surgeons' basic responsibilities toward the soldier had changed little. In war and in peace, they continued to care for the sick and wounded and attempted to prevent disease by ensuring that a soldier's water was good and that the food was both good and properly prepared. They also consulted with the commanding officer on the location of posts and camps, and when troops were to be moved by water, inspected the transports.[8]

The medical officer's preinduction examination of the Army recruit, involving principally a visual inspection of the disrobed candidate, might appear to have been one of his least demanding duties, but failure to take this responsibility seriously could bring the surgeon to grief. When it could be proved that an unfit man had been accepted as a recruit, those responsible for an injudicious acceptance were apparently required to reimburse the Army for the expense of clothing and equipping him. In one such instance, an assistant surgeon and a recruiting officer were forced to share this cost for each of three recruits who, according to an inspecting board, could not meet the Army's physical qualifications. The physician's fine, half the total, was $26.11, more than $23 of which was for clothing. The medical officer defended himself by saying that the supposedly preexisting conditions in all three men could be faked by someone anxious to get out of the Army, that it had not been proved that any of the problems existed at the time of the recruitment, that he had not had the opportunity of cross-examining the men in question, and that he was being deprived of his property without due process. The surgeon general backed his subordinate in an appeal to the secretary of war, but one of the mem-

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FORM 3.

DIARY of the weather.

Date.	Thermometer.					Barometer.	Winds.		Weather.		Rain.	Remarks.
	Sun rise.	2 P. M.	Sun set.	9 P. M.	Mean.	Noon.	A. M.	P. M.	A. M.	P. M.	Inches.	

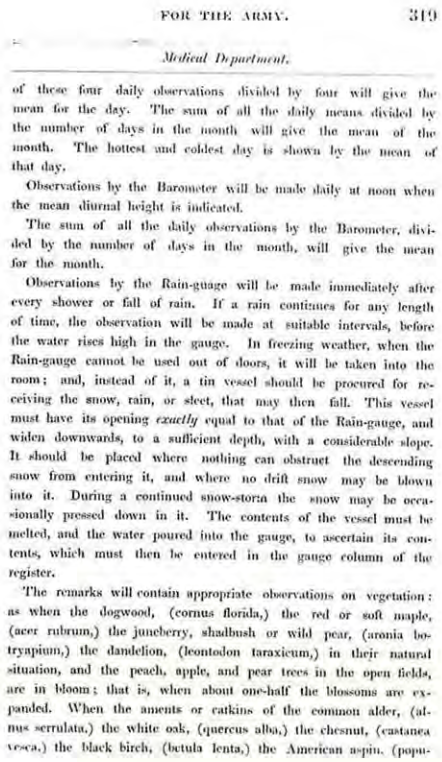
The Thermometer will be kept in a situation where there is a free circulation of air, and where it cannot be affected either by the direct or reflected rays of the sun, or by radiation of heat from neighboring bodies; as bare and dry earth, sand, gravel, or pavement, walls, or other structures of a light color. It should also be placed considerably remote from massy walls, which slowly imbibe or part with caloric.

The Rain gauge will be kept remote from all elevated structures, to a distance at least equal to their height, and still further off, where it can be conveniently done. The Conical Rain-gauge is to be suspended in a circular opening made in a board, which is to be fixed to a post, eight feet from the ground; the opening to be five inches diameter, and bevelled, so as to fit the side of the gauge, into which the cap is to be fixed, with its base downwards, to prevent evaporation, should the measurement be *accidentally* delayed. The measurement is made by putting the scale to the bottom of the gauge, and noting the distance to the water-mark. The graduation of the scale is by hundredths of an inch for the first three-tenths of an inch, and above that for tenths and half-tenths. The intermediate distances may be measured by the eye, and set down in decimals.

Observations by the Thermometer will be made four times a day, viz: at sun-rise, 2 P. M., sun-set, and 9 P. M. The sun

[7]Quote from Ltr, Lawson to Foot (17 Dec 1840), RG 112, entry 2, 15:295; Ltrs, Lawson to Wheaton (20 Sep 1841) and to Clement Finley (18 Sep 1844), both in RG 112, entry 2, 12:207 and 13:103, respectively.

[8]Robinson, *An Account* 1:41.



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of these four daily observations divided by four will give the mean for the day. The sum of all the daily means divided by the number of days in the month will give the mean of the month. The hottest and coldest day is shown by the mean of that day.

Observations by the Barometer will be made daily at noon when the mean diurnal height is indicated.

The sum of all the daily observations by the Barometer, divided by the number of days in the month, will give the mean for the month.

Observations by the Rain-guage will be made immediately after every shower or fall of rain. If a rain continues for any length of time, the observation will be made at suitable intervals, before the water rises high in the gauge. In freezing weather, when the Rain-gauge cannot be used out of doors, it will be taken into the room; and, instead of it, a tin vessel should be procured for receiving the snow, rain, or sleet, that may then fall. This vessel must have its opening *exactly* equal to that of the Rain-gauge, and widen downwards, to a sufficient depth, with a considerable slope. It should be placed where nothing can obstruct the descending snow from entering it, and where no drift snow may be blown into it. During a continued snow-storm the snow may be occasionally pressed down in it. The contents of the vessel must be melted, and the water poured into the gauge, to ascertain its contents, which must then be entered in the gauge column of the register.

The remarks will contain appropriate observations on vegetation: as when the dogwood, (cornus florida,) the red or soft maple, (acer rubrum,) the juneberry, shadbush or wild pear, (aronia botryapium,) the dandelion, (leontodon taraxicum,) in their natural situation, and the peach, apple, and pear trees in the open fields, are in bloom; that is, when about one-half the blossoms are expanded. When the aments or catkins of the common alder, (alnus serrulata,) the white oak, (quercus alba,) the chesnut, (castanea vesca,) the black birch, (betula lenta,) the American aspin, (popu-

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lus tremuloides,) begin to drop. When ripe field-strawberries appear in quantity, and when the wheat harvest commences. When the last killing frost occurs in the spring, and the first in the autumn, as shown by their effects on tender buds, young leaves, or germs of fruit trees, or other vegetables; the vines of cucumbers, melons, beans, &c. They will also note the first appearance of barn-swallows and martins; the occurrence of thunder and lightning, hail storms, hurricanes, meteors, white or hoar frost; the first snow, its depth occasionally, and its disappearance.

Half the number of times that any point of the compass appears in the A. M. and P. M. columns, will give the number of days in which the wind appeared from that point during the month.

The prevailing weather will be found in the same way, including every day of rain and snow, as cloudy; and noting the number of those in which it rained or snowed separately. The Rain-gauge will be noted in inches and decimals.

INSTRUCTIONS FOR KEEPING WEATHER DIARY. *(Courtesy of Library of Congress.)*

bers of the board of inspectors investigating the matter was an Army surgeon. Assuming, apparently, that the board's physician would have been able to detect a faked contraction of the last two fingers on the right hand or a feigned lameness supposedly caused by a leg two inches shorter than its mate, the Army refused to back down. In any case, the protesting surgeon finally abandoned his case and paid up.[9]

The collection of meteorological data also remained among the duties of the Army surgeon. The observations and reports on weather and similar matters that the surgeon general required of his subordinates was becoming even more complex with time. The physician responsible for reports from Governors Island in New York Harbor, for example, was required to use not only a barometer and thermometer but also a rain gauge, hygrometer, and wet bulb, and to record cloud formations and the direction and force of the winds. All surgeons became responsible for recording sudden changes in the wind and temperature, the moment when the barometer reached its lowest point during a storm, and even the passage of flocks of migratory birds. Although these responsibilities were

[9]Rpt, Board of Inspectors (21 May 1839) and Ltrs, Treasury to Hawkins (29 Dec 1840), Hawkins to B. Lewis (13 Jan 1841) and to Lawson (10 May 1841), Lawson to Sec War (3 Jun 1841), Asst AG to Sec War (5 Jun 1841), and Hawkins to Lawson (18 Jun 1841), all in RG 112, entry 12.

no doubt an unwelcome burden to some medical officers, others apparently came to enjoy this particular aspect of their work.[10]

The enormous quantity of reports on meteorological observations that poured into the Washington office only added to Lawson's problems with paperwork. In 1841 he finally decided that he would no longer acknowledge the arrival of each report and that he would instead write a surgeon in the field only when a report failed to arrive on time. Questions apparently also arose concerning these reports because in 1842 Lawson ordered the formation of a medical board to design accurate and uniform instructions.[11]

The importance of the Medical Department's information gathering was apparently widely recognized by the 1840s. In 1842 the Army requested that colleges, scientific institutions, and private citizens cooperate in the collection of data. When an earthquake shook parts of the Southwest on 4 January 1843, inquiries came in to the department from private citizens interested in learning the details of the event, asking that information on the quake be obtained from surgeons in the field. The surgeon general appears to have sent such a questionnaire to his surgeons only a few days after receiving the request.[12]

Locating young doctors with the ability to perform satisfactorily all the many duties required of them by the Army Medical Department was difficult even though physicians were so numerous that establishing a profitable practice was difficult. Doctors with the education necessary to pass the Department's tests were presumably among those whose chances for establishing a lucrative practice appear to have been the best. An average of 50 percent or more of those examined failed, but the tests were never waived, even when administering them required the temporary removal of an assistant surgeon from duty in Florida during the Second Seminole War. The department was apparently unwilling to take chances in its search for doctors of good background who might find that the excitement and challenge of military life and the possible difficulties of private practice outweighed the danger and isolation that could face the Army surgeon.[13]

The entrance examinations were apparently given without favor to anyone, and the age limit of twenty-one to twenty-eight for the examinees was never waived. Unsuccessful candidates occasionally lashed out with accusations such as "damned favoritism—because I did not have influential friends to intercede for me." In this particular instance, the young applicant may have tried to conceal the fact that he was not yet of age, but Lawson was able to calm the troubled waters. Less than two months after he had accused Lawson of "damned favoritism," the proud Dr. James L. Peacocke wrote Lawson to express his gratitude "for the kind words and gentlemanly treatment" he had received from the

[10]Thomas A. Mower, "Meteorological Observations," *New York Journal of Medicine and the Collateral Sciences* 2 (1844):134, 137; Edgar Erkskine Hume, *Ornithologists of the United States Army Medical Corps* (Baltimore: Johns Hopkins Press, 1942).

[11]Cir (14 Jul 1841), RG 112, entry 2, 13:15–56.

[12]Mower, "Meteorological Observations," p. 137; Ltrs, Lawson to Thomas C. Madison (30 May 1843) and to Henry D. Rogers (31 May 1843), both in RG 112, entry 2, 14:207–08 and 210–11, respectively; Rogers to Sec War (27 Mar and 7 Apr 1843), both in RG 112, entry 12.

[13]Richard H. Shryock, "Public Relations of the Medical Profession in Great Britain and the United States, 1600–1870," *Annals of Medical History*, n.s., 2 (1930):318–19; Ltr, AG to Taylor (15 Oct 1839), RG 94, M565, roll 11, 15:435–36; John Duffy, *The Healers* (New York: McGraw-Hill Book Co., 1976), pp. 177–81.

surgeon general and his assistant when he visited Washington.[14]

As a result of the requirements laid down by the Medical Department for entry and promotion, the reputation of Army surgeons improved. A civilian physician, writing in 1848, pointed out that the Medical Department's entrance examinations had always been strict and that incompetents had never been known to pass them. The department's system, he stated, "has saved thousands of brave men from the knives and nostrums [dubious remedies] of professional bunglers." Although they did not explain their reasoning, authorities maintained that the age limit was second only to the examinations themselves as a promoter of the efficiency of the medical service.[15]

Men so rigorously selected deserved, in Lawson's opinion, more adequate salaries. Some of his surgeons had written in early 1838 to express their belief that their pay did not reflect the importance of their services. That same year, however, Congress finally raised their pay to equal that given those cavalry officers ranking from first lieutenant through major and also granted an extra ration for every five years of service. This step gave assistant surgeons with less than five years of experience $3.33 more a month and all other department physicians $10 more a month.[16]

The rank and status of Army surgeons in the 1836 to 1845 period remained imprecisely defined, however. Despite their pay, they did not have the rank of field officers and were not entitled to the salutes prescribed for such officers even though they received equivalent salaries. In addition, although the surgeon's right to serve on a court-martial was indisputable, some question existed about his eligibility to serve on such purely administrative bodies as the boards that decided on the disposal of serviceable property (boards of survey) or that managed the fiscal affairs of a post (councils of administration). The commanding officer of a fort was not always happy to have the post surgeon on such a board, but by 1840 the adjutant general had made it plain that although Army physicians could not preside over such bodies, they were entitled to serve on them.[17]

Lawson was concerned with appearances as well as with substance. The impression created by the surgeon's uniform had long concerned him and he became enraged over proposed modifications that suggested to him that the medical officer was considered in some way to be inferior to his brother of the line. The surgeon general indicated that he personally would rather wear civilian dress than a uniform unadorned by epaulets. He claimed that their presence upon a medical officer's shoulders would cause him to esteem his commission more highly. As a result of Lawson's efforts, the new surgeon's uniform of 1840 was complete with "Epaulettes—Gold, with solid bright crescent" and "a spread eagle of solid silver metal to be worn by the Surgeon General only . . . to be placed upon the epaulette strap above the wreath." The

[14]Quotes from Ltrs, Peacocke to Lawson (5 Oct and 23 Nov 1842), both in RG 112, entry 12; Ltr, G. M. Willing to Lawson (30 Aug 1842), RG 112, entry 12.

[15]Robinson, *An Account* 1:40–41, quote from p. 43; Ltrs, Lawson to Sec War (29 Apr 1840) and Heiskell to John Bell (13 Apr 1841), both in RG 112, entry 2, 11:310 and 12:376, respectively; "The Requirements," p. 317; "Review of Forry's Statistical Researches," *Western Journal of Medicine and Surgery*, 1st ser., 4 (1841):271–72; Croghan, *Army Life*, p. 23.

[16]Ltrs, King to Miller (10 Feb 1838), RG 112, entry 2, 9:152–53; W. L. Wharton et al. to SG (28 Feb 1838), RG 112, entry 12; *Army and Navy Chronicle*, p. 346.

[17]Ltrs, Lawson to Sec War (18 Jul 1838) and to Porter (17 Mar 1840) and Heiskell to Sec War (4 Nov 1841) and to W. Levely (9 Feb 1844), all in RG 112, entry 2, 9:367, 11:247–48, 13:154–57, and 14:43, respectively.

epaulets of all were to bear "a laurel wreath embroidered in gold, and the letters 'M.S.' in old English characters within the wreath."[18]

Lawson's readiness to fight higher authority on behalf of his subordinates undoubtedly made his flaming pen easier to bear, but in some instances he fought with his surgeons as vigorously as he fought for them. As a rule, his deepest anger was directed at those who appeared to be shirking their duties in Florida or using illness as an excuse for avoiding responsibilities. Even a medical officer's unfortunate choice of words, however, might cause a marked ruffling of the Lawsonian feathers. Although Lawson had been an arrogant and belligerent subordinate of Lovell, he was very sensitive about the attitudes of his subordinates when he became surgeon general. To one surgeon whose language had unwittingly offended, he wrote, "When it suits my purposes to prefer formal charges against you, I shall do it without your dictation; and should you wish to apply through me to a Court of Inquiry, your language must be more respectful to me and towards the Secretary of War."[19]

Among Lawson's more significant feuds with a subordinate was the one with William Beaumont, a man whose pride appears to have rivaled that of the surgeon general. Lawson began to resent the attentions and special considerations that Lovell showed Beaumont during the period of Beaumont's work with Alexis St. Martin. By the time Lawson succeeded Lovell as surgeon general, Beaumont had attained international respect and fame. The antagonism between the two men was great. Each appears to have believed himself entitled to a degree of respect that the other was not willing to grant. Finally, in 1839 Beaumont requested a leave of absence with his replacement to be provided by the department at its expense. Since personal business was the stated reason for the request, Lawson denied it. Beaumont, already distressed by rumors that Lawson was planning to move him to a less desirable post, responded to the refusal with a lengthy and condescending letter of the kind that invariably enraged Lawson. The surgeon general not only held his ground on the matter of leave but added fuel to the fire in September of 1839 by ordering Beaumont to Florida to serve on a medical examining board. Because Beaumont was no longer conducting research on St. Martin's digestion, the assignment appears to have been reasonable, but Beaumont, in an attempt to force Lawson to rescind it, submitted his resignation. To his astonishment, the surgeon general accepted it, commenting that "if an example is not made of some one soon, the army will become more like a mob than a military Body." Beaumont then attempted to withdraw his resignation, but Lawson stood fast. Beaumont's long and distinguished Army career, one that began in the War of 1812 when both Beaumont and Lawson had first committed themselves to the care of the Army's sick and wounded, was at an end.[20]

Lawson's concerns were not limited to the physicians in his department. He was also interested in the attendants who as-

[18]Quote from Brown, *Medical Department,* p. 164; Ltr, Lawson to Lovell (5 Oct 1824), RG 112, entry 2.

[19]Quote from Ltr, Lawson to Woods (12 Oct 1840), RG 112, entry 2, 12:54; for Lawson's attitude toward Lovell, see also RG 112, Lawson's Letterbook, 1821–1825, entry 226, esp. Ltr, 16 Oct 1825.

[20]Quote from Ltr, Lawson to Sec War (16 Jan 1840), RG 112, entry 2, 11:188; Myer, *Beaumont,* pp. 241–45, 251–54, 265–67; Ltrs, Lovell to AG (7 Jul 1827) and Lawson to William Beaumont (27 Mar 1839), both in RG 112, entry 2, 4:156 and 10:222, respectively.

sisted post surgeons in their hospitals. The problem of obtaining good men to serve as hospital stewards remained from Lovell's period of administration. A steward was usually selected from the line by a surgeon, with the consent of the post's commanding officer. The Medical Department apparently continued to operate on the assumption that when it was impossible to find in this way an enlisted man capable of performing in a sober, reliable, and reasonably intelligent manner, the post surgeon could enlist a man specifically to serve in this capacity or even hire a civilian.[21]

A law enacted in 1838 officially authorized the enlistment of young men as stewards and increased their pay. At posts with more than four companies, stewards were paid as sergeants of ordnance; at smaller posts, they were paid as infantry sergeants. Nevertheless, many surgeons continued to have questions about signing on stewards. Thomas Mower, a surgeon on recruiting duty in 1839, made an arrangement with a young man anxious to serve as a hospital steward, specifying that he was not to serve in any other capacity. Since the enlistee had "rec. a collegiate education" and was both "a student of theology" and "of good character," Mower was eager to have him in the Army but was unsure how to interpret the regulations.[22]

In 1842 Congress forbade the enlistment or reenlistment of men to serve specifically as stewards, but surgeons continued to be confused. "Is it intended that the assignment of Hospital Stewards be permanent, or only temporary"? a surgeon wrote Lawson in 1844, adding, "Can a citizen who has enlisted solely with a view to perform the duties of Hospl steward be reduced to the ranks and made liable to perform military duty—more especially when the word soldier has been erased and steward substituted in the enlistment?" How Lawson solved this problem is not known.[23]

The realization of the extent to which a good steward could lighten the medical officer's burden engendered much of the interest in the character of the men chosen to be hospital attendants. Lawson did not approve of the custom of those surgeons who had their stewards fill out reports and manage accounts, because unnecessary errors resulted. He did not, however, underestimate the worth of stewards to the Medical Department. Wishing to upgrade their position, in early 1840 he established a training school for stewards at one of the New York Harbor posts, apparently Fort Columbus. By mid-1840 twenty young men of upright moral character had been trained by an assistant surgeon, had gone through a four- to five-month probationary period, and had been sent out to assist surgeons requesting their aid. In 1844 the adjutant general ruled that new orders issued by the commanding general of the Army, Lt. Gen. Winfield Scott, required that stewards be taken from the line and that they remain attached to their companies. Lawson's attempts to improve the standards for hospital stewards were thereby negated, and the records of the period never again refer to the school.[24]

[21]Ltr, Thomas Mower, Heiskell, and Sylvester Day to Lawson (30 Jul 1840), RG 112, entry 12.

[22]Quote from Ltr, Mower to Lawson (18 Feb 1839), RG 112, entry 12; Ltr, Mower, Heiskell, and Day to Lawson (30 Jul 1840), RG 112, entry 12.

[23]Quote from Ltr, Adam M. McLaren to Lawson (14 Apr 1844), RG 112, entry 12; Ltrs, Heiskell to Sec War (8 Dec 1842), RG 112, entry 12; Lawson to John S. Griffin (11 Oct 1843), RG 112, entry 2, 14:439; see also Ltrs, Mills to Lawson (12 Aug 1837), Wheaton to SG (4 Jan 1843), McDougall to Lawson (13 Apr 1843), Lawrence Sprague to Lawson (10 Oct 1843), Stinnecke to Lawson (8 May 1844), and AG to Military Storekeeper (15 Jun 1844), all in RG 112, entry 12; Lawson to Stinnecke (13 May 1844), RG 112, entry 2, 15:143.

[24]Ltrs, Lawson to Hoxon (24 Apr 1840), to Randall (25 Aug 1840), and to Richard H. Coolidge (1 Oct

THOMAS MOWER. *(Courtesy of National Library of Medicine.)*

Surgeons do not appear to have been as enthusiastic about hiring women to help in hospitals as they were about hiring stewards. At least one surgeon suggested replacing matrons with men. Matrons were the only women routinely found working in Army hospitals, but the surgeon at Fort Wood, in New York Harbor, maintained that it was they who caused the greatest problems he ever had to face in his facility. They "either have children when they come, or make out to get them soon after, which adds very materially to the other objections against them." In listing these other objections, he noted that matrons were "lazy, sluttish, and wastefull, and in short . . . , a nuisance."[25]

Lawson does not appear to have expressed himself on the subject of women in hospitals, but he emphasized his "dislike to any thing like effeminancy, luxury, or too much convenience in a military hospital." He could not "consent to make *Gentlemen* of *common Men* as soon as they are brought into the Army." No man, in his opinion, was entitled to find in a military hospital any form of luxury he could not provide for himself at home, and Lawson obviously intended that this policy be a guide to those ordering supplies for these facilities.[26]

Nevertheless, certain standards had to be maintained at the various post hospitals scattered about the nation, and many facilities needed upgrading. In 1839 Congress voted almost $70,000 for the building of new hospitals, but most of this sum was spent in just two years. In 1843 the surgeon general pointed out that the coastal forts still lacked no appropriate hospital facilities. He blamed this situation upon those who believed that structures erected outside the walls of a fort would interfere with its defense. He pointed out that a building located outside the fortifications could be burned down if hostilities ever made it advisable, but that keeping patients in the damp, poorly ventilated quarters within fortifications endangered their recovery and, indeed, threatened the health of all those who lived in them.

1841), all in RG 112, entry 2, 11:302 and 494 and 13:115, respectively; Henderson to Lovell (12 May 1836), Heiskell to Lawson (4 Jan 1839), Russell to Lawson (15 Dec 1839), Randall to Lawson (17 May 1840), Mower, Heiskell, and Day to Lawson (30 Jul 1840), Wheaton to Lawson (23 Oct 1841), Hawkins to Lawson (25 May 1842), Porter to Lawson (11 Jun 1844), E. D. Townsend to C. S. Merchant (copy, 14 Jun 1844), Porter to Lawson (2 Jul 1844), and Steiner to Lawson (20 Jul 1848), all in RG 112, entry 12.

[25]Quotes from Ltr, Monroe to Lawson (11 Aug 1837), RG 112, entry 12; Ltr, Monroe to Lawson (24 Aug 1837), RG 112, entry 12.

[26]Ltr, Lawson to Russell (20 Jun 1844), RG 112, entry 2, 15:204.

Despite his open dislike for "too much convenience," Lawson also appears to have been receptive to ideas for improving hospital equipment. When the secretary of war expressed an interest in having iron bedsteads used throughout the Army, for example, Lawson moved quickly to look into the matter. In the fall of 1837 he had one single and one double metal bedstead made up and sent to the War Department, confident that if these frames could be obtained at a reasonable price, the secretary would order them for hospitals as well as for barracks. The price of $15 each proved acceptable. Congress appropriated funds for the purpose, and Lawson began to buy bedsteads and to send them out to many post hospitals. By 1843 the money voted for this purpose had all been spent. Lawson noted that the new frames held up well, were free of insects, had a neater appearance than their wooden counterparts, and took up less space. He placed a second order for metal frames in 1845, using a slightly different, improved, and less expensive design, one for which "the parts will be made with such nicety and precision as to fit each other promiscuously."[27]

Lawson was also interested in having some sort of ambulance developed for use in Florida during the Second Seminole War. He envisioned a plain, light, two-horse wagon "on Boston or Cradle springs." In this vehicle the wounded would lie upon canvas slings, ten to twelve inches above the floor, so that medicines could be stored beneath them. An ambulance and a set of panniers made of tin and slung across a saddle by means of a leather case should be provided for each battalion. A prototype of the desired wagon appears to have actually been built, but there is no record of its having been put into regular service at this time.[28]

As far as posts in the West were concerned, transportation presented a greater problem than purchasing. Ships came to grief from time to time and floods could delay the delivery of much-needed goods. Some forts appear to have been particularly unfortunate. In March 1845, for example, a packet ship loaded with supplies for Forts Snelling and Crawford, as well as for Forts Leavenworth, Atkinson, Des Moines, and Scott, was wrecked, and only three months later, when another ship, bound for New Orleans, met misfortune on the coast of Florida, the mishap deprived Fort Crawford of sixteen iron bedsteads and Fort Snelling of another twelve.[29]

Lawson was concerned about the care and disposal of old Medical Department property as well as with the purchase and transportation of the new. He was, for example, interested in the use of old bedding and linens. Great care should be taken, he believed, to ensure that boards of survey were not called upon to condemn property that could still be made to fulfill its original purpose, but only a board of survey could condemn items that could no longer be used for their original purpose. The actual disposal then became the responsibility of the surgeon involved. Worn-out linens

[27]First quote, ibid.; second quote, Ltr, Mower to Lawson (23 Oct 1844), RG 112, entry 12; Ltrs, Lawson to Thomas Mower (1 Sep 1837), RG 112, entry 2, 8:476; Lawson to Leonard, to Simpson, and to Russell (all 29 Jul 1840), all in RG 112, entry 2, 11:432–33; Heiskell to M. Mason (24 Nov 1841) and Lawson to Abadie (26 Oct 1843) and to Moses H. Grinnell (16 Feb 1844), all in RG 112, entry 2, 13:192, 14:452, and 15:48–49, respectively; Mower to Lawson (17 Apr 1843, 23 Oct and 3 Dec 1844, and 16 Jan, 12 Mar, and 26 Apr 1845), all in RG 112, entry 12.

[28]Quote from Ltr, Lawson to Sec War (26 Jul 1837), RG 112, entry 2, 8:423–24; Ltr, Lawson to A. MacKay (17 Aug 1837), RG 112, entry 2, 8:458.

[29]Ltrs, Mower to Lawson (25 Mar and 13 Jun 1845) and Griffin to Lawson (1 Apr 1846), all in RG 112, entry 12.

were not, Lawson informed one surgeon, to be used as dishcloths or for "other household purposes," but superannuated pillowcases and sheets beyond repair were to be used for bandages and dressings.[30]

Among other problems that arose in connection with the Medical Department's expenses was that of how properly to allocate a soldier's commutation allowance for food, a matter that came to a head in 1841. The difficulty stemmed from the fact that the food of hospitalized soldiers was provided by both the Subsistence and the Medical Departments. Should the Subsistence Department be unable to supply the specialized type of diet that a patient might require, the expense for his food became the responsibility of the Medical Department. The issue, therefore, was whether the monetary value of the ration normally supplied by the Subsistence Department but not used for a hospitalized patient should be paid out to acting medical purveyors for the Medical Department's use as needed without restriction. The alternatives involved either using the ration allowance solely and specifically for the benefit of the individual soldier or crediting the sum to his unit. The surgeon general decided that it was illogical for a soldier to receive both hospital rations and the benefit of the government allowance at the same time and ruled that such money should go into a common fund for use by the Medical Department.

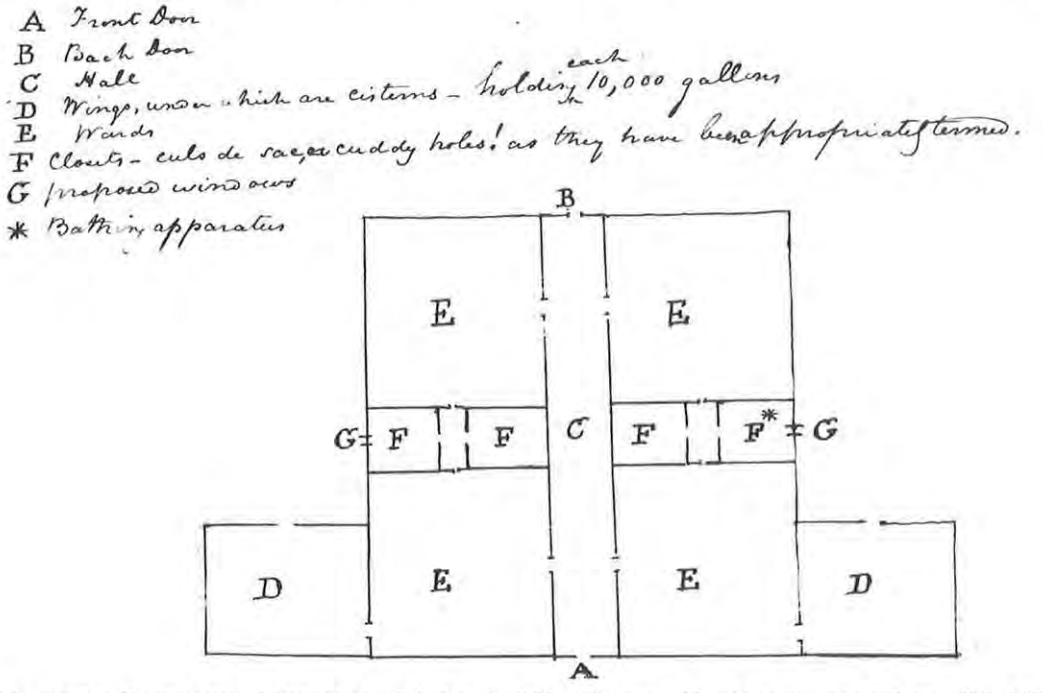
Problems of Surgeons in the Field

Except for the high morbidity in Florida that resulted from the Second Seminole War, disease patterns, like the other problems facing the Medical Department, did not change materially in the first years after Lawson succeeded Lovell as surgeon general. Alcoholism continued to cause difficulties, despite Lovell's campaign against hard liquor and reports that intemperance was undermining the health of untold numbers of men. The Army itself provided each soldier with a daily gill of rum, whiskey, or brandy until 1838, when it substituted six pounds of coffee and twelve pounds of sugar per 100 men for the liquor ration.

In the early 1840s, the average soldier serving in the northern states was reported sick once every 4½ months, whereas in the middle and southern states he was ill once every 4 months. Serious epidemics rarely challenged surgeons assigned to long-established forts along the Canadian border and the northern Atlantic coast, and they found it difficult even as late as the mid-1840s to raise official enthusiasm for long overdue improvements to hospitals or living quarters. Those caring for soldiers on the western frontiers, on the other hand, were often engaged in the struggle against disease. The combination of diarrhea and dysentery, the traditional camp disease, and malaria continued to scourge the Army.

The number of forts in the rapidly expanding nation grew as both white and red men moved west of the Mississippi, but the consequences of the Indian removal policy, and particularly of the Second Seminole War, added to the burden of some post surgeons in all parts of the country. A few post hospitals far from either Florida or the frontier cared for ill recruits or sheltered invalids returned from the southern fighting. One post representative of collection points for recruits was Madison Barracks at Sackett's Harbor, New York, where the

[30]Quote from Ltr, Lawson to Russell (20 Jun 1844), RG 112, entry 2, 15:203; Ltrs, Lawson to Foot (21 Jun 1844), to John M. Cuyler (9 Jul 1844), to King, Simpson, and James R. Conrad (1 May 1845), and to other recipients, all in RG 112, entry 2, 15:210, 226, 486, 487, and 488–505, passim.



MADISON BARRACKS HOSPITAL, *22 April 1842. Thomas Henderson, Ass't Surg. RG 112, ser. 12, box 301.*

surgeon was responsible for a large number of sick from among the unacclimated recruits. Housing there was dilapidated, and the post surgeon blamed the water for the high number of diarrhea cases. Among other problems afflicting both recruits and veterans were boils, skin infections, and scabies, as well as malaria, respiratory problems, and rheumatism.[31]

When no recruits were assigned to Madison Barracks for a brief time in 1840, the total number of men at the post fell well below 100, but by the fall of 1840, recruits were coming in again and the population was rising. By 1842, veterans of the Florida war were appearing there as well, bringing with them the fevers that plagued soldiers in the South. Within a few months of the end of the Second Seminole War, however, life at Madison Barracks was settling back into a pattern of few and generally mild illnesses, punctuated by occasional outbreaks of scarlet fever, which in some cases was severe.[32]

The facilities available for the patients of the Madison Barracks' surgeon were, like so many in the North, old and inadequate. They consisted of three rooms located at the far end of the enlisted men's barracks. One room was used as a dispensary, the other two were used as wards. One ward was approximately 400 square feet and the second almost twice that, but chimneys took up much of the space in both. As a

[31]Surgeon's Quarterly Rpts, Madison Barracks (30 Sep 1838–30 Sep 1845), all in RG 94, entry 634.

[32]Surgeon's Quarterly Rpts, Madison Barracks (30 Jun 1840–30 Sep 1845), all in RG 94, entry 634.

result, the facility could hold only eighteen beds, two or three of which were regularly used by hospital attendants. On the basement level of this wing were two "matron's rooms," a "bathing room," and a "kitchen and eating room."[33]

The post surgeon at Madison Barracks in 1838 emphasized that the rooms occupied by the sick there were never intended to be used as a hospital and so "of course [were] extremely defective in arrangements as well as in other important particulars." Among the defective arrangements were those for ventilation. Furthermore, in the surgeon's opinion, hospitals should also be entirely separate from barracks. By 1839, however, the construction of a new and separate hospital, built of limestone and designed by the Surgeon General's Office with modifications by the post surgeon, was underway. The main body of the building contained the ward for the sick, while a bathing room occupied one wing and a morgue a second. Only the site itself appears to have been criticized: it was judged too near a freshwater stream and too exposed to the wind during long winters. Furthermore, a steep ravine that lay between the hospital and the barracks made the hospital inaccessible during the heavy snows characteristic of that part of the country.[34]

The Quartermaster's Department turned the new facility over to the surgeon in November, but some of the problems involved in housing the sick remained. Experience showed the new hospital at the Madison Barracks to be a mixed blessing. The planks used for the flooring were kiln-dried and poorly seasoned and, as a result, shrank rapidly. Because the building's fireplace proved inadequate for heating, stoves had to be used; their installation appeared to aggravate the problem with the floors. The excessively dry floorboards rapidly absorbed any stains, so the post surgeon urged that they be painted, which he believed would solve all the difficulties he had been experiencing with them. The records, unfortunately, do not reveal whether this step was actually taken.[35]

At many of the northern posts along the Atlantic coast, damp casemates, the masonry rooms designed to contain cannon, continued to be the only shelter available for all those in the garrison, sick or well. As a result, the surgeon in the field might be preoccupied with the effects of such accommodations upon himself and his family as well as with their effects upon the soldiers. At Fort Hamilton in New York Harbor, for example, the post surgeon reported that he had spent $4,000 of his own money to have his personal quarters modified so as "to protect my own health and make myself and family comfortable and respectable." The hospital accommodations at this post were so poor that for several years patients were periodically taken to the new Fort Columbus facility nearby, but in the summer of 1845 the Army authorized the improvement of the hospital casemates. Nevertheless, and despite the surgeon general's dislike for casemate facilities, the long-standing suggestion of the surgeon at Fort Hamilton that a separate hospital building be constructed appears to have been ignored.[36]

[33]Quotes from Ltr, Heiskell to Lawson (23 Feb 1839), RG 112, entry 12; Ltr, Heiskell to Lawson (11 Nov 1838), RG 112, entry 12.

[34]Quote from Ltr, Heiskell to Lawson (23 Feb 1839), RG 112, entry 12; *Statistical Report, 1839–55*, p. 39.

[35]Ltr, Heiskell to Lawson (22 Apr 1842), RG 112, entry 12.

[36]Quote from Ltr, Eaton to Lawson (13 Feb 1845), RG 112, entry 12; Ltrs, Eaton to Lawson (2 Jul 1842 and 10 Jan 1843) and Mower to Dr. Carpenter (21 Dec 1839), all in RG 112, entry 12; for details on similar conditions at Ft. Adams, R.I., see also *Statistical Report, 1839–55*, p. 10, and Ltrs, Lawson to Joseph G. Totten (16 Aug 1844), RG 112, entry 12.

At Fort Columbus, on Governors Island, the post surgeon, Joseph P. Russell, faced problems both with his quarters and with an influx of invalids from Florida. While Russell was serving in Florida early in the Second Seminole War, a major from the Corps of Engineers took over the quarters usually assigned to the fort's post surgeon, rooms that had been modified for Russell's use on the orders of the Medical Department. On returning north in November 1838, instead of being assigned to his usual quarters or even to those in which the post clerk was living, which were only slightly inferior to those of the surgeon, Russell was offered space he found entirely unacceptable. After Lawson appealed in his behalf to the secretary of war, urging that Russell be allowed to displace the clerk, the returning surgeon appears to have made no further complaints.[37]

A year later, Russell wrote to the surgeon general of his pleasure with the new post hospital nearing completion at Fort Columbus, adding that he hoped to furnish it with the new iron bedsteads. To this fine new hospital the Army shipped fifty-seven invalids from Tampa, Florida, in June 1839 and either thirty-nine or forty-seven more—the sources are contradictory on this figure—from the Cedar Key hospital in 1840, by which time the hospital was presumably being used to train hospital stewards. The Ceder Key transferees arrived in such poor condition that Russell immediately wrote Lawson, complaining bitterly of the decision to send these men to his facility. Removing invalids from a warm climate to a cold one during the winter was "extremely injudicious, and ill advised." Furthermore, the vessel that carried them had been very uncomfortable, the weather during the voyage "boisterous," and the men at times drenched by bilge water. By the time they reached Fort Columbus, "they presented a most pitiable spectacle, were generally in a very filthy and lousy condition, two of them had involuntary and unconscious discharges, and were literally wallowing in their excrement."[38]

Russell protested further that his hospital could take only fifty patients without crowding and that the poor condition of the men arriving from Florida would be very bad for morale at a base where recruits were to be trained for duty in the Seminole wars, and would generally discourage enlistments. Any future victims of the Seminole wars, he asserted, should be sent to Fort Monroe in Virginia or to Fort Moultrie in South Carolina, where the climate was better and where there would be no new recruits to be horrified by the spectacle of what service in Florida could do to a man's health. But the Florida invalids continued to pour in, seventy-three more from Cedar Key in late June 1841 and fifty-six from Pilatka in early July.[39]

A continuing health problem that grew to surprising proportions at Fort Columbus after the first invalids arrived from Florida was venereal disease. In December 1836 the post surgeon reported that 10 of the 120 men newly entered on his sick list in the past quarter were suffering from gonorrhea and 10 from syphilis (the records do not make it possible to guess how many of these patients might actually be suffering from

[37]Ltrs, Russell to MacKay (10 Dec 1838) and to Lawson (10 Dec 1838) and Lawson to Sec War (23 Dec 1838), all in RG 112, entry 12; Surgeon's Quarterly Rpt, Ft. Columbus (31 Dec 1838), RG 94, entry 634.

[38]Quotes from Ltr, Russell to Lawson (29 Nov 1840), RG 112, entry 12; Ltr, Russell to Lawson (15 Dec 1839), RG 112, entry 12; Surgeon's Quarterly Rpts, Ft. Columbus (30 Jun 1839 and 31 Dec 1840), both in RG 94, entry 634.

[39]Ltr, Russell to Lawson (29 Nov 1840), RG 112, entry 12; Rpts, Russell to Lawson (22 Jun and 7 Jul 1841), both in RG 94, entry 634.

both diseases). Two years later, the surgeon reported only 10 cases of venereal disease, but in the following June, nine days after the arrival of the 57 invalids from Tampa, the venereal disease case load figure stood at 14, this from a sick list totaling 433 for the quarter. Three months later, however, despite the fact that the total number of new cases of all kinds of diseases and wounds at that post had decreased by 67, 59 were newly recorded victims of gonorrhea and syphilis. Russell did not suggest how many of these might have been Florida veterans who had acquired a new problem in the course of celebrating their return to civilization. The venereal disease rate slowly dropped from this high point and reached its more customary level several months later.[40]

To the south of the New York forts, the health problems that had plagued such posts as Fort McHenry in Maryland and Baton Rouge during Lovell's term as surgeon general appear to have been relieved before Lawson had long served in that position. Conditions at the Maryland post reached a nadir in the months immediately following Lovell's death in the fall of 1836, and the post was subsequently abandoned briefly in 1837. When troops reoccupied it in 1838, the poor location and dilapidated condition of the old hospital inspired a quick start on a new one, a structure that greatly pleased the civilian surgeon assigned there. The retreat of malaria from the country's more northern areas may have been responsible for an improvement in health at the Fort McHenry garrison. Although, during the winter months, soldiers on guard duty who went from the overheated guard room at Fort McHenry out into the cold air suffered considerably from head colds (or catarrh as it was then called), by 1844 the men at this post apparently considered it one of the most desirable assignments.[41]

At Baton Rouge, the new hospital was also finished in 1839, complete with brick walls, a much-admired system of ventilation, and a ten-foot-wide gallery around the entire structure. The fevers and digestive problems characteristic of southern posts continued to plague Baton Rouge, however, with the third quarter of the year being particularly unhealthy. In 1843, the weeks of the late summer and early fall were unusually difficult; yellow fever struck the post in September when the surgeon was already struggling to care for men transferred from Florida who were "worn out . . . by Climate and Severe service—particularly Intemperance."[42]

Except for the influenza epidemic of 1843, the health of the garrisons at such northwestern posts as Forts Snelling and Mackinac, the latter in Michigan, remained good once the stresses and shortages related to their establishment were past. The surgeon at Fort Mackinac, however, like his colleague at Fort Hamilton, felt compelled to use his own money for improvements more appropriately made at the Army's expense. Although the physician paid personally to have the hospital rooms painted,

[40]Surgeon's Quarterly Rpts, Ft. Columbus (31 Dec 1836, 31 Dec 1838, and 30 Jun and 30 Sep 1839), all in RG 94, entry 634.

[41]Surgeon's Quarterly Rpts, Ft. McHenry (1818–45, esp. Rpt, 31 Mar 1845), all in RG 94, entry 634; Ltrs, G. C. U. Roberts to unknown recipient (24 Dec 1836), Henderson to SG (1837), and Roberts to Benjamin King (10 May 1839) and to Lawson (30 Nov 1846), all in RG 112, entry 12; King to Sec War (30 Jan 1838) and to Thompson (21 Mar 1838), both in RG 112, entry 2, 9:141 and 183, respectively; French, *Two Wars*, p. 26.

[42]Quote from Surgeon's Quarterly Rpt, Baton Rouge (30 Sep 1843), RG 94, entry 634; Surgeon's Quarterly Rpts, Baton Rouge (1822–45), RG 94, entry 634; *Statistical Report, 1819–39*, p. 254; *Statistical Report, 1839–55*, pp. 147, 254, 265.

in an attempt to start a fund to cover this sort of expense in the future, he asked each civilian treated in the facility to donate fifty cents to the cause.[43]

Despite its grim beginnings, Fort Snelling had acquired an excellent reputation by 1836, and the early sufferings of its garrison were almost forgotten. Its garden was admired for its unfailing supply of vegetables, and scurvy was no longer a threat. In the opinion of an Army inspector in 1838, "No soldier ought to desire to live better than they have always done at this post." The post surgeon could not afford to relax his vigilance, however. Smallpox occasionally afflicted the Sioux Indians who lived near the fort, threatening any in the garrison who were not immune. After 1839, when alcohol became available for the first time in the vicinity of the post, the surgeon recorded that "The increase to our sick list is owing in my opinion to the introduction of Ardent Spirits amongst us." Many of the ills that came to the attention of the post surgeon at Fort Snelling, however, were of a type usually associated with long, cold winters. Colds and rheumatism were common, and some soldiers suffered from chronic bronchitis or chilblains, a painful engorgement of the fingers, toes, and earlobes caused by cold, damp weather. Army surgeons did not often encounter malaria in such a chill climate except when units already afflicted with this disease came to Fort Snelling.[44]

Unlike the reports of many post surgeons, those of George Turner at Fort Snelling separated the number of patients treated in their quarters from those treated in the post hospital. Turner usually hospitalized up to a third of his patients, or as many as eighty-six per quarter. Given the size of most post hospitals in relation to the length of their post sick lists, it is probable that most of those treated by post surgeons were outpatients.[45]

The forts located in or near the lands assigned to the tribes moving west from Florida, Alabama, and Georgia were not as healthy as Forts Snelling and Mackinac. The health record of Fort Gibson (located in Cherokee lands on the banks of the Grand River along the main emigrant route from St. Louis to Texas) was particularly miserable. In the sickly season every man on post might be ill more than once in a quarter. The Army did not abandon Fort Gibson, however, because the secretary of war believed that its existence was crucial to the Cherokees' security in their new lands. The infantrymen who shared the post with a detachment of dragoons were still sheltered in rotting, badly ventilated barracks when Lawson became surgeon general; perhaps because of the hope that the fort would soon be closed, authorities were loath to invest more money in its buildings. The occupants of the infantry barracks fell ill at a particularly high rate when the wind shifted to the southwest, from the direction of the bottomlands between the Grand and Verdigris rivers. Although the dragoon quarters were sheltered from the southwesterly winds by a ridge, they were exposed to the prevailing winds of summer, which also brought disease. During the last nine months of the year at Fort Gibson, malaria was the most

[43]Surgeon's Quarterly Rpt, Ft. Mackinac (30 Sep 1843), RG 94, entry 634; Croghan, *Army Life,* p. 75.

[44]First quote, Croghan, *Army Life,* p. 66; second quote, Surgeon's Quarterly Rpt, Ft. Snelling (30 Jun 1839), RG 94, entry 634; Ltrs, Lawson to Jones (18 Aug 1843), RG 112, entry 2, 14:275; John Emerson to Lawson (14 Dec 1838 and 26 Aug 1839), both in RG 112, entry 12; Jones, *Citadel,* p. 216; Surgeon's Quarterly Rpts, Ft. Snelling (1836–45), all in RG 94, entry 634.

[45]Surgeon's Quarterly Rpts, Ft. Snelling (31 Mar 1842 and 30 Jun 1843), both in RG 94, entry 634.

common illness, 700 or more cases developing in the course of a quarter. In addition, diarrhea increased the garrison's miseries in the summer, while in the winter, respiratory diseases posed an additional problem.[46]

Because the post's surgeons themselves also suffered from repeated attacks of disease, providing adequate medical care for the garrison, normally about 500 strong, was difficult. The Surgeon General's Office tried briefly to insist that four surgeons could handle all the fort's health problems, but in 1837 authorities realized that five would be better. Despite the recognized need for at least four to five surgeons, by June 1838 only three medical officers were present at Fort Gibson. In the winter of 1839, when there were approximately 540 men at Fort Gibson and 236 cases of disease reported for the quarter, only two surgeons were serving at the post, with the health of one "fast declining" and that of the other scarcely better.[47]

In the fall of 1839, when over 600 cases of disease were reported during the quarter, the medical staff once again consisted of only three men. When a contract for a civilian physician was presented to Lawson for his approval, however, he refused to allow the expense on the grounds that the Regular Army surgeons already at the fort should be able to handle the load. Struggling to provide an adequate medical staff for the troops fighting the Seminoles, Lawson refused to understand why a garrison of 483 officers and men should need so many doctors, noting that the 258 men at Fort Wayne, just sixty miles away, made do with the services of only one physician. To the secretary of war Lawson protested that in only eight months the commanders of the troops in Arkansas had spent over $3,000 for private physicians, in spite of the services of the five Regular Army surgeons sent west to care for the 1,196 men at their four posts.[48]

By 1840 Lawson was willing to admit that, because of its poor location, Fort Gibson had proved for ten years to be "the most sickly military Post in the United States" and that the diseases there were often serious enough to cause death or the permanent destruction of health. His sympathy for the surgeons serving there, however, was limited. Typically, he looked for fault in their conduct. He admitted that assistant surgeon Joseph H. Bailey was of good character, but he deplored Bailey's custom of spending much of his time and energy on his private practice, principally in caring for Indians, thereby neglecting both his duties at the fort and his own health.[49]

The surgeons at Fort Gibson were manning two hospitals, one for the infantry and the other for the dragoons, both of which

[46]*Statistical Report, 1819–39,* pp. 221–22; *Statistical Reports, 1839–55,* p. 267; Prucha, *Sword,* pp. 359–60; Surgeon's Quarterly Rpts, Ft. Gibson (1836–46), all in RG 94, entry 634; Ltrs, Lawson to Gales and to Seaton (both 8 Mar 1843), both in RG 112, entry 2, 1:186 and 187, respectively; Wharton to King (6 Jul 1838), and to Lawson (13 Feb 1839), both in RG 112, entry 12; Francois des Montaignes, *The Plains . . . ,* eds. Nancy Alpert Mower and Don Russell (Norman: University of Oklahoma Press, 1972), pp. 167–68.

[47]Quote from Ltr, Wharton to Lawson (13 Feb 1839), RG 112, entry 12; Surgeon's Quarterly Rpts, Ft. Gibson (1837–39), all in RG 94, entry 634; Ltrs, King to Sec War (13 Dec 1836 and 25 Mar 1837) and Tripler to AG (7 Oct 1837), all in RG 112, entry 2, 8:134 and 278 and 9:10, respectively; Wharton to King (24 Jan 1838), Mills to King (27 Jun 1838), and Wharton to Lawson (15 Dec 1840), all in RG 112, entry 12.

[48]Ltrs, Lawson to Sec War (11 Nov 1839), RG 112, entry 2, 11:58–59; Wharton to Lawson (9 Jul 1839), RG 112, entry 12; Surgeon's Quarterly Rpt., Ft. Gibson (30 Sep 1839), RG 94, entry 634.

[49]Quote from Ltr, Lawson to Sec War (30 Apr 1840), RG 112, entry 2, 11:312; Ltrs, Lawson to Lewis (27 Aug 1840) and to Bailey (4 Sep 1840), both in RG 112, entry 2, 11:500 and 12:15, respectively.

were inadequate. Because Lawson anticipated the abandonment of the post, he initially withheld his support from the campaign of these physicians to override the post commander's unexplained opposition to the addition of two wards to the existing facilities. By May 1838, however, Lawson had agreed to the expansion. The commanding officer's consent was then obtained, and before another year passed, one of the two new wards was completed and the old buildings were improved.[50]

One of the dragoon officers complained, however, that the custom of having the post's physicians rotate between the two hospitals was not an ideal arrangement for the sick because the physicians never had the opportunity to know their patients as individuals. Presumably in answer to his complaint, sometime before the beginning of 1839, one surgeon at Fort Gibson was assigned to work exclusively at the dragoon hospital. When only two medical officers were at the post, however, the sickness of either rendered this arrangement less than ideal, because the patients of the sick physician were then cared for by a doctor who was completely unfamiliar with their problems. Although by 1840 Lawson had apparently capitulated on the matter of hiring a civilian surgeon, he believed that the most efficient approach to providing care for the post's sick would be to combine the two hospitals in one building. His suggestion to this effect was ignored until later in 1840, when many of the dragoons appear to have left the post. The commanding officer then declared that the infantry hospital would function as a general hospital and shelter patients from all units represented at the post.[51]

At least two of the surgeons at Fort Gibson in the 1840s found it an appropriate post for further study of the use of quinine for malarial fevers. Charles McCormick, who had developed his approach to the treatment of malaria while he was in Florida, introduced to Fort Gibson the practice of treating malaria with large doses of quinine administered during the fever's paroxysm as well as during its remission. The intermittent fevers affecting the men at Fort Gibson tended to return regularly at seven-day intervals, making it possible to administer quinine in anticipation of the attacks. Physicians discovered that by giving 10 grains of quinine twelve hours before the expected paroxysm and another 10 grains six hours later, they could prevent the fever's return. They also learned that, for a febrile patient, 15 to 20 grains of quinine given as a single dose was effective, and its effectiveness was enhanced when it was repeated at four- to six-hour intervals thereafter, for a total of two to three days. Although physicians might also prescribe bleeding or even emetics and cathartics, fortunately for the patients, they found that usually no preparation was necessary for the administration of quinine.[52]

Although the demand for quinine at Fort Gibson was great, a hospital steward stationed there in the 1840s stated that "to protect the men from malaria, the government served a gill of whiskey daily to each man." His comment may have referred to

[50]Ltrs, Mills M. Mason (copy, 11 Apr 1838), Mills to Lawson (14 Apr 1838), and Wharton to King (21 Mar and 6 Jul 1838) and to Lawson (13 Feb 1839), all in RG 112, entry 12; King to Wharton (25 Apr 1838) and to Mills (21 May 1838), both in RG 112, entry 2, 9:235 and 272, respectively; De Camp to Lovell (May 1836), RG 94, entry 634.

[51]Ltrs, Wharton to Lawson (12 May 1837 and 13 Feb 1839), Order, Arbuckle (no. 13, 21 Jan 1840), and Ltr, Wharton to Lawson (29 Jan 1840), all in RG 112, entry 12; Ltr, Lawson to Wharton (25 Jan 1840), RG 112, entry 2, 1:175.

[52]Coolidge, "Gibson," pp. 447, 449–50; *Statistical Report, 1839–55*, p. 267.

the time when a boat bearing a new supply of quinine sank on the Arkansas River, forcing the surgeons to rely on other medications. In any event, the number of men requiring medical attention doubled after the sinking, and deaths were prevented only by the reservation of the small remaining supply of quinine for those most seriously ill. Shortly after a new shipment of quinine arrived at the post, the patient population was back to normal.[53]

In the 1830s fevers were also a common affliction at Fort Leavenworth, Kansas, a base that grew in importance as increasing numbers of settlers moved west and greater numbers of Indians from east of the Mississippi arrived in the Oklahoma Territory and in Arkansas to the south of this post and in what later became Iowa to the north. The size of the garrison fluctuated as expeditions to establish peaceful relations with and among the Indians or to escort settlers or traders farther west came and went. The problem of providing these detachments with medical attention was a difficult one, especially during the years when so many surgeons were needed in Florida.[54]

Although the greatest consistent cause of disease at Fort Leavenworth was malaria, such disorders of the digestive system as dysentery and diarrhea were also common. A severe epidemic struck in the late summer of 1837, afflicting 260 men, or more than five times the number then suffering from malaria, out of a garrison whose average size numbered only 334. The 1843 influenza epidemic also reached Fort Leavenworth, bringing 153 men to the attention of the surgeons in the third quarter of the year. Many men also suffered from wounds and so-called contusions. One Fort Leavenworth surgeon, however, believed that most of the patients under his care could thank alcohol for their health problems, no matter what their symptoms might be. He added to his quarterly report of 31 December 1843 the assertion that "Nearly all the cases arise primarily from liquor." The surgeons' reports from Fort Leavenworth also hint at other vices in addition to alcoholism. In recording the discharge of a dragoon because of his "general debility," for example, another surgeon later noted, "This man destroyed himself with vicious secret practices."[55]

In the late 1830s, and especially in the third and fourth quarters of those years, the recorded number of cases of disease treated at Fort Leavenworth could exceed by as much as 80 percent the number of men in the garrison. Fortunately, not long after Lawson became surgeon general, a new hospital began to rise there; when complete, it was a "very capacious brick hospital, two stories high with every necessary appurtenance."[56]

Because it was not always possible to assign two or more surgeons to Fort Leavenworth, on at least one occasion a hospital steward provided the medical care for an expedition leaving that post. The detach-

[53]Quote from James D. Elderkin, *Biographical Sketches and Anecdotes of a Soldier of Three Wars, . . .* (Detroit, 1899), p. 10; *Statistical Report, 1839–55,* p. 269; Coolidge, "Gibson," p. 450; Ltr, McCormick to Lawson (6 Oct 1844), RG 112, entry 12.

[54]Walton, George H. *Sentinel of the Plains: Fort Leavenworth and the American West.* (Englewood Cliffs, N.J.: Prentice-Hall, [1973]), pp. 48–49; Croghan, *Army Life,* pp. 10, 73; Ltrs, Macomb to Lawson (1 Apr 1838 and 3 Apr 1840), both in RG 112, entry 12.

[55]Quotes from Surgeon's Quarterly Rpts, Ft. Leavenworth (31 Dec 1843 and 31 Dec 1845, respectively), both in RG 94, entry 634.

[56]Quote from Croghan, *Army Life,* p. 73; *Statistical Report, 1819–39,* pp. 164–65; Aurora Hunt, *Major General James Henry Carleton, 1814–1873: Western Frontier Dragoon* (Glendale, Calif.: Arthur H. Clark Co., 1959), p. 97; Surgeon's Quarterly Rpts, Ft. Leavenworth (1827–44), all in RG 94, entry 634.

ment of 11 officers and 200 men started out for the territory of the Osage Indians in the spring of 1838 without a physician because the surgeon did not believe that he should leave the post without a medical attendant. Two years later, shortly after a second physician finally arrived at Fort Leavenworth, the newly assigned surgeon left with a detachment ordered to establish a new post. Since his replacement had already been diverted to Florida, Fort Leavenworth was once again down to a single Army surgeon.[57]

By 1843 a second surgeon was once again on duty at Fort Leavenworth, but in June he, too, left the post, accompanying three companies of dragoons escorting traders to Santa Fe. The physician remaining at the post was temporarily handicapped in his work by a broken bone in his right hand. The bone apparently healed in time, but since the surgeon also suffered each winter from a *"thoracic* disease," in 1844 he was sent to Fort Jesup, Louisiana, after he had requested reassignment to protect his health.[58]

Another Fort Leavenworth expedition departed not long after the ailing surgeon left for Louisiana. Its goals were to effect a reconciliation between the warring Pawnee and Sioux and to create a favorable impression of the white man among them and the other Indian tribes living near the confluence of the Missouri and Platte rivers. The five companies involved, accompanied by a surgeon, set out in mid-August of 1843 but were scarcely on their way before men began to fall ill, twelve, it would seem, in the first twenty-four hours alone. The second day out of Fort Leavenworth, a private "fell from his horse in convulsions, and, although the surgeon was promptly in attendance, died in a few minutes." Less than two weeks later, yet another private died, "of Chronic Diarrhea with which he had been ill almost from the day of our departure from the Fort." By the end of August, many among the officers, men, and hired teamsters were sick; to the victims of disease were also added those of accidents and carelessness, bringing the total on the surgeon's list to twenty-four. Among the injured was a private who shot himself in the hand early in September, "such accidents from the Carbines . . . not [being] of unfrequent [sic] occurrence in the Dragoons." When the sick and injured were unable to continue the journey by horseback, the surgeon had them placed in a hospital wagon, to complete the trip in this uncomfortable vehicle.[59]

Conclusion

In his attempts to provide adequate medical care for the soldiers at forts like Leavenworth and Gibson, as well as for those at posts scattered about the country, without neglecting the men fighting in Florida, Lawson was severely handicapped by the unwillingness of Congress to face the need for a significant increase in the basic size of the Medical Department. To compensate for the inadequate number of physi-

[57]Ltrs, Macomb to Lawson (1 Apr 1838 and 3 Apr 1840), both in RG 112, entry 12.

[58]Quote from Ltr, Wharton to Lawson (4 Apr 1844), RG 112, entry 12; Ltrs, ibid. (3 Jun and 17 Oct 1843), both in RG 112, entry 12. It is interesting to note that Wharton anticipated the establishment of the Army Medical Museum by several decades. In a February 1841 letter to Lawson, he suggested that medical officers be required "to forward to your office, such specimens of *Morbid Anatomy* as may be revealed in the performance of their Duty. . . . Would not a few years produce a cabinet of specimens . . . alike honorable to the chief & to the members thereof?" Ltr, Wharton to Lawson (12 Feb 1841), RG 112, entry 12.

[59]C. Wharton, "The Expedition of Major Clifton Wharton in 1844," *Kansas State Historical Society Transactions* 16 (1923–25):273, 275, 281–82, 290, 293, 302, quotes from 275, 281, and 290, respectively.

cians at his disposal, Lawson drove his surgeons hard, raging at any subordinate who showed signs of submitting to weakness or discouragement and denying leave to all who were not seriously ill. He encouraged his surgeons fighting to have the importance of their contributions to the Army recognized. He worked to lighten their loads where he could by attempting to improve the facilities where they worked and by initiating a training program to enable stewards to assist the medical officers more effectively. When all else failed, Lawson hired contract surgeons. His supply system, inherited from his predecessor, functioned well; few surgeons complained of significant shortages. Although, unlike Lovell, Lawson leapt at the chance to go into the field, the men whom he appointed to act for him in his office were competent, and the medical service did not suffer from his occasional absences from the surgeon general's desk.

Up until 1846, however, the Army Medical Department as organized in 1818 had been tested only in hostilities against Indians, fought between small units. The challenge presented in 1846 by the Mexican War would draw Lawson once again away from his office and into the field, where he would for the first time be in a position to direct personally the medical care of U.S Army units during a conventional war.

CHAPTER 5

The War With Mexico: The Taylor and Kearny Campaigns

In the second quarter of the nineteenth century, the ultimate goal of many of the migrants streaming west was territory then belonging to Mexico. In 1836 the new settlers in Texas proclaimed their independence. Enthusiasm for the addition of the new Loan Star Republic to the Union was strong, and the annexation of Texas in February 1845 made war almost inevitable. In May of the following year Congress officially declared war, and the Army found itself facing the challenge of a major conflict at the far end of long supply lines in a disease-ridden land.[1]

Although the Army appears to have devoted surprisingly little effort in advance of the actual campaign to gathering information about the geography, water supplies, and other pertinent characteristics of Mexico, it adjusted to the demands of war with much greater ease than it had in the War of 1812. Congress modified the structure of the Army by placing brigade and division organizations above the regimental level, and it undertook a controlled expansion both by adding men to existing regiments and by creating new ones. During the course of the war, another 64,000 men serving under varying terms of enlistment in volunteer units joined the 30,000 wartime regulars.

Disease wrought its usual havoc among these soldiers. Volunteers, many of them farm boys who had never before been exposed to communicable diseases and who were unimpressed with the demands of camp sanitation, fell ill at twice the rate of the regulars. Some apparently had not been immunized against smallpox; as a result, this dreaded disease occasionally struck down small numbers of volunteers, although no epidemic on the scale of those of the American Revolution resulted, and the regulars, who had been vaccinated, were spared. Many physicians fell ill, but disease killed relatively few of them, especially in comparison to the mortality among surgeons during the struggle with the Seminoles in Florida. Five Regular Army surgeons and two of those who joined the Medical Department only for the duration of the war apparently died as a result of illness contracted during or exacerbated by their service south of the Rio

[1]Unless otherwise indicated, material in the two chapters on the war with Mexico is based on Louis C. Duncan, "Medical History of General Scott's Campaign to the City of Mexico in 1847" and "Medical History of General Zachary Taylor's Army of Occupation in Texas and Mexico, 1845–1847," both in *Military Surgeon* 47 (1920):436–70, 596–609 and 48 (1921):76–104, respectively, as well as on Callan, *Military Laws*, Brown, *Medical Department*, Justin H. Smith, *The War With Mexico*, 2 vols. (New York: Macmillan Co., 1919), Edward D. Mansfield, *The Mexican War . . .* (New York: A. S. Barnes & Co., 1848), and R. S. Ripley, *The War With Mexico—A Military History*, 2 vols. (New York: Harper & Bros., 1849).

Grande, while one died of wounds.[2]

Administration of the Medical Department

The fall of 1845 found Surgeon General Lawson eagerly anticipating war. In a letter to Brig. Gen. William Worth he complained, "It is much to be feared that the Mexicans intend to content themselves with waging a war of threats and denunciations, and that, after all their blustering, they will not afford our gallant officers and men recently ordered to Texas sufficient pastime to keep their blood in circulation."[3]

In spite of Lawson's enthusiasm, the likelihood of war, and the growing need for surgeons for new posts being established in the West, no increases in the size of the Medical Department were made until after war was actually declared. Although three doctors were traditionally allowed for each regiment, in June 1846 Congress ordered the call-up of only two physicians per volunteer regiment, if there were not enough Regular Army physicians available to care for these men. The department, however, already too small to provide each Army post with a physician, was scarcely in a position to offer care for the volunteers, who, therefore, had to provide for themselves. Congress did not increase the size of the department staff until February 1847. In the process of creating nine new regular infantry regiments and a dragoon regiment, to be called up for the duration of the war, the legislature gave the president the power to appoint one surgeon and two assistant surgeons for each newly authorized regular regiment and to name an additional two surgeons and twelve assistants directly to the regular department staff, which now totaled 115. The lawmakers apparently waived the age limitation, but since they made no exception to the requirement that prospective regular surgeons pass a rigorous examination and since the number who passed these tests continued to be low, months elapsed before all the new slots were filled. Even with the increase, the hiring of private physicians both to care for soldiers in Mexico and to serve as post surgeons within the United States continued to be necessary.[4]

An almost casual provision of the legislation of February 1847 marked a milestone in the history of the U.S. Army Medical Department: the new legislation granted surgeons and assistant surgeons the rank they had so long sought. Although in practice, under exceptional circumstances and on an informal basis, medical officers might briefly command small numbers of troops, this law also specifically stated that doctors were not to exercise command outside the Medical Department. Since a law of August 1846 had already granted vol-

[2]Thomas R. Irey, "Soldiers, Suffering, and Dying in the Mexican War," *Journal of the West* 11 (1972):295; Ltrs, Heiskell to AG (4 May 1847), RG 112, entry 2, 17:244; Henry Holt to Lawson (22 Jan 1846), RG 112, entry 12; J. J. Oswandel, *Notes of the Mexican War*, rev. ed. (Philadelphia, 1885), p. 435; Stanhope Bayne-Jones, *The Evolution of Preventive Medicine in the United States Army, 1607-1939* (Washington: Office of the Surgeon General, Department of the Army, 1968), p. 86; Porter, "Notes" 26:322; H. R. Robards, "The Diseases of the Army of Occupation in the Summer of 1846," *Western Journal of Medicine and Surgery*, 2d ser., 7 (1847):187–88; William G. Proctor, "On the Diseases of the United States' Army on the Rio Grande," *Western Journal of Medicine and Surgery*, 3d ser., 1 (1848):461–62.

[3]Quote from Ltr, Lawson to William Worth (13 Oct 1845), RG 112, entry 2, 16:150.

[4]Ltrs, Lawson to AG (6 Sep 1845), to Sec War (30 Mar 1846), and to James A. Gregg (21 May 1846) and Heiskell to Randall (10 Feb 1847), to Hunt (22 Feb 1847), to W. I. Michie (19 Mar 1847), to J. P. Drake (8 Apr 1847), and to A. G. Howard (18 Jan 1849), all in RG 112, entry 2, 16:129, 299, and 342, 17:200, 223, 378, and 411, and 19:365, respectively.

unteer surgeons the same status as their regular counterparts, they, too, received rank. The surgeon general became a colonel, surgeons became majors, and assistant surgeons, captains. The significance of the new law, however, did not become apparent until after the war.[5]

The responsibilities assigned to the members of the Medical Department who served in Mexico included those of medical director and director of a general hospital, both positions given to senior surgeons, and that of purveyor. The purveyor usually functioned as physician as well as supply officer. Doctors accompanied units in the field and the department attempted to place a physican aboard any troop transport destined for a long voyage, to inspect the vessel before departure, and to care for the troops in transit. No attempt was made, however, to establish guidelines for determining in advance who should serve in general hospitals and who should remain with the regiment.

The caliber of the volunteer doctors sent to Mexico was on the whole low. Most were unaccustomed to military discipline and unfamiliar with the requirements of military medicine, particularly the requirement for sanitation. Since they, like contract surgeons, were not required to pass qualifying examinations, their skills were questionable. Their personal health was often poor; some apparently joined the Army with the thought of restoring their health by a change of climate. They were profligate in their use of supplies and casual about the required monthly reports, to the despair of the medical director under whom they served.[6]

The fundamental problem continued to be the failure of Congress to recognize that any army whose duties included the garrisoning of small posts scattered over a wide area required more surgeons than an army operating exclusively in units of regimental size or larger. Attempts to obtain and keep competent hospital attendants to ease the burdens of Army surgeons remained futile. The weak, the convalescent, the alcoholic, and the incompetent were left behind as attendants to care for hospital patients while their healthier and abler comrades marched off with their units. The fact that the medical staffs of disease-ridden volunteer regiments were too small to give adequate care to their sick and often lacking in skill and dedication complicated the shortage of regular physicians. In addition, Lawson did not make the most of the surgeons he had when he failed to plan in advance for the simultaneous staffing of both regimental and general hospitals. Most departmental physicians were overworked, and the strain upon them when battle or epidemic sent large numbers of men to hospitals was great.[7]

As experienced military surgeons could have predicted on the basis of their experiences in the West and in the Second Seminole War, frequent delays occurred in the arrival of needed items in Mexico. Shipwrecks or unexplained disappearances ru-

[5]Robinson, *An Account* 1:42.

[6]Ltrs, Jarvis to Heiskell (16 Nov 1847) and Satterlee to Lawson (11 Apr 1848), both in RG 112, entry 12; Lawson to Edward Bullus (10 Jul 1846) and to P. H. Craig (5 Aug 1846) and Heiskell to Hez. Williams (2 Jan 1847), to AG (4 Mar 1847), and to Gray (6 Sep 1847), all in RG 112, entry 2, 16:425 and 449, 17:141 and 244–45, and 18:51, respectively.

[7]Bernard John Dowling Irwin, "Notes on the Introduction of Tent Field Hospitals in War," *Proceedings of the Fourth Annual Meeting of the Association of Military Surgeons* 4 (1894):113–14; Ltrs, Lawson to Sec War (30 Mar 1846), RG 112, entry 2, 16:299; Porter to Lawson (5 Jul 1846) and to McCormick (25 Jun 1847), both in RG 112, entry 12; Josiah Gorgas to his mother, in Frank E. Vandiver, "The Mexican War Experience of Josiah Gorgas," *Journal of Southern History* 13 (1947):382; Porter, "Notes" 26:311.

ined the most careful planning, but even without mishaps, bedding and other bulky items proved particularly difficult to transport. Such a shipment might take as long as six weeks to reach a Mexican port from New York City and another eight weeks to arrive at its final destination inland.[8]

Although the distances involved were great, Lawson urged that, whenever possible, medical purveyors send their requisitions to New York City, where the needed items could be bought in better quality and at lower prices than elsewhere. He suggested that medicines be packed for shipment in small quantities, to eliminate any need to open large containers when only a fraction of their contents was needed. He stockpiled medical supplies for both regular and volunteer units at New Orleans. Although an occasional shortage of a critically important medicine such as quinine might force a surgeon to buy within Mexico, medical supply officers could usually draw upon the stock of the New Orleans purveyor.[9]

Surgeons in the Field

The first units to enter combat against Mexican troops were those under Brig. Gen. Zachary Taylor. In the summer of 1845, anticipating a hostile response from Mexico to the annexation of Texas, President Polk ordered General Taylor to move from his station in Louisiana to a position nearer the border. By the end of August, Taylor's army was camped in the vicinity of Corpus Christi, Texas. Surgeons considered the climate there to be "perfectly delicious and healthy [with] no possibility of sickness." In a short time, however, bad water (probably resulting from the presence of the troops, who polluted it), extreme variations in temperature, and what was regarded as bad air began to take their toll. "The Northers . . . blow with great force and produce an instantaneous change in the temperature, the thermometer falling 30 degrees in as many seconds," a surgeon wrote. He added that insects and snakes also proved to be a threat, "especially rattlesnakes which are as plenty [*sic*] as blackberries." Between respiratory and digestive ills, by October "the whole army [could] be considered a vast hospital." An average of 90 officers and 118 men out of every 1,000 were sick, and the situation worsened in November before starting to improve. A disgusted Nathan Jarvis, who had had few complaints about Minnesota winters at Fort Snelling, commented: "Texas, its climate, . . . and people [are] all a humbug & not worth the cost of taking."[10]

To care for the many sick in General Taylor's command, surgeons set up eight reg-

[8]Ltrs, Lawson to De Camp and to Finley (both 9 Dec 1846) and Heiskell to De Camp (15 Feb 1847) and to Charles H. Laub (10 Nov 1847), all in RG 112, entry 2, 17:98, 99, and 206 and 18:222, respectively; Laub to Heiskell (5 Dec 1847) and John Frazier Head to Lawson (30 Oct 1846), both in RG 112, entry 12; Mower to Lawson (24 Sep 1846), in U.S. Army Hospital Department, New York, Letter Copy Book, 1846–1854, Ms fB25, NLM.

[9]Ltrs, Lawson to James Simons and to Craig (both 9 Feb 1846), to William Hammond (2 Jun 1846), and to Mower (6 Jul 1846), all in RG 112, entry 2, 16:254, 256, 270, and 420, respectively; Satterlee to Lawson (27 Dec 1846 and 8 and 29 Jun 1847), Mower to Lawson (6 Jul 1846 and 22 Mar 1847), Porter to Lawson (2 Jan 1847), and Henry H. Steiner to Lawson (24 Jun 1848), all in RG 112, entry 12; Mower to Lawson (24 Sep 1846 and 9 Nov 1847), both in Ms fB25 NLM.

[10]First quote, Emma Jerome Blackwood, ed., *To Mexico With Scott: Letters of Captain E. Kirby Smith to His Wife* (Cambridge: Harvard University Press, 1917), p. 18; second and third quotes, Ltr, Jarvis to Will (8 Sep 1845), in Jarvis Papers; fourth quote, Porter, "Notes" 23:14; fifth quote, Ltr, Jarvis to Ben Jarvis (30 Nov 1845), in Jarvis Papers; see also Porter, "Notes" 23:14–16, 18; *Niles' Weekly Register* 68 (30 Aug 1845):401; William Seaton Henry, *Campaign Sketches of the War With Mexico* (New York: Harper & Bros., 1847), p. 45.

imental hospitals, each sheltered in two or three large hospital tents, and a general hospital, housed in a large frame building in Corpus Christi. In the latter facility, those whose illness was likely to be prolonged joined the overflow of patients from the regimental hospitals. The medical staff manning these hospitals included the medical director for Taylor's force, Presley H. Craig, Jarvis as director of the general hospital, a purveyor, and thirteen more department physicians. Three civilian doctors were hired until more Regular Army surgeons could be assigned to Taylor's command. Almost immediately after Taylor's departure from Corpus Christi, the general hospital there was moved to a new location on St. Joseph Island, Texas, and on 7 November 1846, it was disbanded.[11]

Although negotiations between the United States and Mexico failed in January 1846, actual hostilities did not break out while Taylor was at Corpus Christi. In March President Polk ordered Taylor to move further south. Leaving 800 to 900 of the very weak and seriously ill at the general hospital under the care of two Medical Department physicians, Taylor established his men at Point Isabel on the coast of Texas, and inland at Fort Texas (soon to be renamed Fort Brown), facing the Mexican town of Matamoros across the Rio Grande. *(Map 3)* Although the men at Fort Texas were healthy when they arrived and the weather was good, many soon fell ill, most with diarrhea and dysentery. Apparently no hospital existed at this base in the early weeks, but department surgeons at Point Isabel set up tents for a general hospital to shelter all the patients from Taylor's command. This facility remained open throughout the war, and surviving records indicate that more substantial housing was eventually found for it.[12]

The surgeons with Taylor received their first wounded from the Mexican hostilities early in May 1846, following the enemy bombardment of Fort Texas and the battles of Palo Alto and Resaca de la Palma. Although exact figures vary, it appears that U.S. forces lost a total of almost 50 killed and over 130 wounded in these battles. Shortly after the second battle, the Mexicans abandoned Matamoros.[13]

For each of these two engagements, the twelve surgeons accompanying the troops initially set up field hospitals near the battlefield. When the wounded could be moved, Craig had 48 taken to the Corpus Christi facility and the remaining 1,123 to Point Isabel, where they were placed in tents and warehouses cleared out for the purpose. The facilities at Point Isabel were overcrowded and badly policed, but, by the standards of the day, the men cared for there did well. One of the surgeons attributed this fact to the proximity of the town to the sea and its breezes, the absence of malaria, and the basic good health of the men, the weak and sick having been left behind when the march began. Nevertheless, twenty died later from their injuries.[14]

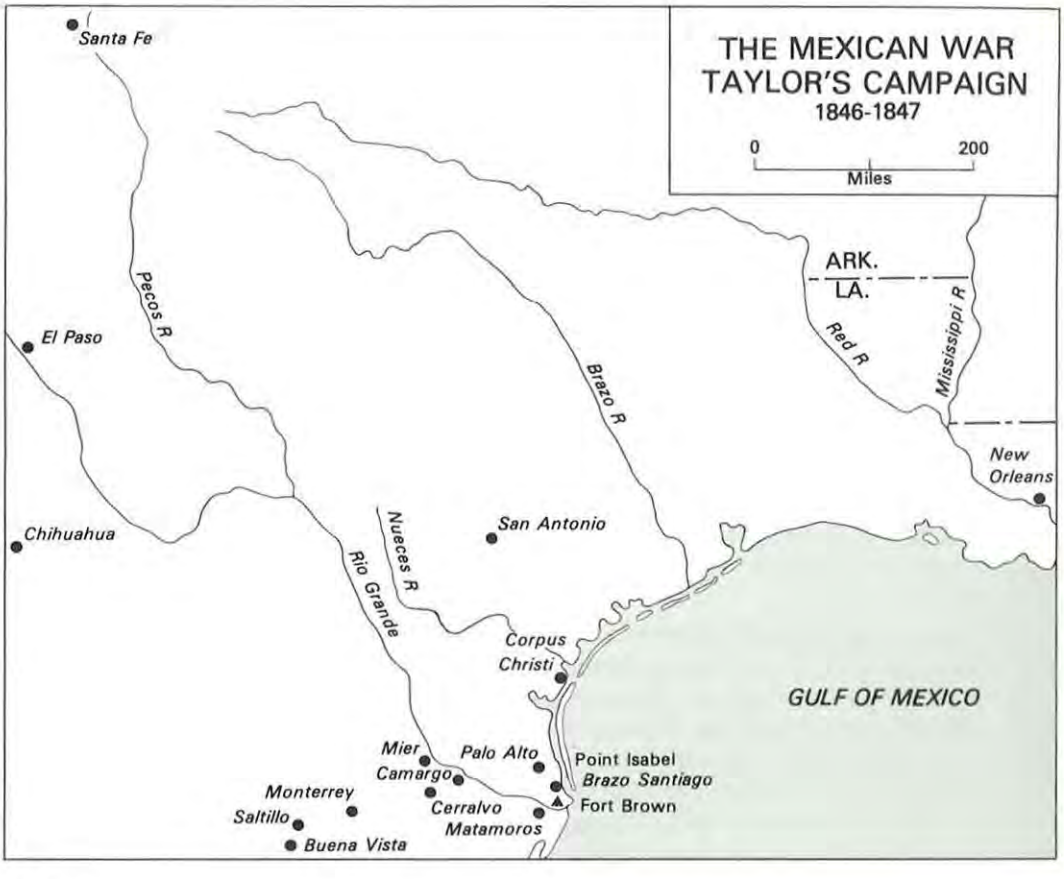
General Taylor's concern for the welfare of the casualties from the two battles of

[11]Surgeon's Quarterly Rpt, St. Joseph Island (7 Nov 1846), RG 94, entry 694; Porter, "Notes" 23:13–14; George Meade, *The Life and Letters of George Gordon Meade,* ed. George Gordon Meade, 2 vols. (New York: Charles Scribner's Sons, 1913), 2:37, 37n; Ltr, Jarvis to Will (8 Sep 1845), in Jarvis Papers; Jarvis, "Notes" 40:438–39.

[12]Ltrs, Heiskell to Wood (Apr 1846), RG 112, entry 2, 17:409; Hawkins to Lawson (28 Apr 1848) and Thomas C. Madison to Lawson (1 Jul 1848), both in RG 112, entry 12; Porter, "Notes" 23:18–19.

[13]Porter, "Notes" 23:21–22.

[14]Ibid., pp. 21–22, 33; Jarvis, "Notes" 41 (1907):101; T. B. Thorpe, *Our Army at Monterrey* (Philadelphia: Carey & Hart, 1847), pp. 294–95; Henry, *Campaign Sketches,* p. 110.



MAP 3

early May was not limited to his own men. He ordered Mexican wounded who had been taken prisoner turned over to Mexican surgeons, some of whom were, in Jarvis' opinion, "very skillful surgeons and very agreeable men." On Taylor's orders Jarvis visited four or five of the hospitals that had been captured when the enemy retreated and concluded that "nothing could exceed the filth & stench of their hospitals from so many wounded crowded together and I felt happy when I had ended my visits." Most of the 300 to 400 patients he saw were suffering from the effects of grapeshot and round shot. "Many had both legs and arms completely torn off. I saw

one fellow keeping the flies off by means of a palmetto leaf in his mouth both arms having been torn off at the shoulder joints." He learned that Mexican surgeons had performed many amputations in the field and that some of the amputees had died of tetanus.[15]

For Taylor's medical staff, the difficulties were just beginning. New volunteer units started to arrive in May 1846, when U.S. troops were occupying the abandoned Matamoros. The rains were heavy and lasted into September, low-lying ground was flooded, "and the whole country saturated with water, [while] the exhalations from it were quickened by the heat of summer into persistent malaria." Mosquitoes were not the only creatures to pose a problem; a tarantula bit a volunteer surgeon and "the effect of the poison was immediate and alarming. So violent were his spasms, that the united strength of several men was required to confine him to his tent."[16]

Alcoholism was a problem in Mexico as in the United States. One patient at Matamoros had been thrown into the guardhouse while suffering from delirium tremens. While so disturbed, he borrowed a "thick, one-bladed pocket knife," and "completely excised the whole of the genital apparatus, close to the body. Flinging them violently into one corner of the room, he very heroically remarked—'Any damned fool can cut his throat, but it takes a soldier to cut his privates off.' " The surgeon was able to stop the hemorrhage that followed this deed. The delirium tremens did not return, and the patient survived, sadder and perhaps even wiser.[17]

The diseases in northern Mexico tended to be mild, but the rate of sickness, relatively low in June, increased as the summer progressed, especially among the volunteers. Since almost 8,000 men were serving under Taylor by early June, it became necessary to erect another hospital building at Point Isabel and to open yet another facility at Fort Brown.[18]

The problems that Taylor's surgeons encountered as his force moved further into Mexico differed little in general outline. Volunteers appear to have invariably fallen ill in greater numbers than regulars, and disease was invariably a more dangerous foe than the enemy. Malaria caused much illness, scurvy appeared from time to time, and measles and mumps afflicted volunteer units, but dysentery and diarrhea caused more difficulties than any other ailment. General hospitals were established at various points through which the army passed: at Mier and Camargo, near the Rio Grande; then at Cerralvo, where at least one surgeon attempted with little success to treat the many sick Mexican children; and finally at Monterrey. At Matamoros, the department also established a hospital where doctors could isolate smallpox victims.[19]

General hospitals were located in tents or in whatever buildings were available, and because ceilings were often low, ven-

[15]First quote, Ltr, Jarvis to Heiskell (16 Nov 1847), RG 112, entry 12; remaining quotes, Ltr, Jarvis to Will (24 May 1846), in Jarvis Papers; see also Jarvis, "Notes" 41:102; Porter, "Notes" 23:21; and George Deas, "Reminiscences of the Campaign of the Rio Grande," *Historical Magazine*, 2d ser., 7 (1870):237.

[16]Quotes from Luther Giddings, *Sketches of the Campaign in Northern Mexico . . .* (New York: George P. Putnam & Co., 1853), p. 40; Ltrs, Meade to Mrs. Meade (3 Jun 1846), in Meade, *Life and Letters* 1:97; W. W. T. Bliss to Craig (22 Jul 1846), in RG 112, entry 12.

[17]E. W. H. Beck, "Case of Excision of the Whole of the Genital Organs," *Missouri Medical and Surgical Journal* 3 (1847–48):160.

[18]Ltr, Bliss to Craig (22 Jul 1846), RG 112, entry 12.

[19]Surgeon's Quarterly Rpts, Mier (30 Sep 1847 and 31 Mar 1848) and Camargo (30 Sep 1846), all in RG 94, entry 634; S. Compton Smith, *Chile con Carne, or the Camp and the Field* (New York: Miller & Curtis, 1857), pp. 59, 65, 76–77.

tilation poor, and rooms crowded, disease could spread rapidly. Even in tents, where ventilation was not a problem, the death rate was sometimes high; one author estimated, for example, that 1,500 men died at Camargo. Many of these general hospitals appear to have remained open until the late spring of 1848, when U.S. troops finally began to leave Mexico.[20]

Taylor and his army reached Monterrey on 19 September 1846. After a five-day struggle, during which U.S. forces suffered 120 killed and 368 wounded, the defenders evacuated the city. For U.S. surgeons caring for troops on the field of battle, it was "all blood—blood—blood!" and "a dreadful sight. . . . Particularly where death [was] produced by artillery and the bursting of shells." Initially, only small tents or blankets on the ground were available for the wounded. Jarvis, and apparently some of his colleagues as well, were working in quarry pits, no more than five feet deep and wide, in which Jarvis had to stoop to avoid being injured himself. Once, when he had just completed one amputation and was preparing to do another, some soldiers fleeing a Mexican sally fell into the pit, on top of the wounded. Fortunately, the enemy did not spot Jarvis himself, and the surgeon was able to continue his labor.[21]

As soon as the city of Monterrey surrendered, wagons and litters began carrying the wounded into the city, where surgeons established general hospitals for each of three divisions. The 1st Division facility lay in the former home of a Mexican general, which was, unlike so many hospital sites, "a beautiful place, with delightful gardens, [and] plenty of water." The house itself was small, but outside, "upon terraces of stone, hundreds of earthen jars were ranged, in which flowering bulbs opened their limpid-looking petals, beside the double-leafed rose, and those things were reflected into a small stream that stole along in its artificial canal, until it noisily poured into a magnificent bath."[22]

Even in this idyllic setting, maggots were soon growing in wounds, which had to be reopened to eliminate the infestation. In many cases, a condition then diagnosed as erysipelas (but which may have been hospital gangrene, another form of streptococcal infection) developed two to three days after surgery, causing sloughing of the involved tissue and either killing its victims or necessitating further amputations. Malaria appeared among the hospitalized wounded, contributing to deaths and delaying convalescence, striking soldiers in camp and the civilian population of the town as well. Supplies of quinine gave out, and surgeons were forced to rely on useless substitutes. Blankets, bedding, and lint were in short supply. "Nostalgia" (homesickness) had "a powerful depressing influence" on many of the new troops and volunteers, prolonging their recovery.[23]

The shortage of physicians seemed particularly severe after the battle for Monterrey, when the wounded were added to the large number of sick already hospitalized. The strain on Army surgeons was

[20]Irey, "Soldiers," pp. 288–89.

[21]Quotes from Ltr, E. K. Chamberlain to S. C. West, in S. Compton Smith, *Chile con Carne*, p. 90; Jarvis, "Notes" 39:267–68.

[22]First quote, Porter, "Notes" 23:35; second quote, Thorpe, *Monterrey*, pp. 115–16; Jarvis, "Notes" 39:268.

[23]Quotes from Surgeon's Quarterly Rpt, Monterrey (30 Sep 1846), RG 94, entry 634; Ltrs, William W. Mackall (19 Oct 1846), in William W. Mackall, *A Son's Recollections of His Father* (New York: E. P. Dutton & Co., 1930), p. 100; Craig to Lawson (21 Oct 1846) and Jarvis to Heiskell (10 Aug and 3 Oct 1847) and to Lawson (20 Feb 1848), all in Meade, *Life and Letters* 1:145; Porter, "Notes" 25:38–39; Payne, "Camp Life in the Army of Occupation: Corpus Christi, July 1845 to March 1846." *Southwestern Historical Quarterly* 73 (1970):341.

great, but Lawson denied Taylor's request for more surgeons beyond the twenty already with his force. A soldier familiar with the work of the Medical Department staff commented, "Nothing can exceed the devotion of our medical officers; they are literally fatigued to death." Under the stress, one physician suffered a mental breakdown from which he never completely recovered.[24]

After 27 September, as the surgeons acquired the buildings necessary for division hospitals at Monterrey, more patients from regimental facilities began arriving, although it was not until 1 October that Jarvis believed the large hospitals were ready to accommodate them. When President Polk disapproved the armistice that Taylor had arranged after taking Monterrey, and the war resumed, Taylor sent his 2d Division south to take Saltillo, an important Mexican road junction. The 2d Division Hospital at Monterrey was broken up, and patients unable to march were sent to one of the other two division hospitals, which had been reorganized so that all volunteers would be in one, all regulars in the other.[25]

Supplies were scarce at Saltillo, which Taylor's men took without opposition. Surgeons set up another general hospital, but the senior surgeon was forced to buy some medicines locally, until the arrival of the 2,800 volunteers and 600 regulars of Brig. Gen. John E. Wool, who brought an ample supply of medicines with them from San Antonio, Texas. Wool and his men camped nearby at Parras and became part of Taylor's force.[26]

Diarrhea, a mild form of malaria, and a life-threatening form of measles appeared among Wool's men before they left Texas. Caring for the sick were four department physicians and volunteer surgeons attached to individual units. Although Congress had provided for two physicians to accompany each volunteer regiment, even this ratio was not always achieved in practice; as a rule, for example, only one medical officer marched with the 1st Illinois Volunteer Regiment.[27]

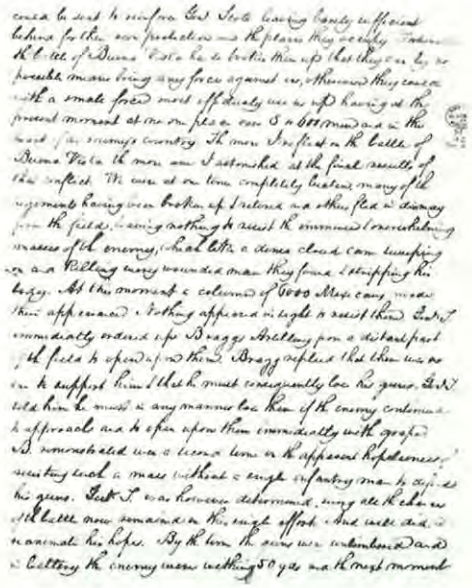
The disease rate among Wool's men dropped after an early peak, and, since those unable to march were left behind in Texas at the San Antonio hospital, the departing force that started south in the fall of 1846 was, for the most part, healthy. One group of volunteers who had recently joined the force suffered greatly, however; a measles epidemic had left many weak; and the change in diet was causing much digestive distress among the men. The march, "under scorching sun, and over plains covered, in many places, to the depth of two or three feet with water," had "disastrous effects" upon them, including respiratory diseases and relapses from measles. For the remainder of Wool's forces, however, the simple diet and vigorous activity contributed to an improvement in health, despite such dangers as the

[24]Quote from Henry, *Campaign Sketches,* p. 226; Surgeon's Quarterly Rpt, Monterrey (31 Dec 1846), RG 94, entry 634; Giddings, *Sketches,* p. 84; Ltrs, Craig to Lawson (20 Oct 1846) and Finley to Lawson (14 Dec 1846), both in RG 112, entry 12; see also Ltrs relating to James A. Conrad (1847–53), RG 112, entry 2, vols. 18–21 and 23.

[25]Surgeon's Quarterly Rpts, Monterrey (31 Dec 1846 and 30 Jun 1848), both in RG 94, entry 634.

[26]Ltr, Porter to Lawson (2 Jan 1847) and Surgeon's Quarterly Rpt, Saltillo (31 Dec 1846), both in RG 94, entry 634.

[27]Otto B. Engelman, ed. and trans. "The Second Illinois in the Mexican War . . . , *Journal of the Illinois State Historical Society* 26 (1934):374; William B. Herrick, "Letters of 5 November 1846," *Illinois and Indiana Medical and Surgical Journal,* n.s., 1 (1846):510. Since Mexican War-era physicians could diagnose pneumonia, it is unlikely that the deaths blamed as measles actually resulted from this complication of the disease. It is probable that the virus then prevalent was more virulent than the present-day strain.



PAGE OF LETTER FROM NATHAN JARVIS TO "BEN," *16 June 1847. (Courtesy of New York Academy of Medicine.)*

wounds from the sharp leaves of the palmetto soap plant that filled one of the valleys through which they marched. The effect of this particular plant was "so venemous [*sic*] that the wounds are hardly curable." The march even appeared to benefit those of the ill and convalescing who had joined their healthier comrades on the journey; a surgeon with a volunteer unit reported that these men recovered more quickly than those who stayed behind.[28]

Despite the healthful effects of the march, at Parras a measles epidemic of unusual severity soon confronted Wool's medical staff. By December the mortality rate was high; one of Wool's men recorded "It was very seldom a man recovered after he had fallen into an aggravated state of the disease, and we knew cases where men have lain down in the evening and in the morning have been found choked to death, from the measles [*sic*]."[29]

Fortunately, Wool's men had time to recover from the measles epidemic. The armistice had ended, but General Taylor's unit did not see action again until late February 1847. By this time Maj. Gen. Winfield Scott had arrived in Mexico to take command of the effort there, siphoning off most of Taylor's regulars and leaving him with a force that was largely volunteer. Scott ordered Taylor to evacuate Saltillo, where health problems were severe, and to take up a defensive posture at Monterrey, which was regarded as among the healthiest cities in Mexico. Taylor, acting as if he had been merely advised to abandon his offensive, instead advanced south of Saltillo. Finally, on 23 February, his forces met a much larger army under the Mexican general Santa Ana at Buena Vista. The U.S. victory there cost Taylor's troops 267 killed and 456 wounded, casualties that numbered about half those of the enemy's.[30]

Some members of Taylor's medical staff had been left behind to manage the hospitals behind the lines, but four Regular Army physicians in addition to those who had marched south with Wool were present at Buena Vista. Spent balls caused the few wounds experienced by U.S. soldiers in the initial skirmish on 22 February, and only two or three men died. The next day sur-

[28]Quotes from Jonathan W. Buhoup, *Narrative of the Central Division* (Pittsburgh: M. P. Morse, 1847), pp. 86, 228; W. B. Herrick, "Remarks Upon the Organization of the Medical Department of the Army, and Effects of Marching and a Camp Life in Producing and Modifying Disease," *Illinois and Indiana Medical and Surgical Journal* 4 (1847–48):227–29, 232.

[29]Buhoup, *Narrative,* p. 94.

[30]James K. Polk, *The Diary of James K. Polk . . .*, ed. Milo Milton Quaife, 4 vols. (Chicago: McClurg, 1910), 2:476–80; Ltr, Porter to Lawson (3 Jan 1847), RG 112, entry 12; Rpt, John Trevitt (31 Dec 1847), RG 94, entry 634.

geons and the stewards assisting them placed themselves "at convenient points near their respective regiments, ready with a plentiful supply of instruments, ligatures, bandages, splints &c" in anticipation of battle and were soon immersed in their work.[31]

Many of the wounded were initially taken either to the nearby Ranchea Buena Vista or to the town cathedral. Wagons quickly removed the 400 to 500 U.S. and Mexican wounded originally sent to the cathedral to Saltillo, often with the aid of "a most gallant old gentleman," a civilian who, surprisingly, was "always found during the battle, where he could be of service."[32]

Although during the night after the battle all the wounded appear to have suffered greatly from cold, thirst, and hunger, those sent to the ranchea were particularly unfortunate. A volunteer surgeon working there noted that "those of the wounded still living, the dying and the dead [were] crowded together indescriminately [*sic*], . . . presenting a melancholy picture of suffering and distress, not easily described, and never to be forgotten." A former patient there remarked that "the whole floor was covered with wounded. . . . The screams of agony from pain, the moans of the dying, the messages sent home by the despairing, the parting farewells of friends, the incoherent speech, the peculiar movements of the hands and fingers," all testified to the miseries of the wounded.[33]

The surviving patients from the ranchea were moved to the cathedral as soon as possible and then, several days later, were divided up among less crowded facilities, each of which could hold 50 to 100 men. Doctors attempted to have wounded volunteers from the same regiment housed together. Officers apparently had private quarters, but large numbers of enlisted men shared a common room. Mexican surgeons worked on their own wounded; at least half of their patients died, a fact a U.S. surgeon attributed to their "diet composed of saccharine, fatty, and other carbonaceous substances, and a life of idleness and dissipation."[34]

The battle of Buena Vista marked the end of active campaigning for the army under Zachary Taylor, although many of the men who had come to Mexico with him participated in operations conducted further south and directed at Mexico City. While Taylor and Wool were undertaking the conquest of northeastern Mexico, however, the Army of the West, under the command of Brig. Gen. Stephen Kearny, launched a second campaign, one aimed at the northwestern region that included the present-day states of New Mexico and California. In Kearny's force assembling at Fort Leavenworth in the spring of 1846 were a company of dragoons, as well as artillery and infantry units, and an 860-man regiment of mounted volunteers led by Col. Alexander Doniphan.[35]

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[31]Quote from W. B. Herrick, "Surgery in the Hospitals After the Battle of Buena Vista," *Illinois Medical and Surgical Journal* 4 (1847–48):302; James Henry Carleton, *Battle of Buena Vista* . . . (New York: Harper & Bros., 1848), pp. 139, 236.

[32]Quotes from Carleton, *Buena Vista,* p. 127; H. Montgomery, *Life of Zachary Taylor* (Auburn, N.Y.: J. C. Derby & Co., 1847), p. 349.

[33]First quote, Herrick, "Surgery in the Hospitals" 4:414–15; second quote, French, *Two Wars,* pp. 81–82.

[34]Herrick, "Surgery in the Hospitals" 4:414–15, quote from 418.

[35]George Rutledge Gibson, *Journal of a Soldier Under Kearny and Doniphan, 1846–47,* ed. Ralph P. Bieber (Glendale, Calif.: Arthur H. Clark Co., 1935. Reprint. Philadelphia: Porcupine Press, 1974), p. 125; William Hemsley Emory, *Lieutenant Emory Reports,* ed. Ross Calvin (Albuquerque: University of New Mexico Press, 1951), p. 21; William H. Goetzmann, *Exploration and Empire* (New York: Alfred A. Knopf, 1966), p. 131.

The first leg of Kearny's journey from Fort Leavenworth was a 50-day, 900-mile ordeal through wilderness, desert, and mountains to Santa Fe, ending in mid-August. By early July, "many were sick, lame, and exhausted," often too exhausted to continue under their own power. Although the Mexicans presented no opposition to their progress, disease, privation, and stress soon incapacitated many and filled the wagons being used as ambulances. Inadequate diet led in some instances to scurvy, good water was often hard to find, and "the mosquitoes came out in clouds in the intense heat of the midday sun."[36]

Although it is difficult to be precise about the number of physicians with Kearny on the Fort Leavenworth-Santa Fe portion of his march, at least six accompanied him. The medical director and two assistant surgeons were Regular Army physicians. One of these doctors was John S. Griffin, who, having been replaced as post surgeon at Fort Leavenworth by a volunteer surgeon, accompanied Kearny the entire way to California. A doctor left at Bent's Fort, in what is now Colorado, with three invalids was apparently a volunteer. Two more surgeons may also have been volunteers; one of them early acquired a reputation as "both lazy and too ignorant to attend to the duties of his office."[37]

At Santa Fe, Kearny divided his force. Although he and 300 dragoons, a 14-man topographical team, and a few scouts continued westward, Colonel Doniphan and his Missouri volunteers initially remained in what would become New Mexico. They attempted to work at pacifying the Navajo Indians, but their ultimate goal was Chihuahua, about 200 miles into Mexico, where they were to join Wool. Although Doniphan's men were suffering from fevers and measles, after signing a treaty with the Navajo on 22 November and learning that the Mexicans were planning to defend El Paso, on the route to Chihuahua, the colonel decided to march south. Moving so rapidly that there was no time for him to receive additional supplies or reinforcements, Doniphan took El Paso at the end of December and then continued south. Word that Wool's plans had changed and that he would not be at Chihuahua did not deter Doniphan. Covering as many as 50 miles in one day through unfriendly terrain, enduring the effects of short rations and inadequate supplies of water, and threatened by snakes, scorpions, and grass fires, by February 1847 Doniphan and his men were approaching their goal. After defeating the Mexicans near Chihuahua, they camped at that town, awaiting further orders. On 21 May, only ten days before their terms of enlistment were up, orders arrived for them to join Wool at Saltillo.[38]

[36]Abraham Robinson Johnston, Marcellus Ball Edwards, and Philip Gooch Ferguson, *Marching With the Army of the West*, ed. Ralph P. Bieber (Glendale, Calif.: Arthur H. Clark Co., 1936. Reprint. Philadelphia: Porcupine Press, 1974), pp. 142, 172–73, first quote, p. 83; Gibson, *Journal*, pp. 129, 133–34, 143, 152, 161, 249, second quote, pp. 133–34; Dwight Lancelot Clarke, *Stephen Watts Kearny: Soldier of the West* (Norman: University of Oklahoma Press, 1961), p. 130; Viola Lockhart Warren, "Dr. John S. Griffin's Mail, 1846–1853," *California Historical Society Quarterly* 33 (1954):97–98, 101.

[37]Johnston, Edwards, and Ferguson, *Marching*, p. 15, quote from p. 127; Gibson, *Journal*, p. 234; Warren, "Griffin" 33:97–98, 101.

[38]Irey, "Soldiers," pp. 292–93; R. Ernest Dupuy, *The Compact History of the United States Army*, new and rev. ed. (New York: Hawthorn Books, 1961), pp. 95–96; Alexander Majors, *Seventy Years on the Frontier: Alexander Majors, Memoirs of a Lifetime on the Border*, ed. Prentiss Ingraham (Minneapolis: Ross & Haines, 1965), p. 90; A. B. Bender, "Frontier Defense in the Territory of New Mexico, 1846–1853," *New Mexico Historical Review* 9 (1934):251–52; James A. Huston, *The Sinews of War: Army Logistics, 1775–1953* (Washington: Office of the Chief of Military History, 1966), p. 146; Edward Everrett Dale, *The Indians of the Southwest: A Century of Development*

None of Doniphan's physicians was a Medical Department surgeon. One was an American civilian hired in Chihuahua, where the Mexicans had imprisoned him when war was declared. Although these doctors were probably unfamiliar with the demands of military medicine, they were called upon to care for a command with a sick rate that approached 33 percent and a high death rate as well. Their patients included many with measles, fevers, and diarrhea. After the engagement near Chihuahua, in which Doniphan lost five wounded and one killed, they cared not only for their own wounded, but for Mexican casualties as well. They performed a large number of amputations; a veteran of the battle noted that it was "a sight to see the pile of legs and arms that have been amputated."[39]

Both the men who remained at Sante Fe and the volunteers who came in after Kearny and Doniphan left were often sick, some from malaria acquired earlier, others from such diseases as tonsillitis, colds, measles, dysentery, typhus, and "a disease affecting the men something like mumps." The death rate could be five to eight in one day. Houses were converted into hospitals, but by the end of October 1846, when there were at least 2,700 men at Sante Fe with more still arriving, the hospitals were full. Supplies were running short because of the difficulties involved in predicting how many volunteers would come in, and there was confusion as to where these supplies should come from. The Regular Army physician who was in charge of the general hospital at Sante Fe, Samuel De Camp, fell ill himself. He recovered quickly, but even with the aid of three medical officers working directly under him, two of whom were Regular Army surgeons, and the physicians with the volunteers, De Camp was unable to stem the tide of illness among the volunteers. On 10 November, six men died, and the next day five more, several from measles. As the weather turned colder and the wind rose, not all the volunteers could find adequate shelter. One noted, "A great mortality prevails among the troops who are dying from exposure and disease."[40]

Through the winter until early February 1847, the men remaining at Santa Fe were occupied principally with subduing Indian and Mexican rebels. The health of the command remained poor; even in mid-April, pneumonia and other respiratory ailments as well as severe cases of fever confronted medical officers there. The supply of medicines was limited through much of the spring, and attempts to improve the health of the command were often frustrated. Many of the men preferred bread and meat to vegetables and fruits, and De Camp maintained that a "vegetable diet [was] almost unknown in New Mexico." By the time scurvy appeared among the men, many of the Missouri volunteers were already sick, having been in poor health when they started their journey to New Mexico, where they hoped to improve or even regain their health through the change in climate. As a result, by the time they reached Santa Fe, some men were in no condition to work. According to De Camp, "Many of them have not done one day's

Under the United States (Norman: University of Oklahoma Press, 1949), p. 47; Gibson, *Journal*, p. 276; Richardson, *Journal*, pp. 35, 37.

[39]Richardson, *Journal*, pp. 35, 37, quote from p. 63; Irey, "Soldiers," pp. 292–93; Adolphus Wislizenus, *Memoir of a Tour to Northern Mexico* (Albuquerque, N. Mex.: Calvin Horn, 1858); Ltr, James Shields to Lawson (28 Jan 1949), RG 112, entry 12.

[40]Gibson, *Journal*, pp. 271, 271n, first quote, p. 244; Richardson, *Journal*, p. 13, second quote, p. 37; Ltr, De Camp to Lawson (21 Oct 1846), RG 112, entry 12; Surgeon's Quarterly Rpt, Army of the West (31 Dec 1846), RG 94, entry 634.

SAMUEL DE CAMP. *(Courtesy of National Library of Medicine.)*

duty since they left Missouri." He urged that volunteers be given physical examinations before being sworn into the Army, so that the unfit would never be in a position to receive pay. Noting, however, that the men from Missouri, unlike many of the other soldiers at Santa Fe, were accustomed to a vegetable diet, he urged that seeds be sent to him so he could plant a garden for their benefit. Whether he ever received his seeds is not known, but, if planted, the garden could not have been very successful; in March 1848, 79 men in a command of fewer than 250 volunteers were reported to have suffered from scurvy in the preceding quarter.[41]

One further venture into Mexico took place from Santa Fe in the spring of 1848, when the officer commanding in New Mexico led approximately 1,100 regulars and volunteers accompanied by two surgeons toward Chihuahua. In mid-March and after the actual signing of the peace treaty, they encountered a Mexican force at Santa Cruz. The U.S. triumph left three of the victors dead and nineteen wounded. Chihuahua was reoccupied, but disease proved to be a devastating enemy; few were spared at least one episode of diarrhea, dysentery, respiratory infection, scurvy, or a venereal disease in the first quarter of 1848, before returning to Santa Fe.[42]

Kearny himself left Santa Fe for San Diego late in September 1846 with a force of mounted troops. Learning two weeks later that the U.S. Navy's Pacific squadron had already secured the principal California ports, he sent 200 dragoons and a surgeon back to Santa Fe, and with the two remaining companies of dragoons continued his westward journey. The two Regular Army surgeons who were with him apparently drew straws to determine who would return to Santa Fe, and Griffin won the right to continue on with Kearny.[43]

On 6 December, when Kearny's men were but thirty-nine miles from San Diego and both mules and riders were exhausted, a force of Californians attacked them at San Pasqual. Although he was now the only surgeon with the unit, Griffin was eager to share in the action. Aware that Kearny would not permit him to do so, he attempted to sneak forward unseen by his commander. When four of the enemy spot-

[41]Quotes from Ltr, De Camp to Lawson (14 Apr 1847), RG 112, entry 12; Ltr, Heiskell to Lawson (12 Mar 1847), RG 112, entry 2, 17:266; Surgeon's Quarterly Rpts, Army of the West (31 Mar 1847 and 31 Mar 1848), both in RG 94, entry 634.

[42]Surgeon's Quarterly Rpt, Army of the West (31 Mar 1848), RG 94, entry 634.

[43]Warren, "Griffin" 33:98; Goetzmann, *Exploration,* p. 134.

ted him, Griffin tried to fire his double-barreled shotgun at them, but since the weapon was wet, it would not discharge. He was forced to flee to gain the protection of the dragoons. Although Griffin escaped injury, the battle of San Pasqual left eighteen U.S. dragoons dead and nineteen wounded. Among the injured was Kearny himself, who suffered two painful wounds.[44]

After the battle, Griffin worked late into the night caring for the wounded. The devices dubbed ambulances that soldiers prepared for his patients appear actually to have been merely buffalo-hide travois fastened between willow poles, each dragged behind a mule. When the expedition took to the road the next day, the wounded in the middle of the group for protection, "the ambulances grated on the ground, and the sufferings of the wounded were very distressing." Kearny himself was able to ride and was thus spared this agony. On the second day after the battle, one of the wounded died, and the rest were in no condition to progress farther. Kearny sent three men ahead to San Diego for help. He ordered that the dead man, "a gallant fellow, who had, just before leaving Fort Leavenworth, married a pretty wife," be buried deep in the ground and his grave covered with heavy stones so that wolves would not dig up the body. The survivors of Kearny's force then settled down to wait until the wounded were well enough to ride; Kearny believed that slow-moving wagons required a heavier guard than he could provide. On 10 December, shortly after Griffin had concluded that all but two of the injured were able to ride, a rescue party of 100 sailors and 80 marines rode in from San Diego to escort them to safety. The wounded entered a Navy hospital; while they were there, someone stole their blankets, presumably the first of the many thefts of this type to plague the Army's sick in California.[45]

Kearny's supply train came west to California from Santa Fe by a more southern route than the general had taken. Guarded by a volunteer battalion of Mormons commanded by Lt. Col. Philip St. George Cooke, the wagon train and the surgeon assigned to the entire force, a volunteer given to overdosing his patients with calomel, arrived in San Diego at the end of January 1847. The battalion remained a short time for recuperation and drill at the California mission at San Luis Rey, just north of San Diego, before being broken up into companies and sent to San Diego and Los Angeles, which had been peacefully surrendered on 10 January. The surgeon with Cooke's force appears to have remained with them at San Luis Rey and then been reassigned to Los Angeles, while Griffin remained for several months at San Diego.[46]

Surgeon General Lawson announced early in December 1846 that the medical needs of the units newly arrived in California could be supplied better from St. Louis than New York. The Medical Department also shipped some supplies with transports taking troops to California by

[44]Warren, "Griffin" 33:102; Emory, *Reports,* p. 168; J. M. H. Hollingsworth, "Journal," *California Historical Society Quarterly* 1 (1923):240.

[45]Emory, *Reports,* pp. 168, 172–74, quotes from pp. 171, 173; Viola Lockhart Warren, *Dragoons on Trial: Los Angeles* (Los Angeles: Dawson's Book Shop, 1965), p. 2; Arthur Woodward, *Lances at San Pascual* (San Francisco: California Historical Society, 1948), p. 39.

[46]Warren, "Griffin" 33:106–08, 110–11; A. B. Bender, "Government Explorations in the Territory of New Mexico, 1846–1859," *New Mexico Historical Review* 9 (1934):4–5; Emory, *Reports,* pp. 182, 188; Frances E. Quebbeman, *Medicine in Territorial Arizona* (Phoenix: Arizona Historical Association, 1966), p. 29.

ROBERT MURRAY. *(Courtesy of National Library of Medicine.)*

sea. Griffin, the first Regular Army surgeon to arrive in California, served as a medical purveyor, receiving the supplies and then distributing them to both volunteer and Regular Army physicians. He does not appear, however, to have been as methodical as Lawson would have wished; Lawson was repeatedly irritated by Griffin's failure to file his reports on time. Moreover, when the surgeon received orders late in the spring of 1847 to report for duty to Los Angeles, he forgot to bring his medical records with him. He also appears to have forgotten to lock up the supplies he left behind for his successor, and, as a result, they were stolen. Unlucky when it came to theft, in November 1847 Griffin reported that a volunteer hospital steward had been stealing his more expensive medicines, including morphine.[47]

By the time Griffin was ordered to Los Angeles, significant resistance had come to an end in California, and Army surgeons were able to settle down into a peacetime routine. Ships brought volunteers around Cape Horn to the newly acquired territory; on one such vessel was assistant surgeon Robert Murray, who would become surgeon general in 1883. Like the other surgeons in California, he was soon involved in treating the victims of accidents and Indians, diarrhea and typhoid. He may, like Griffin, have even treated soldiers newly landed from the six-month voyage around Cape Horn who were suffering from scurvy.[48]

Conclusion

Surgeons who, like Griffin, served in the northern provinces of Mexico, faced familiar diseases of a kind to be found at many of the forts in the West. Nevertheless, because there were so few doctors in proportion to the number of sick and wounded, the strain upon these medical officers was great. Their principal difficulties involved caring for relatively large numbers of troops on the move and in finding adequate shelter for those of the sick and wounded who were unable to march with their comrades. The setting for the Medical Department's greatest challenge, however, lay to the south.

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[47]Warren, "Griffin" 33:118, 120–21, 258; Ltrs, Lawson to AG (8 Dec 1846) and Heiskell to King (2 Aug 1847), both in RG 112, entry 2, 17:95 and 591, respectively; George Sanderson to Griffin (8 Apr 1847) and Griffin to Lawson (1 Jun 1847), both in Warren, "Griffin" 33:112, 118, respectively; Griffin to Lawson (22 Nov 1847), RG 112, entry 12.

[48]Warren, "Griffin" 33:252–53, 258–59, 267.

Chapter 6

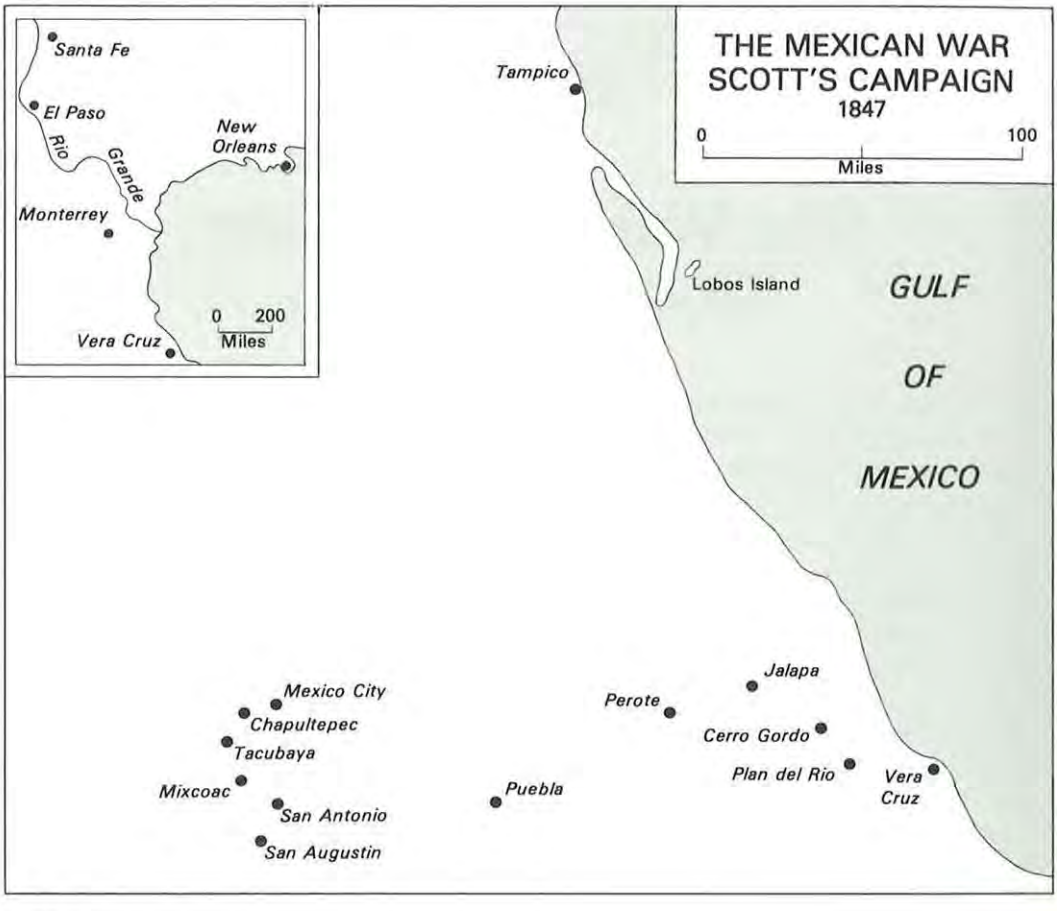
The War With Mexico: Scott's Campaign

The campaigns in Mexico's northern provinces, though successful, failed to bring that nation to her knees. As a result, in the autumn of 1846, Maj. Gen. Winfield Scott began planning a campaign to take Mexico City itself. Among his most important considerations at this time was the danger of yellow fever which, he was convinced, would make serious inroads into his force if April 1847 and the following months were to find him still in the mosquito-ridden coastal areas.

Joining General Scott in New Orleans at the end of 1846 was his good friend Surgeon General Thomas Lawson, who, after several months of sniping from the sidelines at the way Taylor and his medical director were handling the assignment of surgeons, had arranged to visit that city. The purpose of Lawson's trip was ostensibly to supervise the establishment of a medical supply depot, but he quickly accepted Scott's invitation to accompany him on his march to Mexico. The surgeon general remained with the invading force from December 1846 through early 1848, but he insisted that he was present in an advisory capacity only.[1]

The question of why Lawson did not officially take over the duties of the medical director for Scott's army has no obvious answer. He rarely usurped the prerogatives of his subordinate, who was obviously in no position to protest encroachment. Lawson had, of course, found the management of medical officers and their work from Washington during wartime a frustrating business at best. His refusal to assume overall responsibility for the medical care of Scott's army while in the field suggests that he would have been happiest merely serving as a senior surgeon on the battlefield, where the excitement was great and the responsibilities relatively uncomplicated. Available evidence indicates that Lawson's somewhat ambiguous position in Mexico, far from being helpful to his surgeons, actually caused confusion. His absence from his desk in Washington, moreover, meant that, at this crucial time, one of his subordinates, surgeon Henry Heiskell, was acting surgeon general, making the important decisions about supply and the apportionment of the Medical Department's limited number of surgeons. Fortunately, Heiskell was thoroughly competent, and the department does not ap-

[1]Ltrs, Lawson to Walker (29 Aug 1846) and to Alexander Suter (11 Nov 1846), both in RG 112, entry 2, 16:473 and 17:53, respectively; see also the collection "Lawson Papers" for documents that suggest a close friendship between Scott and Lawson.



MAP 4

pear to have suffered unduly from Lawson's absence from Washington, despite his lack of interest in his Washington office while he was in the field.[2]

Preparing for Invasion

Even before they set foot on Mexican soil, Scott's men were plagued by an assortment of diseases. The medical pur-

[2]Ltr, Adam N. McLaren to Med Dir (3 Jan 1848), RG 94, entry 634; Lawson to G. M. Brooke (7 Dec 1846) and Heiskell to Drake (8 Apr 1847), to John C. Glen (18 Jun 1847), and to AG (7 Jul 1847), all in RG 112, entry 2, 17:93, 411, 506, and 545, respectively.

veyor at New Orleans had to work "night and day" to aid the men boarding transports there—"The dark cloud of disease hovered over us," a volunteer surgeon wrote in describing his sea voyage to Mexico. Illness continued to strike as the troops landed at Tampico, a town taken from the Mexicans in the fall of 1846 by the U.S. Navy, and at Lobos Island, off the coast. *(Map 4)* On the island, Surgeon Richard S. Satterlee was running short of quinine in December 1846, and an outbreak of smallpox detained three companies of Pennsylvania volunteers when their comrades departed for the assault on Vera Cruz. Mississippi volunteers, the "most lawless set of men" the surgeon general had ever seen, ran up bills with private physicians without authorization.[3]

When two divisions from Taylor's force arrived to join Scott's command at Tampico in the summer of 1847, surgeons found it necessary to establish a general hospital to care for the sick. Like so many of the general hospitals established in Mexico, the Tampico facility apparently remained in operation at least through the spring of 1848, at which time more than a thousand volunteers and a tenth as many regulars were stationed in that town. Yellow fever struck in the fall of 1847, causing fifty-four deaths, but dysentery, diarrhea, and malaria were such common diseases that each soldier averaged almost two hospitalizations a quarter in the so-called sickly season, the late summer and early fall, of that year.[4]

RICHARD S. SATTERLEE. *(Courtesy of National Library of Medicine.)*

Establishing a Base: Vera Cruz

Despite his best efforts, Scott was a month behind his timetable when his 6,000 regulars and 8,000 volunteers left Tampico and Lobos Island and landed near Vera Cruz in early March 1847. They brought with them tents where the approximately

[3]Thomas N. Love, "Remarks on Some of the Diseases Which Prevailed in the 2d Reg. Mississippi Rifles, for the First Six Months of Its Service," *New Orleans Medical and Surgical Journal* 5 (1848–49):4–6, first and second quotes, 5–6; third quote, Ltr, Lawson to Heiskell (11 Feb 1847), RG 112, entry 12; Porter, "Notes" 26:301; Ltr, Scott to Butler (3 Jan 1847), in U.S. War Department, *Correspondence Between the Secretary of War and Generals Scott and Taylor, and Between General Scott and Mr. Trist*, presented to the 30th Cong., 1st sess., House of Representatives, as Ex. Doc. 56, p. 41; Ltrs, Scott to Marcy (28 Feb 1847 and 24 Feb 1848) and to Butler (3 Jan 1847), all in U.S. War Department, *Letters of General Winfield Scott and Secretary Marcy Relating to the Mexican War (1848)* (n.p., n.d.), pp. 1–2, 41, and 86, 88, respectively; Oswandel, *Notes*, pp. 61–62; Ltr, Satterlee to Lawson (27 Dec 1846), RG 112, entry 12.

[4]Ltr, Hawkins to Lawson (5 Jul 1847) and Surgeon's Quarterly Rpts, Tampico (30 Jun, 30 Sep, and 31 Dec 1847 and 31 Mar 1848), all in RG 94, entry 634.

JOHN B. PORTER. *(Courtesy of National Library of Medicine.)*

twenty physicians with Scott could care for their patients during the siege of that town. When the Mexicans there surrendered, Army doctors set to work to locate more permanent quarters for both sick and healthy. They also began to deal with the various forms of filth that littered the city's streets, which they found to be broad and easily cleaned. Surgeon John Porter took over an old Franciscan convent facing the sea to serve as a general hospital, attracted by its excellent ventilation and good water supply. (Church and monastery buildings would prove to be popular choices as Army hospitals in Mexico.) Porter was not able, however, to obtain competent hospital attendants, and moving the wounded to the new facility, often by means of a blanket carried by four men, irritated wounds and may have caused one death. To add to Porter's troubles, many of his patients were afflicted with diarrhea, but the new hospital contained neither privies nor "chamber utensils."[5]

Because of its location, Vera Cruz became the site both of an important general hospital and of the principal medical supply depot for General Scott's campaign. The medical purveyor there, Charles H. Laub, was apparently responsible for distributing supplies that arrived at his post to the purveyors at other bases in central Mexico, but the presence of the surgeon general in Mexico caused him some confusion. In the early summer of 1847, Laub was still submitting his reports on the receipt of shipments to Lawson, and since Lawson did not bother to forward these documents to Washington, the New York City supply officer assumed that supplies were going astray and continued to ship more. Laub, on the other hand, concluded that the arrival of goods he had not ordered meant that requisitions were no longer necessary. Not until August, when the true nature of the problem began to emerge, did Laub realize that he should be reporting directly to Washington both on the arrival of shipments and on his future needs.[6]

The supply situation in 1847 was also complicated by the fact that more men were being called up than the Medical Department had prepared for. In urging care in the use of hospital stores and medicines,

[5]Porter, "Notes" 26:302, 311, 322–23, quote from 332; Roger G. Miller, "Yellow Jack at Vera Cruz," *Prologue* 10 (1978):48; J. F. H. Claiborne, *Life and Correspondence of John A. Quitman* . . . , 2 vols. (New York: Harper & Bros., 1860), 2:232; Ltrs, Lawson to Brooke (7 Dec 1846) and Heiskell to Finley (8 Jan 1847), both in RG 112, entry 2, 17:93; Lawson to Heiskell (11 Feb 1847) and Porter to Heiskell (19 Aug and 3 Sep 1847), all in RG 112, entry 12.

[6]Ltrs, Laub to Lawson (20 May, 30 Jun, and 3 Aug 1847), and Joseph J. B. Wright to Lawson (25 Oct 1847), all in RG 112, entry 12; Heiskell to Satterlee (6 Mar 1848), RG 112, entry 2, 18:467.

acting surgeon general Henry Heiskell deplored in particular the extravagance of volunteer surgeons; another member of the department's staff directed the same comment at volunteer nurses and hospital attendants as well. Occasional orders to supply medicines to teamsters and other employees of the Quartermaster's Department made the attempts of the Surgeon General's Office to predict need accurately all the more difficult. Unexpected calls for supplies apparently were not unusual at lower levels in the chain. Purveyor Laub, for example, was distressed to learn in the fall of 1847 that he would be responsible for supplying the units coming south from the Rio Grande area, where they had been serving under General Taylor, since they were apparently bringing little in the way of supplies with them.[7]

Two items that would in the future be considered vital were not among regular shipments through Vera Cruz. A visiting civilian physician brought ether and the apparatus to administer it to the hospitals and demonstrated its use, but it inspired no enthusiasm. Lawson himself determined that the volatility of ether and the fragility of the necessary equipment made anesthesia impractical in Mexico. Porter concluded that its continued use would only add to the toll at that hospital. He blamed ether for slow healing as well as for the excessive bleeding that had characterized a thigh amputation that he saw performed with its aid. It poisoned the blood, he maintained, and damaged muscle "contractility." He speculated also about the relationship between ether and an increase in hospital gangrene (which was probably a streptococcal infection) and stated (inaccurately) that hospital gangrene had never existed before the use of anesthesia.[8]

CHARLES H. LAUB. *(Courtesy of National Library of Medicine.)*

Lawson had also been investigating the possibility of obtaining ambulances, but even at the time of the landing near Vera Cruz, the Medical Department was still unable to provide its surgeons with any type of vehicle designed specifically to serve as an ambulance. One authority maintains that the department did not use this type

[7]Ltrs, Heiskell to Craig (6 Sep 1847), RG 112, entry 2, 18:51; Glen to Lawson (1 Dec 1846) and Laub to Lawson (29 Oct 1847), both in RG 112, entry 12.

[8]Quote from J. B. Porter, "Surgery and Surgical Pathology: On the Effects of Anesthetic Agents in Operations for Gunshot Wounds," *New York Journal of Medicine and the Collateral Sciences*, n.s., 9 (1852):288–89; Ltr, Lawson to Morton (1 Mar 1852), RG 112, entry 2, 22:276; Wangensteen and Wangensteen, *Rise of Surgery*, p. 26; George Winston Smith and Charles Judah, eds., *Chronicles of the Gringos: The U.S. Army in the Mexican War, 1846–1848* (Albuquerque: University of New Mexico Press, 1968), pp. 349–50.

of conveyance for a decade after the war. A soldier who was in Mexico in December 1847, however, wrote of his trip in an "ambulance," which he described as a closed and very uncomfortable wagon with springs. It seems unlikely that the vehicles referred to as ambulances in such contemporary documents were built to serve exclusively as such. Lawson's order for fifty wagons specifically designed to carry the wounded, apparently placed after the start of the war, was lost in the Quartermaster's Department until too late for them to be used in Mexico and was thus apparently never filled.[9]

Like the supply depot, the general hospital established at Vera Cruz was vital to the campaign. It remained open for the remainder of the war, caring for an average of from 300 to 800 patients at a time, many of whom were probably destined for evacuation to New Orleans. Patients from units stationed nearby were sent to Vera Cruz when their camp had no attending surgeon or no accommodations for the sick. Not all of the hospital's occupants were soldiers; a few were civilian laborers, often "Irishmen, and very dissipated." When Scott's army prepared to advance beyond the coastal areas, the sick and wounded in regimental hospitals who were unable to march swelled the population of the general hospital; a total of more than 1,000 soldiers remained behind. By 17 April, when the last of the troops left Vera Cruz, the patient load was so great that physicians had to take over a Mexican military hospital, by then almost emptied of its Mexican patients. By July the disease rate was so high that some patients had to lie on blankets on the hospital floor. The number of attendants fluctuated from month to month, but at the end of April, 11 stewards, 2 cooks, 4 male nurses, 1 wardmaster, and 4 Mexican matrons were on duty at Vera Cruz. There, as elsewhere, the shortage of physicians also made itself felt, but supply problems, at least, were minor.[10]

Many diseases brought patients to the Vera Cruz hospital, but yellow fever was most feared. The physician in charge concluded that yellow fever was most dangerous in summer, although it was present throughout the year and posed a greater threat to newcomers than to the native population, most of whom were already immune. Malarial fevers were also common, and dysentery-like illnesses were a constant threat to soldiers in such a climate. Nevertheless, General Scott believed that it would be safe for troops to stay in Vera Cruz as long as they did not associate with the natives and remained in the waterfront area with its breezes from the sea. He was confident that men assigned to the castle of San Juan de Ulloa, on an island in the harbor, would escape yellow fever entirely. In this notion he was sadly mistaken. Troops going through Vera Cruz on their

[9]Quote from Charles F. Hinds, ed., "Mexican War Journal of Leander M. Cox," *Kentucky Historical Society Register* 55 (1957):219; Ltrs, Harney to Tompkins (6 Jun 1848), in Daniel D. Tompkins correspondence (1847–49), NLM; Lawson to Heiskell (11 Feb 1847), H. L. Thistle to Scott (26 Jun 1847), and Testimonial, Valentine Mott, Lawrence Proudfoot, and William H. Van Buren, all in RG 112, entry 12; Ltrs, Lawson to Mower (4 Dec 1846) and Heiskell to Edward Warren (3 May 1847), both in RG 112, entry 2, 17:86 and 434, respectively; Mower to Asher Robbins Eddy (18 Jan 1847), in U.S. Hospital Department Copy Book, NLM.

[10]Porter, "Notes" 26:311-12, quote from 312; Surgeon's Quarterly Rpt, Vera Cruz (30 Jun 1848), and Surgeon's Monthly Rpts, Camp Bergara (Apr–May 1848) and Camp Washington (Jun 1847 and May 1848), all in RG 94, entry 634; J. B. Porter, "Letters," *New Orleans Medical and Surgical Journal* 6 (1849–50):52; Irwin, "Notes," pp. 113–14; Miller, "Yellow Jack," p. 49; Ltrs, Heiskell to McCormick (22 Feb 1848), RG 112, entry 2, 18:450; Porter to McCormick (copy, 11 Jan 1847) and E. H. Barton to Porter (18 Jul 1847), both in RG 112, entry 12.

way to or from the front often came down with yellow fever, as did those who, like the hospital staff or the men at the castle, remained in or near that city. Both volunteer and regular surgeons contracted yellow fever, and at least two died of it.[11]

Physicians at Vera Cruz treated yellow fever with 15 to 25 grains of quinine to reduce the fever and baths and mustard plasters to equalize "temperature and the circulation" and subdue "gastric irritation." Mercurials promoted "early and free evacuation of the bowels; . . . five or six passages in as short a time as practicable" being considered desirable to alleviate stomach irritation and nausea. Cupping was favored over bleeding by means of either venesection or leeches.[12]

Despite the efforts of surgeons at Vera Cruz, legends grew up about disease and death there. At least one veteran of the Mexican War believed that "a great many deaths occurred, chiefly among that class of people who neither have the means nor care to take pains about health—such as Qr. Mr.s men & soldiers—they have died by the hundreds of yellow fever, dysentery and bad wounds. Occasionally an officer is stricken down, but altho' all nearly have been sick, few have died, because they had had good attendance & good treatment."[13]

Part of the reason for the high death rate at the Vera Cruz hospital lay in the fact that many patients did not come into the facility until they were already near death; some soldiers, like their predecessors in the Continental Army almost seventy-five years earlier, apparently believed that death awaited those who entered a general hospital. The death rate at this facility from all causes among Army and nonmilitary patients from 1 April 1847 to 21 March 1848 was 12 percent (775 of 6,466 patients died). Appalling though it may appear, this rate compared favorably with the 15 to 20 percent mortality experienced by British forces during the Crimean War and the 25 to 30 percent of the French in the same conflict, as estimated by Louis Duncan, and the 15 percent at the New Orleans Charity Hospital at this time.[14]

Compared to other causes of death at Vera Cruz, yellow fever did not prove to be as dangerous as had been feared. From April through September 1847, the yellow-fever season, 3,874 patients, both military and civilian, entered the Vera Cruz hospital, but only 402 of them had yellow fever, of whom 109 died. In contrast, almost a third of all those hospitalized were patients with diarrhea or dysentery, of whom 199 died. In August, a frightening 67 percent of the victims of yellow fever died, but the average overall death rate from that disease during the spring and summer of 1847 did not exceed 28 percent.[15]

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[11]Ltrs, Scott to Marcy (5 Apr 1847), in War Department, *Correspondence*, p. 100; Porter to Heiskell (19 Sep and 8 Oct 1847), both in RG 112, entry 12; Porter, "Letters" 6:52; Surgeon's Quarterly Rpts, Vera Cruz (31 Aug 1847), San Juan de Ulloa (30 Sep 1847 and 31 Mar and 30 Jun 1848), and Surgeon's Monthly Rpt, San Juan de Ulloa (31 Aug 1847), all in RG 94, entry 634.

[12]Porter, "Notes" 26:312–13, 326–28, and 35:352, quotes from 26:312–13.

[13]Ltr, Josiah Gorgas to his mother (6 Aug 1847), in Frank E. Vandiver, "The Mexican War Experience of Josiah Gorgas," *Journal of Southern History* 13 (1947):382.

[14]Porter, "Notes" 26:301, 311, 331, 332–33; Ltrs, Scott to Marcy (13 Feb 1847), in War Department, *Correspondence*, p. 93; Duncan, "Scott's Campaign" 47:445; ibid. 47:459; Miller, "Yellow Jack," p. 51. Estimates concerning Crimean casualty and mortality rates vary widely. In his *History of the Army Medical Department*, vol. 2. (Edinburgh: Churchill Livingstone, 1974), p. 185, Neil Cantlie suggests that only 11 percent of British troops hospitalized in the Crimea died.

[15]Porter, "Notes" 26:326–28 and 35:352; Porter, "Letters" 6:57–58; Ltrs, Porter to McCormick (11 Jun 1847) and Laub to Heiskell (5 Jul 1847), both in RG 112, entry 12; Charles McCormick, "Editorial: Sick-

By the spring and summer of 1847, the strain on Army surgeons was taking its toll, both at Vera Cruz and elsewhere in Mexico. The civilian physicians hired to make up for the shortage of military doctors provided only limited relief, since they proved all too often to be incompetent adventurers. Although he continued at his post, Porter's health was seriously undermined by the demands placed upon him. Benjamin Harney, the elderly surgeon who was Scott's medical director, fell ill even before the landings at Vera Cruz. He was still so weak in April that one observer believed he was "breaking down" and predicted that his departure from Mexico was imminent. Harney found the strength to continue, however, until he was slightly wounded by a ball that struck his leg just above the ankle, causing him to relinquish his responsibilities of medical director in favor of less arduous duties, although he remained in Mexico.[16]

The Drive on Mexico City

The strain on Scott's surgeons was unrelenting. Although the men who marched inland from Vera Cruz in April 1847 left yellow fever behind them, intestinal disorders followed. Many were soon "weak and exhausted from the effects of bad water and diarrhea." Some were left by the roadside, easy prey for guerrillas. Even before his 18 April victory at Cerro Gordo, Scott found it necessary to order the opening of a temporary general hospital at Plan del Rio, not far from the Cerro Gordo pass.[17]

The battle for the control of the Cerro Gordo pass left sixty-four U.S. soldiers dead. Surgeons worked twenty-four hours and more in the open air, caring for the 353 wounded on

> a great plateau of table land with giant precipices here and towering ledges of rock there, standing askew as if nature, when the earth was cooling from a molten mass, had wrenched the earth asunder, grasping and tearing out a huge proportion and carrying it away to leave a shelf where man might get a foothold and build his habitation.

Scott ordered that as soon as the U.S. victory seemed assured, one wagon per regiment and another for the cavalry gather up the wounded and take them to the appropriate hospitals. The decision as to which facility should be used for each case was made not by the medical director, but by the surgeon general himself. The wagon allotment must have been inadequate, for some patients were moved by litter, but when darkness fell, none of the wounded remained on the field.[18]

Because the Mexicans had used old muskets firing round balls, wounds were not serious except for injuries caused by artillery fire. As a result, only 10 percent of the wounded from Cerro Gordo died. Supply wagons returning to Vera Cruz carried the less seriously hurt back with them. Although the temporary hospital at Plan del Rio lacked both hospital furniture and bedding, and the supply of drugs, instruments, and dressings was small, most patients remained at this facility for at least a short time. To make matters worse, two days

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ness in the U.S. Army in Mexico," *New Orleans Medical and Surgical Journal* 4 (1847–48):141; Ltr, Heiskell to the editor of the *Baltimore Sun* (18 Oct 1847), RG 112, entry 2, 18:236–37; *Statistical Report, 1839–55*, p. 230.

[16]Eba Anderson Lawton, ed., *An Artillery Officer in the Mexican War 1846–7: Letters of Robert Anderson, Captain 3rd Artillery, U.S.A.* (New York: G. P. Putnam's Sons, 1911), pp. 37–38, 40, 256, quote from p. 123.

[17]Oswandel, *Notes*, p. 108, quote from p. 110.

[18]Quote from Elderkin, *Sketches*, p. 63; Maria Clinton Collins, ed., "Journal of Francis Collins . . . ," *Quarterly Publications of the Historical and Philosophical Society of Ohio* 10 (1915):59.

after the battle, the able-bodied left the area. Since medical officers were attached to units rather than hospitals, these men took their doctors with them, leaving only one physician, a Regular Army surgeon, to care for 200 wounded.

Scott's force occupied Jalapa after the Cerro Gordo victory, and wagons moved many of the wounded there from Plan del Rio at the end of April. As they neared the town, these sufferers were enveloped by "air . . . filled with sweet fragrance of orange trees, making the entry of Jalapa more like the Garden of Eden." The approach appears to have been so dramatic that despite the jostling of the wagons and the agony of their wounds, the injured men could still be "amazed by the hills of the city." The discomfort caused the patient by being moved by litter is not known, but carrying one was apparently a depressing duty; a soldier who had been required to bear a litter finally vowed he would kill himself before he spent another day at such a task. He then leaned on the muzzle of his gun, pulled the trigger with his big toe, and brought his earthly sufferings to an end.[19]

The Jalapa hospital was apparently located in a church or buildings attached to a church. It evidently lacked even the most essential equipment, and its attendants, like those at Vera Cruz, were men unfit for anything but hospital duty. As many as 1,000 men went through this facility, and although one patient believed that "men are dying in this hospital almost constantly," the mortality was actually only 20 percent. In a castle at Perote, a short distance beyond Jalapa, was a second hospital, managed by a Pennsylvania volunteer surgeon responsible to the head of the Jalapa facility. The Perote unit remained open through the summer, but by August the deaths among the 300 patients sheltered there were mounting. The average death rate was about four a day but could be as high as twelve. A majority of the deaths were blamed on diseases contracted on the march, most often diarrhea and dysentery.[20]

When Scott ordered his men forward once more in May, he hesitated to leave the sick and wounded at Jalapa, where they would be unguarded should the enemy attempt to harrass them. Moving them, however, would also expose them to enemy attack and, in addition, would further undermine the health of many. Scott appears to have finally decided to leave at Jalapa those too ill to withstand two days on the road, trusting the Mexicans to follow the tradition that "military hospitals are universally regarded, by civilized enemies, as sacred." The patients left at Jalapa remained safe until their evacuation at the end of June, and the facility appears to have reopened in the fall of 1847. Although "*infernal* fleas and other creeping things" were infesting the hospital, diarrhea-like ailments rather than insect-borne diseases caused the highest percentage of deaths, at least among the volunteers. By June 1848, venereal diseases were taking a high toll; forty-six patients were suffering from gonorrhea and thirty-three from primary syphilis.[21]

[19]Oswandel, *Notes*, p. 383, first quote, p. 140; second quote, Thomas D. Tennery, *The Mexican War Diary of Thomas D. Tennery*, ed. D. E. Livingston-Little (Norman: University of Oklahoma Press, 1970), p. 84; Surgeon's Quarterly Rpts, Jalapa (21 Apr and 30 Jun 1847), both in RG 94, entry 634.

[20]Quote from Tennery, *Diary*, p. 84; Oswandel, *Notes*, pp. 195, 383; Surgeon's Quarterly Rpts, Jalapa (21 Apr and 30 Jun 1847) and Ltrs, McLaren to Med Dir (3 Sep and 3 Dec 1847), all in RG 94, entry 634; Grady McWhinney and Sue McWhinney, eds., *To Mexico With Taylor and Scott, 1845–1847* (Waltham, Mass.: Blaisdell Publishing Co., 1969), p. 158.

[21]First quote, Ltr, Scott to Col Childs (3 Jun 1847), in War Department, *Correspondence*, p. 187; second

Diarrhea "in its most fatal and destructive form" struck Scott's men when they reached Puebla, a town about a hundred miles southwest of Jalapa and located on a high, dry site, with a temperate climate and clean streets. In one regiment men were soon dying at the rate of two a day. Over 1,000 there were on sick report as of 4 June 1847. Surgeons blamed the disease rate on bad food, the change in diet, poor cooking, the weather, and the weakened condition of the men. When the army left Puebla during the second week in August, 2,000 men who were sick or convalescent stayed behind. Still others fell ill along the way, requiring surgeons to establish hospitals at other sites through which Scott's force passed on its way to Mexico City, while supply trains returning to Vera Cruz through these towns picked up invalids to carry them on the first leg of their trip home. Many who remained with the army were also suffering from diarrhea, and some carried their own supply of opium to treat themselves.[22]

On 18 August, Scott's surgeons set up another general hospital at San Augustin, ten miles south of Mexico City. During the following two days, Mexican forces killed 137 U.S. soldiers and wounded another 877. Despite rain and cold, at least thirty-two surgeons, including Lawson, worked night and day to care for the injured. Although the wounded were soon disbursed among several regimental hospitals at various sites in the area, the general hospital remained open to care for men stationed there after the main body of the army moved on. A facility was also opened at San Antonio, principally to care for the Mexican wounded, who apparently preferred treatment from U.S. Army physicians.[23]

As he approached Mexico City, Scott ordered a general hospital established at Mixcoac, where he placed the surgeon serving as the medical purveyor for his army in charge, aided by ten assistants. This facility remained in operation until after the surrender of Mexico City. A second hospital was established in the archbishop's palace west of Tacubaya, near Scott's headquarters.

On 8 September, U.S. troops met the Mexicans at Molino del Rey. Present were Lawson and eleven other Medical Department surgeons, two of whom were wounded. Litters and wagons took the casualties from the battle to Tacubaya. One of the injured physicians, who had been shot in the head while leading troops after their officers had fallen, died there of a brain abscess. A few days later, while viewing his men as they attacked the castle of Chapultepec, Scott realized that the Tacubaya hospital was within the range of enemy guns and ordered its occupants evacuated to Mixcoac. The Tacubaya facility reopened once the danger was past and some of the wounded from Chapultepec were moved there not long after the surrender of Mexico City on 14 September.[24]

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quote, Oswandel, *Notes*, p. 404; Surgeon's Monthly Rpt, Jalapa (31 Dec 1847), Surgeon's Quarterly Rpt, Jalapa (30 Jun 1848), and Ltrs, McLaren to Med Dir (3 Sep and 3 Dec 1847), all in RG 94, entry 634; Ltr, McLaren to Heiskell (1847), RG 112, entry 12.

[22]H. Judge Moore, *Scott's Campaign in Mexico . . .* (Charleston, S.C.: J. B. Nixon, 1849), p. 120, quote from pp. 118–19; Oswandel, *Notes*, pp. 177, 239; Ltr, Scott to Marcy (4 Jan 1847), in War Department, *Correspondence*, p. 188; George Ballantine, "How Far Shall We Charge?" in McWhinney and McWhinney, *To Mexico*, p. 158.

[23]Ltr, McMillan to Lawson (6 Sep 1847), RG 112, entry 12; Edgar Erskine Hume, "Comment and Criticism: Medical Officers Who Marched With the Army Under General Scott Upon the City of Mexico in August, 1847," *Military Surgeon* 54 (1924):99–101.

[24]Hume, "Medical Officers" 54:99–101; Hazard Stevens, *The Life of Isaac Ingalls Stevens*, 2 vols. (Boston: Houghton Mifflin Co., 1901), 1:218–19.

The surrender of Mexico City was not the end of hostilities. Just as Scott's troops were completing their victory at the nation's capital, Mexican guerrillas were launching an attack on Puebla, with its garrison of 800. Santa Ana and several thousand men quickly reinforced the attackers. Although a typhoid epidemic reportedly struck during the siege and killed hundreds of the defenders in a short time, as many as 600 of the 1,800 patients at Puebla were well enough to aid in the city's defense. On the evening of 28 September, "the Mexicans (cowardly dogs) attacked our hospital, and succeeded in setting fire to the main gate." Even though the siege was not lifted for two weeks, the hospital was able to continue in operation much as before, apparently closing only in the summer of 1848.[25]

After the Victory

Despite the action at Puebla, the active phase of the war was essentially over when U.S. forces took Mexico City. Scott's medical director, wishing to close the facilities outside the city, quickly searched out buildings suitable for use as division hospitals within Mexico City. He often chose convents or official palaces, but even the best of these were still cold, damp, dark, badly ventilated and, in the opinion of U.S. surgeons, conducive to digestive problems and fevers. Floors were often brick or tile. Since there were no chimneys, presumably there was no artificial heat. Windows opened into a central courtyard, thereby limiting the ventilation. The real cause of health problems, however, lay in the character of Mexico City itself. The city in general was "exceedingly filthy" and the area in which one hospital was located was poorly drained, so that sewage remained near the surface. "The poor [had] no privies, and their excrement [was] at once deposited in the open street, [while] the lower order of people [was] almost universally affected with lice, and fleas [were] the inmates of the palace as well as the hovel." Not surprisingly, typhoid could appear year round, and many U.S. soldiers contracted it while in the city.[26]

In Mexico City the division hospitals were merely collections of regimental hospitals, functioning under the overall supervision of a surgeon at the division level. Although some of the funds of each regiment intended for its sick were sent to help finance the division hospital, Scott also levied a tax on the city, $20,000 of which went to meet hospital expenses. By December 1847 the number of patients in Mexico City hospitals had declined, permitting all to be moved into one general hospital, which was sheltered in several large buildings under the control of a single surgeon and four assistant surgeons.[27]

Nevertheless, disease continued to be a major problem for troops in Mexico. The volunteers who continued to come into Mexico even after the end of significant military action often fell ill, frequently with diarrhea. A Kentucky unit was devastated by one ailment after another, beginning with measles that afflicted the men even before they started out. Some had not entirely recovered from the measles when they boarded ship and subsequently became seasick. "The Sight was laughable. . . . A poor fellow would tumble over so sick that he could not move and vomit

[25]Oswandel, *Notes*, pp. 267, 341, 359–60, quote from p. 309; Surgeon's Quarterly Rpt, Puebla (16 Jun 1848), RG 94, entry 634; Moore, *Scott's Campaign in Mexico*, pp. 212–14, 217–18.

[26]Robert Newton, "Medical Topography of the City of Mexico," *New York Journal of Medicine and the Collateral Sciences*, n.s., 1 (1848):298, quotes from 302–03; Irwin, "Notes," p. 114.

[27]Lawton, *Anderson*, p. 314.

upon himself. . . . The hold was full of sick men & the whole boat presented the most sickening scene." The seasickness eased in a day or two, but then, not long after the unit landed on 16 November 1847, diarrhea took over. Soldiers too ill to march were left behind at the ship or at the nearest hospital. The sick tried many remedies to cure their diarrhea, including bathing their feet in warm water and drinking "some cayenne pepper tea," evidently placing little faith in professional medical advice until amateur remedies had failed. By early December one man was so ill with diarrhea that he had to be hospitalized at Jalapa. As the unit continued to move inland, wagons picked up those too sick to march, and more were hospitalized, twenty being left at the Puebla facility.[28]

Incoming volunteer units were not the only ones afflicted with diarrhea. Three companies out of ten ordered to leave Mexico City for Vera Cruz and, presumably, to return to the United States in March 1848, for example, were detained because of what was called "the diarrhea blues." Furthermore, measles and mumps apparently occasionally appeared among volunteers already in Mexico, and erysipelas, in addition to malaria, was reported to be "common among all the corps." In January, almost 4,000 of the 15,000 men in Mexico were sick. Thus, even though hostilities were over, as long as U.S. soldiers remained in Mexico, hospitals would be needed to shelter their sick, not only at Mexico City but also at Vera Cruz, Jalapa, and other sites where troops were stationed or through which any great number of them might pass.[29]

Surgeons ordered the evacuation of those who were faced with a lengthy illness or convalescence and those with serious wounds. As a result, to their sufferings were added the torture of sixteen or more days in a wagon, tossed about from Mexico City and Puebla to Vera Cruz, where they boarded ships bound for New Orleans. Physicians accompanied them on each leg of this trip, but the stress of the journey upon men already in a weakened state increased their chances of falling ill. Many, having survived their wounds, died of disease. Once on board ship, they too often lay upon the deck without cover, presenting, according to Assistant Surgeon Charles McCormick, "a spectacle of the most heart rending distress, & extreme suffering," their situation made yet more depressing by the fact that the sick were scattered among the dead and dying and surrounded by dirt and filth.[30]

The sufferings of the invalids returning to the United States did not end with their arrival at New Orleans. In one instance, a volunteer surgeon accompanying 128 patients neglected them on board ship and abandoned them entirely as soon as they got to shore. His failure to turn them over to anyone else allowed them to scatter throughout the city, so that eight were never found. On another occasion, a department assistant surgeon accompanying

[28]Hinds, "Cox" 55 (1957):35, 39, 41, 46, 47, 49, 213, 214, 217, 218, 220, 226, 227–28, 232, quotes from pp. 39 and 214, respectively.

[29]First quote, Oswandel, *Notes*, p. 509; second quote, Ltr, Scott to Sec War (2 Feb 1848), in War Department, *Correspondence*, p. 272; Ltr, Thomas Marshall to Scott (3 Jan 1848), in War Department, *Correspondence*, p. 258; Porter, "Notes" 26:329–30; Rpt, Scott to Sec War (6 Jan 1848), in Winfield Scott, *Memoirs of Lieut-General Scott, LL.D.*, 2 vols. (New York: Sheldon & Co., 1864), 2:562–63; Israel Moses, "Cases of Erysipelas, Which Occurred at Soluca, Mexico," *New York Journal of Medicine and the Collateral Sciences*, n.s., 2 (1849):162–63.

[30]Quote from Ltr, McCormick to Heiskell (30 Oct 1847), in RG 112, entry 12; Collins, "Journal," p. 89; Karl Jack Bauer, *The Mexican War* (New York: Macmillan Publishing Co., 1974), p. 32; Stevens, *Stevens* 2:225.

invalids developed delirium tremens when the ship arrived at New Orleans. Moreover, the hospital in that city was becoming overcrowded. A nearby barracks and the buildings of a private institution were taken over to shelter the casualties, but an outbreak of yellow fever in the summer of 1847 further congested the New Orleans facilities, which until the spring of 1848 could shelter an absolute maximum of 300 men.[31]

In 1847 the acting surgeon general in Washington urged that some patients at New Orleans be moved upriver to Baton Rouge, where the barracks hospital was empty; if the barracks itself was also used, 100 or more patients could be accommodated. Medical and hospital supplies were plentiful, and a good private physician was available nearby. This hospital, however, was not ready for patients until September 1847, when the preparation of 30 spaces was complete, and 100 more were almost ready for occupancy. This number, however, was insufficient to give the New Orleans facilities much relief, and when Lawson himself returned from Mexico to New Orleans, he found the situation there as bad as ever.[32]

Such a large number of invalids continued to come in to New Orleans that by 1848 the situation was critical. The department attempted to send as many patients as possible out of the New Orleans-Baton Rouge area to such posts as Jefferson Barracks near St. Louis. Lawson urged that Congress take greater heed of the problem Mexican War invalids posed; a new hospital should be built in New Orleans and specially equipped hospital ships sent to return men from Vera Cruz to New Orleans. Lawson's suggestions about hospital ships were evidently ignored, but by June 1848 the Army had taken over new facilities under construction at New Orleans that had originally been planned as a hospital for merchant seamen. While this project remained incomplete, a general hospital apparently capable of taking at least 300 patients was opened on Greenwood Island, near Pascagoula, Mississippi, to care for the sick from Mexico. Unfortunately, the four buildings used there were "mere

CHARLES MCCORMICK. *(Courtesy of National Library of Medicine.)*

[31]Porter, "Notes" 35:351–52; Ltrs, Heiskell to McCormick (9 Nov 1847), to James McFarlane (12 Nov 1847), to Wright (5 May 1848), and to Satterlee (17 May 1848), all in RG 112, entry 2, 18:219 and 226 and 19:43–44 and 58, respectively; McCormick to the editor (22 Jun 1847), in "Editorial," *New Orleans Medical and Surgical Journal* 4 (1847–48):140; Lawson to Heiskell (11 Feb 1847), McCormick to Heiskell (30 Oct 1847), and Wood to Heiskell (18 Jul 1847), all in RG 112, entry 12.

[32]Ltrs, Heiskell to AG (2 Jul 1847) and to Porter (25 Apr 1847) and Lawson to Sec War (13 Mar 1848), all in RG 112, entry 2, 17:534–35 and 18:100 and 485, respectively; Ltr, Wood to Heiskell (18 Jul 1847) and Statement, Lawson (26 Jan 1848), both in RG 112, entry 12.

shells, leaking in rainy weather," according to Porter, who was in charge of this facility. Proper food for the sick was hard to find, and the men were in very poor condition, suffering from diseases such as chronic dysentery, diarrhea, and even scurvy. When the Greenwood hospital closed in November 1848, Porter accompanied those still needing hospitalization back to New Orleans, despite the fact that the new hospital there was not actually completed until a month later.[33]

For some troops, New Orleans was but a way station. Many eventually went on to other posts along the coast, and especially to Fort Monroe, or returned to their homes. Some arrived at the Virginia post in fine health, but of the 250 on one ship, 100 came down with yellow fever after leaving New Orleans. A company of artillerymen that had been at Vera Cruz also arrived at Fort Monroe with many still sick. The post surgeon reported that 25 of these men had fevers during the trip and that 9 died, "one with black vomit" (i.e., yellow fever). He hospitalized 7 with diarrhea and placed 14 convalescing from fevers in hospital tents set up about a mile from the post at a healthy site. As he went home by steamer, one veteran wrote, "my mouth is so sore that the least effort to masticate my food is very painful, and I cannot eat, . . . and even if I could, it would be improper for me to do so, on account of a long continued diarrhea and pain in my breast and side."[34]

Conclusion

Of the more than 100,000 soldiers who had left the United States to fight in Mexico, over 1,500 had been killed in action, but more than 10,000 had died of disease. The proportion of sick to killed was better than that of the Revolution; in the Civil War, however, only two would die of disease for every one killed in battle or dead from wounds. These figures include neither those who died at home as a result of disease contracted in Mexico nor those family members of returned soldiers who contracted dysentery or typhoid from them. Many a man undoubtedly suffered from impaired health long after the end of the war, starting the campaign "full of health," and returning home "a sick soldier—a mere skeleton of a man, worn down by the prolonged fatigue of travelling, watching and toil."[35]

As it was in so many wars, disease was the great enemy in the Mexican War—the rate of death from disease among the U.S. soldiers in Mexico was ten times that of civilians at home. The surgeons of the Medical Department, too few to meet the demands made upon them, working with inexperienced volunteer and contract surgeons and assisted by attendants who were, for the most part, the dregs of the Army, were helpless before the inroads of dysentery and other digestive ills. They were not as helpless as they had been, however. By means of vaccination they were able to stop outbreaks of smallpox before they became epidemic, and with large doses of quinine

[33]Quote from Ltr, Porter to Bliss (1 Nov 1848), RG 112, entry 12; Porter, "Notes" 35:247–48; Ltrs, Lawson to Sec War (13 Mar 1848) and to Taylor (18 Aug 1848), both in RG 112, entry 2, 18:485 and 19:172, respectively; Chase to Lawson (23 Jun 1848) and Porter to Lawson (20 Jul, 29 Nov, and 3 Dec 1848), all in RG 112, entry 12; McCormick to Lawson (10 Mar 1848), copy in RG 112, entry 12.

[34]First quote, Ltr, Thomas Henderson to Heiskell (13 Jul 1848), RG 112, entry 12; second quote, Richardson, *Journal*, p. 86; see also Ltr, Henderson to Heiskell (24 July 1848), RG 112, entry 12; Collins, "Journal," pp. 106–08.

[35]Quotes from Richardson, *Journal*, p. 86; Irey, "Soldiers," pp. 285, 298; William Jay, *Review of the Causes and Consequences of the Mexican War* (1849. Reprint. New York: Arno Press & The New York Times, 1969), p. 221; Bayne-Jones, *Preventive Medicine*, pp. 55, 86.

they were able to cut short the paroxysms of malarial fevers. Unfortunately, for practical reasons as well as because of prejudice and fear of the unfamiliar, they failed to use anesthesia on a large scale, and thus passed up their only real chance during the Mexican War to make a significant contribution to the progress of medical science.[36]

Although Army surgeons would continue to be helpless against many scourges until progress in the state of the art of medicine gave them better weapons against disease, the war with Mexico emphasized the need for many changes that were within the realm of possibility. As a result, although Lawson's suggestion about hospital ships appears to have been dropped, efforts to develop an ambulance and to make the position of hospital steward permanent continued. The Mexican War did not, however, lead Lawson to conclude that the Medical Department should anticipate in peacetime the complex demands of war. As a result of his lack of insight, a lack many others shared, he failed to develop plans that might minimize the adverse effects of the necessary wartime influx of large numbers of inexperienced surgeons, allow for the need to staff both general and regimental hospitals, and meet in other ways the requirements of an army at war. A stubborn and unimaginative surgeon general had overlooked the most important and perhaps even the most obvious lesson of the Mexican War.

[36]Edward Jarvis, "The Sanitary Condition of the Army," *Atlantic Monthly* 10 (1862):472–73.

CHAPTER 7

Lawson's Last Years, 1846–1861

Settlers and prospectors began moving west in large numbers after the United States acquired the Oregon Territory in 1846 and the northern provinces of Mexico in 1848, a movement that grew still larger after the discovery of gold in California in January of that year. The federal government called upon the Army to explore boundaries and possible railroad routes in the new lands and to confront Indian and Mormon challenges to its authority. New posts also needed garrisons and the growing numbers of travelers needed the Army's protection. The character of the new lands aroused great interest in the scientific community. Surgeons assigned to Army units in the West were encouraged not to limit themselves to purely medical duties but to study the fauna, flora, and geology in their district and to record the customs of the inhabitants.

During the period from 1846 to 1861, tensions were building over the question of the extension of slavery into newly acquired lands, and secession was an ominously frequent topic of discussion. But contingency planning was still a thing of the future and neither Surgeon General Lawson nor any of the Army's other leaders seriously considered how they might meet the demands of a large-scale conflict. Lawson's official letters betrayed no concern with the problems inherent in such a war. Medical Department efforts continued to be directed almost exclusively toward meeting the challenges of the peacetime Army, and in directions essentially no different, except in magnitude, from those of earlier years.

Administration

Once the war with Mexico was won, the Army was again broken down into small, scattered units. That conflict had brought about few basic changes in the Medical Department. It was still not large enough to provide medical attendance for each garrison and detachment, despite Lawson's effort to obtain an adequate staff. Although he himself was brevetted brigadier general in May 1848, the surgeon general's campaign for increased stature for his surgeons was also thwarted. Congress did, however, finally allow the retention in the position of hospital steward of any man qualified to handle that role.

The law of 1847 that had allowed the addition of fourteen new surgeons ordered their dismissal at the end of hostilities. In July 1848, when the legislature repealed that requirement, it added a provision forbidding the hiring of replacements for those who did leave. By then, some of the fourteen had already departed. Only in March 1848 did Congress make the fourteen slots permanent, thus officially permitting the signing on of ten doctors to replace those who had already resigned. Considering the need, this increase was in-

significant. With ninety-four surgeons, some of whom would always be sick or incapacitated by age, the department was expected to care not only for men scattered among eighty-nine posts, some of which needed more than one surgeon, but also for soldiers involved in multitudinous expeditions, both large and small, that took them from their regular assignments. The threat of Indian ambush isolated some posts, making it essentially impossible to send a surgeon in time of emergency to a post otherwise without medical attendance.[1]

In 1851, Congress made the Army Medical Department indirectly responsible for the medical care of the residents of the new Army Asylum or, as it later became known, the Soldiers' Home. The surgeon general served as a member of the Board of Commissioners. A department medical officer served as attending surgeon, his duties at the Soldiers' Home being above and beyond those of his regular Army assignment and recompensed as the Board of Commissioners might decide. For many years, Assistant Surgeon Benjamin King served as secretary-treasurer of the board as well as attending physician, and both Surgeon General Lawson and, after the Civil War, Surgeon General Joseph K. Barnes were very much concerned about the operations of this institution.[2]

Lawson's campaign for a larger Medical Department was, therefore, a continuing one. In his report of November 1855 he emphasized to the secretary of war that the number of surgeons the Army needed did not "depend upon the numerical force of the army, but upon the manner in which it is employed; that is upon the divisions and subdivisions it has to undergo, and the particular service in which it is engaged." In 1856 Congress did vote the department 4 more surgeons and 8 more assistant surgeons, but at least one general believed that no fewer than 12 more surgeons and 40 more assistants were required at this time. In the summer of 1860, with the nation at the brink of civil war, Congress granted the department slots for only 4 more surgeons and 4 more assistant surgeons. The Army was forced to face the oncoming holocaust with only 30 surgeons and 83 assistants, not all of whom would remain loyal to the Union.[3]

Because of the Medical Department's relatively small size, its expenses for contract surgeons remained high, averaging $24,000 a year in the mid-1850s. A civilian doctor hired to care for 100 or more men was paid $50 a month, for 50 to 100, $40, and for fewer than 50, $30, with an allowance added for any physician providing his own supplies and medicines. If he had to abandon his practice to accompany troops on the march, a civilian might receive as much as $100 a month. In some areas, however, nonmilitary physicians were impossible to obtain, and many soldiers did not trust contract surgeons. Some of these doctors, however, were young men who had recently passed the department's still demanding examinations and were awaiting

[1]Ltrs, Heiskell to William J. Worth (25 Jan 1849) and Lawson to AG (25 May 1851), both in RG 112, entry 2, 19:375 and 21:434, respectively. Unless otherwise indicated, all material in this chapter is based on Brown, *Medical Department*; War Department, SGO, *Regulations for the Medical Department* (Washington: Alexander, 1850) and *Regulations for the Medical Department of the Army* (Washington: A. O. P. Nicholson, 1856); and Callan, *Military Laws*.

[2]Paul R. Goode, *The United States Soldiers' Home: A History of Its First Hundred Years* (Privately printed, 1975), pp. 46–48, 54, 57, 60, 71, 86.

[3]Quote from Brown, *Medical Department*, p. 207; Ltrs, McCormick to Lawson (29 Nov 1857) and Twiggs to Lawson (27 Aug 1859), both in RG 112, entry 12.

openings on the staff. The quality of their work, therefore, was generally good.[4]

Because Lawson had few officers, he was unable to grant them leave except in instances of great need. This fact distressed him, all the more so when department finances dictated that, except for the most deserving cases, surgeons who succeeded in obtaining leave must hire and pay for their own replacements. Since the increases allowed in the Department's size were always inadequate, the problem was chronic, and some good men left the Army as a result.[5]

The officers of the Medical Department had official rank after February 1847, but the new law's significance for the surgeon's status within the Army was not clear. Although medical officers received housing and allowances on the same basis as line officers, those who assumed that they no longer had to obey commands from junior officers of the line or to take a back seat to them when serving on administrative boards were in for a rude awakening. Not long after the passage of the law, the adjutant general stated that since its implications were confusing, the old laws would continue to apply. Some high-ranking officers who had bitterly opposed the law were urging its repeal. When Surgeon, and now a major, Clement Finley, who would succeed Lawson as surgeon general, refused to obey an order from Bvt. Lt. Col. Braxton Bragg, whose regular rank was captain, he was court-martialed and convicted. President Millard Fillmore remitted the sentence of dismissal from the service, but upheld the court's verdict. A second medical officer who repeated Finley's offense not long after was also convicted and sentenced to dismissal, but the president again remitted the sentence, this time on the grounds that the defendant had not heard of the earlier ruling.[6]

The question of the role surgeons could play on Courts of Inquiry and similar bodies apparently also remained unresolved. The secretary of war ruled that a medical officer could preside over such a court if he was the senior officer, but this ruling was evidently not always applied to boards of inspection and survey. Congress had little to say on the matter, and medical officers unhappily concluded that, despite the 1847 law, their status in the Army was essentially unchanged.[7]

At the time of the Mexican War, the position of hospital stewards within the Army also remained to be clarified. The level of aid that properly trained stewards rendered surgeons—some could perform an apothecary's duties and even conduct minor surgery—made it all the more important that such men be given permanent positions with the department. The demand for competent stewards was great. At posts where

[4]Ltrs, William J. Sloan to Lawson (1 Mar 1859), RG 112, entry 12; Wood to Joseph B. Flint (14 Mar 1856) and Lawson to Robert Thompson (16 May 1856), both in RG 112, entry 2, 25:193 and 269–71, respectively.

[5]Ltrs, Heiskel to Jarvis (14 Feb 1851) and to AG (30 Sep 1852), both in RG 112, entry 2, 21:383–84 and 22:492–93, respectively; M. L. Crimmins, ed., "Notes and Documents: W. G. Freeman's Report on the Eighth Military Department," *Southwestern Historical Quarterly* 53:207; Ltr, Maj Gen James A. Wier, U.S. Army (Ret.) to author (4 Jan 1883), copy in historians' files, CMH.

[6]Ltr, Coolidge to Finley (11 Jul 1851), RG 112, entry 2, 22:44; U.S. War Department, *General Orders 1851* (Washington, 1851), GO no. 51; Ltrs, Mower et al. to Lawson (24 Apr 1847), Tripler to Lawson (6 Jan 1859), Porter to Lawson (7 Feb 1849), and John B. Wells to Heiskell (26 Jul 1847) and to Marcy (11 Aug 1847), all in RG 112, entry 12.

[7]Ltrs, Heiskell to Moore (27 Dec 1850), Coolidge to Wright (21 Aug 1852), and Lawson to AG (10 Oct 1853), all in RG 112, entry 2, 21:308, 22:461, and 23:358, respectively; Satterlee to Lawson (1 Feb 1859) and White to Lawson (3 Mar 1853), both in RG 112, entry 12; A. A. Woodhull, "An Inquiry Into the Military Rights and Duties of Medical Officers in the Land Forces," *U.S. Service Magazine* 1 (1864):478.

supply depots were located, surgeons might ask for a second steward to serve as medical storekeeper. Few civilians who were qualified to perform at the highest level would enlist, however, if they knew that they might be taken from Medical Department assignments and forced to serve as ordinary soldiers. Moreover, surgeons found it frustrating to train a steward from the line only to see him march off with his unit. On the other hand, having a good man taken permanently from his unit was frustrating to his commanding officer.[8]

Finally, in 1856 and only after much urging by Lawson, Congress granted the secretary of war the authority both to appoint stewards from among men already in the Army and to hire competent men from the outside to be permanently attached to the Medical Department for a salary of $30 a month. This law also granted men who served as cooks and nurses extra duty pay in recognition of the hazardous and unpleasant nature of much of their work, a move the department had been unsuccessfully urging for years.

After the passage of the 1856 law, the Medical Department moved cautiously to create what one of Lawson's assistants described as an "efficient corps of stewards." Although there was no longer any need to keep a steward at one specific post or with a particular unit, the department still feared that moving these men about too much might cause Congress to have second thoughts. Whether the reason was caution or ineptness, by 1861 the department had not taken full advantage of the opportunity afforded by the law of 1856 to build up a corps of trained and disciplined stewards.[9]

Although Lawson needed the cooperation of Congress to deal effectively with the personnel problems he faced, he was to a large extent free to manage supply as he saw fit. The rapid changes that took place as the Army assumed expanding responsibilities made supply operations increasingly complex. Attempts to anticipate need were at times frustrated by the short life of some posts, the long distances involved, and the hazards that threatened shipments as they moved west. The surgeon general continued to believe that whenever possible, purchasing should be handled in New York City, where prices were generally lower than elsewhere. However, a year might be required for goods to reach a western fort from the East, and on the West Coast the telegraph was not available for placing supplemental orders. In consequence, the department was forced to permit some buying at New Orleans and to allow surgeons, when absolutely necessary, to meet specific needs on their own or through the Quartermaster's Department.[10]

The Medical Department also began to establish supply depots at central locations in the West. In 1849 Fort Leavenworth became a storage site from which surgeons as far away as New Mexico could draw. A few months later, apparently when Indian dep-

[8]Crimmins, "Freeman's Report," 53:207; Ltrs, Jarvis to Lawson (17 Dec 1859), Mower to Heiskell (16 Mar 1847), Randall to Lawson (6 Mar 1849), H. H. Steiner to Lawson (20 Jul 1846), and Stinnecke to Lawson (8 May 1844), all in RG 112, entry 12.

[9]Quote from Ltr, Wood to A. J. Ridgely (10 May 1859), RG 112, entry 2, 25:524; Ltrs, Lawson to AG (17 Feb 1857) and Coolidge to W. T. Clarke (24 Oct 1859), both in RG 112, entry 2, 27:77 and 211, respectively.

[10]Ltrs, J. H. Bailey to Lawson (20 Apr 1846), Wheaton to SG (13 Apr 1848), and Jarvis to SG (7 Mar 1859), all in RG 112, entry 12; Heiskell to Wheaton (9 Jan 1849), to McDougall (22 Feb 1850), and to Mower (9 May 1850) and Coolidge to Charles E. Pleasants (7 Jan 1852), all in RG 112, entry 2, 19:353, 20:476, and 498, and 22:210, respectively.

redations made repeated punitive expeditions necessary in Texas, the department set up another warehouse at San Antonio. The need for a major depot there was temporary, and this facility was soon reduced in size and required to supply only units passing through. By 1855 there were also medical supply depots at Albuquerque and Santa Fe and at Benecia, in present-day California, but the surgeon general remained adamant in his determination to have permanent forts order on a yearly basis from New York City, requisitioning from depots only in emergencies.[11]

The safety of goods shipped long distances remained very uncertain; rough handling often damaged even carefully packed items, and shipwrecks were a fact of life. In 1856 the failure of his annual shipment to arrive actually forced the surgeon at Fort Chadbourne, Texas, "to resort to the *horse and mule medicine* in the Quarter Master's Depot." Included in the supplies lost in wrecks were two consecutive shipments in 1860 to forts in the Arkansas-Oklahoma area. Judging from the size of the department's orders, the concept of anesthesia was being accepted, but ether continued to be difficult to ship. One order evaporated during the long trip from New York to Albuquerque because of ill-fitting glass stoppers. The purveyor obtained a promise from the supplier to ship the anesthetic again, at no cost to the government if the Army transported the bottles.[12]

Surgeons in California began to urge Lawson to permit some purchases to be made there. One physician maintained that the items he needed could be bought locally for less than the total cost, including shipment, of the same items bought in New York. The department's decision in January 1861 to buy the tea for California posts in San Francisco was a gesture in this direction. In addition, theft or evaporation might cause bottles of wine to arrive in California empty. The Surgeon General's Office finally ordered the medical director in San Francisco to buy twenty-four dozen bottles of Los Angeles wine for the use of West Coast posts to supplement sixty dozen bottles to be sent from New York City. The New York purveyor initially concluded that Los Angeles wines were acceptable "for medicinal use," but by April 1861 it had become obvious that California wines did not please eastern palates; they were all, the San Francisco purveyor reported, either too sweet or too acid, and none were fit for the sick.[13]

Supply problems also resulted from the relative haste with which troops were moved about. In the spring of 1851, for example, companies of the 5th Infantry began arriving at Fort Gibson from Fort Leavenworth on their way to Texas, but "entirely destitute of medical Supplies." The Surgeon General's Office asked the

[11]Ltrs, Heiskell to Mower (4 Jul 1849), to McCormick (26 Jul 1849), to Wright (4 Feb 1850), and to McDougall (22 Feb 1850) and Lawson to Act QMG (19 Sep 1855), all in RG 112, entry 2, 20:144, 177, 451, and 476 and 25:37, respectively; Coolidge to McCormick (5 Apr 1861), Jarvis to Lawson (27 Apr and 10 Oct 1859), and Mills to Lawson (16 Jan 1851), all in RG 112, entry 12.

[12]Quote from Ltr, E. P. Langworthy to Lawson (1 Dec 1856), RG 112, entry 12; James O. Breeden, "Health of Early Texas: The Military Frontier," *Southwestern Historical Quarterly* 80 (1977):397–98; Ltrs, Murray to Lawson (17 Feb 1854), Porter to Lawson (1 Sep 1858), Swift to Lawson (30 May 1852), Satterlee to Lawson (16 Apr and 14 Nov 1860), and Wells to Montgomery (2 Mar 1852), all in RG 112, entry 12.

[13]Quote from Ltr, Satterlee to Lawson (25 Jan 1861), RG 112, entry 12; Ltrs, Lawson to Asst QMG (7 Aug 1857), Wood to Satterlee (28 Feb 1860), and C. H. Smith to Satterlee (23 Jan 1861), all in RG 112, entry 2, 26:137–38 and 27:329 and 597, respectively; Coolidge to Lawson (9 Apr 1861), D. Camden De Leon to Lawson (5 Jul 1856), Deyerle to Lawson (20 Apr 1852), and Griffin to Lawson (10 Jul 1852), all in RG 112, entry 12.

regiment's commanding officer to order surgeons at the nearest post to send all their medical supplies to his unit; the surgeons so deprived might resupply themselves from New Orleans. The general commanding the Military Department of the West had apparently not been consulted in this situation. When he heard of it, he announced that the Medical Department's handling of the matter was "entirely irregular," since only he could give such orders. He also questioned the authority of the surgeon acting as medical director for his area to function as other than a post surgeon; apparently Lawson's custom of requiring the senior surgeon in a military department to serve as medical director was not always recognized. In any event, the general ordered that all requests for medical supplies from other posts come from or through his headquarters. Amidst the furor, the Texas-bound troops were supplied from Forts Gibson, Towson, and Washita.[14]

Supply was but one of the difficulties faced by Medical Department surgeons in the West. The shortage of adequate hospital facilities at new posts also presented problems. In 1858 at Walla Walla, Washington, for example, the hospital was "a temporary thatched hovel, twelve by fourteen, with only four bunks (one above the other), less than three feet wide." Although the wounded resulting from individual skirmishes with the Indians in the West were usually few, expeditions against the Indians could on occasion result in more wounded than there were bunks. For reasons that the surgeon apparently did not understand, construction of a new facility to replace the defective one at Walla Walla had come to a halt by 1854. The problems of the medical officer in San Francisco at this time were even greater. His hospital building was too small for the growing command and in poor condition, and the surgeon general made matters worse by refusing to grant an adequate fuel supply for the summer months. Summers in northern California were almost as cool as the winters, but Lawson insisted upon allowing only two cords of wood for the summer even though eight were needed for the winter.[15]

Surgeons also experienced problems getting their patients to whatever facilities they had succeeded in establishing. As late as 1859, the Medical Department had made little progress against the difficulties involved in moving the disabled. In the fall of that year, a board of five department surgeons met in Washington to examine models for ambulances. They recommended trials of two types, a two-wheeled version and a four-wheeled one that could carry ten men. The larger model was apparently in use at Fort Leavenworth by 1861. An attempt to have a horse litter designed for use in areas inaccessible to wheeled vehicles failed. Additional difficulties arose from the fact that Army officers tended to use ambulances as if they were ordinary wagons. In 1860 the department was forced to emphasize that the vehicles distributed to the Army to serve as ambulances were not to be used for any other purpose.[16]

[14]First quote, Ltr, Wells to Madison (copy, 16 May 1851), and second quote, Ltr, Page to Wells (20 May 1851), both in RG 112, entry 12; Ltrs, Wells (recipient's name illegible) (23 May 1851) and Wells to Lawson (21 Jun 1851) and Order (no. 7, 19 May 1851), all in RG 112, entry 12.

[15]SGO, *Statistical Report on the Sickness and Mortality in the Army of the United States . . . From January, 1855, to January, 1860* (Washington: George W. Bowman, 1860), pp. 268–70, quote from p. 270; Ltrs, J. F. Hammond to Lawson (11 May, 15 Jun, and 21 Aug 1854), all in RG 112, entry 12.

[16]Ltrs, Wood to Satterlee (28 Feb 1860) and to J. E. Johnston (2 Aug 1860), both in RG 112, entry 2, 27:330 and 484, respectively; J. F. Hammond to Law-

The principal difficulties faced by the Medical Department as a whole in the fifteen years before the Civil War resulted from the refusal of Congress to grant adequate increases for the medical staff and, above all, from the rapidity of the nation's expansion. In the Far West, where the greatest change was taking place, the telegraph and the railroad were not available, and the problems faced by surgeons there were exaggerated by the resultant inability of the department to adjust the shipment of supplies quickly enough to meet the changing demand.

The Work of the Army Surgeon as a Physician

Ultimately the problems generated by slow communications and transportation, by an understaffed department, and by the shortage of trained and reliable stewards fell upon surgeons in the field, and particularly upon those in the West. In the East the Army doctor's duties tended to be mundane and included such chores as administering physical examinations to men wanting to join the Army. After the Mexican War, the department decided to look more closely at the health records it had been accumulating on would-be recruits. Published in the second volume of the department's *Statistical Report*, this study of men examined from 1849 through 1855 recorded that 3,516 of 5,000 consecutive applicants in 1850 and 1851 were foreign-born, and 2,113 were from Ireland alone. A total of 2,675 were "from Great Britain and dependencies," while almost 700 came from Germany. These figures no doubt reflected the upheavals of 1848 in Europe and the Irish potato famine. The text noted, however, that in wartime, "The relative proportion of native and foreign recruits [was] reversed."[17]

The department's study also revealed that at midcentury the average would-be soldier weighed just under 150 pounds and stood between 5 feet 6½ inches and 5 feet 7½ inches—regulations required a minimum height of 5 feet 5 inches. Among 1,800 native-born applicants examined for one part of the study, only 241 were at least 6 feet tall, and the tallest hailed from Georgia. A large proportion of rejected recruits suffered from "varicose veins and varicocele." Many native-born men were rejected as "not robust, too slender," although physicians concluded that the "excess rejections" of these men resulted merely from their being "young men who had not arrived at the full development of their physical strength." The rejections of foreign recruits, on the other hand, often resulted from generally poor physical condition. A large number of "Europeans" (apparently an all-others type of category) was also rejected because of "Unsound and broken-down constitutions," while many English and Irish proved to be unacceptable because of "Intemperance and bad habits."[18]

The department also classified its rejected recruits by occupation. Presumably most of the men who left their trades during peacetime to join the Army were not completely successful in civilian life. In some instances, poor health may have been to blame for their failures and therefore the *Statistical Report* figures may not be an ac-

son (24 Feb 1855), Tripler to Wood (22 May 1860), and Wright to Lawson (8 Mar 1861), all in RG 112, entry 12; Otis, *A Report to the Surgeon General*, pp. 2n, 5, 9.

[17]Quote from *Statistical Report, 1839–55*, p. 627. Unless otherwise indicated, all statistics in this chapter are derived from vol. 2 of the *Statistical Reports*.

[18]Quotes from *Statistical Report, 1839–55*, p. 629.

curate indication of the health of the civilian population. The lowest proportion of rejections was found in the category "Carpenters and workers in wood," the highest among laborers and farmers. Varicose veins caused rejections in all groups, but these tables also suggested that laborers suffered more than others from "lax abdominal rings," presumably a precursor of hernia, while farmers who had deserted their fields were often the victims of "imbecility" and venereal diseases, the latter acquired, perhaps, in the city where they signed up. The greatest incidence of intemperance was found among those who preferred the Army to tailoring, but "clerks, students, and teachers" were most often afflicted with hemorrhoids.[19]

The fact that such detailed statistics were gathered about those rejected by Army physical examinations may give the misleading impression that by this period only the fit were accepted for military service. Since no "exact, full, and uniform instructions" on how to conduct pre-induction physicals were distributed within the Army, overly eager recruiters had considerable leeway in filling their quotas. On at least one occasion, a line officer, angered by a rejection of a would-be recruit, tried but failed to have it reversed. Alcoholism, epilepsy, and psychological problems, furthermore, were undoubtedly difficult to spot, and accurate tests for such diseases as syphilis did not exist. Since physicians evidently believed that they could cure gonorrhea, men with this disease might be accepted if they had suffered no permanent physical damage. In the belief that soldiers "would not tolerate the mixed breed as comrades," surgeons continued to reject those whose racial background was unclear.[20]

Regardless of their health when they signed up, recruits were exposed to many diseases by Army life. Furthermore, except for smallpox, the Medical Department could do little to keep the soldier from contracting diseases to which he was exposed. All recruits were eventually vaccinated, but cases of smallpox did occasionally occur. Some victims had not yet been immunized, or had not been properly immunized, while others may have lost their immunity over time. In 1849, when smallpox was particularly prevalent, 66 soldiers fell ill with the disease. Of these, 23 had been vaccinated, but of the 8 who died, none had ever undergone the procedure.[21]

Army surgeons had by this time apparently realized that although it was often difficult to obtain a potent vaccine, revaccination was advisable whenever soldiers were likely to be exposed to smallpox. The surgeon at Fort McKavett, Texas, for example, reimmunized most of the men at his post in 1857 after hearing of a smallpox epidemic in San Antonio. Because of the difficulty of obtaining vaccine, he started by immunizing only infants and children who had never undergone the procedure. Using material taken from their lesions, he then vaccinated the 22-man post band. The

[19]Quotes from *Statistical Report, 1839–55*, p. 630.

[20]Quotes from Richard H. Coolidge, *Revised Edition of Thomas Henderson's Hints on the Medical Examinations* . . . (Philadelphia: J. B. Lippincott Co., 1856), pp. 20, 32; Francis Paul Prucha, *Broadax and Bayonet* . . . (Madison: State Historical Society of Wisconsin, 1953), p. 41; Remarks, Maj E. W. Townsend (18 Sep 1858), and Ltr, Randall to Lawson (26 Sep 1858), both in RG 112, entry 12; Ltr, Bandel to his parents (17 Mar 1857), in Eugene Bandel, *Frontier Life in the Army, 1855–61*, ed. Ralph P. Bieber (Glendale, Calif.: Arthur Clarke Co., 1932), p. 105.

[21]Ltrs, Lawson to Martin N. Paine (12 Aug 1852), RG 112, entry 2, 22:450; W. S. King to Lawson (8 Mar 1850) and Lafayette Guild to Lawson (22 Aug 1857), both in RG 112, entry 12.

procedure took for all but four of this group, two of whom had already been vaccinated and two more of whom bore smallpox scars. With material obtained from members of the band he next vaccinated half of the remaining men, and with material from these, he immunized the final group.[22]

Vaccinating the people at Fort McKavett in relays ensured the potency of the vaccine matter used after the first round. The department encouraged other surgeons to propagate their vaccine similarly and also tried to develop an exchange system among its physicians. The New York purveyor experimented at this time with shipping the inoculum in small sealed glass tubes, but since these containers were quite fragile, the department generally continued to use vaccine crusts to ship the virus, although this method of shipment carried the risk that the material might be ineffective when it reached its destination.[23]

Although immunization was not possible for diseases other than smallpox, the use of quinine could reduce malaria to the level of a "vexatious" disease, even in those areas where mosquitoes thrived. In Florida, for example, where fevers had caused such havoc during the Second Seminole War, a surgeon reported in 1856 that "ague and fever seldom affords [*sic*] cause for alarm, or even seriously excites the anxieties of the patient."[24]

Scurvy had long been better understood than malaria, but its cause continued to be partially obscured by misconception. As late as 1859, physicians still listed such factors as poor ventilation, lack of exercise, exposure, a hot, dry climate, and boredom as contributing factors. Having treated five cases in August and September 1857, during which time the men in his care had been offered dried vegetables as well as "apples, peaches, rice, and molasses," a surgeon in the West concluded that this experience had demonstrated that "abstinence from vegetable food is not, as some suppose the sole cause of scurvy." He maintained that a man's physical condition and habits, especially "evil habits" involving the use of the "filthy narcotic, tobacco," contributed to the appearance of the disease.[25]

When it was not deliberately supplemented with antiscorbutics, the normal Army diet provided little that could have prevented or cured scurvy. A surgeon in Florida reported that men sent out on an exploratory expedition on 31 March 1857 were showing signs of scurvy before their return to base on 21 May—and that while in the field they had eaten only pork, hard bread, and coffee. In 1854 the standard menu at Fort Columbus in New York Harbor was little better, except for the addition, "at rare intervals," of "one or two boiled potatoes." A soldier serving in the West in 1856 recorded a diet of a pound of pork or a pound and a half of beef each

[22]*Statistical Report, 1855–60*, pp. 189–90. Unless otherwise indicated, material on diseases in the Army is based on vols. 2 and 3 of these *Statistical Reports*.

[23]Ltrs, Heiskell to McDougall (1 May 1849), to W. S. King (20 Aug 1849), and to Wood (27 Mar 1854), all in RG 112, entry 2, 20:33, 216 and 24:32, respectively; Cooper to Lawson (24 Apr 1849) and Satterlee to Lawson (3 Nov 1857), both in RG 112, entry 12; Rpt, Coolidge, in *Statistical Report, 1855–60*, p. 97.

[24]Quote from *Statistical Report, 1855–60*, p. 149; Elkanah Babcock, *A War History of the Sixth U.S. Infantry* (Kansas City, Mo.: Hudson Kimberly Publishing Co., 1903), pp. 66, 70–72; Esmond R. Long, "The Decline of Chronic Infectious Disease and Its Social Implications," *Bulletin of the History of Medicine* 28 (1954):373.

[25]Quotes from *Statistical Report, 1855–60*, p. 287; Ltrs, Heiskell to Baily (24 Mar 1852), RG 112, entry 2, 22:309; Wood to E. W. Johns (23 Mar 1859), in *Statistical Report, 1855–60*, p. 55; Perin to Lawson (2 May 1850), RG 112, entry 12. It is now believed that such factors as stress and smoking may indeed increase the body's need for vitamin C.

GLOVER PERIN. *(Courtesy of National Library of Medicine.)*

day, coffee, "plenty of sugar," a little more than a pound of bread, and rice. Officers and their families had first claim to vegetables grown on post, so surgeons might have to resort to using native plants for the enlisted men even when the garden was doing well. Surgeons at less arid posts had long known of the virtues of wild onions, but Glover Perin discovered in the Southwest that cactus juice, flavored sometimes with whiskey, sugar, and lemon extract to make it more palatable, also made a good antiscorbutic. In spite of the ingenuity of post surgeons, among the many victims of scurvy in the 1849-1854 period were 10 men at the New York Harbor post, 988 in Texas, and 148 in California.[26]

Scurvy may not have been as common a condition as diarrhea, dysentery, respiratory ills, and alcoholism, but it was, nevertheless, a familiar problem. By contrast, yellow fever and cholera were so erratic in their appearance and so dangerous as to be capable of inspiring actual panic. Yellow fever continued to appear sporadically and without warning at cities all along the coast, and more regularly in the Deep South. Fort Brown, Texas, where it attacked 74 of the 89-man garrison and 18 of the women and children, was but one of the posts where this mosquito-borne disease spread terror. At that post fear caused even normally sober men to drink heavily, and the surgeon reported that the bodies of many of the forty-one who died showed "well-marked symptoms of *delirium tremens*."[27]

Among the forts often visited by yellow fever was Fort Moultrie, in the harbor of Charleston, South Carolina. Diarrhea and dysentery were common there, as were various kinds of fevers, including malaria and dengue. Diagnosis, therefore, could be difficult. Although yellow fever appeared in Charleston in 1849 after an absence of several years, it did not reach Fort Moultrie until August 1850. Doctors disagreed about the nature of the disease at the fort, however. The post surgeon, John Porter, had already had more than his share of problems that summer—his hospital was run down and his steward a drunkard and a thief. When Charleston surgeons challenged his conclusion that the disease they

[26]Augustus Meyers, *Ten Years in the Ranks, U.S. Army* (New York: Stirling Press, 1914), pp. 3, 5–7, first quote, p. 7; second quote, Bandel, *Frontier Life*, p. 105; *Statistical Report, 1839–55*, p. 363; Ltrs, H. P. Bee to Lawson (8 Oct 1853), McCormick to Lawson (16 May 1850), L. D. Mullawny to Lawson (5 Oct 1853), and Perin to Lawson (2 May 1850 and 3 Jul 1851), all in RG 112, entry 12.

[27]Quote from *Statistical Report, 1855–60*, pp. 182–83.

were fighting was yellow fever and stated that it was dengue, Porter, who had become familiar with yellow fever in Mexico, replied that dengue was basically "a febrile, arthritic disease" and that he had not noted arthritic symptoms in his patients. He did entertain the idea that the disease might also be remittent fever. All but 10 of the 48 officers and men, plus 43 of the women and children at the fort, contracted the disease before it had run its course, but the fact that none died indicates that the problem may not have been yellow fever.[28]

Yellow fever apparently spared Fort Moultrie again in 1851, but the next year 33 of the 106-man garrison fell ill with it. The four who died were the only fatalities at the post during the entire year. This time no questions arose as to the nature of the epidemic, but at least Porter's luck had in some respects turned—his new steward was "always . . . steady and temperate," and his hospital attendants were so conscientious during that desperate time that he was moved to urge the surgeon general to continue his attempt to get extra pay for those performing this type of work.[29]

Yellow fever returned to Fort Moultrie in epidemic form once again in 1858, but by that time Bernard M. Byrne had replaced Porter as post surgeon. Byrne may have been made of less stern stuff than Porter. The epidemic apparently unnerved him, although accusations against him were never proved. Less than a month after he diagnosed the first case of yellow fever, and after three of the sick had died, Byrne reported himself ill. He remained on sick report 32 days, an unusually long time; one of his yellow fever patients was able to return to duty 3 days after being hospitalized and two others in 10 to 11 days.

In the nine days after Byrne first became ill, eighteen more cases appeared and ten more victims died. A civilian physician from Charleston was asked to care for these men. Rumors began circulating that Byrne was not really ill, that he was avoiding patients for fear of contracting yellow fever himself. Even after the arrival of William J. L'Engle, a Regular Army surgeon, Byrne's services were still needed—the epidemic ended only after striking forty-nine men and killing twenty-eight.[30]

Although at the urging of one of the other officers at Fort Moultrie, Bvt. Col. J. L. Gardner, the post commander, took action against Byrne, Gardner apparently never doubted that Byrne was genuinely sick and unable to perform his duties. The Charleston physician said that, in Byrne's place, he too, would have treated himself, but that he could not substantiate Byrne's claim of ill health without having examined him. The ailing surgeon's steward praised his superior's devotion to duty and testified that Byrne looked ill during the time he was on sick report. A private reported that when the surgeon returned to duty, "He seemed . . . to be a very delicate man, and very much reduced." L'Engle maintained that Byrne was obviously well enough to have cared for the sick since he had been caring for Mrs. Byrne, and an officer who had visited Byrne during his illness maintained that the surgeon showed no sign of

[28]Ltrs, Porter to Lawson (11 and 26 Aug 1849, 16 Oct 1849, 2 Oct 1850, and 9 Feb 1852), all in RG 112, entry 12; Surgeon's Quarterly Rpt, Ft. Moultrie (30 Sep 1850), RG 94, entry 634.

[29]Quote from Ltr, Porter to Lawson (26 Nov 1852), RG 112, entry 12; Surgeon's Quarterly Rpt, Ft. Moultrie (31 Dec 1852), RG 94, entry 634.

[30]Unless otherwise indicated, all information on Byrne's experiences at Ft. Moultrie is based on *Statistical Report, 1855–60*, pp. 122–23; Byrne, *Court Martial*, and Surgeon's Quarterly Rpts, Ft. Moultrie (30 Sep and 31 Dec 1858), both in RG 94, entry 634.

being unwell or suffering and that action should be taken against him.[31]

Byrne's reputation stood him in good stead at his trial and the civilian doctor pointed out that Byrne had been under no professional obligation to care for patients when a qualified physician was present to assume the responsibility for their welfare. The secretary of war approved the court's verdict of not guilty, but pointed out that the acquittal came on the ground of reasonable doubt and that the illness of Byrne's wife had not absolved him of his responsibilities to the command.

Yellow fever was, despite the erratic timing of its appearance, more familiar to many men in the Army than cholera, which had disappeared from the United States after the epidemic of 1832 had run its course. In 1848, however, cholera reappeared on the North American continent, striking some posts repeatedly while sparing others. New York Harbor was among areas where this fearful disease spread terror, and 29 of the 79 who contracted it there died. At Kentucky's Newport Barracks, 16 of 231 perished, and at Missouri's Jefferson Barracks and the nearby St. Louis Arsenal, 130 of 368 victims did not survive. Texas was also hard hit during this time, but Florida, New Mexico, and posts in southern California were spared.[32]

Cholera was soon a seasoned traveler in the United States. It accompanied troops on their way to Texas from New Orleans in 1848, when that city was in turmoil as the result of simultaneous epidemics of yellow fever and cholera. When two steamships carrying 450 soldiers set out for Port Lavacca, Texas, from a barracks four miles from the "doomed city" of New Orleans on 12 December, cholera was a stowaway. Several days later, the men, still in "perfect health," debarked, with cholera still in hiding. The vibrio accompanied both those who remained in the town and those who went out to Placido Creek to camp. On 21 December, the disease came out into the open at last, striking the men at both sites, appearing at Placido Creek after a severe storm had soaked the ground on which the men had to lie. By dawn of the 22d, 8 or 9 men at Placido Creek and 40 at Port Lavacca were dead. By the time the epidemic had run its course a week later, 350 men and camp followers had felt its effects and 150 lay dead.[33]

In February cholera appeared at Brownsville, Texas. In March it struck at Brazos Santiago and Matamoros. At Camargo and nearby Camp Ringgold, the dread disease appeared early in March. Dragoons leaving the camp for San Antonio by way of Laredo on 11 March took the vibrio with them. The appearance of cholera at San Antonio puzzled Nathan Jarvis, for the disease struck the town harder than it did other communities even though the always-present breeze prevented miasmas and the town was considered one of the healthiest in Texas. Estimates of the number of deaths in San Antonio from mid-April to the first week in June varied from 400 to 700; among them was that of a major general, William Worth. All told, 44 soldiers died of cholera in southern Texas and 173 in the western part of that state during the period of 1848 to 1854, after which the disease disappeared from the area.[34]

[31]Quote from Byrne, *Court Martial*, p. 87.

[32]Ltr, Lawson to Paine (12 Aug 1852), RG 112, entry 2, 22:448–49.

[33]First quote, Ltr, Jarvis to Benjamin Jarvis (23 Dec 1848), in Jarvis Papers; Jarvis, "Notes," pp. 438, 440–41, second quote, p. 438; Chambers, *Cholera*, p. 206; E. D. Fenner, "Report of Epidemic Cholera in the City of New Orleans, 1848–49," *Southern Medical Reports* 1 (1849):135.

[34]Jarvis, "Notes," pp. 439–41, 443; J. B. Wright, "Report on the Topography of San Antonio, and the

Cholera accompanied travelers, both military and civilian, along all the main routes west in the early 1850s and even affected troops on their way to California by ship, but familiarity with this disease bred terror rather than contempt. In the summer of 1855, more than six years after cholera reappeared in the New World, the panic it inspired precipitated what was apparently a mental breakdown for the surgeon at Fort Riley, Kansas. Hysterical with fear for himself and his family, he deserted his post at the height of the epidemic, leaving sick and dying men, women, and children without medical attendance. Although he was convicted by court-martial and dismissed from the Army in January 1856, he was reinstated less than a year later and served creditably in the Union Army during the Civil War, eventually becoming Grant's medical director in the West.[35]

Cholera paid repeated visits to posts like Fort Leavenworth, through which soldiers and civilians, explorers and prospectors passed on their way along the Santa Fe and Oregon Trails to or from the newly acquired territories in the West. In 1848 traffic coming upriver from New Orleans brought the vibrio with it, and in 1849 the organism accompanied recruits from New York. In the first nine months of that year, 64 at the post became ill with cholera and 28 died from it. In the summer of 1850 men from a unit hit by cholera while at the Jefferson Barracks brought the disease with them as they traveled up the Missouri River. It "spread with fearful rapidity" among them, causing several deaths the night before their boat arrived at Fort Leavenworth. At its height the epidemic reportedly killed 4 or 5 a day, but by September it had apparently once again run its course in the Leavenworth area.[36]

In 1851 cholera struck the men of a detachment of dragoons and infantry recruits going through Fort Leavenworth bound for New Mexico, killing 15 of the 28 contracting it. One surgeon with these men was so constantly ill that he was of little use and remained behind when the men left the post in May. A second surgeon died along with 35 of his patients. In 1853 troops passing through the post brought cholera again—the Fort Leavenworth surgeon wrote the surgeon general that every detachment arriving at this post seemed to be stricken with cholera along the way. Those too sick to continue were bedded down in the three post hospitals, whose combined population was rarely less than 39 and was usually 85 or more each day. Because physicians did not always accompany detachments coming through Fort Leavenworth, such patients sometimes failed to receive adequate care.[37]

Epidemic Cholera That Prevailed There in the Spring of 1849," *Southern Medical Reports* 1 (1849):416–17, 429.

[35]Elderkin, *Sketches*, pp. 97–98; Francis R. Packard, *History of Medicine in the United States*, 2 vols. (New York: Hafner Publishing Co., 1963), 2:925; [George E. Omer, Jr.], *An Army Hospital From Horses to Helicopters* (Fort Riley, Kan., n.d.), p. 16. The story of cholera at Ft. Riley can be found in Percival Lowe's *Five Years a Dragoon, 1848–1854* (Kansas City, Mo.: Franklin Hudson Publishing Co., 1926).

[36]Glisan, *Journal*, pp. 12–13, 22, quote from p. 21; Ltrs, McDougall to Lawson (16 Jul 1849) and Mills to Lawson (3 Oct 1850), both in RG 112, entry 12; Surgeon's Quarterly Rpts, Ft. Leavenworth (1846–1848 and Mar, Jun, and Sep 1849), all in RG 94, entry 634; Elvid Hunt, *History of Fort Leavenworth, 1827–1927* (Fort Leavenworth, Kan.: The General Service Schools Press, 1926), p. 69; James Augustus Bennett, *Forts and Forays . . .* eds. Clinton E. Brooks and Frank D. Reeve (Albuquerque: University of New Mexico Press, 1948), pp. 10–11.

[37]Chris Emmett, *Fort Union and the Winning of the Southwest* (Norman: University of Oklahoma, 1965), p. 7; Ltr, Cuyler to Lawson (24 Jun 1855), RG 112, entry 12; William Aloysius Keleher, *Turmoil in New Mexico, 1846–1868* (Santa Fe, N. Mex.: Rydal Press, 1952), p. 129 n. 61; Stanley Francis Louis Crocchiola,

In 1855, cholera returned once again to Fort Leavenworth with troops passing through, and by summer was raging at the Kansas post. Medical attendance remained inadequate for the need and the hospital was crowded. A larger barracks was taken over to supplement facilities for the sick, but some of the 115 who fell ill during the course of the epidemic ended up on the floor of an old stable that was "so infested with rats that they ran over the helpless sick in the day time." It was very hot, but the only drinking water available had to be brought in barrels from the Missouri River. Each man who wanted a drink dipped his cup into the common container. Some of the patients were soon "unconscious of their surroundings; their features had turned to a bluish black color. Flies in great numbers swarmed around them, and settled on their open lips and staring eyes. . . . The doors and windows were all open, but the heat and stench were terrible." Some of the coffins of the twenty-four who died were loaded with bodies in plain view of the sufferers. One corpse was too large for its container; "when his head and feet were in, his chest bulged up, which made it necessary for one of the attendants to sit on the cover while it was being nailed down."[38]

Sanitation at Fort Leavenworth was described as good, and the post surgeon in 1857 reported only two problems: the difficulty of finding sufficient water for bathing in the winter, when streams were frozen, and the need to find a way to drain laundry water away from living quarters. Nevertheless, by modern standards the management of the kitchen left something to be desired. In 1855, for example, a civilian working at the post, perhaps helping to construct the new barracks, discovered something odd on his dinner plate. A witness reported that "a closer examination disclosed a full grown rodent, minus its hair." Whether the rodent was bald because of advanced age, disease, an abnormal supply of hormones, or long boiling was not disclosed, but the quartermaster reacted by hiring a new set of cooks.[39]

Among the expeditions leaving Fort Leavenworth for other parts of the West were those sent to deal with recently settled Mormons in Utah, who were resisting the authority of the U.S. government. Planning for a 2,500-man expedition into Utah began in the spring of 1857. The recruits who joined this force just outside Fort Leavenworth were in poor condition, some were either too young or too old. "Many were broken down by habits of dissipation—by intemperance, by syphilis, by the practice of masturbation, & c." Health problems apparently multiplied as they waited. Diarrhea was soon a common affliction and was blamed on diet and the climate. One surgeon specifically mentioned "a dietetic cause more potent" than any other, "that ancient military institution, bean soup. A vile concoction, prepared under this name," was served at Fort Leavenworth. Poison oak, "a plant which flourished in great luxuriance" in that area, also led to misery for some soldiers. "The local pain, heat, redness, and swelling," stated a physician, "were often considerable, accompanied by some constitutional disturbance,

Fort Union (New Mexico) (n.p., 1953), p. 59; Surgeon's Quarterly Rpt, Ft. Leavenworth (30 Jun 1851), RG 94, entry 634.

[38]Meyers, *Ten Years*, pp. 57–60, quotes from pp. 58, 59, and 60, respectively; Ltrs, Ridgely to Lawson (29 Apr and 14 Jun 1855), both in RG 112, entry 12; Surgeon's Quarterly Rpts, Ft. Leavenworth (30 Jun, 30 Sep, and 31 Dec 1855), all in RG 94, entry 634.

[39]Quote from Erasmus Theodore Carr, "Reminiscences Concerning Fort Leavenworth in 1855–56," *Kansas State Historical Society's Transactions* 12 (1911–12):378; Hunt, *Leavenworth*, pp 98–99, 111.

especially when the scrotum was involved."[40]

The start of the march was not initially accompanied by any improvement in the health of the men bound for Mormon territory. In the first three days, problems caused by drunkenness, heat, and the general unfitness of the men limited progress to sixteen miles. When their water containers were empty, soldiers drank from pools of "water exceedingly filthy and nauseous from animal and vegetable decomposition" and were paid for their trouble with vomiting and more diarrhea. Some were overcome by heat and exhaustion, but the wagons in which they were placed were too high for easy loading and offered a jolting ride.[41]

In the course of their march the men encountered Pawnee Indians, among whom smallpox was raging, and efforts to avoid contact with them proved vain. Some of the quartermaster's men could not resist "the charms of filthy squaws," but their weakness was repaid with syphilis rather than smallpox. As the expedition neared the Platte River, problems caused by diarrhea diminished, but the incidence of malaria increased, and in August the first case of scurvy appeared. By the end of the month, the men had marched 419 miles, during the course of which one of the surgeons had, in addition to his other chores, delivered two babies, both to wives of soldiers.[42]

The weather was growing colder as the men approached the end of their 1,100-mile march from Fort Leavenworth—on 8 November the mercury reportedly fell to -44° F. and a strong northwest wind chilled the marrow of their bones. By December they had set up camp for the winter at Fort Bridger, in today's state of Wyoming, near the Utah border. While awaiting the outcome of negotiations with Brigham Young, surgeons established hospitals for their units in tents floored with hides, a design that proved quite comfortable. Scurvy was apparently no longer a problem, possibly because dried vegetables had been added to the diet, although the drying process probably destroyed much of the vitamin C. Many suffered from frostbite, however, and one man lost the last joints of four toes to the cold.[43]

The knowledge that reinforcements for the Utah Expedition would soon be arriving from Fort Leavenworth determined the Mormons to seek peace in the spring of 1858, and the men assembled to subdue them were, therefore, gradually dispersed. Before this could happen, however, a surgeon at Fort Bridger encountered a new and mysterious form of fever that first struck men who had been camped in a grassy valley. Within four days fifty-five of them were sick. Within three weeks 110 officers and men as well as a large number of teamsters and herders had fallen ill. The initial symptoms included an hour or two of chills followed by a high fever, flushing of the skin, severe pain in the lower back, pain and cramps in the legs, a quickened pulse, nausea, and constipation. The eyes were bloodshot, and a "white, cheesy fur" covered the tongue, whose papillae were red and prominent. All symptoms disap-

[40]Quotes from *Statistical Report, 1855–60*, pp. 281–83; Estimate, Satterlee (2 Jun 1857), RG 112, entry 12.

[41]Quote from *Statistical Report, 1855–60*, p. 283.

[42]Quote from ibid., p. 285.

[43]Jesse A. Gove, *The Utah Expedition, 1857–1858: Letters of Capt. Jesse A. Gove, 10th Inf., U.S.A.*, ed. Otis G. Hammond (Concord: New Hampshire Historical Society, 1928), pp. 5, 11, 107, 138, 143–44, 146, 221; Ltr, Wood to Med Dir (30 Nov 1859), RG 112, entry 2, 27:241; Theophilus F. Rodenbough, *From Everglade to Canon With the Second Dragoons . . .* (New York: D. Van Nostrand, 1875), pp. 189, 191.

ROBERTS BARTHOLOW. *(Courtesy of National Library of Medicine.)*

peared within thirty-six hours, but in some cases the disease returned in a less severe form on the fifth day, lasting another twelve to eighteen hours. Only one death occurred at this time; the victim was a man who had been sick a week and paralyzed for two days. Mormons called the disease mountain fever, but it may have been what is today known as Colorado tick fever.[44]

Although mountain fever was apparently a disease Army surgeons had not encountered before, the old familiar ones like scurvy, alcoholism, and typhoid fever were also present in the area where the Mormons lived. In the period from 1857 to 1859, only 4 men died from wounds and injuries in the Utah and Wyoming territories, but 34 died of disease, 8 of these from typhoid. Of eleven cases of scurvy, however, only one man died. The liquor sold by traders despite regulations to the contrary occasionally had particularly unfortunate effects. In at least one instance this beverage was compounded of alcohol, tobacco, "and various narcotics," and packed a kick that killed one man in short order and made many more ill.[45]

The Mormons as a people apparently fascinated non-Mormons who came to know them, including an Army surgeon, Roberts Bartholow, who stated in the third volume of the *Statistical Report* that "The Mormon, of all the human animals now walking this globe, is the most curious in every relation." It was, he said,

> a curious fact, that Mormonism makes its impress upon the countenance . . . an expression compounded of sensuality, cunning, suspicion, and a smirking self-conceit. The yellow, sunken, cadaverous visage; the greenish-colored eyes; the thick protuberant lips; the low forehead; the light, yellowish hair; the lank, angular person, constitute an appearance so characteristic of the new race, the production of polygamy, as to distinguish them a glance.

He added that, even among the wealthiest Mormons, the infant death rate was high—these people believed in curing disease by "miraculous interposition" rather than by physicians.[46]

Examples of the failure of physicians to cure were not unusual in the middle of the nineteenth century, but the death of the Medical Department's most illustrious patient emphasized the helplessness of doctors when confronted with many of the diseases of that period. Despite the efforts

[44]Quote from *Statistical Report, 1855–60*, p. 305.

[45]Max L. Heyman, Jr., *Prudent Soldier: A Bibliography of E. R. S. Canby 1817–1870* (Glendale, Calif.: Arthur H. Clark, 1959), pp. 110–11, quote from p. 110.

[46]Quotes from *Statistical Report, 1855–60*, p. 301–02.

of three medical officers and a civilian colleague and at a time of considerable political turmoil, President Zachary Taylor fell victim to a gastrointestinal ailment in 1850.

Taylor became ill after spending hours in the sun on 4 July and then returning to the White House to drink quantities of cold beverages and eat raw fruits and vegetables. His doctors, summoned only after many hours had passed, diagnosed cholera morbus (acute gastroenteritis, not the dreaded Asiatic cholera), complicated in its later stages by remittent fever. They dosed him with calomel, opium, and quinine. The up-and-down path of the disease led them at times to believe that their treatment was successful, but after five days of intermittent nausea, cramps, and diarrhea, and eventually fever as well, on the evening of 9 July, Taylor died.[47]

Taylor's death may well have resulted from some form of food poisoning, a common enough affliction at the time, though not one that ordinarily led to death. A fever had kept Taylor in bed for almost two weeks during the Second Seminole War, attacking him again during the war with Mexico. He may have been susceptible to flare-ups of malaria, especially when some other problem sapped his strength. Taylor's history of gastrointestinal problems, however, also suggests that a recurrence of amebic dysentery may have contributed to his demise. Like many another old soldier, he may have harbored not one but two parasites capable of killing him when the resilience of youth had deserted him and stress had rendered him especially vulnerable.[48]

BERNARD J. D. IRWIN. *(Courtesy of National Library of Medicine.)*

Surgeons as Soldiers and Scientists

Few Army surgeons were ever privileged to sit at the president's bedside, but many cared for soldiers in campaigns against Indians in the West. One young physician very much involved in these efforts was Assistant Surgeon Bernard John Dowling Irwin. Irwin was both an amateur naturalist and the first man ever to win the congressional Medal of Honor, which was awarded to him in 1894 "for gallantry in action against hostile Chiricahua Apache Indians near Apache Pass, Ariz. 13th and 14th February, 1861."[49]

[47]Holman Hamilton, *Zachary Taylor: Soldier in the White House* (Indianapolis and New York: Bobbs-Merrill Co., 1951), pp. 388–93.

[48]Holman Hamilton, *Zachary Taylor, Soldier of the Republic* (Indianapolis and New York: Bobbs-Merrill Co., 1941), pp. 36, 140, 192; Hamilton, *Soldier in the White House*, p. 388.

[49]Quote from B. J. D. Irwin, "The Apache Pass Fight," *Military Surgeon* 73 (1933):197; U.S. Department of the Army, *The Medal of Honor of the United States Army* (Washington: Government Printing Of-

Irwin's opinion of the Apache was scarcely better than that which his colleague held of the Mormon. His observations led him to conclude, among other things, that Apache women did all the work, "while the dusky warrior basks in the sunshine, smoking his cigarito, dreaming over the ruthless deeds of murder and rapine" that he had inflicted on "the unfortunate 'pale faces'." The repeated demonstration of what the Chiricahuas might do to palefaces unfortunate enough to fall into their hands apparently made compassion for the Apache difficult for the men at Fort Buchanan in present-day Arizona, seventy miles south of Tucson. In Irwin's account of the events of the winter of 1860 to 1861, he noted that under the leadership of Cochise, Chiricahuas often ambushed small groups on their way to Mexico or California, killing the men and enslaving the women and children, with "ill treatment much worse than the most cruel death." He pointed out that "the highway leading to and from Apache Pass was dotted with the graves or stone tumuli that cover the remains of the victims of [Cochise's] treachery." Apaches, Irwin concluded, were all alike, "treacherous, bloodthirsty, and cowardly."[50]

The events that brought Irwin the Medal of Honor began with the departure of Lt. George M. Bascom and sixty men of the 7th Infantry, to which Irwin was attached, from Fort Buchanan, under orders to try to find a boy whom Cochise and his men had reportedly kidnapped and cattle they had stolen from a beef contractor. After having been persuaded by a civilian he knew to come to camp to discuss these matters, the Indian leader managed to escape an attempt to detain him there by force. Others of his party were kept as hostages, but the chief, undeterred, attacked the Overland Mail the night after his escape. Having sent a request for help through to Fort Buchanan, Bascom arranged a second parley, one that barely missed being a complete disaster. Three civilians with Bascom mingled with the Indians attending the gathering and were never seen alive again, but an attempt to ambush this parley failed. The Indians then surrounded the camp.[51]

After Bascom's messenger arrived at Fort Buchanan, a message was sent to the cavalry units at Fort Breckinridge, 100 miles away, requesting their support in helping Bascom. Desirous of bringing at least some aid to the lieutenant as quickly as possible, Irwin obtained permission, despite his supposed noncombatant status, to lead a small detachment directly from Fort Buchanan, where there were no cavalry units, to Bascom's camp. In spite of the severe blizzard that was raging, Irwin and fourteen infantrymen set out on muleback toward Apache Pass. When they entered the pass, they encountered five wagons, all "plundered and burned," with eight naked bodies fastened to the wagon wheels. The victims had slowly burned to death as the flames consumed their vehicles. Shortly thereafter, Irwin and his men took prisoner three Indians found herding stolen cattle. Intending to use the cattle to distract the besiegers as well as to supply Bascom and his men with beef, Irwin had the beasts driven ahead of him. With the three In-

fice, 1948), pp. 6, 206. Unless otherwise indicated, all material on Irwin's experiences at this time is based on his article in *Military Surgeon*, pp. 197–203.

[50]First quote, *Statistical Report*, 1855–60, p. 212; remaining quotes, Irwin, "Apache Pass," pp. 198–99; Harvey Starr, "Bernard J. D. Irwin, M.D.," in *The Westerners Brand Book*, no. 13 ([Los Angeles], 1960), pp. 77–79, 81.

[51]Starr, "Irwin," p. 81.

dians as his captives, the surgeon made his way through to Bascom's camp.[52]

With the arrival of the cavalry from Fort Breckinridge a day later, the Indians quickly disappeared. As in so many engagements with the western Indians, few men had been wounded. Although only two of Bascom's command had been hurt, soldiers who located Cochise's camp found that others had not been so fortunate—vultures were tearing the flesh from the bodies of six white men, among them those of the civilians taken by the Chiricahuas at the time of the second meeting with Bascom. With the eight tormented bodies from the plundered wagon train a vivid memory, Irwin urged Bascom to execute six Indian hostages in retaliation. "The punishment," he admitted, "was an extreme mode of reprisal but was demanded and justified by the persistent acts of treachery and the atrocious cruelties perpetrated by the most cowardly and intractable tribes of savages infesting the territory." Irwin's insistence finally overcame Bascom's initial reluctance to resort to such measures, and, ten days later, the six Indians were hung "to the boughs of two stately oaks" that stood over the graves of their white victims. Because Irwin and Bascom "were desirous of making a lasting example to our treacherous foes, the bodies were allowed to remain suspended permanently."[53]

Irwin's courage in action won him acclaim, and his medical duties must have occupied much of his time, since malaria posed a severe problem at Fort Buchanan because the post was small. But he also had time to pursue his interest in natural history and to keep the detailed meteorological records that the department required of all surgeons. Little hope may have remained that the data about climate and weather that he dutifully recorded and sent back to the surgeon general would be of great significance to the medical world, but there were valuable nonmedical uses for this kind of material, of which the Medical Department had accumulated sixty-four volumes by 1860. A researcher at the Navy Department used data from the Medical Department in preparing a study of storms, for example, and his work would serve as an aid to navigation. The topographical engineers responsible for assessing routes for the construction of railroads to the Pacific were also among those who made use of Medical Department data. In addition, the Medical Department cooperated with the Smithsonian Institution, which even provided some of the instruments used in recording details of the weather, in spite of the friction that developed between Lawson and Joseph Henry, head of the Smithsonian.[54]

[52]Quotes from Irwin, "Apache Pass," p. 202; Starr, "Irwin," p. 84. A report appearing three years later asserted that the term "non-combatant" was "convenient, but not truthful," adding that a physician could command troops in the absence of other commissioned officers; Woodhull, "Military Rights and Duties," p. 480.

[53]First and second quotes, Irwin, "Apache Pass," p. 203; remaining quotes, B. J. D. Irwin, "A Case of Severe Puncture Wound: Body Transfixed by a Bayonet:—Recovery," *American Medical Times* 4 (1862):274. Most engagements with the Indians in the West in the decades before the Civil War were like this one—small, involving few men, and resulting in an average of barely more than one soldier wounded per clash: George W. Webb, *Chronological List of Engagement Between the Regular Army of the United States and Various Tribes of Hostile Indians, Which Occurred During the Years 1790 to 1898, Inclusive* (St. Joseph, Mo.: Wing Printing & Publishing Co., 1939), pp. 9–23.

[54]Ltrs, Lawson to Jefferson Davis (copies, 5 Feb and 10 May 1856), both in Joseph Henry Papers, Record Unit (RU) 7001, U.S. National Museum, Smithsonian, Washington; Coolidge to Baird (4 Feb 1856), in Spencer F. Baird Papers, RU 7002; Heiskell to Griffin (6 Jun 1850), Lawson to AG (25 Jun 1853), and Lawson to Henry (5 Apr 1856), all in RG 112, entry 2, 21:96, 23:209, and 25:222–29, respectively; James Pollard Espy, *First Report on Meteorology* (n.p., n.d.),

Irwin shared his interest in natural history with many other Army medical officers, among them the future surgeon general, William A. Hammond. By the time the Civil War was over, some of these surgeons were on their way to achieving enviable reputations as naturalists. With their aid, even before 1861, the surgeon general was able to cooperate with scientists and institutions interested in obtaining specimens of animals, plants, and minerals. When Army physicians could not be spared to accompany exploring expeditions, the department hired contract surgeons, making skill as a naturalist one of the important qualifications for this position. Through the efforts of Assistant Secretary Spencer F. Baird, the Smithsonian Institution worked closely with the Army. It supplied surgeons with containers for their specimens, materials and instructions for preserving them, books relating to natural history, and in at least one instance, actually trained the naturalist-physician for his work.[55]

One of the Army's young contract surgeons with an interest in natural history had passed the Department's entrance exams before accompanying a survey party exploring possible railroad routes in the Northwest. George Suckley cared for the sick and injured among the men and also served as a naturalist, under Baird's guidance. The Smithsonian provided the necessary supplies and required that Suckley collect and study zoological and botanical specimens, familiarize himself with the Indians and their history, and make notes on rivers and their currents and falls. He initially had much time for this work because the men in the party were generally quite healthy, but his efforts to send his specimens safely back to Washington did not always meet with success. On at least one occasion, Baird was confronted by a container in which "unfortunately nearly all the fish were spoiled."[56]

When an opening became available in December 1853, while Suckley was with the exploring expedition in the West, he joined the Medical Department and was sent to Fort Steilacoom in the Washington territory. Here he established a "good private practice" and began to invest in real estate. The opportunities for a naturalist were rich in the area and Suckley was content, but in the summer of 1854, to his dismay, the Army ordered him to Fort Dalles in the Oregon Territory, "a most barren spot." He had little time for natural history, for he was soon ordered to accompany a detachment sent "to chastise some Indians about 400 miles" from the fort. Despite the danger posed by the enemy, Suckley came

pp. 1, 2, 4; U.S. War Department, *Report of the Secretary of War on the Several Pacific Railroad Explorations* (Washington: A. O. P. Nicholson, 1855), p. 39; Ashburn, *Medical Department*, p. 388. Henry criticized the department's work in the field of meteorology, but Professor W. E. Landsberg, University of Maryland Department of Meteorology, has pointed out that modern meteorologists regard the Army's records as of higher quality because of the Army's greater control over its observers.

[55]Unless otherwise indicated, material on naturalists serving in the Army is based on Edgar Erskine Hume's *Ornithologists*. The paragraph is also based on Ltrs, Irwin to Baird (1 Sep 1857) and Hammond to Baird (9 May 1852), both in Registrar 1834–1958, Accession Records, RU 305, Smithsonian; Baird to Irwin (9 Oct 1857), Outgoing Correspondence, Assistant Secretary, 1850–1877, RU 53, 16:507; Lawson to Charles Sutherland (1 Aug 1853) and Heiskell to Byrne (17 May 1854), both in RG 112, entry 2, 23:266–67 and 24:13, respectively; Cooper to Lawson (12 Jan 1859) and Official Orders, Jefferson Davis (extract, 12 Apr 1853), both in RG 112, entry 12.

[56]Quote from Ltr, Baird to Suckley (17 Jan 1855), RU 53, 10:195, Smithsonian; U.S. War Department, *Reports of Explorations and Surveys . . .*, 14 vols. (Washington: A. O. P. Nicholson, 1855), 1:64, 82, 177–79, 219–301; Ltrs, Baird to Suckley (26 Nov and 26 Dec 1853 and 31 Jan 1854), all in RU 53; Suckley to Baird (14 Apr 1853), RU 6999T; Isaac I. Stevens to Lawson (12 Apr 1853), RG 112, entry 12.

back from his six weeks in the wilds with "a few articles of interest."[57]

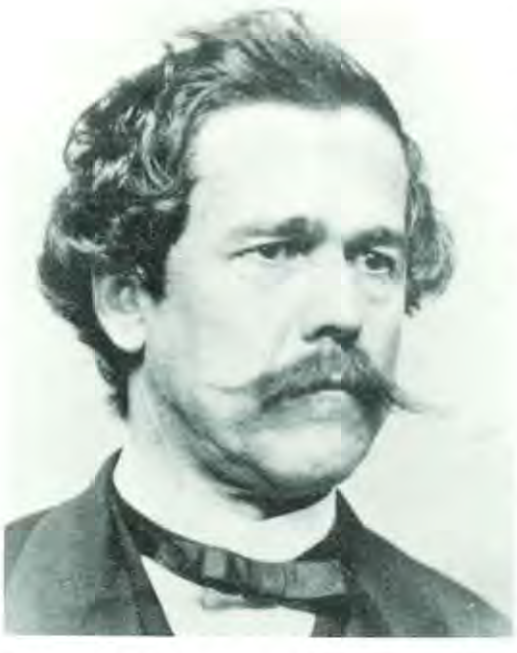
At Fort Dalles, Suckley began to realize that he could not be happy in the Medical Department. His first love was natural history, and his duties as a military surgeon made it impossible for him to work and move about with the freedom he desired. His assignment in the West was delaying his work on the final version of the Pacific Railroad survey report. Baird used his influence in Washington to obtain leave for Suckley to travel east for a few months, but the surgeon was soon ordered west again. Suckley spent Christmas of 1855 in Panama with troops being sent to the West Coast and by the end of January was at Fort Steilacoom accompanying expeditions against the Indians in which he faced considerable personal danger as he cared for the sick and wounded. By the summer of that year Suckley was determined to leave the Army. He wished, however, to avoid having to pay his own expenses to return, and hoped to obtain leave to travel east and to resign shortly after his arrival. Again Baird did his best in Suckley's behalf through his acquaintances in the government, but to no avail. Suckley was forced to resign while still on the West Coast and by mid-November was on his way home.[58]

Even in the absence of hostile Indians, specimen hunting was not always a danger-free occupation, as Samuel Washington Woodhouse, who became a prominent naturalist, discovered. While Woodhouse was serving as a contract surgeon with an expedition exploring the Zuni and Little Colorado rivers, a rattlesnake that he was trying to collect bit him. Woodhouse broke the creature's back with a ramrod, but when he picked it up, he forgot to grasp it close to its head, and was bitten on the index finger of his left hand. He sucked the wound while his companion quickly applied a tourniquet to the digit. He then scarified the area around the wound and, as soon as he could obtain ammonia water, applied it to the bite. Following the recommendation of a civilian he encountered on his way back to camp, he also began drinking whiskey in large quantities. Despite his precautions by evening the glands in his armpits were sore. He then dosed himself with an opiate and, substituting

GEORGE SUCKLEY. *(Courtesy of National Library of Medicine.)*

[57]Quotes from Suckley to Baird (22 Nov, 16 and 27 Aug, and 16 Oct 1854), Incoming Correspondence, Assistant Secretary, 1850–1878, RU 52, vol. 71, pt. 2:564–66.

[58]Ltrs, Baird to Suckley (Oct 1854, 15 Feb 1855, and 15 May, 18 Apr, 21 Jun, and 16 Jul 1856), all in RU 53, 10:8, 314, 14:116, 277, and 15:88–89, 131, respectively; Suckley to Baird (28 Dec 1854, 24 May 1856, 23 Dec 1855, and 21 Jan, 10 Feb, 9 Mar, 16 Apr, and 11 Jul 1856), all in RU 52, vol. 71, pt. 2:567, 580, 582, 583, 584, 585, 587, and 589, respectively.



SAMUEL WOODHOUSE. *(Courtesy of National Library of Medicine.)*

brandy for the whiskey, managed to remain drunk for four or five hours. Throughout the night he continued dosing himself with various remedies, including a cathartic. After sobering up, he removed the tourniquet from his finger and applied a flaxseed meal poultice. Even with all this care, it was months before he regained the use of his hand. Whether because of the bite itself or because of the length of time he left the tourniquet in place, he eventually lost the nail and part of the finger.

Although many surgeons worked as naturalists when not occupied with their patients, one young physician retained his unusual youthful interest in communications and worked while he was an Army surgeon to perfect a system of signaling with flags during daylight and torches at night. Assistant Surgeon Albert J. Myer first brought his ideas to the attention of military authorities late in 1856, when he expounded the virtues of his system in a letter to Secretary of War Jefferson Davis. In 1859 the approval of an Army board led to field tests, and in 1860 Myer was appointed signal officer, at which time he formally resigned from the Medical Department. In 1863 Myer became the first head of the new Signal Corps.[59]

Conclusion

Some of the younger members of the Medical Department showed varied talents as naturalists and inventors, as surgeons, and as brave and sometimes harsh soldiers. The department itself, however, was typical of Army bureaus of the time, its leaders aging and set in their ways. During peacetime, the experience of the older men was a valuable asset, since the problems challenging the Medical Department in the years immediately preceding the Civil War were those it had always faced. Distances were greater and posts more numerous, but neither the diseases nor the needs of the individual post or detachment had significantly changed. Furthermore, the art of medicine had yet to become a science, and experience was no worse a guide than any other in the treatment of the familiar diseases. But the Medical Department had no plans for meeting the supply and evacuation problems of a major conflict, or for systematically providing the physicians and hospitals needed to care for masses of casualties. And even if contingency plan-

[59]Edgar Erskine Hume, "The Foundation of American Meteorology by the United States Army Medical Department," *Bulletin of the History of Medicine* 8 (1940):225–26; "Army Doctors—Pioneers and Peacemakers," *Military Medicine* 126 (1961):891; Paul J. Scheips, "Albert James Myer, An Army Doctor in Texas, 1854–1857," *Southwestern Historical Quarterly* 82 (1978):9, 20–24.

ning had been customary for nineteenth century armies, no one could have predicted the size and extent of the ordeal to come. Unprepared even for a minor war, the Army Medical Department would inevitably be overwhelmed in the earliest months of the Civil War.

CHAPTER 8

The Civil War, 1861: Many Problems, Few Solutions

When Confederate guns began pounding Fort Sumter, South Carolina, on 12 April 1861, undoubtedly one of the least apprehensive men behind its walls was Assistant Surgeon Samuel W. Crawford. Taken from the same mold that produced Surgeon General Thomas Lawson, Crawford was more soldier than physician and eager for combat in which he could take an active part. He had led the rear guard of the unit abandoning Charleston's Fort Moultrie in December 1860. Upon arriving at Fort Sumter, across the harbor from Fort Moultrie, he had volunteered to take his turn as officer of the day. Quickly familiarizing himself with the problems involved in defending Fort Sumter, he undertook the command of a battery during the bombardment. *(Map 5)* In spite of the fact that he was by then responsible for the care of the first four Union soldiers to be wounded by Confederate guns, Crawford also met Confederate representatives arriving at the fort on 14 April to discuss its surrender and conducted them to the fort's commanding officer.[1]

The time was approaching when the professional demands on medical officers in wartime would be too great to permit them to play part-time active military roles as well. The care of thousands of patients, both sick and wounded, and the management of the various stages of their evacuation from battlefield to the hospital that completed their care would soon no longer allow a surgeon general to ride at his general's side, as Lawson had done in the war with Mexico, or permit a medical officer the challenge of commanding a unit in battle. At Fort Sumter, however, where the casualties from the bombardment were few and their wounds slight, Crawford was still able to function successfully as both medical and line officer. The first fatal injury at the fort came only after the surrender, when at final ceremonies an accidental

[1]Primary sources, including Crawford's own report and documents in the War Department's *War of Rebellion* volumes, indicate that, contrary to statements in many secondary volumes, the Confederate bombardment of Ft. Sumter did produce Union casualties. Rpt, Crawford (12–14 Apr 1861), RG 94, entry 634, hereafter cited as Crawford Report; War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (Washington: Goverment Printing Office, 1880–1901), ser. 1, 1:12, 20–24, 62, 66–67 (hereafter cited as *WOR*); Paul E. Steiner, *Physician-Generals in the Civil War: A Study in Nineteenth Mid-Century Medicine* (Springfield, Ill.: Charles C Thomas, 1966), pp. 41–42, 44; A. Doubleday, *Reminiscences of Forts Sumter and Moultrie in 1860–61* (New York: Harper, 1876), pp. 146, 166; Samuel Wylie Crawford, *The Genesis of the Civil War: The Story of Sumter 1860–61* (New York: C. L. Webster & Co., 1887), pp. 430–70. Unless otherwise indicated, all material in this chapter is based on Brown, *Medical Department,* and Callan, *Military Laws.*


CANADA
LAKE MICHIGAN
LAKE HURON
LAKE ONTARIO
LAKE ERIE
Hudson R
Albany
Buffalo
Detroit
N.Y.
PA.
New York
Philadelphia
N.J.
MINN.
WISC.
ILL.
MICH.
IND.
OHIO
Pittsburgh
Gettysburg
MD.
DEL.
Baltimore
WASHINGTON
IOWA
MO.
Indianapolis
Cincinnati
Springfield
Rich Mtn.
W.VA. (1863)
Richmond
Fort Monroe
Sedalia
St. Louis
Jefferson Barracks
Ohio R
Louisville
Perryville
KAN.
Springfield
Wilson's Creek
Cairo
Paducah
KY.
VA.
TENN.
Raleigh
New Bern
Fort Donelson
Fort Henry
Nashville
Murfreesboro
Fayetteville
Pea Ridge
ARK.
N.C.
S.C.
Chattanooga
Memphis
Shiloh
ALA.
Chickamauga
Little Rock
Pine Bluff
Mississippi R
Cornith
Iuka
Rome
Atlanta
Charleston
Fort Moultrie
Fort Sumter
Beaufort
OKLA.
LA.
Montgomery
Columbus
Savannah
TEX.
Vicksburg
Shreveport
MISS.
Mobile
GA.
FLA.
Baton Rouge
New Orleans
THE CIVIL WAR
1861-1865
0
400
Miles

MAP 5

explosion of ammunition killed one man and hurt several others. These men were quickly evacuated, one to a Charleston hospital and the others to the North with the rest of the garrison. The summer after the surrender, Crawford announced his intention to resign from the Medical Department to become an infantry officer. In this capacity he rose to the rank of brigadier general during the war. Even after hostilities ended, he never returned to the practice of medicine.[2]

Administrative Problems of the Medical Department

Crawford was but one of many physicians to leave the Medical Department in the early months of 1861. Of 114 doctors serving at the time Fort Moultrie was abandoned, 24 resigned to join Confederate forces and 3 more were dismissed for disloyalty. Their departure left the Medical Department with a relatively small nucleus of experienced military surgeons around which it had to build a huge wartime organization.

Even veterans of the Mexican War, however, had no concept of the difficulties that would be involved in dealing with casualties on the scale of those of the Civil War. Accustomed to handling the health problems of small and relatively isolated posts, old-time Army surgeons had never been called upon to develop plans for evacuating, hospitalizing, and caring for vast numbers of wounded and sick or for preventing disease in camps with populations of thousands. Because of the seniority system, the department's initial responses to the Civil War were directed by "fogies," acccording

SAMUEL W. CRAWFORD. *(Courtesy of National Library of Medicine.)*

to George T. Strong, a contemporary familiar with their work—old codgers "paralyzed by routine habits acquired in long dealing with an army of ten or fifteen thousand and utterly unequal to their present work." Unable to accept the fact that their years of experience had taught them little that would be of value in the crisis, some of these "superannuated officers" on occasion also stood in the way of others more willing to innovate.[3]

The Medical Department's most superannuated officer at the time of Fort Sumter's surrender, Surgeon General Thomas Lawson, would soon no longer be contrib-

[2]Steiner, *Physician-Generals,* p. 44; Crawford Report; Ltr, Lewis A. Edwards to Crawford (19 Jul 1861), RG 112, entry 2, 28:253.

[3]Quotes from George Templeton Strong, *Diary of the Civil War, 1860–1865,* ed. Allan Nevins (New York: Macmillan Co., 1962), p. 181; U.S. Sanitary Commission (USSC), *Sanitary Memoirs of the War of the Rebellion* (New York: Hurd & Houghton, 1867), p. 43.

CLEMENT ALEXANDER FINLEY. *(Courtesy of National Library of Medicine.)*

uting to the department's problems. Apparently already ill when Confederate guns first fired on the South Carolina fort, Lawson died of apoplexy on 15 May after fifty years in the Army and almost twenty-five as surgeon general. Unfortunately his aging successor, Clement A. Finley, was, as a contemporary put it, "utterly ossified and useless." Already in his sixties, Finley apparently had little to recommend him for so high a post except his forty years in the Army.[4]

In the spring and early summer of 1861, a large group of younger surgeons with no military experience was rapidly gathering to join veteran Regular Army surgeons. Most of the new physicians were volunteers. Although Congress doubled the number of medical officers assigned to each of the forty volunteer regiments called up by President Lincoln in May, Surgeon General Finley considered one surgeon and one assistant surgeon per regiment still to be inadequate. Since state authorities often ignored the examination required for acceptance into the new volunteer force and a medical degree was not a prerequisite to service, the quality of the new physicians was as open to question as the quantity, and even homeopaths might be considered for positions as regimental surgeons.[5]

In July, in the process of approving the President's call for troops, Congress added a requirement that brigades of three or four regiments each be organized and that the secretary of war assign each brigade a surgeon, who must have passed an exam "of practical character" administered by the Medical Department. The specific responsibilities of the brigade surgeon were not outlined at this time, leaving the medical director of each army or area to use his brigade surgeons as he wished. In practice the duties assigned these individuals were considerable, especially in view of the fact that many were young volunteers and at best familiar with Army routine only to the extent made possible by a few months of service as regimental surgeons. Those brigade surgeons who became medical directors when Regular Army medical officers were not available might be called upon for

[4]Quote from Strong, *Diary*, p. 181; Ltrs, Edward to W. T. Willard (15 May 1861), RG 112, entry 2, 28:65; Wood to AG and to Finley (both 18 May 1861), both in RG 112, entry 2, 28:75.

[5]*WOR*, ser. 3, 1:636; Ltrs, W. I. H. White to Joseph T. Howard (20 May 1861), Wood to P. W. Ellsworth (20 May 1861) and to Henry H. Smith (24 May 1861), Finley to Griswold (18 Oct 1861), and Wood to Gov Kirkwood (20 Nov 1861), all in RG 112, entry 2, 28:82, 83, and 102, and 29:9 and 120, respectively; "The Week," *American Medical Times* 3 (1861):224; Ltrs, J. D. S. Haslet and William Johnston to SG (both 13 Jun 1861), both in RG 112, Registers of Letters Received, 1862, entry 10:13.

advice on matters affecting the command's health even though they were not likely to be authorities on either hygiene or sanitation.[6]

Regular Army surgeons, however, remained the backbone of the Medical Department. Whenever possible the positions of medical director and medical purveyor were assigned to them. Regulars with years of experience who were serving in the West were called east in the summer of 1861, their places to be taken by civilians. New regulars, both those replacing resigning physicians and the additional thirty for whom Congress called in August, were, however, as inexperienced as their volunteer counterparts, although their professional skills continued to be guaranteed by the examinations the department invariably administered to regulars.[7]

Contract surgeons, or acting assistant surgeons, and medical cadets were, for the most part, as lacking in military experience as volunteer and new regular surgeons. Contract physicians might have neither skill nor military background and were in some instances considered to be "charlatans and imposters" by their contemporaries. The creation of the position of medical cadet in the summer of 1861 represented a major innovation, since it made it possible for medical students eighteen to twenty-three years old to serve as dressers or ambulance attendants. Up to fifty of these young men could be signed on at one time and given the rank and pay of West Point cadets.[8]

To help in the care of the Army's wartime patients, the Medical Department needed a larger group of hospital attendants and nurses that was usually available. Like the Department's new physicians, many attendants were unfamiliar with the routine of military hospitals. Those detailed from the ranks might also be among the least fit of their units. Convalescents, who were familiar to some degree with hospitals, were sometimes found to be both physically weak and "inhuman in their treatment of patients."[9]

Many women were eager to serve as nurses, but it was an unusual candidate who had been given even the briefest of training, since nursing schools were few. Surgeon General Finley reportedly opposed the use of civilians and particularly the use of women. To bring order out of potential chaos as far as female nurses were concerned, the Army asked the formidable Dorothea Dix, already well-known for her work with institutions for the insane, to serve as superintendent of female nurses for the Army and to screen applicants for nursing positions. In August, however, Congress effectively undermined her position by ruling that surgeons in charge of hospitals could hire nurses without going through Superintendent Dix. Those women whom Dix found acceptable were plain of face and dress and over thirty years

[6]Quote from Ltr, M. I. Asch to J. Burd Peale (21 Oct 1861), RG 112, entry 2, 29:18; Ltrs, Wood to George G. Shumard (21 Jun 1861) and Finley to U. Goldsmith (3 Jul 1861), 28:183 and 213, respectively; John H. Brinton, *Personal Memoirs of John H. Brinton, Major and Surgeon U.S.V., 1861–1865* (New York: Neale Publishing Co., 1914), pp. 18, 54, 62–63.

[7]Ltrs, Wood to Finley (27 Apr 1861) and to McCormick (6 May 1861), both in RG 112, entry 2, 28:14 and 38, respectively.

[8]Quote from Brinton, *Memoirs*, pp. 65–66; Ltrs, Wood to Finley (27 Apr 1861) and to McCormick (6 May 1861), both in RG 112, entry 2, 28:14 and 38, respectively; William Quentin Maxwell, *Lincoln's Fifth Wheel: The Political History of the United States Sanitary Commission* (New York: Longmans, Green, & Co., 1956), p. 62.

[9]Quote from Mary Ashton Rice Livermore, *My Story of the War: A Woman's Narrative of Four Years of Personal Experience* (Hartford, Conn.: A. D. Worthington & Co., 1889), p. 127.

of age. The Army forbade female attendants to accompany units on the march or to work in regimental hospitals and paid them 40 cents a day plus a ration each, a sum roughly half of that paid male civilian nurses hired to care for military patients.[10]

Not all Army surgeons looked forward to the assistance of female nurses. A medical journal of the day stated that female nurses were often "a useless annoyance," lacking the physical strength needed to help wounded men. The article also suggested that its readers try to "imagine a delicate refined woman assisting a rough soldier to the close-stool, or supplying him with a bedpan . . ." Some admitted, however, that when aided by orderlies or convalescents, female nurses could serve a useful purpose, since they were more attuned to the emotional needs of the sick and more skilled at "sanitary domestic economy."[11]

In the Regular Army, the hospital steward, who before the war often added the role of nurse to his other duties, had by 1861 gained a position commanding considerable respect. Only men who could establish their competency as apothecaries were accepted for the required five-year enlistment. These men also served as wound dressers and were paid almost twice as much as female nurses, whose role, like that of all nurses, was seen as menial. Medical students sought positions as stewards through which they could gain experience in their chosen fields. In volunteer units, regimental surgeons followed the old custom of choosing their stewards from their own units, one being allowed for each battalion.[12]

Expansion and organizational changes affected the Department's facilities as well as its personnel. The widespread network of post and regimental hospitals that supported the peacetime Army could never have been adequate to handle the vast numbers of sick and wounded that would result from the Civil War. To handle the overflow of patients from regimental hospitals, the Medical Department reinstituted the general hospital on a much larger scale than ever before. The first need for this institution developed in Washington, D.C., when more than 600 artillerymen and engineers were ordered to that city in January and early February 1861. By the end of January, Lawson had ordered the establishment of the first general hospital to care for the sick of units then in the capital and for any that might be sent through in the following weeks. With the advent of hostilities, the Medical Department started setting up more such facilities in Washington. Medical directors in other areas also began to establish general hospitals to shelter those who had to be left behind when their units were on the move. Realizing that they should act ahead of actual need, directors attempted to prepare these facilities before patients were actually waiting to enter them.[13]

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[10]*WOR*, ser. 3, 1:262, 308, 398, 421; Ltr, Wood to Cuyler (11 Dec 1861), RG 112, entry 2, 29:15; Sylvia G. L. Dannett and Katherine M. Jones, *Our Women of the Sixties* (Washington: U.S. Civil War Centennial Commission, 1963), p. 9; Isobel Stevenson, "Nursing in the Civil War," *Ciba Symposia* 3 (1941–42):921–22; Helen E. Marshall, *Dorthea Dix, Forgotten Samaritan* (Chapel Hill: University of North Carolina Press, 1937), pp. 217–18.

[11]First and second quotes, "Duties of the Army Surgeon—Females Not Suitable for Nurses," *American Medical Times* 3 (1861):30; third quote, "Female Nurses in Military Hospitals," *American Medical Times* 3 (1861):25.

[12]Ltrs, W. I. H. White to E. Kissler (14 May 1861) and to J. C. Bucher (21 May 1861), Wood to Ellsworth (20 May 1861), and Edwards to John S. Powell (21 Aug 1861), all in RG 112, entry 2, 28:61, 83, 85–86, and 354, respectively.

[13]Ltr, Edward to Satterlee (29 Jan 1861), RG 112, entry 2, 27:605; RG 94, Register of Hospitals, entry 554; Constance McLaughlin Green, *Washington, Vil-*

Regimental hospitals with their tents and equipment continued to accompany units on the march. Having sent back to a general hospital men unable to march at the time the unit broke camp, the regimental surgeon cared for the wounded during and after battle wherever he could, sometimes in a ravine or under a tree. He often established his hospital in a house near the battlefield and pitched his tents nearby to take in those the building could not accommodate. During a battle that produced more casualties than regimental facilities could handle functioning as isolated units, the medical director might call for the creation of a temporary field hospital, manned by regimental surgeons. In certain instances this officer also permitted the creation of a brigade hospital, operated under the immediate supervision of the brigade surgeon. Regarded as a consolidation of regimental hospitals, they were in actuality something of a hybrid between the regimental and general hospital, more permanent than the former but less so than the latter.

Men assigned to hospital duties in regimental facilities were also expected to manage the evacuation of the wounded, a task they shared for a time with members of the regimental band. Only twenty-five men were available in both categories in each regiment since the regulations permitted the assignment of no more than ten men per regiment to work as hospital attendants. The secretary of war rejected all offers from outside the federal government to provide ambulance companies. Initially none of the men from the regiment were trained in the management of ambulances and stretchers, and as a result an occasional surgeon or medical director undertook to drill these men so that they could perform their duties more effectively.[14]

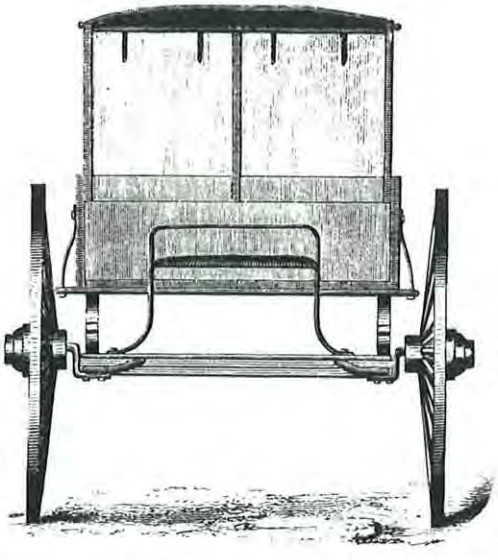
Experiments before the war with various types of design had not led to a final decision on the type of conveyance to adopt. As late as 27 April 1861, the Medical Department had apparently not anticipated a need to order more of these vehicles despite complaints of shortage. Surgeons in the West were familiar with the four-wheeled variety and reported on it, but a two-wheeled form, relatively untested but apparently designed by Finley, became the basis of the evacuation system once the war began. The purchase of five of the lighter model for every one of the heavier type was unfortunate, since in use the two-wheeler proved fragile.[15]

Although evacuation and care of the wounded during and after battle was the most conspicuous responsibility of the department, the sick continued to outnumber the wounded and prevention of disease was an important consideration. The fact that in the early months of the war, almost anyone who wished to join the Army was permitted to do so frustrated attempts to maintain the Army's health. Physical examinations varied from state to state and in some were very lax. As a result, "feeble boys, toothless old men, consumptives, asthmatics, one-eyed, one-armed men, men with different length of legs, club-footed and ruptured," all might be permitted to

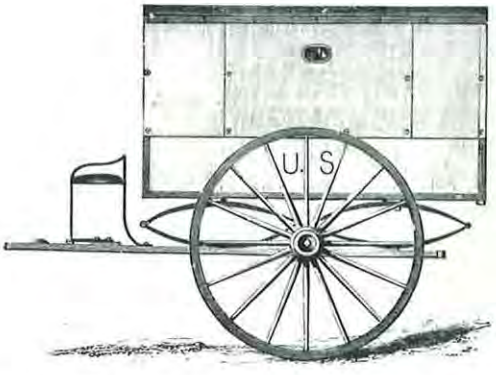
lage and Capital, 1800–1878 (Princeton, N.J.: Princeton University Press, 1962), p. 233; *WOR*, ser. 3, 1:23.

[14]Maxwell, *Sanitary Commission*, p. 76; "Duties of Brigade Surgeons," *American Medical Times* 3 (1861):282–83; War Department, SGO, *Medical and Surgical History of the War of the Rebellion*, 2 vols. (Washington: Government Printing Office, 1870–88), 1, app.:10–11 (hereafter cited as *MSH*).

[15]Ltrs, Wright to Lawson (8 Mar 1861), RG 112, entry 12; Edwards to Robert Landreth, to A. Orvis, and to John M. Maisch (all 27 Apr 1861), all in RG 112, entry 2, 28:15; Finley to L. Thomas (2 Aug 1861), RG 112, entry 2, 28:298; Frank H. Hamilton, *A Treatise on Military Surgery and Hygiene* (New York: Balliere Bros., 1865), p. 44.



FINLEY AMBULANCE, FRONT VIEW, *from illustration in* Medical and Surgical History.



FINLEY AMBULANCE, SIDE VIEW, *from illustration in* Medical and Surgical History.

join volunteer regiments. Many were soon sent home, and others "left the service irregularly," especially after the first battle of Bull Run in the summer of 1861. Only in August 1861 was examination by a surgeon actually required and even then the order was often flagrantly ignored.[16]

Many recruits came from isolated areas, where they had never been exposed to measles and the other ordinary communicable diseases of childhood. In the camp where they were first received, as well as in the much larger ones to which they progressed, all were exposed to contagious diseases of many kinds. Furthermore, accustomed to having their clothes washed, food cooked, and quarters kept clean by wives or mothers, recruits were quite helpless when it came to maintaining high standards of hygiene and sanitation in the Army. Department doctors, who complained that their own ambiguous rank and the resultant lack of prestige crippled their efforts to have line officers enforce strict rules, blamed this lack of hygiene and sanitation for much disease. Veteran soldiers, who maintained higher standards, also suffered from such diseases associated with faulty sanitation as typhoid, diarrhea, and dysentery. The sick rate of the entire army in the last six months of 1861 exceeded 30 percent, with digestive complaints the greatest source of illness and typhoid the principal cause of death.[17]

In their effort to prevent the spread of disease, medical officers emphasized the dangers of overcrowding. Twenty or more

[16]First quote, Sanitary Commission, *Memoirs*, p. 44; second quote, Ltr, Finley to F. Coakley Vanderpool (2 Nov 1861), RG 112, entry 2, 29:65; Maxwell, *Sanitary Commission,* pp. 31–32; *MSH* 1, app.:47.

[17]*MSH* 1, pt. 1:296–300; Brinton, *Memoirs,* p. 61; Maxwell, *Sanitary Commission,* pp. 71, 73; Joseph Janvier Woodward, *Outlines of the Chief Camp Diseases of the United States Armies* (1863. Reprint. New York: Hafner Publishing Co., 1964), p. 9; William Howard Russell, *My Diary, North and South,* ed. Fletcher Pratt (Gloucester, Mass.: Peter Smith, 1969), p. 196; "Sanitary Commission: Report of the Resident Secretary, "*American Medical Times* 3 (1861):60–61; Strong, *Diary*, p. 203n.

men often shared only 1,100 cubic feet of air in the Sibley tents used as shelters in the first months of the war, but even in barracks, which were usually hastily erected, overcrowding was a problem. Wet camp sites, overwork and exposure, and even poor blankets were also blamed for much illness. A civilian familiar with Army life maintained, however, that sending a soldier's pay directly to his wife or to a savings account would significantly improve the Army's health by making it impossible for him to buy "bad pies and rotgut whiskey."[18]

A potential cause of disease that received little attention early in the war was the Army's defective diet. In the summer, when fresh fruits and vegetables were easy to find, the soldier usually had an adequate diet if he was stationed near a good source of supply or permitted to live off the land. Those in authority considered the basic Army ration to be "all sufficient for the men," but the potato was its only source of vitamin C. In the summer of 1861, Congress passed a bill adding fresh vegetables or their equivalent to the diet, but the equivalent was apparently dried vegetables, which required long cooking to be palatable. Furthermore, transportation for an adequate supply of any form of vegetable was hard to find and commanding officers sometimes failed to take the need for vegetables seriously. Soups were favored as a way of serving meats, but the recommended recipes called for hours of cooking, which undoubtedly destroyed the last traces of this perishable vitamin in potatoes and any other vegetable that might find its way into the pot. Scurvy was already appearing by the end of 1861, even though it takes some weeks or months to make its appearance in men whose supply of vitamin C has previously been adequate.[19]

To care for the large numbers of both sick and wounded that characterized the Civil War, a far more complex system than that existing in peacetime was necessary to provide medicines and hospital supplies, especially since the troops were often on the move. New York City remained the principal supply center, but medical purveyors opened additional depots at appropriate sites over the nation, including Baltimore and Cairo, Illinois. Minor depots were set up near large camps, preferably near railroads or water transportation and, if possible, near a market. Field purveyors accompanied armies on the march, obtaining supplies at the nearest depot and issuing them as needed.[20]

The amount of supplies actually on hand when the war began was small, and the size of the Army was growing rapidly. The manufacture of the various items that were needed was time consuming. Buyers turned to contractors who might be interested only in a profit without regard to the dictates of patriotism. As reports came in about hospitals without either clothing or bedding for their patients, buyers became desperate, profiteers began to thrive, and fraud became common. Large amounts of cloth

[18]Quote from Strong, *Diary*, p. 85; Maxwell, *Sanitary Commission*, p. 34; Woodward, *Outlines*, pp. 46–47; *MSH* 1, app.:1.

[19]Charles S. Tripler and George C. Blackburn, *Handbook for the Military Surgeon* (Cincinnati: Robert Clark & Co., 1861), pp. 13–14, quote from p. 12; Maxwell, *Sanitary Commission*, p. 58; "Duties of the Army Surgeon . . . ," "Sanitary Commission: Report of the Resident Secretary," and "The Week," all in *American Medical Times* 3 (1861):30, 91, and 107–08, respectively.

[20]Ltrs, Wood to Tripler (30 May 1861) and to J. H. Bailey (10 Jun 1861) and Edwards to J. S. Bobbs (18 Oct 1861), all in RG 112, entry 2, 28:116 and 142 and 29:42, respectively; King to Finley (23 Aug 1861), RG 112, entry 12; *MSH* 1, pt. 3:964; Huston, *Sinews*, p. 174.

had to be purchased from abroad. Surgeons sometimes lacked even a complete supply of instruments, and a physician who wanted those of the most modern design might have to furnish them himself.[21]

Medicines were not always a problem in the early months of the war. Many new regiments were initially supplied by the state from which they came, but others had to draw upon the Medical Department's purveyor. When he could not contact a purchasing officer of his own department, the medical officer had to obtain medicines through the Subsistence or the Quartermaster's Department. Many volunteer doctors further complicated the problem of supplying medicines by their failure to appreciate the advantages of limiting the variety bought. Some had favorite potions that were not to be found on the department's supply table, a document to which few additions were made when it was revised in the summer of 1861. Surgeon General Finley insisted that no unlisted items could be distributed without his personal approval.[22]

Slow transportation, complex ordering procedures, and the efforts of well-intentioned civilians also complicated medical supply. Delays forced medical officers to buy locally, and citizens added to the confusion by donating items that were not necessarily needed. Ambulances and many items involved in the building and equipping of military hospitals had to be obtained through the quartermaster, which added further complexities to the Medical Department's operations.[23]

Surgeons made ingenious attempts to stretch the Department's resources. They sold the bones and fat from the meat fed to patients, for example, as well as stale bread, old newspapers, and similar items, and used the proceeds to buy whatever they believed to be of general benefit, such as books for the hospital's library, daily papers, magazines, and even musical instruments. The Medical Department received credit on Subsistence Department books for unused rations. At those hospitals where the produce of gardens or fish caught by convalescents could be added to the facility's larder, the amount in this so-called hospital fund could be significant. The sum was used to add special items to the diet, and at one hospital it also paid the salary of a professional cook whose skills resulted in considerable savings to the hospital by eliminating waste.[24]

While the varied demands of the early months of the war almost overwhelmed the Medical Department, many patriotic groups attempted to help in the care and feeding of Union soldiers. Their aid at first tended to be haphazard and inefficient, but not long after the war began and with Medical Department encouragement, a group of private citizens, one of whose leaders was a former Department surgeon, created an organization designed to coordinate efforts to aid the sick and wounded and to prevent disease. The U.S. Sanitary Commission was a less powerful but more pervasive version of a commission that had aided British soldiers during the Crimean War, and its work was officially approved

[21]Ltr, Satterlee to Wood (22 May 1861), RG 112, entry 12; Huston, *Sinews*, pp. 179–80, 184; John Shaw Billings, "Medical Reminiscences of the Civil War," *Transactions of the College of Physicians of Philadelphia*, 3d ser., 27 (1905):114–15.

[22]Ltr, Finley to Med Dirs (11 Nov 1861), RG 112, entry 2, 29:95; SOs, Thomas (no. 232, 28 Apr 1861), RG 112, entry 57.

[23]Ltrs, Wood to L. Thomas (20 May 1861), RG 112, entry 2, 28:78; Laub to McLaren (11 Jun 1861), RG 112, entry 12; Courtney R. Hall, "The Lessons of the War Between the States," in *History of American Medicine*, ed. Felix Martin-Ibanez (New York: MD Publications, 1959), p. 73.

[24]*MSH* 1, pt. 3:959.

by President Lincoln and his first secretary of war, Simon Cameron.[25]

Within the War Department, opinions of the Sanitary Commission varied. Although he wished its power to be less than that of the British Sanitary Commission in the Crimea, Acting Surgeon General Robert C. Wood had encouraged its formation in the spring of 1861. Surgeon General Finley accepted its help, although apparently with reluctance, but Lincoln's second secretary of war, Edwin Stanton, opposed it. Some Medical Department members believed that the need for supplies as perceived by the commission was only apparent and that it resulted almost entirely from the ignorance of volunteer surgeons, who asked for more than they really needed. As late as December 1861, departmental opposition to the commission was so strong that a commission official was moved to comment that it was a "pity that [the] Bureau will neither do its official duty nor permit volunteers to help it without throwing filth at them.[26]

Whether welcomed or not, the Sanitary Commission attempted to help the Medical Department with both advice and material aid. Its advice in the early months of the war was wide ranging. It urged more exacting physical exams for recruits, the creation of a nurse corps, an increase in the rank of members of the Medical Department, and greater attention to sanitation and disease prevention. It outlined a system to be used to determine the order in which patients were treated during and after battle and recommended the specific instruments and supplies a surgeon should take into the field.[27]

The more tangible assistance that the Sanitary Commission offered the sick and wounded, including prisoners of war, was as varied as the topics on which it offered advice. It provided papers, pens, and volunteer scriveners to write letters for those unable to do so, and supplied dressing gowns, slippers, and reading material. It appealed to the public for donations of wine, spirits, mosquito netting, flannel, sheets, and ice. Its surgeons followed the army into the field and brought with them ambulances, wagons loaded with stores, anesthetics, and surgical instruments. Its inspector kept watch over camp and hospital conditions. In time the Sanitary Commission even established a hospital directory by means of which relatives could determine the location of any individual patient. It supplied quinine when Finley delayed his decision to order it for prophylactic use in northern Virginia. Officials of the U.S. Sanitary Commission might provide lint for wound dressings, food, and even a hospital on short notice.[28]

The U.S. Sanitary Commission was not the only civilian organization of its kind that attempted to assist the Union Army with its wounded. Both the Western Sanitary Commission and the Christian Commission also operated along similar lines. The former was established in the summer of 1861, in large measure at the instigation of Maj. Gen. John C. Fremont, and functioned west of the Mississippi much as its counterpart, the U.S. Sanitary Commission, did in the east. Since the U.S. Sani-

[25] *WOR*, ser. 3, 1:225, 258–59, 308; Strong, *Diary*, pp. xxxvii, xlviii, 150; Neil Cantlie, *A History of the Army Medical Department*, 2 vols. (Edinburgh: Churchill Livingstone, 1974), 2:144–45.

[26] Strong, *Diary*, p. 15, quote from p. 198; "The Sanitary Commission," *North American Review* 98 (1864):163, 168.

[27] Maxwell, *Sanitary Commission*, pp. 31–32, 74–75, 114; Stevenson, "Nursing," p. 921; USSC, *Sanitary Memoirs* 1:16, 24–25.

[28] Maxwell, *Sanitary Commission*, pp. 55, 71, 79, 81, 295–96, 305, 307; Mary Livermore, *My Story*, pp. 131-32.

JOHN CUYLER. *(Courtesy of National Library of Medicine.)*

tary Commission did not entirely restrict its activity to the East, there was conflict between the two organizations. They encountered many of the same difficulties in working with Army surgeons, some of whom gladly accepted their help and some of whom were determined to do without it. Although the main concern of the Christian Commission was the spiritual welfare of the soldier, members of this organization also wrote letters, set up diet kitchens to provide special foods for hospital patients, and performed similar functions. As a result, the U.S. Sanitary Commission tended at times to regard the Christian Commission as yet another rival.[29]

Both the U.S. Sanitary Commission and the Medical Department broke new ground on a large scale in the first months of the Civil War. East and west of the Appalachians, medical directors were often forced to experiment and improvise. In each area of the country where there was military activity in 1861, the medical director was forced to solve the problems he encountered with little, if any, assistance from the surgeon general. Despite the lack of central direction, the senior surgeon of the Medical Department for each army or area found it necessary to establish general facilities to shelter those whose wounds or diseases were likely to keep them hospitalized more than a few days, to attempt to systematize evacuation when his supply of ambulances was inadequate and his attendants untrained, and to supervise subordinates who were often inexperienced in military medicine.

Care of the Sick and Wounded in the East

Medical directors of units serving east of the Appalachians found, long before year's end, that their relative proximity to the surgeon general gave them few, if any, advantages. Surgeon General Finley was jealous of his own powers and prerogatives, but his support of members of his department was ineffective.

Perhaps the first medical director to discover how little he could rely on Finley was John M. Cuyler, a 27-year veteran of the

[29]Brinton, *Memoirs*, p. 48; *Report to the Western Sanitary Commission on the General Military Hospitals of St. Louis, Mo.* (St. Louis, 1862), p. 4; Jacob Gilbert Forman, *The Western Sanitary Commission. A Sketch of Its Origin, History, Labors . . .* (St. Louis: R. P. Studley & Co., 1864), pp. 7–8, 16–17; Jack D. Key, *William Alexander Hammond, M.D. (1828–1900)* (Rochester, Minn.: Davies Printing Co., 1979), p. 19; Maxwell, *Sanitary Commission*, pp. 104, 191; Western Sanitary Commission, *Report of the Western Sanitary Commission for the Year Ending June 1, 1863* (St. Louis: Western Sanitary Commission, 1863), p. 1.

Medical Department assigned to manage the medical care of soldiers in the Fort Monroe-Newport News area of Virginia. Cuyler was in a very difficult situation in the summer of 1861, caught between an inadequate surgeon general and an overbearing commanding general, the arbitrary Maj. Gen. Benjamin Butler. When Butler sent some of his units on an ill-conceived and ill-executed operation intended to eliminate a Confederate battery at Big Bethel, Virginia, physicians with his command were already struggling with a measles epidemic, and a general hospital had been opened to ease the strain on existing facilities. Furthermore, Cuyler had no ambulances. After the Big Bethel effort ended in fiasco, Butler apparently assumed that Cuyler's organization could not provide care for his fifty-three wounded. He took over a hotel in the area, including its supply of bedding, and called in his family physician, Gilman Kimball, at that time a contract physician at the Army hospital in Annapolis, Maryland, to head the command's general hospital. In so doing, Butler caused the surgeon general considerable dismay. The Annapolis hospital was left without a physician when Kimball joined Butler, which he did against Finley's expressed orders. Kimball's arrival, accompanied by several assistants, was not explained to Cuyler, who acquiesced in Kimball's takeover of the hospital because he had no alternative.[30]

Kimball's care of his patients may have been adequate—no complaint on this score has been found—but his departure in August 1861 revealed further evidence of his lack of appreciation for the way in which the Medical Department operated. While in office he had attempted to charge the Department for items it did not normally supply. After he left, Cuyler discovered that Kimball had also neither kept a record of expenditures and receipts nor collected a hospital fund. Despite his exasperation over the entire affair, Finley apparently later permitted Kimball to attain the position of brigade surgeon and to be reassigned from a position in the Western Department in order once again to join the politically powerful Butler.[31]

Unlike Cuyler, William S. King, Brig. Gen. Irvin McDowell's medical director in northern Virginia, experienced no conflicts with his commanding officer, but the support he received from the surgeon general was as weak as that given his colleague at Fort Monroe. King, a 24-year veteran of the Medical Department, was handicapped by the fact that he had arrived in Washington from New Mexico and been assigned to McDowell's force only a few days before it started south toward Manassas and the first battle of Bull Run. A high disease rate was already predictable, for camps were generally filthy. Latrines were inadequate, and the men were too unfamiliar with military life to see the need to use them. Seemingly undaunted, King set to work at once to do what he could to prepare for the coming operation. On 16 July, the day that McDowell's army started south, King set up a general hospital in a former boarding school in Alexandria and

[30]RG 94, entry 544, Register of Hospitals; Ltrs, Edwards to Cuyler (19 Jun 1861) and Finley to G. Kimbal (19 Jun 1861), to E. D. Townsend (24 Jun 1861), to Thomas (6 Jul 1861), and to Townsend (12 Jul 1861), all in RG 112, entry 2, 28:175, 175–76, 192, 232, and 309, respectively; Cuyler to Finley (17 Jun, 9 and 25 Jul, and 13 Dec 1861) and to Butler (copy, 4 Jul 1861), all in RG 112, entry 12; SOs, Thomas (no. 149, 3 Jun 1861), RG 112, entry 57; "Camp Butler" and "The Week," both in *American Medical Times* 3 (1861):64 and 79, and 222–23, respectively; *WOR*, ser. 1, 2:82, 85.

[31]Ltrs, Finley to Butler (17 Jul 1861) and to Thomas (4 and 23 Oct 1861), all in RG 112, entry 2, 28:245 and 485 and 29:29, respectively; Cuyler to Finley (18 and 21 Aug 1861), both in RG 112, entry 12.

requisitioned twenty more ambulances. Finley approved the order, but his initials upon it did not guarantee the delivery of the vehicles. One of the assistant surgeons working in his office apparently concluded that, since the order did not bear McDowell's signature and since some ambulances had recently been delivered to the general's headquarters, the new vehicles were not needed.[32]

When McDowell's 34,000-man army began its march, King had had no time to train ambulance attendants or to devise plans for evacuation and hospitalization. Apparently unaware of the serious nature of these omissions, King decided to stay at McDowell's side as much as possible in the belief that he could thus coordinate ambulances and "give a comprehensive supervision of officers connected with the medical department of the army, and see that the wounded were being attended to by the regimental officers." This approach had not worked particularly well for Surgeon General Lawson in the war with Mexico, and it was not likely to prove a good one when applied to an army more than three times the size of General Scott's and to a group of physicians, most of whom lacked military experience of any kind. McDowell preferred to be at the head of his troops, and thus King was in a poor position, given the state of communications of the period, to advise his surgeons or coordinate their efforts. Moreover, there was no one below him in the medical hierarchy whose responsibility it was to supervise the work of the volunteer surgeons, who were unsure how to go about even such simple matters as ordering more supplies.[33]

This lack of preparation initially showed itself during and after a skirmish at Blackburn's ford on 18 July, when an estimated 10 Union soldiers were killed and another 33 wounded, according to King, and others were felled by the heat—the total killed, wounded, and missing was later set at 83. Regimental surgeons gathered their patients for treatment wherever they could; at least one spot chosen proved too hot, and patients had to be moved. Troops fleeing in panic and blocking the roads hindered evacuation from the field. King made no attempt to establish a hospital himself until he saw ambulances coming in from the field with the wounded and the victims of heat exhaustion and realized that regimental surgeons could not handle the situation unaided. Troops coming through earlier, however, had drawn the wells dry in the Centreville area and the water supply at the hospital King's aide had hastily set up there, two miles from the battlefield, proved inadequate. Physicians who were sometimes confused about their responsibilities also caused problems; one doctor refused until ordered to care for patients from units other than his own. McDowell failed to establish a guard for the hospital and mobs of soldiers wandered through the buildings, searching for friends and food. King finally succeeded in restoring order, once he left McDowell's side, but only after "a great amount of exertion." After two days he was able to procure ambulances to evacuate those who could be moved east to Alexandria but the seriously injured were left behind to be captured by the enemy.[34]

[32]RG 94, entry 544, Alexandria, Va.; SOs, Asst AG (no. 178, 5 Jul 1861), RG 112, entry 57; Ltrs, King to Finley (13 and 16 Jul 1861), both in RG 112, entry 12; Wood to McCormick (6 May 1861), RG 112, entry 2, 28:38; USSC, *Documents of the U.S. Sanitary Commission* (New York, 1866), vol. 1, no. 17:3–6.

[33]Quote from *WOR*, ser. 1, 2:309; *MSH* 1, app.:3, 9; Ltr, King to Finley (16 Jul 1861), RG 112, entry 12.

[34]*MSH* 1, app.:1–5, 8, 17, quote from 2; *MSH* 2, pt. 1:xxxv; *WOR*, ser. 1, 2:305, 309, 721; Russell, *Diary*, p. 213; S. Emma E. Edmonds, *Nurse and Spy in the*

By 20 July, the shortage of supplies was beginning to worry King. Twenty wagons with Medical Department supplies had been left behind in order not to impede the march, but King had requested that more supplies be sent by rail from Alexandria to the Fairfax station. Finley granted the request, but never made the shipment. Possibly because of King's harrassed state of mind, he did not anticipate a full scale battel on the 20th, and, as a result, the scenes enacted after the skirmish at Blackburn's ford were repeated on a larger scale, with supplies low and ambulances still too few.[35]

Although McDowell himself heeded King's advice that the men no longer be rushed because of the heat, his officers continued to push their soldiers, and doctors once again found themselves caring for the victims of heat exhaustion. Just before the two armies actually clashed, King realized that a facility to supplement regimental hospitals would once more be necessary. He placed the new hospital in the church at Sudley, where water supplies were adequate. Some by ambulance and many apparently on foot, patients soon came pouring into the various facilities, including those set up at King's orders at Sudley and Centreville, as well as the regimental hospitals. Apparently neither King nor anyone else made any attempt to relate the number of physicians at any one hospital to the number of patients, who came in at random. Two hundred or more wounded eventually received treatment at Centreville and 300 of the remaining 900 were cared for in the Sudley church and other buildings nearby. Many of the less seriously wounded managed to reach Washington on their own, while many others lay on the field or in the shade of trees and bushes. Surgeons generally worked where they pleased—those who wished to work on the battlefield took their saddlebags with them to care for those who had not been moved to shelter.[36]

After the battle, fleeing soldiers and their equipment once again blocked the path of ambulances that were attempting to evacuate the wounded north to safety. When the Union flight was halted at the Potomac River, King returned south with ambulances, hoping that the victorious Confederates would allow him to retrieve his wounded still lying on the battlefield, but they would not. All the casualties that McDowell's army left behind, either on the field or in hospitals, were taken captive. With them were captured a number of Union surgeons, five of whom had volunteered to remain with their patients at Sudley. The enemy permitted two Union physicians to take over a farmhouse and its outbuildings to use as a hospital although they had few supplies and the rebels could not provide them. At least one captured surgeon helped load Union wounded on trains for the long and agonizing trip to Richmond. Trains with wounded had low priority on the tracks and thus might not reach the Confederate capital for days, during which time those in the boxcars suffered for lack of food and care.[37]

Union Army (Hartford: W. S. Williams & Co., 1865), pp. 34–35.

[35]Ltrs, King to Finley (16 and 20 Jul 1861), both in RG 112, entry 12; *MSH* 1, app.:2.

[36]Ltr, King to Thomas W. Fry (26 Jul 1861), RG 112, entry 12; *MSH* 1, app.:5–8; *WOR*, ser. 1, 2:418; Maxwell, *Sanitary Commission*, pp. 19–20; W. W. Keen, "Surgical Reminiscences of the Civil War," *Transactions of the College of Physicians of Philadelphia*, ser. 3, 27 (1905):96; William I. Sherman, *Memoirs of General William T. Sherman, by Himself*, 2 vols. (New York: D. Appleton & Co., 1875), 1:185; Louis C. Duncan, "The Battle of Bull Run," in *The Medical Department of the United States Army in the Civil War* (n.p., [1912–14]), pt. 2, pp. 10–13, 17, 20.

[37]Ltr, W. H. King to Finley (23 Jul 1861), RG 112, entry 12; *MSH* 1, app.:4, 7–8; *WOR*, ser. 1, 2:345, 416, 421.

The custom of not classifying medical officers as prisoners of war, which according to military historian Louis Duncan had existed to some extent in Europe for three hundred years, had apparently been forgotten since Napoleon's time. Nevertheless, all the surgeons who were taken prisoner in the aftermath of the first battle of Bull Run were eventually released. Confederate Brig. Gen. Pierre G. T. Beauregard was strongly in favor of releasing them as soon as possible. Some were allowed to go before mid-April 1862, but at least one was held captive in South Carolina for a year.[38]

The battle of Bull Run was a great shock to military and medical experts alike. The U.S. Sanitary Commission denounced the lack of advance planning for the care of the wounded, some of whom had been left for long periods unattended on the field. The lack of a coordinated system of evacuation had also forced many who could walk to drag themselves back to Washington unaided. The Surgeon General's Office maintained that the number of physicians in attendance in the District of Columbia was more than adequate, but beds must have been in short supply, since the wounded and their ambulances were forced to wander the streets of the city, trying to find one of the four general hospitals there that would take them in. The new hospital at Alexandria was not yet entirely ready to receive patients; on 21 July it held but 26 of the 175 it was hoped it would eventually be able to accommodate. In the closing months of 1861, however, the Medical Department was at least aware of what it was facing and was preparing to meet future challenges. Large numbers of sick as well as wounded were a distinct possibility since typhoid deaths were increasing in Washington general hospitals. Fortunately, the Medical Department, realizing also that the poor sanitation of many barracks in the city was threatening not only their occupants but also the entire community with disease, began urging increased sanitation.[39]

When Maj. Gen. George B. McClellan was brought in to replace McDowell, Surgeon Charles Tripler, apparently a favorite of old General Scott, came in to serve as McClellan's medical director in August 1861. Reported to be an "energetic, spasmodic, crochety, genial" soul, Tripler had been serving in the Medical Department since 1830. Since he had been giving a course of lectures on military medicine at the Cincinnati Medical College, the problems involved in caring for sick and wounded soldiers up to 1861 were fresh in his mind.[40]

Tripler was apparently not afraid of the task that lay ahead of him. At a time when sweeping changes were necessary, however, he was not so much an innovator as an administrator. He saw many inadequacies in the operations of the department in the area defended by the Army of the Potomac, among them deficiencies in sanitation, hy-

[38]*MSH* 1, app.:7–9; Duncan, *Medical Department,* pt. 2, pp. 16, 18–19. Duncan to the contrary, evidence exists that the English took French medical officers prisoner in the Napoleonic wars: Richard L. Blanco, *Wellington's Surgeon General: Sir James McGrigor* (Durham, N.C.: Duke University Press, 1974), p. 134.

[39]*MSH* 1, pt. 1:60–62, app.:1–9; Maxwell, *Sanitary Commission,* pp. 20, 88; Ltrs, Thomas R. Shelton to Finley (21 Jul 1861) and King to Finley (7 Aug 1861), both in RG 112, entry 12; Wood to Joseph K. F. Mansfield (16 and 19 May 1861) and to A. N. McLaren (20 May 1861), all in RG 112, entry 2, 28:70, 76, and 77–78, respectively; Irwin, "Notes," p. 120

[40]Quote from Strong, *Diary,* p. 181; see also Ltr, Finley to Thomas (3 Aug 1861), RG 112, entry 2, 28:302; SOs, Williams (no. 25, 13 Aug 1861), RG 112, entry 56; Tripler and Blackburn, *Handbook;* Eunice Tripler, *Some Notes of Her Personal Recollections* (New York: Grafton Press, 1910), pp. 127, 131. Unless otherwise indicated, all material on Tripler is based on *MSH* 1, app.:44–52, and *WOR,* ser. 5:76–113.

giene, and disease prevention; evacuation and hospitalization; and the competence of volunteer surgeons, but attempted to deal with them along entirely orthodox lines. Many of the problems were departmental and more appropriately the province of the surgeon general, but Finley apparently made no effective attempt to deal with them.[41]

Tripler recognized that some of the difficulties experienced by the Medical Department resulted from the incompetence of a few volunteer surgeons and the inexperience of many more. He called a board to examine physicians of questionable skills and ordered that from then on such a board examine any medical officer whose competence had been questioned. Tripler also decided to place his brigade surgeons in authority over regimental surgeons of their brigades. Then, by instructing the brigade surgeons about the measures he believed necessary to preserve the Army's health and requiring them to be responsible for the medical officers under them, he was able to spread his doctrines downward despite the large number of surgeons involved.

Tripler hoped to inculcate in his subordinates the principle of avoiding general hospitals whenever possible. Tripler was aware that the general hospital was necessary to receive patients from an army on the move, but, like so many of the old-time surgeons, including King, he retained his dislike for an institution that took a patient far from his unit and appeared to delay his return to it. He also maintained, however, that "there was no authority for any hospital establishment in the vicinity of divisions or brigades, that might relieve the hospital tents if crowded" and still keep the men near their units. Tripler moderated his negative stance on such facilities only enough to allow brigade hospitals to exist as "aggregations of regimental hospitals.[42]

CHARLES TRIPLER. *(Courtesy of National Library of Medicine.)*

Tripler recognized that general hospitals were a necessary evil. He believed that the capital's supply of 2,000 hospital beds would have to be expanded. In a report apparently written a year later he maintained that he had specifically urged 20,000 beds as a minimum goal and that the U.S. Sanitary Commission had been willing to settle for a smaller number, but a commission spokesman, in recalling the same debate,

[41]Ltrs, Edwards to Byrne (15 and 18 Jul 1861) and Finley to AG (18 Jul 1861), all in RG 112, entry 2, 28:240–41, 249, and 250–51, respectively; SOs, Thomas (no. 193, 19 Jul 1861), RG 112, entry 57; "Army Hospitals," *American Medical Times* 3 (1861):125.

[42]Quote from *MSH* 1, app.:48, 49; Ltr, King to Finley (7 Aug 1861), RG 112, entry 12.

reversed the figures and maintained that it was Tripler who was willing to settle for less than 20,000. Although Tripler was apparently successful in systematizing admission to these institutions, in his attempt to increase the number of beds available he encountered frustration, much of which came, directly or indirectly, from Surgeon General Finley.

Tripler was concerned with the quality as well as the quantity of the new hospitals being opened to serve the Army of the Potomac. He favored creating new hospitals from the ground up rather than taking over old buildings, but designs suggested to him by the Sanitary Commission were so expensive that eventually he had to settle for only two such structures. The buildings that were available for his use as hospitals were often outstanding examples of inappropriate design: halls were narrow, provisions for toilet and bathing facilities woefully inadequate, cellars damp and undrained. In some instances, dirt-retaining carpets still lay on the floor. Ventilation was invariably inadequate and bad odors often filled the rooms. Windows were both too small and too few, wards were too small to provide the desired amount of air per patient, and even beds were often of poor quality. Not surprisingly, erysipelas appeared in some of the Washington and nearby Georgetown hospitals at this time.[43]

Finally forced to accept the fact that even with strong Sanitary Commission support he would not be able to establish a network of completely new military hospitals in the capital area, Tripler continued his search for buildings suitable for hospital use in locations both in and around the capital. Not long after the end of the year, his efforts finally brought the total number of beds available for military patients in the Washington area to 6,000. He planned to move patients from Washington to such cities as Annapolis, Baltimore, and Philadelphia as promptly as possible so as to keep beds in Washington free for new patients.[44]

Tripler's efforts to open hospitals in nearby cities to relieve the pressure on those in the capital area brought him into open conflict with the surgeon general, not because of any substantive issue but rather because Finley apparently resented his subordinate's success and influence. The secretary of war had initially informed Finley that the surgeon general was directly in charge of general hospitals in the area of the Army of the Potomac, but Tripler, with McClellan's backing and little consideration for Finley's sensibilities, went blithely about his own schemes. The secretary of war eventually granted McClellan the right to proceed as he saw fit with the establishment of new hospitals, and such was Tripler's position as McClellan's medical director that McClellan's victory was Tripler's victory. Tripler and Finley remained at odds.[45]

Finley apparently kept a jealous eye on Tripler's work in the fall of 1861, and when Tripler attempted to report to him about his search for suitable buildings in Philadelphia to serve as general hospitals for patients moved from Washington, the surgeon general flew into a rage. Cutting his subordinate off short, Finley charged that Tripler had not paid his superior the courtesy of notifying him of what he was doing in Philadelphia, that he was putting McClellan up to giving orders that humil-

[43]"Army Hospitals" and "The Week," both in *American Medical Times* 3 (1861):127–28 and 153, respectively.

[44]Strong, *Diary*, p. 186; RG 94, entry 544; Ltr, Wood to Kennedy (12 Sep 1861), RG 112, entry 2, 28:429.

[45]"Army Hospitals," *American Medical Times* (1861) 3:128; Strong, *Diary*, pp. 183–84.

iated the surgeon general, and that he was trying to upstage the surgeon general by locating more space for hospitals outside the District of Columbia than was needed, in view of Finley's own efforts in this regard. Allowing Tripler no chance to explain himself, Finley berated him in the presence of a third party and then ordered him from the room. Tripler lost little time in placing charges against Finley, and on 6 December, a court-martial was called to consider the case. On 10 December, the surgeon general was charged officially with "Conduct unbecoming an officer and a gentleman" and "Conduct to the prejudice of good order and Military Discipline." The case was never tried, however, because Finley successfully raised the question of whether the general in chief, McClellan, was empowered to dismiss a bureau chief. Finley retracted such of his language as had offended Tripler, and the matter rested. Since the Sanitary Commission was by this point in full cry after Finley and since the question of the surgeon general's competence was being debated in the public press, the charges placed against Finley and dismissed on a technicality probably contributed to the erosion of his position.[46]

Finley was not the only frustration in human form that Tripler had to endure. Volunteer help flocked to the hospitals, and not all of it was welcome. From Tripler's point of view, his hospitals were full of civilians who considered themselves better able than he to manage them. "Sensational preachers, village doctors, and strong-minded women" all "obtruded their crude suggestions." Competent nurses were too few rather than too many. Triple wished to have one nurse for every ten patients, but at the Kalorama facility, where contagious cases were isolated, for example, at one time only two nurses were responsible for 106 patients. Such attendants were generally either well-trained lay nurses, male and female, or members of one or another religous order.[47]

Not the least of the problems that Tripler faced when he became medical director of the Army of the Potomac was that of evacuation. Since he was not responsible for the choice of the fragile two-wheeled ambulance and was scarcely likely to be able to wean Finley away from his own design, one that he apparently attempted to patent, Tripler's complaints were largely useless. He pointed out that 110 of the 228 two-wheelers issued by the Quartermaster of the Army of the Potomac in the three-month period that began July 1861 had "disappeared," statistics that to him indicated "reckless use." Tripler obtained an order ending the practice of using ambulances as taxis. This order may have been obeyed, since as of 31 December 1861, 314 of the Finley design ambulances and 71 four-wheelers were functioning in Washington and one two-wheeler was functioning with each regiment in the field.[48]

Convinced of the need for another method of evacuation to manage the removal of men lying in areas inaccessible to ambulances and apparently assuming that Finley would do nothing about the problem, Tripler began experimenting with a litter that could be attached to the back of a horse or mule. The initial model he tried was, at 140 pounds, too heavy, but Tripler

[46]Quotes from Court Martial Charges (10 Dec 1861), Records of the Judge Advocate General, Proceedings of Courts Martial and Courts of Inquiry, RG 153, box 2893, II547; SOs, Thomas (nos. 322 and 327, 6 and 13 Dec 1861), both in RG 112, entry 57; Strong, *Diary*, pp. 183–84, 186, 190.

[47]Quote from Irwin, "Notes," p. 121; Maxwell, *Sanitary Commission*, p. 52; "Army Hospitals," *American Medical Times* 3 (1861):127–28; *WOR*, ser. 3, 1:636.

[48]Quote from *MSH* 1, app.:49; Maxwell, *Sanitary Commission*, p. 75; Hamilton, *Treatise*, p. 166.

continued to try different models in his search for one that could be used to replace the two-wheeled ambulance. Although the problem of the proper vehicle in which to transport the wounded remained, attempts to train attendants led to some improvement. Surgeons serving in the Poolesville, Maryland, area drilled their attendants in evacuation techniques and organized them by brigades to achieve greater efficiency. In October, McClellan ordered that all ambulance attendants take part in hour-long drills six times a week under the direction of regimental surgeons.[49]

Disease prevention was also one of Tripler's major concerns. Some of the diseases that were beginning to plague the Army of the Potomac were preventable by medical means, others by improved sanitation and hygiene. Tripler learned that many soldiers serving under McClellan had not been vaccinated against smallpox. He ordered the situation remedied and attempted to require that thereafter all recruits be vaccinated before they left their assembly points. Finding the results of this campaign not entirely satisfactory, he ordered brigade surgeons to inspect all men and to immunize those in need of it. His efforts must have been successful, for in the first seven months he was in office there were but 168 cases, most of which had already been contracted before the victims entered the Army.

Since malaria was a major threat to the Army's health, Tripler was intrigued by a report of one of his surgeons that it could be prevented by the ingestion of quinine in whiskey. The regulations did not recognize this remedy, and so Tripler turned to the Sanitary Commission to obtain the necessary ingredients. When the potion seemed successful, he managed to persuade Surgeon General Finley to issue it to those regiments most threatened by malaria. Tripler continued to receive favorable reports of the concoction and eventually ordered that supplies be kept on hand at all times.

In yet another effort to prevent disease, Tripler moved to improve living conditions, both for hospitalized soldiers and for those in the field. He assigned three medical officers to serve as field hospital inspectors and urged an end to the practice of using tents over submerged foundations to shelter soldiers in the field. He was also concerned with the design and heating of tents. Above all he urged upon surgeons and commanding officers alike "the paramount importance of hygienic morality."[50]

A certain amount of disease was, of course, inevitable. Measles, the scourge of new units, did not pass the Army of the Potomac by, and both malaria and typhoid appeared despite precautions. In October and November, among approximately 130,000 men, almost 8,000 cases of fevers of all kinds developed, with 1,000 described as typhoid. Although Tripler regarded typhoid as endemic in the United States, he also believed that many diagnoses of typhoid were in error. In December, alarmed at the high disease rate, General McClellan appointed three medical officers to serve on a committee to investigate the nature of the prevailing diseases. Their conclusion was that malaria was taking the highest toll but that typhoid was definitely present. Nevertheless, al-

[49]Maxwell, *Sanitary Commission*, p. 76; Duncan, "Pope's Virginia Campaign," in *Medical Department*, pt. 3, p. 6; "Duties of Brigade Surgeons," *American Medical Times* 3 (1861):282–83; *MSH* 1, app.:10–11.

[50]Quote from *MSH* 1, app.:47. These were not the first field hospital inspectors to serve in the East, since at least one was apparently serving in the Hagerstown, Md., area earlier in the summer. It is not known, however, whether he was appointed by Finley: Order, Asst AG Porter (27 Jun 1861), RG 112, entry 56.

though the number of cases of disease in the Army of the Potomac rose from 8,000 in July of 1861 to greater than 35,000 in December, the disease rate was falling, from 45 percent in July to 30 percent in September and then to slightly more than 23 percent in December.[51]

Tripler and the surgeons under him were struggling to find ways in which the Medical Department could meet the sudden and overwhelming demands that the new conflict placed on the medical service of the Army of the Potomac without altering the department's basic structure. Though their efforts showed some success, they were handicapped in their attempts by factors beyond their immediate control. Both volunteer soldier and volunteer physician knew little as yet of the requirements of military life, stockpiles of supplies grew slowly, and, above all else, the great numbers of men joining the armed forces created overwhelming medical problems. Much time would be required to resolve these shortcomings, not only for the Army of the Potomac, but for all Union armies.

JOSEPH J. B. WRIGHT. *(Courtesy of National Library of Medicine.)*

Care of the Sick and Wounded in the West

Military engagements to the west of the Appalachians took place on a smaller scale than the battle of Bull Run and thus, although disease took a growing and appalling toll, the number of wounded to be cared for after any single battle was relatively small. Even the battle of Wilson's Creek, Missouri, caused only two-thirds as many wounded as Bull Run. Distances were great, however, and the campaigns lacked the sharp focus of those in the East. Action tended to take place far from any large and secure city where sufficient numbers of appropriate houses might be available to serve as general hospitals. Transportation became critically important and medical directors tended to set up general hospitals in cities convenient to major railroads or rivers. The patient load of general hospitals in the West was great even though some surgeons refrained from sending patients from regimental hospitals to these facilities until they were dying, a custom that tended to revive the old fear of general hospitals.[52]

In western Virginia and along the Ohio River, Union forces under McClellan and his successor, Brig. Gen. William S. Rosecrans, fought to uphold the independence of those who refused to join the eastern

[51] *MSH* 1, pt. 1:30–35 and pt. 3:364–72; Ltr, Finley to AG (4 Dec 1861), RG 112, entry 2, 29:167.

[52] Irwin, "Notes," p. 121; Maxwell, *Sanitary Commission*, p. 56.

portion of the state in secession. In the spring of 1861, the medical director for McClellan was Joseph J. B. Wright, to whom fell the responsibility for organizing the medical care of the troops in the Department of the Ohio. The regiments in the area were so newly called up that one of Wright's first duties was to provide hospital supplies for them, a task he was able to complete quickly with the aid of the New York City purveyor. Because so many of these men were in poor condition when they joined the Army, Wright anticipated a need for general hospitals to serve the sick among them and hoped to locate these facilities at several different sites, from West Virginia westward.[53]

Wright questioned whether the hospitals that sheltered disabled merchant seamen in Cincinnati and Pittsburgh would be worth using for casualties. The hospital in Cincinnati was already available to volunteer patients, but despite its 100 to 150 bed capacity, it held only 15 to 30 men. He finally decided that the rising disease rates of late summer and fall made reliance on regimental hospitals and the homes of patients who lived in the Cincinnati area unrealistic. The arrival of wounded from various engagements that fall made Wright's need all the more imperative. By October patients were pouring into Cincinnati by the hundreds, some from engagements in western Virginia whence they traveled much of the way by boat. Volunteer surgeons sent on many patients from Ohio who wished to be near their homes. Wright's staff in Cincinnati was too small to handle the heavy case load, and malingerers were turning up in significant numbers. His problems, like Tripler's, were only made worse by "scores, if not hundreds of officious & meddle-some women, & equally officious men, all of whom claim to have the direction of the Hospital." Some of these busybodies were undoubtedly drawn to the hospital by vivid newspaper stories about the sufferings of the wounded in poorly administered hospitals. Nevertheless, Wright also wrote the surgeon general of his indebtedness to the citizens of Cincinnati, whose charitable donations helped meet hospital expenses, and to that city's physicians, who donated their time to help the Medical Department staff.[54]

Before his reassignment to St. Louis in the fall of 1861, Wright was also called upon to establish general hospitals near the battlefield in West Virginia. At Rich Mountain in July, for example, he set up a temporary field hospital in a three-story house and in tents pitched nearby. He also set up a general hospital in the town of Beverly, seven miles from Rich Mountain, both for the wounded from Rich Mountain and for those that came in a few days later from the engagement at Carrick's ford. In this facility, five assistant surgeons cared for both Union and Confederate soldiers, on an equal but usually separate basis.[55]

Wright believed that, on the whole, his patients in the Department of the Ohio had been well cared for, despite what he apparently deemed the hopeless military ineptitude of his volunteer surgeons and

[53]Ltr, Wright to Finley (6 Jul 1861), RG 112, entry 12; SOs, Thomas (no. 139, 23 May 1861), RG 112, entry 57; *MSH* 1, app.:13. The way in which the area west of the Appalachians was departmentalized changed as the war progressed. The Department of Western Virginia, for example, was removed from the Department of the Ohio in September 1861 and added to another department in 1862, while the Department of the Cumberland lasted only from August to November 1861: *MSH* 1, pt. 1:74.

[54]Quote from Ltr, Wright to Finley (15 Oct 1861), RG 112, entry 12); see also Wright to Finley (2, 9, and 21 Aug, 22 Sep, and 14 Oct 1861), all in RG 112, entry 12; *MSH* 1, app.:14; SO, Thomas (no. 139, 23 May 1861), RG 112, entry 57.

[55]*MSH* 1, app.:13, 14.

Finley's failure to send him the ambulances he needed. Although the men for whom he was responsible were fighting in a primitive country far from supply centers, and supplies were limited, no serious shortage developed, even of such difficult-to-transport items as anesthetics. Surgeons were apparently able to use freely either chloroform or chloroform mixed with ether and did so with complete success, without anesthesia-related deaths. Wright recalled later that he had had "improvised . . . ambulances in sufficient number" from "light two horse spring wagons" bought at McClellan's order. The evacuation of patients from Rich Mountain to the Beverly general hospital three days after the battle went well, although Wright admitted that part of the credit had to go to smooth roads and good weather.[56]

In the fall of 1861, the Surgeon General's Office ordered the opening of yet another general hospital in the Department of the Ohio at Louisville, Kentucky, a unit that was to be staffed by contract physicians. By this time the Medical Department had assigned Robert Murray (who would serve as surgeon general from 1883 to 1886) to replace Wright. Murray set up his headquarters in Louisville and asked the surgeon general to appoint one of the assistant surgeons working in Cincinnati as medical director of that area so that he could focus his own efforts upon Louisville. By the end of November, a measles epidemic had struck in that part of Kentucky and the two general hospitals Murray had established in Louisville were both crowded. Two more hospitals were being prepared for opening, and plans were underway to set up still more, but meanwhile 100 men were in temporary rooms in the town and 400 more sick in camp. With 50,000 men in the field and more coming in, the situation was not likely to improve. Moreover, Murray was having difficulty hiring contract surgeons at $100 a month, the maximum he was permitted to offer.[57]

To the west of the Department of the Ohio were 23,000 men who would on 25 July come under the command of Maj. Gen. John Charles Fremont. Until August there was little action in Missouri and most of the sick of Fremont's new command were cared for in regimental and post hospitals near St. Louis. Medical Director Samuel De Camp hastily set up the first general hospital in that city, located on a major railroad, the first week in August. After first accepting and then rejecting the smaller and "miserable, filthy Marine [merchant marine] Hospital," De Camp finally chose for his general hospital a new building with a capacity of more than 500. Only a few days later, Brig. Gen. Nathaniel Lyon and his 5,000 men left their camp near Springfield, Missouri, to attack the enemy near Wilson's Creek, and their disastrous defeat brought the first significant number of wounded to the hospitals of General Fremont's command.[58]

Lyon's medical system was loosely organized in the summer of 1861, with no medical director to coordinate the work of the sixteen physicians who served within the command. The men who served as ambulance drivers and attendants had received no training. Ambulances and tents were in short supply. The number of ty-

[56]*MSH* 1, app.:13, quotes from 14; *MSH* 2, pt. 1:xxxv; Ltrs, Horace R. Wirtz to Finley (19 Dec 1861) and Wright to Finley (1 Jun 1861), both in RG 112, entry 12.

[57]Murray to Finley (28 Nov, 1 Dec, and 26 Dec 1861), all in RG 112, entry 12.

[58]Quote from Ltr, De Camp to Wood (25 Jul 1861), RG 112, entry 12; Ltrs, De Camp to Finley (2 and 15 Aug 1861), both in RG 112, entry 12; *Report to the Western Sanitary Commission,* pp. 3–6; SO, Asst AG (no. 13, 31 Jul 1861), RG 112, entry 56.

phoid and dysentery cases began increasing in August at about the same time that approximately forty men were wounded in a "smart skirmish." Lyon now ordered a volunteer doctor to establish a general hospital in Springfield where his headquarters was located, since regimental facilities could no longer accommodate all his sick. The doctor selected an unfinished building originally intended to serve as a courthouse and chose at least one other medical officer, a Regular Army assistant surgeon, to serve with him there.[59]

On 9 August, Lyon ordered his command to leave camp near Springfield and to prepare to attack the enemy along Wilson's Creek. The battle the next day was fierce, lasting six to seven hours. In the disastrous defeat that ensued, Lyon himself was killed, and the loss in dead and wounded was second in 1861 only to the casualties at Bull Run. But two vehicles, both "large spring wagons drawn by six mules," were available to remove the more than 700 wounded. Those who could walk were cared for in a ravine, and many of those who could not remained on the battlefield overnight. Most of the casualties were eventually brought to Springfield, and about 200 joined the rest of Lyon's battered force in their 110-mile retreat from Springfield to Rolla, Missouri, whence they went by train to hospitals at St. Louis. One medical officer present at the battle of Wilson's Creek believed that had Lyon appointed a medical director, 90 percent of the wounded could have been cared for and evacuated before the retreat began.[60]

The wounded who could not join the retreat were sheltered in the general hospital at Springfield, where seven Union doctors remained with them, but most of the men serving as nurses joined the retreat to Rolla. When Confederates took possession of Springfield the following day, they quickly made off with the hospital supplies and medicines that Union forces had left behind for their own wounded. The enemy preempted all available transportation, and a week was needed to retrieve all Union wounded from the battlefield. Although $5,000 had been left with Union surgeons for the purchase of supplies and food for their patients, no medical supplies were available. Surgeons did somehow manage to perform many operations, which was fortunate since conditions had not been favorable for surgery at the battlefield.[61]

The defeat at Wilson's Creek placed an added burden on a hospital system already strained by increasing numbers of patients with typhoid, measles, pneumonia, and diarrhea, diseases that spread all the more rapidly because of the poor sanitation that characterized many of the camps in Fremont's command. Those of Lyon's casualties who had joined the retreat from Springfield to Rolla eventually arrived in St. Louis, where they were joined in time by the wounded who had been taken captive. A month after the defeat, the contending armies began a gradual exchange of wounded prisoners that was not completed until November. Taking advantage of the nearby railroad, surgeons sent most of these patients in boxcars 110 miles on new, unsettled, and bumpy track back to St. Louis, where hospitals were generally not highly regarded. Wounded from an engagement at Lexington, Missouri, in September also turned up at St. Louis. All available wards, including some in St.

[59]Quote from *MSH* 1, app.:15.

[60]*MSH* 1, app.:16, 17, quote from 16; *From Sumter to Shiloh: Battles and Leaders of the Civil War*, new ed. (New York: Castle Books & A. S. Barnes & Co., 1956), p. 306.

[61]Ltr, Edward C. Franklin to De Camp (16 Aug 1861), RG 112, entry 12; *MSH* 1, app.:16–17.

Louis charity hospitals, took in military patients, and even the charity hospitals were soon full to overflowing. To make matters worse, patients were coming in from crowded hospitals in other parts of Missouri and even from Cairo, Illinois, where the sick were too numerous for local hospitals to handle. De Camp opened a hospital for smallpox victims on an island in the Mississippi River and another for measles victims. He had smaller hospitals opened at intervals along the rail line in Missouri from Sedalia and Rolla to St. Louis and took over a steamboat to use as a hospital ship. He freed beds in the city by sending convalescents to camps outside the city. The Western Sanitary Commission began outfitting railroad cars for the sick and provided equipment for many of the hospitals, supplemented Medical Department supplies, and even opened its own hospital in a rented five-story building, where patients were cared for by an Army staff.[62]

By December of 1861 the condition of the 2,000 patients in St. Louis hospitals was outraging civilian observers, who reported the deaths of fifty-six patients in one week. A gentleman familiar with the St. Louis situation wrote the secretary of war that the Army's hospitals there were "in a miserable, dirty, filthy and *disgraceful* condition" and that entry into them meant "*certain death.*" The mortality varied, of course—from 26 October to 2 November, for example, only thirty-four died. Horrible as the rate may have seemed, it was perhaps to have been expected, since only the sickest patients were likely to be sent to general hospitals. The mortality was not significantly worse than that in the general hospitals of the East, where 151 of the little more than 2,000 patients died in December. This rate was actually lower than that in general hospitals of the entire central region, where 8 percent of the patients died during the last month of 1861.[63]

The story at many other hospitals in the West was much the same as that in Cincinnati and St. Louis. Crowding was frequent and inadequate housing common, as could be seen at the facility set up in Jefferson City, Missouri, to care for 500 men who broke down as Fremont drove his men hard to make up for a string of defeats. This hospital was housed in an old seminary, two taverns, and a private home. Many windows were broken in these buildings, and some patients had to lie on the floor. A Sanitary Commission inspector noted that spittoons and chamberpots were not promptly emptied and that lazy and undisciplined soldiers had turned the hospital grounds into one large latrine. Hospitals in and near Cairo, Illinois, were apparently in better shape than many others, partially because overcrowding had been relieved by sending patients downriver to St. Louis. The rate of malaria among the patients in these units was high, although, like most physicians before the twentieth century, the medical officers there did not remark upon any possible relationship between the

[62]George Edgar Turner, *Victory Rode the Rails: The Strategic Place of the Railroads* (Indianapolis: Bobbs-Merrill Co., 1953), p. 297; Ltrs, De Camp to Finley (8 and 29 Jul, 2 and 16 Aug, 2 Sep, 14 and 21 Oct, and 1 Nov 1861), all in RG 112, entry 12; *Report to the Western Sanitary Commission*, pp. 3–6; Maxwell, *Sanitary Commission*, p. 105; Brinton, Memoirs, p. 35; Forman, Western Sanitary Commission, pp. 8–10, 15; U.S. Sanitary Commission, *Documents* 1, no. 26:5, 9, 10, 15, no. 36:6, 46, no. 38:3; Western Sanitary Commission, *Report*, p. 8.

[63]Quote from H. Phillips to Cameron (27 Dec 1861), RG 112, entry 12; Ltrs, De Camp to Finley (19 Aug and 14 Oct 1861), both in RG 112, entry 12; Forman, *Western Sanitary Commission*, pp. 13, 15; *Report to the Western Sanitary Commission*, p. 10; "Sick and Wounded Soldiers in St. Louis," *American Medical Times* 3 (1861):396; *MSH* 1, pt. 1:60–65, 114–19.

JOHN H. BRINTON. *(Courtesy of National Library of Medicine.)*

mosquitoes, "powerful and bloodthirsty . . . pests, gray-backed, huge and insatiate," and the disease rate. As usual, inexperience joined ignorance and undiscipline as a major source of trouble. The young brigade surgeon, John Brinton, who set up a new hospital in Illinois at nearby Mound City to relieve overcrowding at the Cairo facility, commented sadly that, if he had had some experience before being called upon to establish that facility, he "could have accomplished in a few hours the work that cost me so many weary days of labor and nights of thought.[64]

[64]Brinton, *Memoirs*, pp. 43–44, 50, quotes from pp. 42 and 52, respectively.

Conclusion

In the West as in the East, the Medical Department's inability to provide prompt and unfailing care for the sick and wounded of the Union army stemmed principally from two factors, both beyond the Department's control. The frequency with which Union forces were defeated in 1861 greatly complicated the management of medical care and evacuation, and the newness of warfare on the scale of the Civil War made it impossible for anyone to have adequately anticipated the scope and magnitude of the problems that would arise. Nevertheless, the Department did not adjust as rapidly as it might have to the new demands placed upon it. Surgeon General Finley was apparently totally unable to grasp the significance of the situation that faced him and seemed more concerned with maintaining his image as head of the Department than with designing new approaches to new problems. Medical Director King, too, found the Lawsonian tradition hard to forget. Although King's successor, Tripler, was capable of a certain amount of innovation, he was not daring by nature, and abandoned the old ways only with reluctance. To the West, such men as young Brinton and the veteran Wright struggled to adapt to the new situation, but youthful vigor could not make up for inexperience, nor mature judgment compensate for inadequate numbers of hospital beds. The first eight months of the war were long enough for serious problems to develop, but not long enough for adequate solutions to be devised and carried out.

CHAPTER 9

The Civil War in 1862: Learning on the Job

The horrors experienced by the sick and wounded during the first months of the Civil War made the need for change in leadership, organization, and operations of the Medical Department in 1862 undeniable. No truly applicable model existed to guide these changes, however. The Medical Department would have to learn through trial and error what was required. The learning process had begun in 1861, but fast and imaginative learners as well as energetic leaders were still wanted.

The first developments to influence the Medical Department significantly, however, took place at a higher level. In January 1862 the relentless Edwin M. Stanton replaced Cameron as secretary of war. In April, Congress voted to allow promotion on the basis of competence rather than seniority. The new bill had barely passed when Stanton, using Surgeon General Finley's alleged mishandling of a complaint as a pretext, removed the aging physician from office and exiled him to Boston, thereby triggering his resignation. At the urging of the U.S. Sanitary Commission, but against his own inclinations, Stanton then appointed a 33-year-old assistant surgeon with barely more than eleven years of Army experience to be the new surgeon general.[1]

Two days after appointing William Alexander Hammond surgeon general, the secretary of war called the new head of the Medical Department into his office. Stanton asked a casual question about the activities of the U.S. Sanitary Commission in a "tone and manner" Hammond recalled as being "offensive in the extreme," and then assured his subordinate that "if you have the enterprise, the knowledge, the intelligence, and the brains to run the Medical Department, I will assist you." Determined not to "quietly submit to the insolence which [Stanton] constantly exhibited toward his subordinates," Hammond, as he later remembered it, replied:

> Mr. Secretary, . . . I am not accustomed to be spoken to in that manner by any person, and I beg you will address me in more respectful terms . . . during my service in the army, I have been thrown with gentlemen, who, no matter what our relative rank was, treated me with respect. Now that I have become Surgeon-General, I do not intent to exact anything less than I did when I was Assistant Surgeon, and I will not permit you to speak to me in such language as you have just used.

To which Stanton answered, "Then, sir, you can leave my office immediately." His

[1]Strong, *Diary*, p. xxxix; Maxwell, *Sanitary Commission*, pp. 126–27. Unless otherwise indicated, this chapter is based on Brown, *Medical Department*, and Callan, *Military Laws*.

WILLIAM A. HAMMOND. *(Courtesy of National Library of Medicine.)*

head thoroughly turned by the respect his colleagues had shown for his ability and by his rapid rise to high office, Hammond thus planted the seeds of his own destruction as surgeon general and undermined the success to which his ability and energy entitled him.[2]

Hammond's earlier experiences in the Army foreshadowed his future as surgeon general. His medical research and his work as a naturalist while serving as an assistant surgeon in the West brought him to the favorable attention of prominent scientists, but he was unable to tolerate a life characterized by, in his words, "restraint and uncertainty." He resigned from the Army in 1860, using as a pretext what now appears to have been a psychosomatic illness. When war broke out, however, he was determined to take part, even though to reenter the Medical Department he had to take the entrance examination again and enter at the very bottom of the list, losing credit for the years he had served earlier. He managed to counter Surgeon General Finley's skepticism by signing a pledge stating that he had not suffered from his heart problem for three years and that if it returned, he would resign.[3]

Hammond's work in the earliest months of the war demonstrated his administrative talents. With great energy he set up new hospitals and improved those already established in Pennsylvania, Maryland, and West Virginia, experimenting with a new system of ventilation. While doing so, he served under two men, Charles Tripler and Jonathan Lettermen, who were sufficiently impressed with his abilities to serve later as his subordinates without apparent objection, and under Maj. Gen. George B. McClellan, who become convinced that Hammond would make a good successor to Finley. Hammond's success also brought him the enthusiastic support of the U.S. Sanitary Commission, but during this same period he managed to earn the enmity of Secretaries of War Cameron and Stanton and of Finley and Robert C. Wood, who several times served as acting surgeon general.[4]

[2]Quotes from William A. Hammond, *A Statement of the Causes Which Led to the Dismissal of Surgeon-General William A. Hammond From the Army* (New York, 1864), p. 16.

[3]Quote from Ltr, Hammond to Baird (19 Apr 1860), RU 305, Smithsonian; Ltr, Hammond to Baird (18 Oct 1860), RU 305, Smithsonian; Strong, *Diary*, pp. 185, 185n; Bonnie Ellen Blustein, "A New York Medical Man: William Alexander Hammond, M.D. (1828–1900), Neurologist" (Ph.D. dissertation, University of Pennsylvania, 1979), pp. 77–78; Hammond (Pledge, 18 Mar 1861), RG 112, entry 2, 28:84; USSC, *Documents* 1, no. 41:29–30, 31n.

[4]Blustein, "Hammond," pp. 75–82; Ltr, Finley to AG (4 Mar 1862), RG 112, entry 2, 29:669; Strong,

From the outset, the key factors in Hammond's military career were his considerable ability as a scientist, his energy and drive, and his unfortunate temperament. Even more than his administrative and scientific talents, his hot temper, his impulsiveness, and his "great self-confidence" that, in the words of friend and colleague S. Weir Mitchell, "led him to inconsiderate action," determined his fate in the Army. Many who knew Hammond as surgeon general were less charitable in their opinions than Mitchell; one remembered that, as head of the Medical Department, Hammond was "rarely anything but captious, irritable, and pompous."[5]

Just at the time Hammond came to office, Congress was acting to make major modifications in the structure of the Medical Department. In April 1862, it created the positions of medical inspector general and eight medical inspectors. It also revived the position of assistant surgeon general, a post to which Stanton, with Hammond's approval, quickly named Robert Wood. Hammond later noted that Stanton had promised the position to Wood, subject to the surgeon general's approval, anticipating, Hammond believed, that he would react vindictively. The inspectors were to be chosen from among both volunteer surgeons and regulars. They were to be responsible for the overall management of military hospitals and for the inspection of sanitary conditions in camps where crowding was leading to epidemics of such diseases as typhoid fever and dysentery. Congress added to the prestige of the Medical Department by giving the new medical inspector general the rank of colonel and the medical inspectors that of lieutenant colonel, and by raising the rank of the surgeon general to brigadier general.[6]

Congress was also aware at this time of the need to increase the size of the Medical Department. Under pressure from the Sanitary Commission it added ten surgeons, ten assistant surgeons, and twenty medical cadets to the roster in April and granted Hammond at the same time permission to appoint as many hospital stewards as he needed. Regimental surgeons and assistant surgeons were continuing to join the Army as part of each new regiment of volunteers and were serving the same terms as those signing up with them. But in July the legislators voted to increase the number of volunteer physicians serving outside the regimental framework as well. After changing the title of the Corps of Brigade Surgeons to Corps of Staff Surgeons, Congress added 40 surgeons and 120 assistant surgeons to the group, designating them surgeons and assistant surgeons of the volunteers. These men were to be "liable for detail for any professional duty the good of the services requires." Congress also gave each volunteer infantry regiment a second assistant surgeon and each cavalry regiment one surgeon and one assistant surgeon. It ruled that militia regiments, when called up, should be organized just as the volunteer units were.[7]

Amid these signs of progress, a new conflict began to take shape within the De-

Diary, p. 187; *MSH* 1, pt. 3:908; "The Sanitary Commission," p. 175.

[5]First and second quotes, S. Weir Mitchell, "Some Personal Recollections of the Civil War," *Transactions of the College of Physicians*, 3d ser., 27 (1905):89; third quote, Henry Crecy Yarrow, "Personal Recollections of Old Medical Officers," *Military Surgeon* 60 (1927):174.

[6]Hammond, *Statement*, p. 4; Maxwell, *Sanitary Commission*, pp. 64, 139; Blustein, "Hammond," p. 78. Medical directors occasionally appointed their own inspectors on an informal basis, but such an appointment did not bring with it a change in rank.

[7]Quote from Ltr, SGO to David L. Magruder (8 Apr 1862), RG 112, entry 2, 30:158; see also Ltr, SGO to Hammond (1 Jul1862), RG 112, entry 2, 31:311; Maxwell, *Sanitary Commission*, pp. 127–29, 135–37.

partment. The ill will between Stanton on the one hand and Hammond and his allies on the Sanitary Commission on the other initially lay beneath the surface, but it emerged to interfere with the Medical Department's operations shortly after Hammond's appointment as surgeon general. For two months after Congress created the position of inspector, the secretary of war delayed giving his official approval to the surgeon general's nominees. Even then, Stanton accepted only four of the eight, substituting for the others men who were apparently not highly regarded by the medical profession. When Congress, recalling what appeared to be the unnecessary agonies of the sick and wounded in McClellan's campaign of May and June, rejected Charles Tripler, McClellan's medical director, for the position of inspector general, Stanton named in his place former Brigade Surgeon Thomas Perley, a man who was "quite unknown to the public service and to the profession," as the editor of the *American Medical Times* put it. Despite the low caliber of the men named to the new positions, the lawmakers saw the position as important and in December created another eight openings for inspectors in the department. Congress also required that the inspectors assume, in addition to their other duties, the responsibility for examining patients in general hospitals and convalescent camps to determine who among them should be discharged from the Army.[8]

Congress also created another new position within the Medical Department, that of medical storekeeper. Although hospital stewards were capable of compounding medicines under a surgeon's direction, Congress now authorized the secretary of war to hire as many as six medical storekeepers, who were to be well-qualified apothecaries or druggists and to work at a more responsible level than hospital stewards. They were required to be between twenty-five and forty years of age and to pass an examination administered by a board of at least three medical officers. The position of the medical storekeeper was temporary, to be eliminated at the end of the war, and apparently carried no rank. Like the medical purveyor, the storekeeper was expected to post bond. He apparently served as a captain and often acted as a substitute for medical purveyor.[9]

Despite these newly created positions, physicians remained the backbone of the Medical Department. Alone among them, volunteer regimental surgeons continued to be examined only by state authorities. They were joining the Army in great numbers, as many as 1,200 in the eight months preceding May 1862. In July, in authorizing the increase in the number of volunteer staff surgeons, Congress ordered that medical officers serving at this level continue to be examined by a board of medical officers. The very strict examinations that Hammond designed for them, however, caused many to fail, and Stanton threatened to eliminate the examining board if more did not pass. Since the correlation between test scores and performance in the field was apparently open to question, this

[8]Quote from "The Week," *American Medical Times* 5 (1862):11; see also "Sanitary Inspector in the Army," *American Medical Times* 5 (1862):94–95; Saul Jarcho, "Edwin Stanton and American Medicine," *Bulletin of the History of Medicine* 45 (1971):155; "The Sanitary Commission," pp. 176–77.

[9]Henry N. Rittenhouse, "U.S. Army Medical Storekeepers," *American Journal of Pharmacy* 37 (1865):88, 90; Ltr, SGO to W. S. King (5 Jul 1862), RG 112, entry 2, 31:367. The question of rank is not addressed in the legislation, but letters to the surgeon general make it apparent that medical storekeepers were addressed as "captain": Ltr, Rittenhouse to SG (6 Dec 1862), RG 112, Registers of Letters Received, 1862, entry 10, p. 447.

threat was not as outrageous as it might sound. Hammond was determined, however, to improve by this means the quality of the care that the Union soldier received. By the end of the year he had concluded that physicians taken into the regular medical service should have studied hygiene and military surgery. He wrote the heads of medical schools to urge the introduction of such courses into their curricula. Although he relaxed his standards somewhat for the examinations given volunteer surgeons, he began to work with eminent physicians in several large cities to improve the caliber of doctors made available to serve under contract.[10]

The quality of the Army's contract physicians was important, since during the course of the war more than 5,500 civilian doctors assisted the Medical Department. Many routinely staffed general hospitals while others provided help only in emergencies when it was necessary to locate more physicians quickly. In the last group were some of the nation's most prominent doctors. When a battle resulted in overwhelming numbers of casualties, those who flocked to the scene might include quacks, cultists, and practitioners of questionable ethics, men who were not under military discipline and who could, therefore, come and go as they liked, taking assignments that pleased them and rejecting all others. They often performed unnecessary operations or wrought havoc as they dug about for bullets. As a result of the problems experienced with doctors so casually assembled, the Medical Department decided to call only upon members of a reserve surgeons corps formed by the governors of various states. These gentlemen were paid the salary of contract surgeons and came in if called. They served under Medical Department orders and were required to remain at their assigned posts at least fifteen days, unless officially released sooner.[11]

Although, like his attempts to require strict examinations, Hammond's efforts to gain for his medical directors a rank more suited to their responsibilities failed, medical officers did, in theory, attain one privilege in 1862. When the war was more than a year old, both sides agreed that they would not in the future hold noncombatants, including physicians, as prisoners of war. Unfortunately, many months would pass before this understanding, never formalized, was routinely heeded.[12]

The need for civilian hospital workers was more constant than that for civilian physicians and some system was required to guide their activities. In June 1862, the secretary of war issued more detailed regulations concerning civilian hospital workers than had been previously in force. Attendants were to serve under military discipline with a squad of eleven nurses assigned to serve every 100 patients. The chief of the squad was to report to the hospital steward. Regulations called for two male nurses for every one female in general hospitals, but many facilities had yet to hire their first woman.[13]

[10]Ltrs, Hammond to G. W. Mittenberger and to others (all 22 Dec 1862), all in RG 112, entry 2, 33:546; Hammond to S. D. Gross (5 and 9 May 1862) and to Cooper (14 May 1862), all in RG 112, entry 2, 30:350, 394, and 423, respectively; T. M. Markoe to SG (19 May 1862), RG 112, entry 12.

[11]GO (no. 65, 12 Jun 1863), in William Grace, *The Army Surgeon's Manual*, 2d ed. (New York: Balliere Bros., 1865), p. 47; "Volunteer Surgical Aid" and "The Week," both in *American Medical Times* 5 (1862):135 and 150, respectively; Hall, "Lessons," pp. 76–77; William A. Hammond, "Letter to 'Gentlemen,' " *Boston Medical and Surgical Journal* 67 (1862–63):305–06.

[12]"The Week," *American Medical Times* 5 (1862):11; GO (no. 60, 6 Jun 1862), in Grace, *Manual*, p. 44.

[13]Grace, *Manual*, pp. 109, 111–12; J. C. Stimson and L. C. Thompson, "Women Nurses With the Union," *Military Surgeon* 62 (1928):228–29.

In the early months of 1862, the general hospitals in which these nurses served were still housed almost entirely in buildings originally erected for some other purpose. Hammond shared the U.S. Sanitary Commission's enthusiasm for the pavilion concept, having experimented with hospital design as a medical officer in West Virginia before he was appointed surgeon general. He had become convinced that more than 3,000 patients could be cared for in one hospital if the ventilation was good. As the building program progressed, the Medical Department was able to abandon some of the old facilities, but the location of the new institutions became a political issue, both because communities usually wanted their wounded cared for nearby and because businessmen were aware of the profit such an institution could engender. Hospitals had also been established by states for their own wounded to supplement the Army's facilities, and the Medical Department was having so much difficulty in finding enough beds that it had no choice but to cooperate with the states. In June 1862, at the urging of state authorities who found them very costly to support, the Medical Department assumed responsibility for many of the state institutions. Because for all practical purposes these facilities remained largely under state control, many patients who should have rejoined their units were instead discharged to civilian life.[14]

The enormous numbers of sick and wounded flooding hospitals with the start of the new campaign season made it necessary to find ways to limit the size of the hospital population. Surgeons attempted to weed out malingerers, but in the confusion that followed a battle, this was a difficult task. Medical officers also urged that more efficient procedures for discharging the chronically ill from the service be devised. The concept of the convalescent camp began to gain popularity because such a camp made it possible for soldiers almost ready to resume their duties to remain relatively near the units to which they would be returning.[15]

Hammond often visited proposed hospital sites to make sure that those chosen were healthy, but by the end of 1862 the Union Army's 150 general hospitals, scattered about the North and West and in some areas of the South and staffed largely by contract surgeons, were not achieving the record for healthfulness that had been hoped for. Although 400 stewards, 300 wardmasters, 6,051 male and female nurses, 3,025 laundresses, and 2,017 cooks served in general hospitals, many of these institutions were still filthy. Dirt, soiled dressings, and old clothing might be under the beds in wards that seemed clean. Bathrooms and tubs sometimes served as temporary repositories for "every uncleansed or unemptied chamber vessel, of soiled and offensive linen, and of every slop that a lazy nurse does not care to move." Laundries, kitchens, and mess rooms might be in a similar state, and hospital grounds could be littered with refuse and privies. Ventilation was likely to be deficient despite Hammond's efforts, principally because architects valued warmth above fresh air.[16]

[14]Blustein, "Hammond," p. 83; Joseph R. Smith, "Hammond, The Surgeon-General," *Post Graduate* 15 (1900):628; Emory Upton, *The Military Policy of the United States* (Washington: Government Printing Office, 1917), pp. 402–05.

[15]Ltr, William J. Sloan to Hammond, and Telg, Josiah Simpson to Hammond (both 7 Jul 1862), both in RG 112, entry 12; Ltrs, Sloan to Hammond (20 Aug 1862) and to SG (11 Sep 1862), both in RG 112, entry 10, p. 637; Finley to Thomas (17 Mar 1862), RG 112, entry 2, 30:47–48; *MSH* 1, pt. 3:908.

[16]Quote from "Management of Military Hospitals," *American Medical Times* 5 (1862):292; War Department, SGO, *Annual Report*, 1862, p. 6; "Locations and

Conditions in the Army's hospitals were all the more important because of the climbing sick rate, more than 16 percent higher than it had been for the period of 1845 to 1859. The death rate from disease had increased even more markedly, from 2.4 percent a year in the earlier period to 5.0 percent from July 1861 through June 1862. Among the more common diseases was diarrhea, with over 200,000 cases recorded for the year starting July 1861. Physicians found it difficult to estimate the number of deaths from this source, however, since diarrhea often coexisted with other illnesses. Measles afflicted almost 22,000 in that period, causing 511 deaths. Figures for such problems as typhus, typhoid fever, malaria, and other fevers as well as for scurvy were unreliable, not only because one victim might have multiple diseases but also because physicians could not always distinguish one fever from another. Almost 24,000 cases of venereal disease appeared, although the author of one journal article noted that very few patients came from commands where lieutenants were "vigilant and sober." The U.S. Sanitary Commission blamed the Army diet for scurvy. One authority suggested that scurvy had become a major Army problem when he maintained that the Commission could best promote the Army's health "by resorting to measures that shall insure a sufficient supply of antiscorbutic vegetables and antiscorbutic care."[17]

Because of the sick rate and the growing numbers of wounded, the strain on the Medical Department's supply system increased too rapidly for Hammond to hope to function without the aid of the U.S. Sanitary Commission and similar agencies. Congress eased his work by removing some of the red tape that restricted the ability of the purveyors to keep up with demand. Hammond revised the supply table so that it continued to reflect current usage and established large depots at Baltimore, Maryland; Fort Monroe, Virginia; Washington, D.C.; Cincinnati, Ohio; St. Louis, Missouri; and Nashville, Tennessee. Distribution in the field was handled from field depots, but buying was still handled principally from New York City and Philadelphia. Although urgent need still led to the occasional purchase of items that proved to be poor, the difficulties he was experiencing in keeping up with demand did not keep Hammond from obtaining Stanton's approval of a plan to supply medicines to any families of volunteers that were totally indigent. In July Congress voted $15,000 for the purchase of artificial arms and legs for both soldiers and seamen, and made the Army Medical Department responsible for determining the models to be used. Hammond was interested in quality as well as quantity, and his efforts to improve the equipment used by physicians in the field also led to the development of two new designs for medical knapsacks.[18]

Among Hammond's other successes were two of long-range rather than immediate significance, the establishment of the

Appointments of Our Military Hospitals," *American Medical Times* 5 (1862):24; Blustein, "Hammond," p. 83.

[17]First Quote, "The Hospital at Portsmouth, R.I.," *Boston Medical and Surgical Journal* 67 (1862–63):116; second quote, Elisha Harris, *The United States Sanitary Commission* (Boston: Crosby & Nichols, 1864), p. 29; *MSH* 1, pt. 3:622–24; D. Hunter, "General Orders, No. 5," *Medical and Surgical Reporter* 8 (1862):103; see also Harris, *The United States Sanitary Commission*, p. 30.

[18]Ltr, Hammond to Baird (29 Nov 1857), RU 305; Blustein, "Hammond," pp. 56–57, 95; Smith, "Hammond," p. 627; *MSH* 1, pt. 3:965–66; War Department, SGO, *Annual Report*, 1862, pp. 8–9; Reasoner, "Medical Supply," p. 17; Ltr, SGO to John Neill (28 Apr 1862), RG 112, entry 2, 30:301; John E. Summers to SG (23 Sep 1862), in RG 112, entry 10, p. 664; Hennell Stevens, "The Medical Purveying Department of the United States Army," *American Journal of Pharmacy*, 37 (1865):92–93.

Army Medical Museum and the first steps toward the creation of what would become *The Medical and Surgical History of the War of the Rebellion.* The surgeon general was particularly sensitive to the possibilities for extending the boundaries of medical knowledge during such a vast conflict. Early in his tenure as head of the department he urged that his subordinates send in specimens both of human tissue and of the foreign bodies, such as shell fragments or bullets, found in wounds. He appointed two men to assist in collecting information and specimens for the history and for the medical museum. Although Stanton succeeded in thwarting Hammond's desire to create a formal medical library in association with the museum, the Surgeon General's Office continued to add to this collection of books on an informal basis until 1867 when the first librarian was appointed.[19]

As the new chief of the Medical Department, Hammond was full of energy and confidence in 1862. Before he had been in office a month, he was going out of his way to express to the medical directors of major armies his confidence in them. He wished them to feel assured of his support in taking the initiative in solving the problems they encountered. He was obviously more willing to delegate authority than his two immediate predecessors had been and desired that his medical directors exercise considerable independence in determining their own needs without directions from him. Rather than control the Washington complex of hospitals personally, as Finley twice attempted to do, Hammond made Surgeon Jonathan Letterman medical director for the capital area. Realizing that the control of both field and general hospitals in an area or for an army might be too much for one man, he began to divide these responsibilities, having one director, for example, for each of the major cities in the East where large numbers of Army patients were cared for and yet another for each army in the East.[20]

Care of the Sick and Wounded in the East

In early 1862, a visitor inspecting General McClellan's Army of the Potomac, the principal army in the East, was pleased with what he saw. Physicians appeared to be both competent and hard working, camps were neat and orderly, drainage was good, and tents were warm, although their poor ventilation caused him some distress. The general hospitals serving the Army of the Potomac, of which there were ten in mid-March, needed little in the way of improvement, in his view, and he found the competence of the nurses, both male and female, to be particularly worthy of notice. In view of such reports, Medical Director Charles Tripler believed with some justification that his attempt to bring order into the medical support of the Army of the Potomac was at least partially successful.[21]

In March Tripler was apparently confident of his own ability to deal with the demands of the upcoming campaign. He sent all the sick except for convalescents to general hospitals, a necessary move that placed a considerable burden upon the facilities

[19]Smith, "Hammond," pp. 625–26; Grace, *Manual,* p. 110; Brinton, *Memoirs,* pp. 169, 179; Schullian and Rogers, "National Library," pp. 9–10; Wyndham Davies Miles, *A History of the National Library of Medicine* (Washington: Government Printing Office, 1982), pp. 18, 29.

[20]Ltrs, Hammond to Tripler (2 May 1862) and SGO to McDougall (12 May 1862), both in RG 112, entry 12, 30:335 and 408, respectively.

[21]L., "Sanitary Condition of the Army of the Potomac," and "Correspondence," both in *American Medical Times* 4 (1862):45–46 and 214, respectively.

JONATHAN LETTERMAN *(second from left, seated), Medical Director, Army of the Potomac,* AND ASSISTANTS. *(Courtesy of National Library of Medicine.)*

in Washington and nearby communities. To relieve the strain, he took over the barracks left vacant as McClellan's army moved south. Unfortunately, much modification was necessary to make these buildings suitable for this use: they were poorly arranged, their ventilation was haphazard, their ceilings low. Their floors often showed wide cracks; they lacked appropriate space for laundry and kitchen; and their sites were frequently filthy. The two newly built hospitals in Washington were completed in time to assume some of the burden, but the number of patients was soon so large that tents had to be erected on the grounds of the new institutions to care for the overflow.[22]

The continued establishment of facilities

[22]*MSH* 1, app.:52 and pt. 3:908–09, 920.

more removed from the battlefield, including those at Philadelphia and New York, relieved the situation in hospitals in the Washington area to some degree, as did the creation of temporary general hospitals near the battlefield. The more permanent facilities were often quite large; New York institutions, according to the surgeon general's annual report of November 1862, held almost 5,000 patients and those of Philadelphia, 5,500.[23]

Tripler began laying plans for the care of sick and wounded in the field before McClellan opened his campaign against Richmond. He prepared instructions for his surgeons about the establishment of what he called "field depots," the organization of the medical officers to serve in them, the proper method of dealing with the wounded, and the way in which ambulances were to be divided up and used. A shortage of ambulances, however, interfered with the operation of Tripler's modest ambulance corps. Although he repeatedly attempted to acquire more vehicles, the Quartermaster's Department sent him only a few, and many of these were two-wheelers, which Tripler regarded as "good for nothing." He also attempted to obtain all the supplies that he anticipated needing. Unfortunately, just when McClellan's forces were beginning their move by water toward the peninsula between the York and James rivers, Surgeon General Finley announced that, as ordered by the secretary of war on 7 April, he was resuming personal control over all general hospitals. Tripler was to leave behind his purveyor and some of his supplies, thus starting the new campaign season with only part of what he needed and the hope that the rest would be forwarded to him from New York City by the time he needed it.[24]

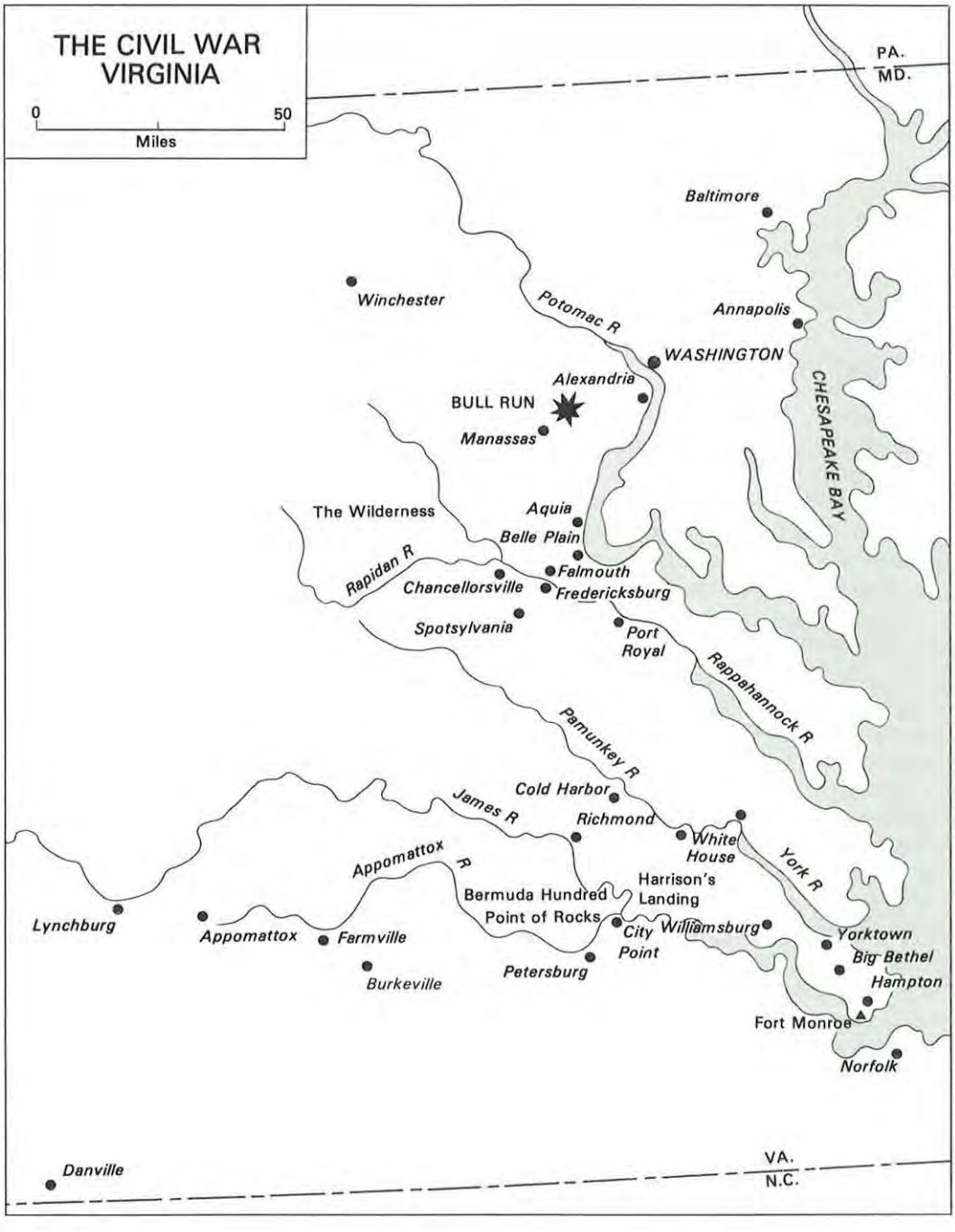
The tendency of many regimental surgeons early in the campaign to abandon supplies rather than to move them exacerbated Tripler's supply problem, since the officers then turned to the purveyor for replacements. The tents belonging to some units, furthermore, were inexplicably left behind in Alexandria, making more difficult the establishment of field hospitals, especially since on the peninsula buildings suitable for hospital use were few. (*Map 6*) Pilfering and carelessness during shipment reduced the amount of supplies actually received, and late shipments resulting from the low priority given Medical Department supplies by the quartermaster only made matters worse. Tripler's request in April 1862 that "an experienced quartermaster and assistant commissary of subsistence be attached to the command of the Chief Medical Officer of an army in the field" came to naught, and Tripler began protesting "beforehand against the Medical Department being held responsible for evils they have no possible means of obviating."[25]

During the Peninsular campaign, an extremely high rate of disease, sometimes called Chickahominy fever, probably either a combination of typhoid and malaria or typhoid alone, made the supply shortages even more critical. Tripler determined, therefore, to reduce the number of patients for whom he was responsible at any one time by evacuating them as quickly as possible. He made every effort to send both

[23]"Army Medical Intelligence" and "Medical Affairs," both in *American Medical Times* 4 (1862):360 and 5 (1862):28, respectively; "The Hospital at Portsmouth R.I.," p. 115; War Department, SGO, *Annual Report*, 1862, pp. 2–4; *MSH* 1, pt. 3:908, 932–33, 935, 989.

[24]Quote from *MSH* 1, app.:63. Unless otherwise indicated, all material on Tripler's work is based on *MSH* 1, app.:50–63.

[25]Quote from *MSH* 2, pt. 3:933; see also Maxwell, *Sanitary Commission*, p. 160.


THE CIVIL WAR
VIRGINIA
0
50
Miles
PA.
MD.
Baltimore
Winchester
Potomac R
Annapolis
WASHINGTON
Alexandria
BULL RUN
Manassas
CHESAPEAKE BAY
The Wilderness
Aquia
Belle Plain
Rapidan R
Falmouth
Chancellorsville
Fredericksburg
Spotsylvania
Port
Royal
Rappahannock R
Pamunkey R
Cold Harbor
James R
Richmond
White
House
York R
Appomattox
R
Harrison's
Landing
Bermuda Hundred
Point of Rocks
City
Point
Williamsburg
Yorktown
Big Bethel
Hampton
Lynchburg
Appomattox
Farmville
Burkeville
Petersburg
Fort Monroe
Norfolk
Danville
VA.
N.C.

MAP 6

the sick and the wounded away from the battle area. Because the facilities at Fort Monroe were limited, many wounded were sent north to Washington, Baltimore, and Annapolis, Maryland, or even further. It was expensive, however, to ship those with slight wounds or self-limiting diseases north only to have to return them south again when they were ready to rejoin their units, and despite the efforts of both the Quartermaster's Department and the U.S. Sanitary Commission, few adequately equipped river or ocean steamers were available for the final leg of the journey. On occasion, furthermore, the water was so shallow that the transports could not come close to shore, and Tripler was forced to act on his own to line up whatever shallow draft vessels he could find to take his patients out to the steamers.[26]

The lack of discipline that characterized so many Union soldiers contributed to Tripler's problems. On one occasion at White House, on the Pamunkey River in Virginia, the 150 men assigned to pitch hospital tents worked so slowly that two days were required to erect thirty-four. On a number of occasions, furthermore, able-bodied soldiers eager to escape the horrors of the campaign swarmed aboard trains and steamers taking the sick and wounded north, displacing those entitled to evacuation. Once when Tripler insisted upon checking candidates for evacuation carefully, a gang of stragglers rushed aboard a vessel that was only half-loaded and refused to get off. Regimental officers who, Tripler believed, could have prevented this disorder did not do so. He finally decided to reduce the effects of this particular problem by retaining as many of the sick as possible in the peninsula. He ordered more hospital space at Yorktown and Williamsburg to house the ill from White House and asked for more medical officers. By mid-June, only half the tents he had requested a month earlier had arrived, and many of these could not be sent to Yorktown because they were needed for field hospitals nearer the battlefield. Tripler was thus forced to use some vessels as floating hospitals and to continue the evacuation of the sick as well as the wounded, and with them, inevitably, stragglers, north by steamer.[27]

Even moving the sick and wounded as far as the riverbank was no easy task. Ambulances were scarce. Hospital attendants were increasingly busy working in hospitals. Band members were often too frightened to venture near the battlefield. Tripler had no control over trains that brought some of the wounded to the waterfront, and the enemy often cut the lines. As a result of these difficulties, severely injured men sometimes lay for twenty-four or even forty-eight hours on muddy, hot battlefields before they were collected, and then were left waiting in the rain for hours at a railroad depot without shelter, food, or water. Since the army was often in retreat, the wounded who could not walk also faced the possibility of capture.

As the situation on the peninsula deteriorated, Hammond became increasingly uneasy about Tripler's ability to deal with the demands placed upon the Medical Department there. In encouraging Tripler to act decisively on his own, the new surgeon general had reassured him early in May that all the department's resources were behind him and that he had only to let the department know his needs. By mid-May, however, Tripler was approaching frenzy.

[26]Ltrs, SGO to Cuyler (11 Apr 1862), Wood to M. C. Meigs (24 Apr 1862), and SGO to Tripler (17 Apr 1862), all in RG 112, entry 2, 30:189, 286, and 325, respectively; Tripler to Wood (14 Apr 1862), RG 112, entry 12; *MSH* 1, pt. 3:75; *MSH* 2, pt. 3:982, 984.

[27]Ltr, Tripler to SG (30 Apr 1862), RG 112, entry 12.

He was trying frantically to acquire the necessary transportation for his patients on both land and water and to arrange for the necessary hospital facilities and for subsistence. He pointed out to Hammond that the problems that took all his time and energy lay properly within the purview of the Quartermaster's and Subsistence Departments. He repeatedly begged Hammond for aid and predicted dire consequences if he did not receive it at once. Delays in the delivery of supplies were "producing frightful results," he telegraphed Hammond on 18 May, while he added in another telegram the same day that the medical staff was "all nearly exhausted."[28]

Hammond obviously sympathized with Tripler's predicament and pushed to obtain ambulances and steamers from the Quartermaster's Department and to fill other requests as rapidly as possible. His answer to Tripler's complaints, however, implied that Tripler was not doing all he could to help himself. He had already been granted, for example, the authority to do on his own many of the things he was now requesting permission to do. In addition, he had not worked as closely with General McClellan as Hammond believed he should. The surgeon general also pointed out that Tripler must accept the fact that the Medical Department could not always meet all his needs. Hammond obtained control over steamers from the quartermaster in June and at last, presumably concluding that Tripler could no longer cope with the situation alone, sent two surgeons to the peninsula with orders to organize the evacuation of the sick and the management of transports. He then gave Tripler specific instructions concerning the abandonment of several unhealthy hospitals and the establishment of others to replace them.[29]

Nevertheless, as the end of June approached, confusion ruled at White House. The wounded continued to arrive in great numbers, communications were poor and then finally nonexistent, few tents were available, and no more could be obtained. Patients filled the shelters and spilled out onto the lawn. On 28 June when the evacuation south to Harrison's Landing on the James River began, Tripler had to order more than 600 wounded abandoned to the enemy because he had so few ambulances, although he left behind surgeons who volunteered to stay with them, supplies, subsistence, and nurses. At Harrison's Landing in the first days of July patients lay in the open, without tents or shelter of any kind. Dysentery, diarrhea, malaria, scurvy, and typhoid fever raged unabated. On 1 July the rain was once again deluging the sick and wounded when Jonathan Letterman arrived from Washington to relieve the defeated Tripler.[30]

Although Tripler may well have done all he could in the situation, George Templeton Strong of the U.S. Sanitary Commission believed that he had been proved totally incompetent. Strong held that Tripler and his staff were entirely responsible for the sufferings of Union soldiers in Virginia, and Congress apparently agreed with Strong. After some senators visited White

[28]Quotes from Telg, Tripler to Hammond (18 May 1862), RG 112, entry 12; Ltrs, Hammond to Tripler (2 and 8 May 1862), both in RG 112, entry 2, 30:335 and 382, respectively; Telg, Tripler to Hammond (9 May 1862), RG 112, entry 12.

[29]Ltrs, Hammond to Tripler (19 and 22 May and 8 Jun 1862), and to Edward Vollum (17 Jun 1862), all in RG 112, entry 2, 30:467 and 493–94, and 31:47 and 150, respectively; Tripler to Hammond (19 and 20 May and 1 and 6 Jun 1862, all in RG 112, entry 12.

[30]USSC, *Surgical Memoirs of the War of the Rebellion, Collected and Published by the United States Sanitary Commission*, 2 vols. (New York: U.S. Sanitary Commission, 1870–71), 1:276–77.

House and saw the situation for themselves, they refused to confirm Tripler's nomination as inspector general. Hammond, however, did not openly blame Tripler. Indeed, he showed considerable compassion when he learned of the Senate's action and received Tripler's request to be relieved. He asked his former superior to name the position he wanted north of the Potomac or along the Ohio River, and when Tripler asked for the post at Detroit, it was his.[31]

A most difficult situation had crushed a man of modest talent. When circumstances permitted him to exercise his administrative talents to their fullest, Tripler functioned well. His toleration for frustration, however, was low, and he had little ability to make the best of bad conditions. In the Peninsular campaign he knew that if the requirements for ambulances, tents, transports, and supplies were not met, the consequences might be horrible. Having been frustrated by Finley when he attempted to prepare adequately for the upcoming campaign, Tripler was unable to accept the fact that Hammond could not at once make everything right. Preoccupied by his inability to prevent the disaster he knew was coming, Tripler failed to seize the available opportunities to prevent a further deterioration. Although Letterman bore no responsibility for the management of the sick and wounded in the peninsula, after he became familiar with the situation at Harrison's Landing, he too concluded that the Medical Department should not be blamed. Tripler was not responsible for the disaster; the worst that could be said, perhaps, is that he was unable to handle the disaster when it occurred.[32]

Initially when Letterman reported for duty, the crisis at Harrison's Landing demanded all his attention. Time, however, was on his side. The new medical director had to face all the frustrations resulting from his limited control over the steamers that evacuated his patients; although he could direct their activities when they were evacuating patients, he could not prevent their diversion, even at critical moments, to other uses. Thus he could only watch while vessels he needed were taken over to move Confederate prisoners. But with the arrival of more transports, outfitted at Hammond's order to carry the sick and wounded, and of some of the 100 tents and 200 ambulances that the beleaguered Tripler had vainly urged Hammond to send, the situation on the James River eased. Patients could now be shipped to hospitals in the North and in the Fort Monroe area, and those who remained could be put under shelter. Letterman was then able to look beyond the immediate situation and to implement his plans for the future.[33]

Lettermen had apparently already formulated plans to improve the efficiency of the Medical Department, and in this he had the support of both Hammond and McClellan. McClellan had discussed the possibility of devising such a scheme personally with Stanton and had received the permission of the secretary of war to formalize it. On 2 August, the general issued an order putting Letterman's formula into

[31]Strong, *Diary*, pp. 222, 230, 230n; Telg, Hammond to Tripler (20 Jun 1862) and Ltrs, Hammond to Tripler and to L. Thomas (both 19 Jun 1862), all in RG 112, entry 2, 31:170, 176, and 191, respectively; Tripler to SG (16 Jul 1862), RG 112, entry 10, p. 797.

[32]Telg, Letterman to Hammond (29 Jul 1862), RG 112, entry 12. Unless otherwise indicated, all material on Letterman is based on *MSH* 1, app.:93–104, and Jonathan Letterman, *Medical Recollections of the Army of the Potomac* (New York: D. Appleton & Co., 1866).

[33]Ltr, Letterman to Hammond (17 Jul 1862), RG 112, entry 12.

effect within the Army of the Potomac, although according to Letterman the printer did not return the order until a few days before the Army of the Potomac was to leave Harrison's Landing, thus delaying steps to fully implement it. On 21 August, McClellan forwarded Letterman's plan to Stanton for approval to put it into effect throughout the Union Army, but eight days later Stanton rejected it, noting it would only "increase the expenses and immobility of our army . . . without any corresponding advantages," an opinion Maj. Gen. Henry W. Halleck echoed less than three weeks later. As a result, just at the time that Letterman was beginning to move ahead with his plan within the Army of the Potomac, he learned that both the secretary of war and the general in chief of the Union Army thoroughly disapproved of it.[34]

Letterman's plan specified that two men and a driver, plus two stretchers, be on board each ambulance. Each regiment would be supplied with two light two-horse ambulances, and each corps another two, to provide evacuation from field to depot. Four-horse vehicles carried patients back to field hospitals and beyond. Letterman called for the organization of ambulances and their attendants by Army corps, with a captain in charge at the corps level, a first lieutenant at the division level, and so on down the line, with a sergeant directing the ambulances at the regimental level. The ambulance corps captain, though a line officer, reported to the medical director, an innovation that caused less comment than might have been expected, in view of the long history of controversy concerning the command relationship of medical and line officers. Those named to man the ambulances were neither teamsters nor band members, nor even hospital attendants who might be called away just when they were most needed. They were soldiers permanently detailed from the ranks for ambulance work. Commanders were required to order only "active and efficient" men to serve with the ambulance corps, and all the men of the new organization were to be regularly and carefully drilled in their new duties. Although medical officers from each division accompanied every ambulance train, ambulance corps officers handled all administrative matters. By creating a permanent, disciplined, and professional ambulance corps, Letterman guaranteed more efficient evacuation and because surgeons and attendants were no longer responsible for transporting patients, better hospital care for the sick and wounded.[35]

While Letterman worked out his plans for the ambulance corps, the medical staff of the Army of Virginia under Maj. Gen. John Pope faced difficulties similar to those that Letterman and Tripler had encountered in McClellan's Army of the Potomac. Although disease was not as great a problem in Pope's command as it had been on the peninsula and the weather remained good, problems involving evacuation overwhelmed the Medical Department during and after the Second Battle of Bull Run in late August. Ambulances were scarce and attendants and drivers, except for those sent from McClellan's army to reinforce Pope in August, untrained and undisciplined. Rail lines that were to have been used to evacuate the wounded from the battlefield were cut, and the patient load became too great for the field hospitals of the area. Those unable to walk lay by the thousands on the ground for twenty-four and more hours unattended. While surgeons worked out the truce that would permit their removal,

[34]Quote from *MSH* 2, pt. 3:934.

[35]*MSH* 2, pt. 3:933–34, quote from p. 936.

stragglers and the slightly wounded managed to be evacuated before their less fortunate comrades.[36]

Once again, the entire system was not prepared for the more than 8,000 casualties that flooded in upon it. Pope's medical staff was too small, and the general hospitals at Alexandria were thrown into confusion in early September as casualties began to come in. Realizing, perhaps, from Tripler's experiences that it was extremely difficult for one man to manage medical care and all stages of evacuation as well, Hammond appointed John Brinton to the new position of medical director of transportation, to supervise the movement of the wounded to Alexandria and between hospitals in that city.

During and after Second Manassas, Pope's medical director, Thomas McParlin, tried two new approaches to the old, familiar problems. In his desire to achieve greater efficiency in the management of field hospitals, McParlin attempted to take centralization to its ultimate conclusion by locating all field operations in one area. But because a single facility could not be convenient for medical officers scattered about a large area, surgeons tended to render more care on the battlefield, and the amount of time they spent away from the central hospital left it undermanned. McParlin's attempt to improve the efficiency of medical supply by leaving the items he needed on the railroad cars that brought them and by keeping those cars on conveniently located sidings was thwarted. The cars were so overcrowded that it was impossible to allow any to be left standing for storage and the enemy could cut rail lines so that trains could not get through.

[36]Unless otherwise indicated, all information about the medical care given the Army of Virginia is based on Brinton, *Memoirs*, pp. 196–201; Duncan, *Medical Department*, pt. 3; and *MSH* 1, app.:108–29.

Triggered by Lee's invasion of Maryland in September, the renewal of the conflict brought together the men who had fought in the previously separate forces of the Armies of the Potomac and of Virginia. Letterman was the medical director of the newly enlarged Army of the Potomac. Although by this point his ambulance corps was a month old, ambulances and medical supplies had to be left behind because of the speed with which McClellan wished to move. The presence of units from Pope's force that had not been introduced to the new system also kept the battles in Maryland from providing Letterman's concept with a true test. The medical director ordered that ambulances and supplies be sent on to Frederick, Maryland, as soon as they became available, but delivery proved to be exceedingly difficult because the Confederates had destroyed the railroad bridge over the Monocacy River near Frederick. All supplies sent by rail had to be unloaded at that point, with much confusion and delay resulting. Fortunately, ambulances began to arrive just before the Army of the Potomac reached Frederick, and the U.S. Sanitary Commission, which had its own means of transportation, provided invaluable help with supply.[37]

Discipline remained poor throughout the army, however, and despite Letterman's efforts, critics charged that the ambulance service at Antietam was characterized by "gross mismanagement and inefficiency, . . . lack of system and control" during the battle. Ambulance

[37]Ltrs, Letterman to Hammond (13 Aug and 6 Sep 1862), both in RG 112, entry 12; Thomas T. Ellis, *Leaves From the Diary of an Army Surgeon* . . . (New York: John Bradburn, 1863), p. 300; "The Wounded and the Ambulances of Our Army," *American Medical Times* 5 (1862):247; Ltr, Cornelius R. Agnew (22 Sep 1862), in U.S. Sanitary Commission, Reports, Correspondence, and Printed Matter, Ms C19, NLM (hereafter cited as Steiner Report).

drivers were accused of greed and thievery, and some of the more than 8,000 wounded remained on the battlefield as much as twenty-four hours. How many of the difficulties related to the presence of the still untrained attendants and drivers from the units that formed Pope's army cannot be ascertained. The wounded were, in any event, finally evacuated to Frederick, and in many cases, beyond to Washington, Baltimore, and the north.[38]

His experiences with the problems of supply, and perhaps those of the unfortunate Tripler as well, led Letterman to conclude that a change in the pattern of distribution would reduce losses when troops were on the move. As a result, he decided in October that, from that time on, supplies would be issued by brigade and doled out to the individual regiments as needed. It would thus be almost impossible for large amounts of medicines, bandages, and hospital stores to be casually abandoned every time a regiment moved. His experience in Maryland also led Letterman to issue general instructions to govern the management of a field hospital system, which he preferred to have organized by division, guaranteeing that each physician would know precisely what his assignment was. Incorporated in the orders issued at the end of October was the concept of having surgery performed only by the three best surgeons in each division.[39]

THOMAS A. MCPARLIN. *(Courtesy of National Library of Medicine.)*

The value of Letterman's system and the competence of his work under very unfavorable circumstances were most clearly demonstrated in the disastrous battle of Fredericksburg, Virginia, in mid-December 1862. Despite all difficulties, the management of the wounded during this engagement was one of the first Medical Department successes in the Civil War. The attempt by McClellan's successor, Maj. Gen. Ambrose E. Burnside, to defeat

[38]Quote from "The Wounded . . . ," *American Medical Times* 5 (1862):246.

[39]Cir (no. 3, 30 Oct 1862), in U.S. Army Medical Department Order and Letterbook of the Hospitals of the 2d Division, 12th Army Corps, 1863, Ms fB50, NLM. Unless otherwise indicated, all material on the Fredericksburg campaign is based on Gordon W. Jones, "The Medical History of the Fredericksburg Campaign: Course and Significance," *Theory and Practice in American Medicine*, ed. Gert Brieger (New York: Science History Publications, 1976), and on Duncan, *Medical Department*. The terminology used to classify hospitals during the Civil War was confused and confusing. What Tripler referred to as a field depot was directed by a surgeon. The function that had been performed by the regimental hospital was after 1861 usually handled at the brigade, the division, or occasionally the corps level. These field hospitals resembled the old general hospitals because they took in patients from more than one regiment, but, unlike general hospitals, they were moved with the units they served. Some of the less permanent general hospitals might now be called evacuation hospitals.

the Confederates was a bloody and spectacular failure, but Letterman had ready near the scene of the battle the tents, ambulances, and other equipment and supplies that would be needed. He had trained the men who were responsible for the care of the wounded and for their evacuation from the battlefield. Three ambulances, each with two stretchers, two attendants, and a driver as well as two hospital tents, were available for each regiment. Stretcher-bearers were instructed exactly where to bring the wounded to meet the ambulances that would take them to the field hospitals.

Despite the difficulties involved in moving casualties under fire, evacuation from the battlefield to field hospitals went well, but Letterman's management of supply and of the final stage of evacuation left him vulnerable to criticism. He did not easily delegate authority, and without a commissary to manage the depot, supply problems engendered by the unexpectedly high casualty rate grew. The Sanitary Commission filled the gap once more with food, blankets, warm underwear, and other items, and evaluated the work of the Medical Department at Fredericksburg as "admirable." Both Walt Whitman, who worked as a nurse with the wounded from Fredericksburg, and the new inspector general, Thomas Perley, were highly critical of the last stage of the evacuation, but neither was in a position to understand the problems Letterman faced. In addition, Perley was a man of dubious reputation and indebted for his position to Stanton, so that his criticism of the Medical Department might have been motivated by self interest.[40]

Letterman could not have anticipated that Burnside would order all of his 9,000 wounded, regardless of their condition, moved from the Fredericksburg area; as medical director he had planned to keep the most seriously hurt where they were. Thus he cannot be held responsible for the horrors that were said to have resulted from journeys made on open railroad cars and long waits for steamers that were also devoid of accommodations for the wounded. Although he did anticipate problems with stragglers and malingerers, he was apparently unable to find guards competent enough to keep them from climbing aboard trains for a free ride to Aquia. It was these men, Letterman maintained, who, finding no shelter at Aquia, began to send up loud complaints about the inhumanity of the Medical Department.

Although surgeons did not have to manage the evacuation of large numbers of casualties, those in charge of hospitals serving small units in the East faced some of the same problems that confronted McParlin, Tripler, and Letterman. The men holding coastal areas of the south often suffered from the high disease rates characteristic of these areas, and the surgeons with them could not always locate buildings easily adapted for use as hospitals. In western Maryland and Virginia, some problems experienced by the troops serving under Maj. Gen. Nathaniel Banks resulted from the fact that they apparently received little attention from the Medical Department in the early months of the year. Although much illness occurred among the men serving near Cumberland, Maryland, for example, Tripler was apparently unaware of their existence for some time, and supplies there and in the Winchester area were inadequate.[41]

[40]Quote from Edmund Andress, *Complete Record of the Surgery of the Battles Fought Near Vicksburg . . .* (Chicago: Fergus, 1863), p. 30; Maxwell, *Sanitary Commission*, p. 182; Brinton, *Memoirs*, pp 215, 220.

[41]*MSH* 1, app.:228–29, 234–36, 243–44, 246; Ltr, SGO to William S. King (5 Apr 1862), RG 112, entry 2, 30:145; Steiner Report, Ms C19, NLM; "Army Medical Intelligence," *American Medical Times* 4

Care of the Sick and Wounded in the West

West of the Appalachians the Medical Department experienced many of the same problems that it encountered in the East. For the Medical Department, the principal difference between the East and the West lay in the character of the chain of evacuation from field hospitals to general hospitals. In the East, where the navigable portions of the rivers ran east and west, patients were most often moved to the north or northeast from the battlefield, as water transportation was not always feasible. In the West, however, the existence of a widespread network of rivers running both east and west and north and south made it possible to rely on large-scale evacuation by water, and fluctuating loyalties and battle lines made rail lines especially vulnerable. Many of the hospital steamers that plied the principal rivers of the midwest could carry 200 to 600 patients or more. They were equipped, manned, and even chartered by one of the sanitary commissions or by a state organization, but Surgeon General Hammond controlled their use. Because of the extensive system of rivers, major hospitals could be located at sites as widely separated as St. Louis, Missouri, and Cincinnati, Ohio, and could shelter patients from battlefields hundreds of miles away.[42]

Although in Louisville and Cincinnati combined, the patient load was almost 3,500 in late 1862, the largest number cared for in the river cities of the midwest could still be found in St. Louis. Hospitals in the city itself in the autumn of 1862 held over 2,700 patients, while another 1,000 were sheltered at the nearby Jefferson Barracks. This building, unlike those upon which Tripler had to rely on in Washington in the spring of the year, was considered excellent for the purpose. It had piazzas and shaded walks for the patients, and its rooms were large and well ventilated. In time new buildings were erected at the Jefferson Barracks, increasing its capacity by 2,500. Benton Barracks and the marine hospital within the city were also taken over in the spring of 1862, but demand continued to exceed capacity. The Western Sanitary Commission deplored what it regarded as the crowding of the city's general hospitals, which it blamed for high death rates from typhoid fever and erysipelas.[43]

Most of the patients in the general hospitals of the midwest came from the armies of Brig. Gen. Ulysses S. Grant, Maj. Gen. William S. Rosecrans, and Brig. Gen. Don Carlos Buell. Unlike McClellan in Virginia, Buell, headquartered in Louisville, Kentucky, appeared indifferent to the welfare of his sick and wounded. His regimental surgeons were few, averaging about three for every two regiments, many physicians having either fallen ill or resigned. Twelve percent of Buell's men remained in Kentucky because they were ill when his army moved. His medical director, Robert Murray, was forced to establish hospitals along the army's line of march to care for the large numbers who fell ill along the way. Ambulances were so few that the sick could not be carried far, and the two-wheeled type disintegrated on the rough roads of the West. Bedding and medicines were scarce

(1862):129; Walker DeBlois Briggs, *Civil War Surgeon in a Colored Regiment* (Berkeley: University of California Press, 1860), p. 61.

[42]Telg, Hammond to McDougall (22 May 1862), RG 112, entry 2, 30:496; Forman, *Western Sanitary Commission*, pp. 42–46; Maxwell, *Sanitary Commission*, p. 121.

[43]Forman, *Western Sanitary Commission*, pp. 45, 49, 65–66; War Department, SGO, *Annual Report*, 1862, pp. 4–5; *MSH* 1, pt. 3:907.

and Buell begrudged the assignment of healthy soldiers to serve as nurses for their ailing comrades, so that little for the care and comfort of these unfortunates could be left behind.[44]

Despite Buell's lack of concern for his sick, Murray was able to gain his consent for the establishment of a convalescent camp for 1,000 near Elizabethtown, Kentucky, a town located along the railroad that connected Nashville with Louisville, enabling these men easily to rejoin their units. Murray also set up a hospital at Elizabethtown, although whether the convalescents were used to nurse the sick there, an arrangement Buell favored, is not known.[45]

The medical director for Grant's Army of the Tennessee was fortunate in having a commander more sympathetic to the problems of the Medical Department than Buell, but he, too, faced high disease rates. Supplies were short and, because of "irregularities in the quartermaster's department . . . in the District of Cairo," ambulances and hospital tents for Grant's army were even harder to obtain than they were for other armies. No buildings suitable for large hospitals were found along the line of march, and the army was soon far from its supply bases. The two-wheeled ambulances that composed half of the force's allotment once again proved too fragile for the uses to which they were put, and although each regiment apparently had its full quota of medical officers, even this number was not enough to care for men in malaria-ridden country under the prolonged stress that characterized Grant's campaign against Fort Henry and Fort Donelson.[46]

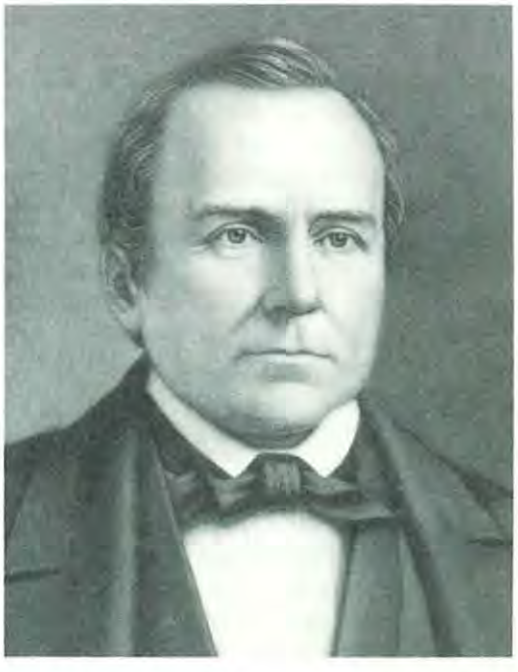
In the West, as in the East, the responsibility for general hospitals and that for field hospitals were often assigned to different men. As a result, Grant's senior surgeon, James Simons, as well as the medical officer who sometimes acted in Simons' stead, John Brinton, often remained in the north at Cairo, Illinois, while Henry Hewit, a volunteer surgeon, accompanied Grant and served as his medical director in the field. Hewit sent one surgeon with each regiment into battle, ready to render whatever immediate care might prove necessary. The regimental medical officer then sent the wounded back to a depot where ambulances could meet them. From these depots, the wounded were taken to large hospitals established out of the line of fire in whatever buildings were available and if necessary in tents, Hewit's main problem being the lack of suitable shelter. Hewit also formed ambulance trains, each managed by a noncommissioned officer. Although his arrogance and rough manners alienated U.S. Sanitary Commission officers, his system, an unsophisticated version of that later devised by Letterman in the East, apparently worked well, even when snow and sleet fell upon the battlefield. Within several days of the struggle for Fort Donelson in February, and apparently after a period of neglect, the wounded were shipped by steamer to the Cumberland River and thence to general hospitals at Mound City, Illinois, and Paducah, Kentucky, as well as at Cincinnati, St. Louis, and Louisville. The troops remaining in the field soon began to succumb to stress and disease, and those stricken with dysentery,

[44]*MSH* 1, app.:23; Ltr, Murray to Finley (22 Jan 1862), RG 112, entry 12; USSC, *Sanitary Memoirs*, p. 55; U.S. Army, Surgeon General's Office, Medical History of the Army of the Ohio and the Cumberland, 1862, Ms C125, p. 5, NLM.

[45]USSC, *Sanitary Memoirs*, p. 55; Ms C125, pp. 1–2, NLM.

[46]Unless otherwise indicated, all material on Fts. Henry and Donelson and the battle of Shiloh is based on *MSH* 1, app.:23–44.

JAMES SIMONS. *(Courtesy of National Library of Medicine.)*



HENRY HEWIT. *(Courtesy of National Library of Medicine.)*

diarrhea, pneumonia, and typhoid fever began to join the wounded under the care of Hewit's medical officers.[47]

After the capture of Fort Donelson, Grant's army traveled by steamer 120 miles from Fort Henry to Savannah, Tennessee. The men were packed closely together, and many apparently remained on board for some time after their arrival at their destination. As a result of the long confinement in close quarters, a typhoid fever epidemic struck, and many died. Supplies of medicines and hospital space ran short, and hospital tents could not be found. Only one steamer was available to move the sick; the quartermaster's men occupied her lower deck and apparently scheduled her use, giving the Medical Department a low priority. Grant ordered Brinton to travel to St. Louis to see whether he could obtain more vessels. "After some delays," Brinton reported, he "succeeded in procuring other steamers, the first of the noble hospital fleet of the western waters."[48]

By the time the Confederate forces attacked Grant's army at Shiloh on 6 April, a "prolific diarrhea that resisted obstinately the ordinary therapeutic means" had added to the afflictions of his men. In combination with malaria, this ailment, which was blamed on the water of the Tennessee River, greatly weakened many of Grant's soldiers. The nature of the battle,

[47]USSC, *Documents* 1, no. 42:4 and 6. Simons was the physician who fled Ft. Riley at the time of the cholera epidemic in 1852.

[48]Quote from *MSH 1*, app.:29; see also *MSH* 2, pt. 3:971.

furthermore, made prompt and proper care of the sick and wounded extremely difficult, for in overrunning the Union camp, the enemy made off with the medical supplies, stretchers, and ambulances they found there. No shelter was available to protect the wounded from a heavy rain, bedding was nonexistent, and food supplies were low. Nevertheless, medical officers made the best use of what they could find, while sending a "pitiful telegram" to the newly installed Surgeon General Hammond asking for help. The reply they received the next morning promised 10,000 mattresses which, unlike the items requested by Tripler during the Peninsular campaign, "came with wonderful quickness." Grant ordered that all tents in his army be taken over for the use of the wounded, and at least one surgeon made wholesale use of captured tents for his patients. Hewit, as Letterman would do several months later, appointed his most skilled surgeons to conduct all operations. Steamers, including the fleet provided by the U.S. Sanitary Commission, aided in evacuation, and Hewit ordered a medical officer to board each vessel and to perform en route further surgery as needed.[49]

When Buell's army arrived to aid Grant at Shiloh, his surgeons could offer little in the way of medical supplies to ease the effects of the shortage. They had few of the needed items with them because they had moved so quickly. A few days after the battle, however, the supply train arrived, along with "constant stream of civilian surgeons, and sanitary commission agents, men and women," and a constant stream of the sick as well. Steamers took them off by the thousands, while three doctors at a nearby convalescent hospital screened those who appeared chronically ill before discharging them from the service. The work load of the medical officers at Shiloh began to diminish only many days after battle.[50]

The spectacle of unnecessary suffering brought about by the lack of tents and medical supplies at Shiloh apparently did not impress General Buell with the need to give his medical director more support. Before the battle of Perryville, Kentucky, on 8 October, for example, after Murray had carefully acquired all the supplies needed for each regiment, Buell ordered that everything that could not be carried in one wagon per brigade be left behind. Since his men were not allowed to bring tents with them, none were available for use by surgeons. The strain of the long march that preceded the battle was great, and illness took a heavy toll above and beyond that of the battle itself. After the conflict, Buell abandoned the sick, without tents, often without shelter of any kind, without blankets, without bedding. Supplies that had been ordered were inexplicably held up by the quartermaster and did not arrive for two weeks. Thousands were ill with typhoid fever, erysipelas, measles, diarrhea, and dysentery, and only the prompt aid of the U.S. Sanitary Commission prevented an even greater disaster. When the sick and wounded could be moved, they were evacuated, usually in empty wagon trains used by the commissary to carry stores.[51]

Major General William Rosecrans, who led the Army of the Misissippi before succeeding Buell in command of the Army of

[49]First quote, *MSH 1*, app.:29; second and third quotes, Brinton, *Memoirs*, p. 171; see also Maxwell, *Sanitary Commission*, p. 132, and Duncan, *Medical Department*, pt. 3, p. 4.

[50]Quote from Sherman, *Memoirs* 1:246; Ltrs, McDougall to Hammond (4 and 8 May 1862), both in RG 112, entry 12.

[51]USSC, *Documents* 1, no. 56:1, 15. Unless otherwise indicated, all material concerning operations in the West in the fall of 1862 is based on *MSH* 1, app.:242–65.

the Cumberland in October, was a man more in Grant's mold than in Buell's. In Mississippi, at both the battle of Iuka on 19 September and that of Corinth in early October, the surgeons with his army were well supplied with all they needed, from tents to ambulances. The establishment of hospitals was easily managed and, according to his medical director, surgeon Eben Swift, the wounded received prompt and excellent care. Oddly enough, however, Swift also noted, without explanation but almost proudly, that patients wounded at Iuka received no anesthetic and that "not a groan or sign of pain was heard." Even after the battle of Murfreesboro in Tennessee in late December, when the hospitals of the right wing, their wounded, and their supplies were captured, when the killed and wounded eventually numbered about 4,000, and when several surgeons deserted, the ambulance corps "worked admirably" under the system originally set up by Murray, and Swift was able to provide "comfortable shelter for all."[52]

EBEN SWIFT. *(Courtesy of National Library of Medicine.)*

Although the engagements west of the Mississippi in 1862 did not become as famous as the battles of Shiloh, Antietam, and Fredericksburg, two battles each resulted in at least 800 wounded. In March the battle of Pea Ridge in northwestern Arkansas left almost 1,000 injured, while in December about 800 were hurt in the struggle at nearby Prairie Grove. The surgeons involved faced the same problems as their counterparts east of the Mississippi. Supply was particularly difficult. The end of the Pacific Railroad was in Rolla, Missouri, 240 miles from the battlefields in Arkansas, and Confederate raiders easily cut off supply wagons before they reached their destination. Buildings of a size adequate for hospital use were also hard to find, but the lack of a network of deep rivers made evacuation to distant general hospitals difficult. Because ambulances and wagons had to use rough roads, medical officers preferred not to move their patients far. The number of casualties forced surgeons to rely heavily on the Western Sanitary Commission for hospital supplies, bedding, and clothing after both battles, but by late December medicines, hospital stores, and ambulances were plentiful.[53]

Most of the casualties from the Arkansas battles remained west of the Mississippi, and at least one general hospital, near Las Vegas, New Mexico, was established to care for the wounded from military action in the Far West. This facility, established at a hot

[52]Quotes from *MSH* 1, app.:256.

[53]Forman, *Western Sanitary Commission*, pp. 27–30, 61–62; *MSH* 1, app.:340–43.

spring a few miles from the town, served more as a shelter for convalescents than as a hospital because the seriously ill or wounded could not tolerate the long overland trip necessary to reach it. When a few casualties from beyond the Mississippi ended up in general hospitals of the Midwest, however, complaints arose because nurses were not always sent with the sick and wounded, and officers commanding units near the hospitals were thus forced to detail their own men to care for patients from other commands.[54]

Conclusion

The problems of the Medical Department were much the same in both the East and the West, and the solutions devised to deal with them were generally similar. The immediate care and evacuation of the wounded from the battlefield was everywhere largely dependent upon the tide of battle. Patients could never be guaranteed speedy and efficient care, but medical directors learned much in 1862 that helped them devise a more effective chain of evacuation from battlefield to general hospital. As line officers began to understand both the importance of speedy evacuation and efficient medical care and the nature of the problems facing the Medical Department, the significant progress already made in dealing with the administrative problems involved in evacuation would continue. Nevertheless, as the year came to a close, medical problems in the form of disease and infection were becoming increasingly insistent. The sick rate was three to five times that found in young civilian men because as the Army expanded, ever larger numbers of men were being thrown together under conditions of stress, inadequate sanitation, and poor diet. Efficiency required centralization, and the sick and wounded would be crowded into hospitals that were increasing in size. As a result, the growing threat of typhoid, erysipelas, scurvy, and other forms of disease and infection cast ahead of it an ominous shadow as 1862 drew to a close.[55]

[54]Sherman, *Memoirs* 1:274; *MSH* 1, app.:346–47.

[55]Jarvis, "Sanitary Condition," p. 473.

CHAPTER 10

The Civil War in 1863: Hammond's Last Year

The appointment in 1862 of a vigorous, ambitious young medical officer as surgeon general and his encouragement of new approaches to Medical Department problems held out great promise for 1863. Under the guidance of William Hammond the Department was already rapidly recovering from the initial shock inflicted by the Civil War's unprecedented demands and taking the steps necessary to evacuate and care for thousands of sick and wounded soldiers. Failing to appreciate the serious danger posed by his strained relationship with Secretary of War Stanton, Hammond apparently assumed that 1863 would be but the first full year of a long and successful career as surgeon general.

Administration of the Medical Department

In spite of Hammond's confidence, the surgeon general's position was already beginning to deteriorate in the spring of 1863. Stanton was quite willing to manipulate events to effect the surgeon general's departure from office, and Hammond played into Stanton's hands by his tactless management of the explosive matter of the Army's use of calomel and tartar emetic as medicines. Hammond considered these drugs too dangerous for everyday use, but his removal of both from the supply table in May caused a great furor, despite the fact that he did permit special requests for either drug when a need could be established. At least one surgeon maintained that he continued to use both items as before. The clamor that Hammond's order caused thus seems out of proportion to the step taken, but the discussion of the matter ranged far and wide. Some agreed with the surgeon general and called his order "judicious, and even necessary," but many physicians were furious that Hammond would presume to tell other doctors what they could or could not prescribe. The potential for misuse was no excuse, they said, for barring tartar emetic and calomel from the supply table.[1]

Hammond's elimination of calomel and tartar emetic from the supply table probably cost him supporters at a crucial time. His position was rapidly deteriorating as

[1]Quote, "Removal of Calomel and Tartar Emetic," *American Medical Times* 6 (1863):297; Blustein, "Hammond," pp. 95–97; *MSH* 3, pt. 1:965; M. Goldsmith, "How to Get Supplies for the Sick and Wounded of Our Army," *Sanitary Reporter* 1 (1863):33; "Calomel and Tartar Emetic in the Army," *American Medical Times* 6 (1863):299; Gert H. Brieger, "Therapeutic Conflicts and the American Medical Profession in the 1860s," *Bulletin of the History of Medicine* 41 (1967):220–22; Ltrs, Byrne to Mansfield (2 Mar 1863) and SGO to "Dear Sir" (12 Jun 1863), both in RG 112, entry 2, 34:322 and 35:199, respectively; "Circular No. 6," *Transactions of the American Medical Association* 14 (1863):29–33.

1863 came to a close, and Stanton continued to manipulate events to hasten his subordinate's demise. In the spring of the year, Stanton apparently refused to allow Hammond to travel west to investigate complaints about the work of the Medical Department there. In the summer, after appointing a commission headed by one of Hammond's personal enemies to investigate the department, the secretary of war relieved Hammond of his duties as surgeon general and sent him on an inspection tour to the South and West, appointing Joseph K. Barnes, who would be the next surgeon general, to act as head of the Medical Department. Barnes formed a close friendship with Stanton shortly after reporting for duty in Washington in mid-1862 and had already received two promotions in 1863.[2]

When Hammond set out on his journey in September, Stanton was almost ominously cordial. In early December, the Secretary of War found grounds for reprimanding Hammond, who responded not by resigning under fire, as his predecessor had done, but by asking for either a court-martial or a board of inquiry. He also asked for permission to return to Washington, where Stanton had, in Hammond's absence, been working to end his tenure as surgeon general. Stanton denied the request, but Hammond's health produced a solution to his problem, as it had in 1860. A few days before Christmas, after falling on the steps of a Nashville hospital and striking his head and back, Hammond suffered a temporary paralysis of both legs below the knees, an injury that he used to justify his return to Washington, where he could more easily deal with Stanton's attack.[3]

Under the circumstances, it is not surprising that Hammond's relationship with Stanton continued to affect adversely some of the surgeon general's favorite projects. Even though, early in 1863, Hammond was completely prepared to open his postgraduate Army Medical School, for example, and had determined which surgeon would teach each course, in the early fall and after the briefest of inspections, Stanton refused to approve the start of classes. On the other hand, when Hammond established successful laboratories for the Medical Department as part of its purveyance operations, and even Barnes, who was not given to praising either Hammond or Hammond's accomplishments, praised them, Stanton did not close them down. Although no attempt was made at these facilities to compound all the medicines the department used, by the end of 1863, after less than a year in operation, the laboratory in Astoria, New York, was making eighty-three of the items on the supply table. With the aid of the laboratories, Hammond could stockpile drugs, thus sparing the Army the effects of shortages and the resultant fluctuations in prices. Surprisingly, Army laboratories never manufactured quinine, despite the fact that the process of making it was relatively simple and the variations in its price quite marked. They tested quinine, however, and any other item susceptible to adulteration. The operations of the three facilities at Astoria,

[2]Brieger, "Therapeutic Conflicts," p. 220 n. 1; *WOR*, ser. 1, 30, pt. 3:245; *WOR*, ser. 3, 3:1199; Strong, *Diary*, p. 306; James M. Phalen, *Chiefs of the Medical Department of the United States Army, 1775–1940*, Army Med Bull No. 52 (Carlisle Barracks, Pa.: Medical Field Service School, Apr 1940), p. 48. Unless otherwise indicated, all material on Hammond's problems with Stanton is based on Blustein, "Hammond," pp. 102–05, and Maxwell, *Sanitary Commission*, pp. 234–37.

[3]Strong, *Diary*, pp. 359, 394; Louis C. Duncan, "The Days Gone By: The Strange Case of Surgeon General Hammond," *Military Surgeon* 64 (1929):109; *WOR*, ser. 1, 31, pt. 3:485.

Philadelphia, and St. Louis resulted in a considerable savings for the Army during the course of the war from 1863 on. The laboratory at Philadelphia alone was credited with saving more than $75,000 from 1863 through 1865.[4]

Stanton's distrust for Hammond's projects did extend to the Army Medical Museum, which he apparently convinced the president was merely "a monument to General Hammond." But Barnes again found himself agreeing with the beleaguered surgeon general. Upon assuming the responsibilities of the head of the Medical Department in the fall of 1863, Barnes encouraged medical officers to continue sending in interesting specimens. More than 1,300 items had already arrived in Washington by 1 January 1863, and the Medical Department employed one man to serve as a water colorist and another as a "bone artist" to further the work of the museum.[5]

The best proof that Hammond's difficulties stemmed more from his personality and conflict with Stanton than from his management of the Medical Department was Barnes' continuance of Hammond's policies and, with the exception of the ill-fated medical school, Barnes' support of Hammond's favorite projects. The Medical Department worked without Hammond's hand at the helm as it had when he was

JOSEPH BARNES. *(Courtesy of National Library of Medicine.)*

there, and the furor that would engulf him affected the sick and wounded very little.

Regardless of who was at the helm, the major concern of the Medical Department was always the day-to-day care of sick and wounded. With soldiers joining the Army by the thousands, the number of sick for whom the Medical Department was responsible grew rapidly. This increase was not unexpected, since new troops were always vulnerable, and epidemics traditionally followed their entry into military service. Malaria was so common, however, that its occurrence was taken for granted. It was generally treated in the field unless the patient was also ill with some other disease. Possibly because those who had contracted such diseases as typhoid fever in earlier years had become immune, but perhaps also because of improved sanitation, the disease rate in the category of contin-

[4]*MSH* 1, pt. 3:965; Ltrs, A. K. Smith to SGO (14 Sep 1863), and Barnes to Stanton (17 Sep 1863), both in RG 112, entry 12; George W. Smith, *Medicines for the Union Army: The United States Army Laboratories During the Civil War* (Madison, Wis.: American Institute of the History of Pharmacy, 1962), pp. 14–15, 37, 42, 60–61; Brinton, *Memoirs*, pp. 259–60.

[5]First quote, Maxwell, *Sanitary Commission*, p. 237; Daniel S. Lamb, "History of the Army Medical Museum," *Military Surgeon* 53 (1923):99, second quote from p. 98; Ltr, Earnest Goodman to J. F. Day, C. H. Lord, and D. H. Strickland (24 Apr 1863), Ms fB50, NLM; Schullian and Rogers, "National Library," p. 9.

ued fevers was actually dropping. A breakdown of fevers into specific disease categories recognizable today was rendered particularly difficult by the invention of a new entity, typho-malarial fever, which may have been typhoid, malaria, both, or neither. Yearly statistics for diarrhea and dysentery, still the most common afflictions, could be misleading for, unlike typhoid, they could be both chronic and recurrent. For this reason cumulative figures tended to exaggerate the number of men who were actually ill with these problems over a twelve-month period. The figures for 1862 and 1863, however, do suggest a marked increase in the total number of typhoid sufferers and a significant upward trend in the acute form of this so-called malady. Scurvy cases were also on the increase, and given the nature of the soldiers' diet, it is entirely possible that many more than the figures suggest were suffering from subclinical scurvy, or in other words, the more subtle effects of a vitamin C deficiency.[6]

To care for those who were seriously ill as well as for those who had been severely injured, the number of general hospitals serving the Army increased from 151 sheltering fewer than 59,000 patients as reported in the annual report of 1862 to 182 the following year, with 84,472 beds. Not all of the beds by any means were in use at all times, since many had to be available to accommodate thousands of new patients after major battles. Many of the institutions of 1862 failed to survive through 1863; ten were closed in 1863 in Philadelphia alone as new facilities replaced the old. Hammond continued to place patients as near their homes as possible. While many hospitals were located in such major eastern cities as Philadelphia, New York, Boston, Baltimore, and Washington, others could be found throughout the Midwest, often along the Mississippi and its tributaries, where they could easily be reached by steamer. Still more were located at least temporarily near major battlefields, from Gettysburg, Pennsylvania, to Vicksburg, Mississippi.[7]

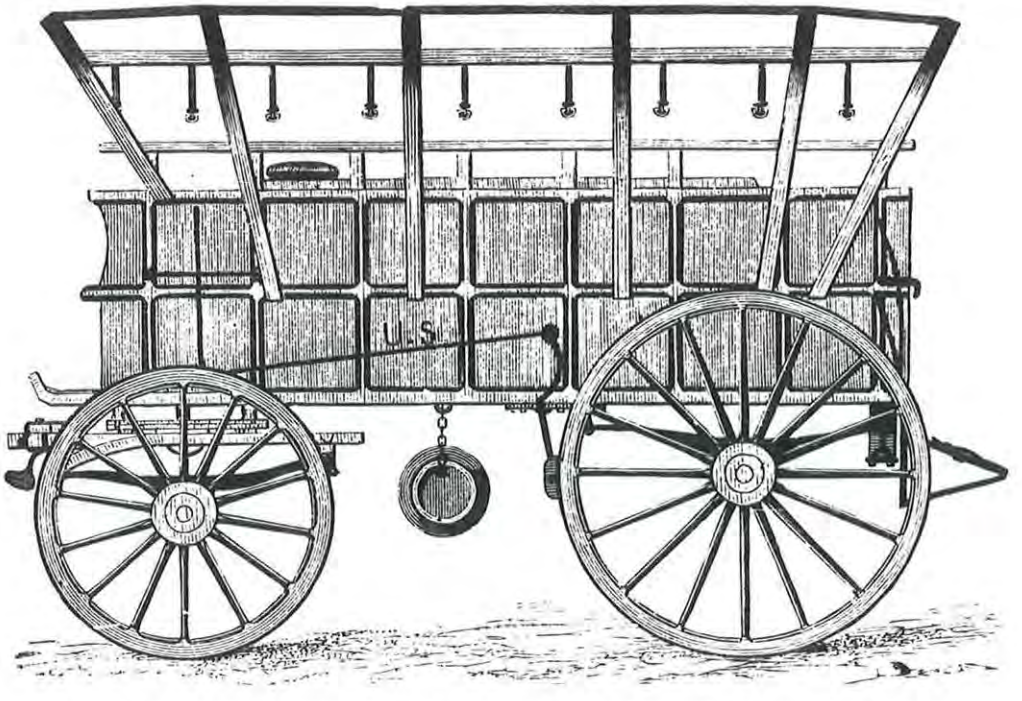
Moving ever larger numbers of patients to hospitals made necessary a more sophisticated approach to evacuation. Much attention was devoted in 1863 to new designs for hospital cars, ambulances, and litters. Boards of medical officers met to consider these new designs, and the quartermaster general himself was invited to inspect a new railroad car. Enthusiasm for a prototype led to the building of more cars on the basis of various designs inspired by civilian organizations, and to their eventual use on runs to such cities as Philadelphia, Baltimore, and New York, as well as Harrisburg, Pennsylvania, and Louisville, Kentucky. A new type of ambulance, a four-wheeler named for Tripler that could carry ten men, was also developed, but its usefulness was limited by the fact that it was so heavy that four horses were required to pull it.[8]

Keeping track of the patients who went in and out of this network of hospitals was difficult. Letterman had developed detailed forms to facilitate the submission of detailed reports. In practice, however, it

[6] *MSH* 1, pt. 1:147, 297, 452, and pt. 3:190–91, 193, 199; Smith, "Typhomalarial Fever. I, " pp. 182, 220, 287–321.

[7] War Department, SGO, *Annual Report*, 1862, p. 5 and 1863, p. 3; *WOR*, ser. 3, 2:389, 3:964–65; Ltrs, Hammond (Ind, 14 Mar 1863), RG 112, entry 2, 34:381; John Campbell to Barnes (2 Dec 1863) and McDougall to SG (4 Jul 1863), both in RG 112, entry 12.

[8] *MSH* 2, pt. 3:928, 948–49, 959–60 n. 1, 968; "Hospital Cars," *Sanitary Reporter* 1 (1863):30; USSC, *Documents* 2, no. 75:6; Turner, *Victory Rode the Rails*, p. 302.



TRIPLER AMBULANCE, *from illustration in* Medical and Surgical History.

proved impossible to keep detailed accounts of the treatment, condition, and location of each patient from the moment he entered the care of an Army surgeon until he was discharged and to move these documents with the patient as he was evacuated and transferred from place to place. Overworked Army surgeons could not guarantee that detailed records would be ready to accompany the wounded when they were moved on short notice. A board that met late in 1863 to consider the problem devised a system calling for registers to be kept at each facility and turned in to the Surgeon General's Office, where the files from various institutions would be compared to eliminate duplications.[9]

The word evacuation is associated primarily with the wounded, but the sick continued to form the major part of the Medical Department's burden. Efforts to keep the unhealthy from entering the Army in the first place were intensified in 1863, and penalties were set for surgeons who were less than strict in this regard. Other approaches to the prevention of disease involved improved sanitation and hygiene and closer attention to the soldier's diet. The medical officer was handicapped, however, by the fact that he could only advise concerning the prevention of disease.[10]

The conviction that improper cooking, which usually meant frying, caused much

[9]Brinton, *Memoirs*, pp. 249–52.

[10]"Responsibility of the Army Surgeon," *Sanitary Reporter* 1 (1863):28; U.S. Provost Marshal General, *The Medical Part of the Final Report Made to the Secretary of War* (Washington: Government Printing Office, 1866), pp. 3–4, 11.

AMBULANCE DRILL. *(Courtesy of Massachusetts Commandery Military Order of the Loyal Legion and the U.S. Army Military History Institute.)*

illness led to an attempt to make both medical and line officers responsible for culinary efforts. More worthwhile were efforts to guarantee that the soldier was offered an adequate amount of fruits and vegetables. Many line officers, however, failed to recognize the symptoms of scurvy or to realize how, even in its early stages, it could undermine the strength of their men. Because of their failure to understand the importance of potatoes to the health of their commands, officers sometimes casually helped themselves to supplies intended for the troops. Staff officers might thus appropriate 25 barrels out of every 100 for their personal use and that of their families and servants. Since another 25 might be siphoned off at the corps level and still more disappear as the shipment descended through the division and brigade levels, the men might receive none, even when authorities at the highest levels believed that the troops were adequately supplied. Hospitalized soldiers were not completely dependent upon the Commissary Department, which was responsible for supplying food to the troops in the field, because the Medical Department's purveyors supplied medicines as well as delicacies, which they continued to obtain from such organizations as the U.S. Sanitary Commission.[11]

Although otherwise few complaints

[11]H. A. Warriner, "Vegetables, Humanity, Patriotism" and "The Condition of the Army of the Cumberland in the Spring of 1863—The Aid Rendered by the Commission," both in *Sanitary Reporter* 1 (1863):92 and 2 (1864):153, respectively; John Ordronaux, *Hints on Health in Armies for the Use of Volunteer Officers* (New York: D. Van Nostrand, 1863), p. 63; Grace, *Manual*, pp. 75–76; John Gardner Perry, *Letters From a Surgeon of the Civil War* (Boston: Little, Brown & Co., 1906), p. 129.

about supplies developed during 1863, problems relating to the caliber of the surgeons who worked in the Army continued. States still administered the exams for surgeons attached to volunteer regiments, and medical boards that convened to look into questions of competence might weed out two-thirds or more from among them. The dismissal from the service of doctors who were deemed unqualified contributed, however, to a shortage of physicians at a time when volunteer regiments still might report for duty without their full complement of medical officers. Surgeons were also needed to serve the new black regiments being formed, but they were recruited specifically for this duty rather than chosen from among those already recruited, and few were enthusiastic about the assignment. They were required both to be graduates of orthodox medical schools and to submit to the scrutiny of a medical board, but since few came forward, the hospital care of blacks often devolved upon stewards appointed to act as assistant surgeons. Black army surgeons were few and not always well received.[12]

Nurses, like doctors, were often overworked, especially in the West, and confusion over who would pay contract nurses left many without wages for weeks early in the year. The hardships they might have to endure were apparently unappreciated, for their pay was reduced from $20.50 a month to $13, plus a $3-a-month allowance for clothing. An order issued in the fall of 1863 permitted the surgeon general to appoint female attendants without consulting Dorothea Dix. Although this power, which could be delegated to hospital directors, was designed for use when acute shortages made it desirable that appointments be made as rapidly as possible, it also enabled the department to bypass Dix at any time that the surgeon general desired to do so. The order, which also required that no more than one nurse be assigned to every thirty beds, emphasized that women nurses were under the exclusive control of the senior medical officer of the hospital in which they served and that he could assign them their duties as he wished and dismiss them for incompetence or disobedience.[13]

The establishment of an official organization in 1863 to manage Negro units would lead before the war's end to the enlistment of more than 186,000 blacks and required planning for the medical care of their sick and wounded. Since authorities apparently believed that public opinion would not permit the sharing of the same facilities by both blacks and whites, special hospitals had to be set aside for the use of this new class of recruits, and black male and female nurses were hired under contract for a maximum of $10 a month to work in them.[14]

The shortage of nurses had already led to use of convalescents in hospitals, but in 1863 the Army took steps to assign those who were chronically ill or permanently crippled to work in these facilities. General

[12]"Responsibility of the Army Surgeon," *Sanitary Reporter* 1 (1863):28; Ltr, Hart to his wife (1 Feb 1863), in Correspondence and Diary, Ms C146, NLM; Cir (2 Oct 1863), RG 112, entry 2, 36:155; Ltrs, Letterman to SG (8 and 13 Jan, 11 Mar, and 21 Sep 1863) and Israel Moses to SG (1 May 1863), all in RG 112, entry 12; Briggs, *Civil War Surgeon*, p. 117, Benjamin Quarles, *The Negro in the Civil War* (Boston: Little, Brown & Co., 1953), pp. 203–04.

[13]Forman, *Western Sanitary Commission*, p. 27; Grace, *Manual*, p. 86; Ltrs, Cuyler to Hammond (20 Jan 1863), B. Choate to John Carpenter (26 Jan 1863), and Head to Hammond (28 May 1863) and Cir, Magruder (23 Apr 1863), all in RG 112, entry 12; "Surgeon Meylert's Letter Continued," *Sanitary Reporter* 1 (1863):79.

[14]Ltrs, Magruder to SG (14 Apr 1863) and Suckley to SG (21 Nov 1863), and Cir, Magruder (23 Apr 1863), all in RG 112, entry 12; "Surgeon Meylert's Letter Continued," *Sanitary Reporter* 1 (1863):79.

orders now required that invalids capable of light duties be mustered in detachments for work as hospital attendants, clerks, cooks, and guards. Many of the men so assigned were apparently the victims of chronic diarrhea or general weakness resulting from wounds or disease, but occasional nurse-invalids were men who had deliberately injured themselves, cutting off their own thumbs, for example, in what would, with the creation of the Invalid Corps, prove a futile attempt to avoid further military duty.[15]

Care of the Sick and Wounded in the East

In early January 1863, the Army of the Potomac was still reeling from the disaster at Fredericksburg just a few weeks earlier. Anticipating renewed hostilities, General Burnside established a medical facility nearby at Aquia, hoping thereby to avoid sending his sick back to general hospitals when his army advanced. When heavy rains and flooding forced him to abandon his campaign, he broke up the establishment at Aquia, sent the seriously ill back to Washington, and set up regimental hospitals to care for those with minor ills. For patients who could not be cared for in these small facilities, Jonathan Letterman as Burnside's medical director formed division hospitals wherever needed within each corps, thus providing his medical officers with experience in running such organizations.[16]

As they settled down near Falmouth, just north of Fredericksburg, in late January, the 120,000 men of Burnside's command were considered to be on active field duty rather than in winter camp. Since the Army provided them with no structures for shelter except inadequate tents, the men often dug shallow pits in the "wide-spreading sea of mud and mire," erecting log huts over these foundations and covering the logs with either tents or brush and mud. The Medical Department deplored this custom, but many regimental commanders appeared to be little concerned about the health and welfare of their men. Nevertheless, the sick rate among veterans initially held at 5 percent, and the rate for the Army of the Potomac as a whole, including fifty-six new regiments, was 8 percent. Letterman considered this record good under the circumstances, although he added that new recruits seemed to be suffering with unusual frequency from venereal diseases and hernia.[17]

At the end of January, when he relieved Burnside, Maj. Gen. Joseph Hooker was much concerned with the health of his new command, since diarrhea, scurvy, and a fever that was probably typhoid afflicted many. Enlisted men were receiving very little of what Letterman considered to be the ample amounts of vegetables shipped to them. In early February, however, after Hooker himself expressed his determination to have the troops receive an appropriate diet, fresh bread and vegetables were issued. Letterman believed that the improved diet, together with better sanitation and greater care with cooking, was responsible for an improvement in health—by April the overall sick rate stood at 7 per-

[15] *MSH* 3, pt. 1:28; Paul Fatout, ed., *Letters of a Civil War Surgeon* (West Lafayette, Ind.: Purdue University Studies, 1961), pp. 57–58; Roberts Bartholow, *A Manual of Instructions for Enlisting and Discharging Soldiers* (Philadelphia: Lippincott, 1863), pp. 216–17.

[16] Unless otherwise indicated, all material on the medical care given the Army of the Potomac is based on Letterman, *Recollections.*

[17] Quote from Letterman, *Recollections*, pp. 102–03; Ltr, Letterman to SG (15 Jan 1863), RG 112, entry 12.

cent. The rate of diarrhea-like ills had dropped from 5.4 percent in February to 3.4 percent, fevers were being encountered less frequently, and even the able-bodied were stronger and more vigorous.[18]

Improving the physical condition of the troops was but part of the preparations Letterman made for the campaign to come. Although an Army-wide reorganization had removed the District of Columbia from the control of the commanding general of the Army of the Potomac and thus the general hospitals of Washington from the control of its medical director, Letterman's hands were still full. He soon found it necessary to appoint first one and then a second medical officer to assist him by acting as inspectors for the Army of the Potomac. In addition, he issued orders to each corps medical director to appoint a surgeon to serve as medical inspector for his unit. Letterman also used the winter to establish medical boards to examine medical officers charged with incompetence.

Many new regiments had joined the Army of the Potomac since the preceding autumn, and in early April Letterman outlined once again how he wished the Medical Department under him to operate during battle. He also issued a call for a private from each company to report for ambulance duty wearing a green badge to identify him as a member of the ambulance corps and pointed out that all attendants below the rank of sergeant must turn in their arms before the start of battle. Letterman's desire to keep as many patients as possible in field hospitals intensified the need for a "regularly trained Corps of Hospital Attendants," but he never succeeded in establishing such an organization.[19]

Before Hooker's army started out for what would be known as the battle of Chancellorsville, his medical director set up tent hospitals along the railroad from Fredericksburg to the depot at Aquia. Here the wounded could remain with their comrades, at the same time providing experience in postoperative care for Hooker's surgeons. Organized by division, but grouped by corps, these facilities were, in his opinion, "abundantly supplied with officers, nurses, cooks, medicines, etc.," so abundantly, in fact, that he reportedly told Hammond that he did not want to have any civilian physicians and nurses sent to the field. An assistant surgeon in the Army of the Potomac, however, later complained about the lack of "trained & disciplined nurses." The tent hospitals were located near one another, so that one line officer, appointed at Letterman's request, could serve as both quartermaster and commissary for all. Since he strongly believed that "life in a General Hospital tends to destroy the good qualities of a soldier," when the army marched, Letterman left 8,000 sick behind in the tent hospital, still under the care of their own surgeons, rather than sending them back to general hospitals.[20]

Two factors, both beyond the control of the Medical Department, complicated the care of the wounded at Chancellorsville.

[18]Strong, *Diary*, p. 321; Huston, *Sinews*, p. 224; Rpt. (filed with Ltr, Letterman to S. Williams, 4 Apr 1863), RG 112, entry 12.

[19]Quote from Ltr, Goodman to McNulty, Ms fB50, NLM; GO (no. 13, 5 Apr 1863) and Ltr, Letterman to "Dr." (12 Apr 1863), both in Ms fB50, NLM; Duncan, "The Bloodiest Day in American History—Antietam," in *Medical Department*, pt. 5, p. 37; Bennett A. Clements, *Memoir of Jonathan Letterman, M.D.* (New York: G. P. Putman's Sons, 1883), p. 18.

[20]First and third quotes, Letterman, *Recollections*, pp. 113 and 143, respectively; second quote, *MSH* 1, app.:138; Clements, *Memoir*, pp. 13–14; Ltr, Letterman to SG (15 Jun 1863), RG 112, entry 12; see also Letterman, *Recollections*, p. 142.

Defeat caused hospitals near the battlefield to be repeatedly threatened with capture (the enemy took and later paroled almost 1,200 wounded). Moreover, the rapid pullback of troops forced Letterman to evacuate the wounded over the long, rough twenty-five miles to the corps hospitals, rather than use facilities closer at hand. In addition, evacuation was made more difficult by Hooker's orders, which prevented many wagons, including those with medical supplies, and all but two ambulances per division from crossing the Rappahannock River with the units moving on Chancellorsville. No stretchers or stretcher bearers were permitted over the river until late on 30 April, by which time shelling had forced medical officers to abandon at least one hospital, and patients had, of necessity, been carried on litters improvised from blankets. Ironically, in a battle where many hospitals with their patients often had to be moved, the Medical Department was not as well prepared as it usually was for evacuation, but Letterman believed that the moves of the hospitals were, under the circumstances, well managed. After the battle was lost, it was only with difficulty that he was able to move enough ambulances across the river to return casualties to the north bank and to the corps hospitals. The approximately 9,500 wounded from Chancellorsville then traveled by train along the single track to Aquia, whence about 2,000 went by boat to Washington.[21]

The care of his patients who had been captured by the enemy also concerned Letterman. Nineteen physicians had been taken prisoner with them. Encouraged by General Robert E. Lee, Letterman sent twenty-six more medical officers and five wagonloads of medicines, blankets, and hospital stores through the lines. A week after the battle, Lee gave his permission for Union ambulances to come through the lines to pick up Union wounded, in so doing sparing these men the discomforts and dangers of a transfer from Confederate to Union vehicles at some halfway point. All captured Union wounded were back within Union lines by 15 May.[22]

Letterman believed that his surgeons had, on the whole, acquitted themselves well at Chancellorsville and pointed out that three had been wounded in action, two severely. A volunteer surgeon, however, maintained in a letter that "many of the Medical men behaved badly—ran off over the river in the first day's fight and never came back at all." Only a few lines later, however, he admitted that some of those who ran off did indeed come back, but added that they had consumed "the Stimulants sent over the River by the Medical Director for our sick." This medical officer may have been inclined to embroider his story a bit, but he was not the only one to raise questions about Letterman's estimate of the situation at Chancellorsville. Hooker reportedly ordered that the number of casualties not be revealed, and, lacking information, Stanton had Hammond send John Brinton to the Chancellorsville area with the secret mission of gathering information on the number of wounded, while ostensibly obtaining specimens for the Army Medical Museum.[23]

In his memoirs, Letterman reported that 9,518 men were wounded at Chancellorsville. Given the difficulty of obtaining accurate figures under the circumstances, his data compares well with that reported in

[21]Fatout, *Letters*, pp. 59–60; *MSH* 1, app.:124–26, 128–30, 135, 137–38.

[22]*WOR*, ser. 1, 25, pt. 2:432, 465–66.

[23]First and second quotes, Fatout, *Letters*, pp. 60 and 64, respectively; Brinton, *Memoirs*, pp. 233–35.

the *War of the Rebellion* collection, which states that 9,759 officers and men were wounded and 1,606 killed. Brinton, however, after noting that one could safely assume four to five men wounded for every one killed, estimated that the total number of casualties was about 23,000, a figure far higher than that given by his contemporaries, although his memoirs do not reveal how he arrived at this figure.[24]

By mid-June, when Army of the Potomac patients were on their way to facilities in Aquia and Washington, the able-bodied were marching north under Hooker, following Lee, who was invading Maryland. Fortunately, the health of the Army of the Potomac was still generally good, for the weather was hot and the troops were pushed to cover twenty-five to thirty miles at a time, even when this meant marching at night. Water was scarce, and men collapsed and died from heat and stress. By the time they reached Pennsylvania, they were "much exhausted and but illy prepared to bear up under the shock of wounds." Hooker, however, had decreased the number of wagons allowed to supply the Medical Department's needs. During the last part of this ordeal, rain turned the dust to mud, and supplies were often abandoned along the roadside. It was fortunate that following the troops were Sanitary Commission wagons, and that their supplies were frequently replenished along the way.[25]

Although battle was expected almost momentarily, Hooker resigned as commanding officer of the Army of the Potomac on 28 June, to be replaced by Maj. Gen. George G. Meade. In his determination to keep open roads to his rear, Meade further complicated supply problems for his medical officers by issuing orders that resulted in hospital supply wagons being kept well back from the battlefield. A medical officer returning from Washington with supplies was also ordered away from the battlefield on 2 July. As a result of these difficulties, although the fighting at Gettysburg finally ended on 3 July, tents were not generally available until two days later. Most medical officers had to rely entirely on the small medicine wagons that routinely accompanied ambulances in the field. One corps had in some unexplained way escaped the restrictions placed on the rest of Meade's army, however, and its experiences suggest what could have been done had the rest of the army not been handicapped. Its normal complement of hospital supply wagons was allowed to accompany it from Virginia and none had been held back from the battlefield. Thus equipped, XII Corps medical officers were able to evacuate their wounded from the field, bathe, dress, and feed them, all within six hours of the end of the battle.[26]

Meade's restrictions complicated supply at Gettysburg, but ambulances worked freely. According to Letterman, of the more than 14,000 wounded, none who were within Union lines were left on the field, even though the 650 officers and 3,000

[24]Brinton, *Memoirs*, pp. 234–35; *WOR*, ser. 1, 25, pt. 1:192.

[25]Quote from [Justin Duinell], *Medical Report of the Second Corps at the Battle of Gettysburg*, Ms C129 (hereafter cited as Duinell Medical Report), NLM; Frederick Law Olmstead, "Preliminary Report of the Operations of the Sanitary Commission With the Army of the Potomac, During the Campaign of June and July, 1863," *Sanitary Reporter* 1 (1863):49. Unless otherwise indicated, in addition to Letterman's *Recollections*, all material of the Gettysburg campaign is based on Duncan's "The Battle of Fredericksburg" and "High Tide of the Confederacy—Gettysburg," both in *Medical Department*, pts. 6 and 7, respectively, and on *MSH* 1, app.:141–47.

[26]Clements, *Memoir*, p. 12; William Warren Potter, *Reminiscences of Field-Hospital Service With the Army of the Potomac* (Buffalo: *Buffalo Medical and Surgical Journal*, October and November 1889), pp. 15–16.

GENERAL SICKLES' LEG. *(Courtesy of Armed Forces Institute of Pathology.)*

drivers and stretcher-bearers of the ambulance corps had to work under fire, five of its members being killed and seventeen wounded. In bringing out the 12,000 whom the ambulances could reach, eight vehicles were damaged and a number of horses either killed or wounded. Nevertheless, since this battle lasted three days, the work of the ambulance corps was not as intense as it had been at Antietam and no serious difficulties developed.[27]

Although the placement of supply wagons far to the rear did not affect evacuation, it added to the difficulties of medical officers who were trying to establish hospitals in the field. For a time after the fighting stopped they lacked an adequate supply of tents and were forced to use any buildings they could find. They even had to leave some patients out in the open, where heavy rains added to their sufferings. Hospitals were often moved; one group was flooded out from a low-lying area that was otherwise both safe and convenient, and others had to be abandoned because of enemy fire. Some of these facilities apparently served only as clearing stations, and ambulances might have to move patients twice, even when the original hospital was not abandoned.[28]

The burden on Union surgeons at Gettysburg was great. Although Sanitary Commission supplies met their most basic needs until Medical Department wagons could arrive, medical officers were not always able to keep up with their case loads. Some had to work through the night and well into the next day. As a result of the strain, many fell ill at one time or another. Those who were captured with their patients were forced to work with few medicines or instruments after their Southern counterparts helped themselves to Union supplies. In addition, thirteen Union surgeons were wounded at Gettysburg, and one died as a result of his injuries.

One severely wounded patient who did not lack for attention from Union surgeons was Maj. Gen. Daniel Sickles, who managed to separate himself from his cigar long enough to have his right leg amputated at the thigh in a field hospital at Gettysburg. Immediately after the surgery, the medical director of the III Corps and forty soldiers accompanied the general while he was carried on a litter to a distant railroad depot. The surgeon remained with him for the rest

[27]Duinell Medical Report, Ms C129, NLM; Richard H. Shryock, "A Medical Perspective on the Civil War," *Medicine in America: Historical Essays* (Baltimore: Johns Hopkins Press, 1966), p. 91.

[28]Duinell Medical Report, Ms C129, NLM.

of his trip to Washington, where Sickles recovered from his wound and his leg joined the growing collection at the new Army Medical Museum.[29]

In spite of the large numbers of both Union and Confederate wounded remaining in the Gettysburg area, Meade found it necessary to take most of his 650 medical officers with him as he started his pursuit of Lee on 6 July. Only 106 Union surgeons remained behind, an average of 1 for every 150 patients. Since some of the Confederate physicians left behind with their wounded had apparently deserted their charges, Letterman was forced to ask Hammond to send 20 more surgeons to Pennsylvania. The strain on Union physicians was great. Young John Shaw Billings wrote his wife on 9 July that he was "covered with blood" and "tired out almost completely," able "only [to] say that I wish I was with you tonight and could lie down and sleep for 16 hours without stopping." He added that he had been "operating all day long and have got the chief part of the butchering done in a satisfactory manner."[30]

By mid-July the surgeons Letterman had requested arrived. Some private physicians from neighboring states came to help, but most were of little use, preferring to operate rather than to help wherever they were needed. Letterman, who accompanied Meade, also asked Hammond to send surgeons to join the Army of the Potomac on its march, to make up for those left behind at Gettysburg. An additional forty-seven medical officers reported to Letterman on 9 July.[31]

As rapidly as possible, the Medical Department shipped its patients from Gettysburg to general hospitals in the north. Hammond ordered that a medical officer "of experience" be found to coordinate the evacuation. Those remaining at Gettysburg were from both Union and Confederate armies, usually amputees or those with serious wounds. As the number of patients dwindled, surgeons attempted to consolidate them and near the end of July opened a new 1,200-bed tent hospital, dubbed Letterman Hospital or Camp Letterman, for their use. The new facility was near the railroad so that patients being sent north could be moved to their trains by litter. Although the presence of individual citizens anxious to help the wounded added a note of confusion to the facilities at Gettysburg, the Sanitary Commission and other volunteer agencies helped staff and supply Gettysburg hospitals, including Camp Letterman, which remained open until 20 November.[32]

Evacuation from Gettysburg hospitals was initially slower than expected, since few ambulances remained after Meade's departure. Before Camp Letterman opened near the station and until the Sanitary Commission opened a 150-bed depot, many patients were left lying in the open, exposed to the weather as they waited for a train. The train trip from Gettysburg was also an ordeal. The rail line was in poor condition, with its bridges in particularly bad shape. Although the department

[29]W. A. Swanberg, *Sickles the Incredible* (New York: Charles Scribner's Sons, 1956), pp. 216–21, 405 n. 16.

[30]Quotes from Ltr, Billings to his wife (9 Jul 1863), in *John Shaw Billings, A Memoir*, ed. Fielding H. Garrison (New York and London: Knickerbocker Press, 1915), p. 65; Ltr, Swift to SG (18 Jul 1863), RG 112, entry 12.

[31]Ltr, Swift to SG (18 Jul 1863), RG 112, entry 12.

[32]Quote from Ltr, Hammond to R. Smith (9 Jul 1863), RG 112, entry 12; Duinell Medical Report, Ms C129, NLM; Ltr, Goodman to McNulty (13 Aug 1864) and Orders, Goodman (28 Jul 1863), both in Ms fB50, NLM; Maxwell, *Sanitary Commission*, pp. 212–13; Olmsted, "Preliminary Report," p. 50; Ltr, a surgeon at Camp Letterman to Steiner (copy, 21 Sep 1863), in Steiner Report, Ms C19, NLM; Anna Morris Holstein, *Three Years in Field Hospitals of the Army of the Potomac* (Philadelphia: J. B. Lippincott, 1867), pp. 43–44, 49–51.

GENERAL HOSPITAL AT GETTYSBURG. *(Courtesy of Library of Congress.)*

placed a surgeon and attendants on every car that carried patients, most of the wounded were in boxcars belonging to returning supply trains rather than in cars designed especially for their comfort. Patients had only straw or hay for bedding, but for longer trips they were supplied with urinals, bedpans, water coolers, and other conveniences. The department eventually evacuated an average of 800 men a day from the Gettysburg area northward.[33]

Because of factors beyond the control of either Letterman or the Medical Department, the death rate among the wounded after Gettysburg was unusually high and the wounds were unusually severe. The men had been exhausted even before the battle by their long, fast march in the heat. After they were injured, many suffered further from exposure to the elements, even though the wounded among both Union and Confederate prisoners were dressed and under shelter of some kind within twenty-four hours of the end of battle. (The British took ten days to reach this point after the battle of Waterloo.) The Medical Department's achievements under adverse conditions illustrated once more the success of Letterman's approach to the problems involved in evacuating and caring for the wounded from a large modern army.[34]

The army Letterman served was large and moved relatively long distances by land. The surgeons who participated in the July 1863 attempt to take Charleston, South Carolina, by an attack from the ocean found an entirely different challenge. Because the troops involved were moving from one island to another, the Medical Department had to make extensive use of

[33]Fatout, *Letters*, p. 70; Maxwell, *Sanitary Commission*, p. 212; Duinell Medical Report, Ms C129, NLM; *MSH* 2, pt. 3:959.

[34]Duinell Medical Report, Ms C129, NLM; S. Weir Mitchell, "Medical Department in the Civil War," *Journal of the American Medical Association* 62 (1914):1447.

JOHN CRAVEN OPERATING *during siege of Battery Wagner. (Courtesy of Massachusetts Commandery Military Order of the Loyal Legion and the U.S. Army Military History Institute.)*

boats to transport men, ambulances, and supplies. On 8 July immediately after the attack began, John J. Craven, the volunteer surgeon serving as medical director for the expedition, loaded ambulances and tents on the ferry that left Folly Island, where a hospital had been established, for Morris Island, where Union forces were besieging Battery Wagner, and where Clara Barton helped care for the hospitalized. The first field hospital that he established on Morris Island had to be moved once to avoid fire from Fort Sumter. His patients were evacuated by ambulance across the hard sand to the hospital and later by ferry to the facility on Folly Island. When more than 1,200 casualties resulted from a second attack on Battery Wagner on 18 July, Craven decided to move all the wounded from Morris Island by steamer back to hospitals at Hilton Head and Beaufort, South Carolina, which he did in two days with the help of three naval medical officers and a physician from the Sanitary Commission. When arrangements for an exchange of wounded prisoners were complete, Craven went by steamer from Morris Island back to Hilton Head to pick up thirty-nine wounded Confederate soldiers. Meeting a Confederate vessel in Charleston Harbor, he exchanged his prisoners for about half of the Union wounded in enemy hands, 105 officers and men, whom he sent back to Hilton Head.[35]

[35]*MSH* 1, app.:241–42; *WOR*, ser. 1, 28, pt. 2:10;

Among the difficulties Craven experienced while on Morris Island was insubordination. During the siege of Battery Wagner, a volunteer surgeon openly defied Craven's authority. Even after the medical director of the Southern Department ordered him to obey Craven, the surgeon continued to set up hospitals for his men wherever and whenever he chose, but whether disciplinary steps were ever taken against the miscreant is not known. During the rest of the summer until the enemy abandoned Battery Wagner in September, Craven also encountered both malaria and scurvy. In the end, however, the efforts of the expedition were frustrated, and as 1863 ended Charleston remained in Confederate hands.[36]

Although reports of scurvy from Union-held areas along the southern coastline were not frequent, fevers continued to be very common. Soldiers in the New Orleans area were hit hard by "swamp fever," or typhoid; an officer under Butler wrote of hearing "the screams and howls of the patients in their crazy fits" in a hospital half a mile from camp and noted that two-thirds of his regiment were dead or hospitalized. Fortunately, Union surgeons were prepared to treat malaria and took the problems it caused in stride. The mortality from malarial fevers was not high in proportion to the number of cases, but in the late summer and early fall, as many as half of the soldiers in some commands were off duty at one time because of these fevers, despite some use of whiskey and quinine or a related drug as a prophylactic. The men assigned to work along the railroad from New Bern to Morehead City in North Carolina, for example, frequently fell ill, and those at two stations along the line had to be relieved every ten days as a result. Each regiment in North Carolina had its own hospital, but the Medical Department established general facilities in New Bern, Morehead City, and Beaufort to handle serious and chronic cases and to supply medicines to a growing number of former slaves working for the Union, as well as for their families.[37]

Care of the Sick and Wounded in the West

Just as Meade was turning back Confederate forces at Gettysburg, Grant was accepting the surrender of Vicksburg, Mississippi, after a campaign that lasted six months. Grant's drive on the southern city, however, involved many lesser engagements rather than one or two great battles.

Working under Grant for this campaign were three Army corps, one of which, under Maj. Gen. William T. Sherman, set an example for the others in the management of the sick and wounded, while a second, under Maj. Gen. John McClernand, particularly needed to improve in this regard. McClernand was more of a politician than a soldier and, like Buell before him, tended to neglect his sick and wounded, leaving them behind without supplies or attendants and, on at least one occasion, without ambulances as well. Despite rough terrain and poor roads, the ambulance system in

"Report on the Sanitary State of the Troops at Charleston," USSC *Sanitary Bulletin* 1 (1866):81; Isbel Ross, *Angel of the Battlefield* (New York: Harper & Bros., 1956), p. 62.

[36]Strong, *Diary*, p. 350; *MSH* 1, app.:241; "Report on the Sanitary State," USSC *Sanitary Bulletin* 1 (1866):78, 81.

[37]John William DeForest, *A Volunteer's Adventure, a Union Captain's Record of the Civil War*, ed. James H. Croushore (New Haven, Conn.: Yale University Press, 1946), p. 152, quotes from p. 153; *MSH* 1, app.:238–39; Ltrs, F. G. Snelling to SG (10 and 15 Jan 1863), both in RG 112, entry 12.

Sherman's IV Corps, which was basically that created by Letterman, was so effective that Medical Inspector Edward Vollum persuaded Grant to adopt it for his entire army. After March 1863, therefore, Grant's ambulance corps was organized by division, with a commissioned officer commanding each unit at the division level, a noncommissioned officer in charge of each at the brigade level, and one driver plus two enlisted men assigned to each ambulance.[38]

Just at the time Vollum persuaded Grant to adopt Sherman's ambulance plan for the entire Army of the Tennessee, a new medical officer, Madison Mills, a Regular Army surgeon, arrived to replace volunteer surgeon Hewit as medical director. Hewit had already established a base hospital at Milliken's Bend, northwest of Vicksburg on the Mississippi. Now Mills created a field-hospital system for the troops taking part in the campaign, one that was designed to accommodate Grant's desire to keep as many of his sick and wounded as possible within his department. Mills also established both convalescent camps and corps facilities to supplement field hospitals at the division level, so that only the seriously incapacitated would need to be taken to distant general facilities.[39]

Mills' work was complicated by the fact that various units of the Union's Army of the Tennessee were moving about the countryside on either side of the Mississippi River as Grant attempted to close in on Vicksburg. In some instances, Union forces made no attempt to hold ground previously taken, and any wounded not moved with their units found themselves within the enemy's lines. Every effort was made to keep

FORMER SLAVE, *one of the Medical Department's patients. (Courtesy of Massachusetts Commandery Military Order of the Loyal Legion and the U.S. Army Military History Institute.)*

with the army both casualties and those who fell ill in increasing numbers, but eventually more than 2,000 were left behind.[40]

For an army so much on the move, the muddy roads and flooding streams of springtime made supply difficult, and the carelessness of some surgeons in making timely requisitions made matters worse. The U.S. and Western Sanitary Commissions provided supplies when the government was unable to furnish them and continued to help in the evacuation of pa-

[38]*MSH* 2, pt. 3:398; Duncan, *Medical Department*, pt. 3, p. 14; Joseph E. King, "Shoulder Straps for Aesculapius: The Vicksburg Campaign in 1863," *Military Surgeon* 114 (1954):218–19.

[39]*MSH* 1, app.:331; *WOR*, ser. 1, 24, pt. 3:128.

[40]*WOR*, ser. 1, 24, pt. 3:357; *MSH* 1, app.:334; USSC, *Documents* 2, no. 75:3.

EDWARD VOLLUM. (*Courtesy of National Library of Medicine.*)

tients, but again commanding officers were tempted to lighten their burdens by leaving regimental medical needs behind. Letterman's organization of supply by brigade had apparently not been adopted in Grant's army, but Mills personally, as medical director for the entire army, took an extra supply of medicines, bandages, and similar items with him. He supplemented these, where possible, by what he could find at drugstores in the communities through which the troops moved. In March Sherman, then on the far side of the Mississippi from Vicksburg and to the west of that city, was confident that his field hospitals were amply supplied. He deplored the spreading of rumors to the contrary. It may have been these very rumors, however, that led Hammond to seek permission to travel west on an inspection tour, even though Grant's army, once it was relatively stationary near Vicksburg, was easily supplied. Steamers made the round trip from Memphis in four to five days, and the Medical Department's needs were stockpiled at Young's Point, north of Vicksburg, where one vessel had been assigned to pick them up and deliver them wherever they were needed.[41]

Supply problems may have been few after May, but the surrender of Vicksburg on 4 July did not end the difficulties facing the Medical Department of Grant's army. As many as 6,000 or 7,000 Confederate wounded, most in very bad condition, depended on Union physicians for aid. The Sanitary Commission once again assisted the Union medical officers. A call also went out to the chief quartermaster for the Department of the Tennessee to assign someone at once specifically to obtain the tents and buildings needed for hospitals, to arrange for transportation, and to provide the wood, water, and other items needed by the Medical Department in Vicksburg. Men whose recovery would be prolonged or who would never completely recover from their wounds were evacuated from the Vicksburg area after the siege. The hospitals near the city that served these patients were consolidated into one, where men awaiting evacuation could receive temporary care. Each regiment also had its own hospital, located when possible in buildings once used by the Confederates for this purpose, where those with tem-

[41] *MSH* 1, app.:330–32; *WOR*, ser. 1, 24, pt. 3:357; Forman, *Western Sanitary Commission*, p. 77; Ltr, Brown to SG (comment of approx. 20 Aug 1863 by unknown author, 9 Aug 1863), RG 112, entry 12; J. S. Newberry, "What the U.S. Sanitary Commission Is Doing in the Valley of the Mississippi," *Sanitary Reporter* 1 (1863):1; S. B. Thrall, "An Iowa Doctor in Blue: The Letters of Seneca B. Thrall, 1862–1864," ed. M. Throne, *Iowa Journal of History* 58 (1906):128, 130.

porary ills or slight wounds could receive care.[42]

At Memphis, many of the patients evacuated from Vicksburg went upriver, where they were joined by some of the more seriously sick and wounded from facilities serving Union forces fighting a successful campaign in Arkansas. The path of evacuation from Arkansas to Memphis was not as well planned as that from Vicksburg, however. The Arkansas evacuees' boats were crowded and their accommodations drafty and so inadequate that patients had to lie on the deck. In late summer the sickness and mortality rates were high in the 20,000-man Army of the Arkansas as it worked its way toward Little Rock. The medical staff caring for those remaining with that army was small, and some physicians were incompetent. Supplies, which had to be shipped from Memphis, came in slowly until the very end of the year. With so many difficulties involved in caring for patients in Arkansas, it is not surprising that almost 1,200 were sent to Memphis. To care for the patients coming from Arkansas and Vicksburg, the Medical Department in Memphis took over the largest and finest buildings they could locate, many of which were hotels, until they had space for 5,000 beds. By summer, however, all these hospitals were full, and patients from Vicksburg were being sent to such cities as Cincinnati and St. Louis.[43]

MADISON MILLS. *(Courtesy of National Library of Medicine.)*

While Grant was planning his effort against Vicksburg in early 1863, the Army of the Cumberland under Rosecrans, with its 4,000 wounded, was recovering from the battle of Murfreesboro and preparing for a new campaign that was not actually undertaken until the summer. Although the town itself, built on a rock, stank with the effluvia of shallow privies as the weather became hotter, the hospital was reportedly immaculate. By spring it could boast of a fine garden; a visitor in early June described that facility as "one of the brightest spots in the Department of the Cumberland, . . . a model army hospital." Meanwhile, Rosecrans and his medical director

[42] *WOR*, ser. 1, 24, pt. 1:489–90; H. A. Warriner, "Department of the Tennessee," "The Rebel Sick and Wounded at Vicksburg," "Dr. Fithian's Report," and "Department of the Tennessee—Report of Dr. Fithian," all in *Sanitary Reporter* 1 (1863):45, 52, 59–60, and 74, respectively.

[43] Forman, *Western Sanitary Commission*, pp. 69–70; *MSH* 1, app.:331; J. R. Smith, "Army of the Arkansas," Ms C126, NLM; Paul E. Steiner, *Disease in the Civil War—Natural Biological Warfare, 1861–1865* (Springfield, Ill.: Charles C Thomas, 1968), p. 30; William Fithian, "Affairs at Helena," "Letter From Dr. Warriner," and "Letters," all in *Sanitary Reporter* 1 (1863):21, 62, and 63, respectively.

used the period of inactivity to have a board check into the competency of his medical officers, some of whom proved less than satisfactory.[44]

Rosecrans' new campaign, aimed at the capture of Chattanooga, a vital railroad junction, would try his medical officers to their utmost. Handicapped by mountainous terrain, vulnerable lines of communications, and an unexpected but severe defeat, they were fated to see their patients suffer from exposure both on the battlefield and during evacuation, from capture by the enemy, and from the effects of near starvation. In May, however, the availability of ripe blueberries and green corn in the fields was accompanied by a drop in the disease rate from 5 percent to 4 percent, where it remained until after the battle of Chickamauga, despite the wet weather that plagued the army on its march.[45]

Rosecrans' new medical director, Glover Perin, believed himself adequately prepared for the campaign when each regiment was supplied with all he estimated it could need for three months—like Madison Mills in Grant's army, he did not change to a system of supply by regiment. Perin planned to leave items held at the corps level intact as a reserve. Unfortunately, in at least some instances, amounts allowed were insufficient for the eventual need. He also did not follow Letterman's example by consolidating small hospitals, and unlike Mills, apparently accepted the ambulance system as he found it. He personally preferred Letterman's approach, however, since better control could be exercised over ambulance trains by having commissioned officers in charge of them. Perin also noted that no one was detailed in Rosecran's army to place patients into the ambulances and that these vehicles were still under the quartermaster's control. Their number was adequate, but since ambulances had been often used as baggage wagons during the winter and spring, many were in poor repair just when they were most needed. Each regiment in the Army of the Cumberland was accompanied by its own ambulance and hospital wagons, while a thirty-vehicle train also moved with each division.[46]

Perin was also able for a time to rely on two specially equipped railroad cars for the evacuation of his wounded, but an accident destroyed one and damaged the other sometime during the spring or summer, forcing medical officers to evacuate their wounded, as many as 100 a day, in boxcars. Evacuation by rail, furthermore, could not always be relied on because of the ease with which lines could be cut and because a portion of the line west of Chattanooga to Murfreesboro ran through enemy-held territory.[47]

A network of hospitals behind the front lines with their field hospitals awaited those who fell ill or were wounded during Rosecrans' advance or in the battle of Chickamauga. The principal facilities were in Nashville, where a group of highly regarded general hospitals provided 3,000 beds for soldiers and apparently more

[44]Quote from M. L. Read, "Department of the Cumberland," *Sanitary Reporter* 1 (1863):27; *WOR*, ser. 1, 20, pt. 1:220; USSC, *Sanitary Memoirs*, p. 55; Ltr, Lewis W. Leeds to Letterman (25 Jun 1863), RG 112, entry 12.

[45]Read, "Cumberland," and "Condition of the Army," both in *Sanitary Reporter* 1 (1863):27 and 2 (1864):152, respectively. Unless otherwise indicated, material on the Army of the Cumberland is based on *MSH* 1, app.:266–68, 70, and Duncan, "The Great Battle of the West-Chickamauga," in *Medical Department*, pt. 8.

[46]USSC, *Surgical Memoirs* 1:54.

[47]"Hospital Cars—Report of Dr. Barnum" and "Report of Dr. Read," both in *Sanitary Reporter* 1 (1863):58 and 59, respectively.

for sick and wounded former slaves who were working for the Army. Louisville and other cities offered another 12,000 spaces. Attempts were made in the summer of 1863 to vacate beds in Nashville, but although more than 2,000 casualties were sent to Louisville and thence to facilities nearer their homes, still others came in from Rosecrans' army to take their places. Hospitals in Murfreesboro were also emptied of their patients, to the extent possible, so that they could be used for the casualties of the campaign. A 1,500-bed mobile tent hospital was left behind in Murfreesboro, organized and equipped so that it could be moved as needed. In August it joined other facilities located along the Tennessee River and the nearby railroad that were used as temporary shelters for soldiers from Rosecrans' army. When possible, these hospitals as well as the convalescent camps that were located along the route were sheltered in buildings or in tents abandoned by the Confederates.[48]

When Rosecrans' men reached Chattanooga, newly abandoned by the Confederates as they evaded Union efforts to cut them off, Perin attempted to set up hospital accommodations for as many as 3,000 men, but found space for only 500 beds in those buildings originally used by the enemy for the same purpose. These structures, furthermore, were far from ideal; many lacked both doors and windows. Nevertheless, Perin urged that the sick and wounded from Rosecrans' army be sent to Chattanooga before the impending battle so that field units would not be unnecessarily encumbered.

In the field at Chickamauga, where Rosecrans finally met the enemy, medical officers experienced all the difficulties spawned by defeat, including the necessity for moving hospitals and the inevitable capture of many of their wounded. Perin has been criticized for locating most of the division hospitals in an area far from the battlefield and easily cut off by the enemy. He has also been blamed for not moving these units and their occupants as promptly as possible when they were in danger of capture. The site he chose, however, was near a vitally needed source of water. Since predicting the fortunes of this battle was particularly difficult and the area was "undulating and thickly timbered," evacuation was tedious and time-consuming. As many as 2,500 wounded were taken captive, 2,000 of whom had been left on the field on 20 September when the army fled, but 1,700 were soon exchanged.[49]

At Chattanooga, the Medical Department was once again not prepared to handle the number of wounded that flooded into the city. With the aid of the Sanitary Commission, Perin tried to find shelter for the 9,000 wounded. More than 200 bales of cotton that were discovered hidden in the town were rapidly converted into mattresses enough to accommodate all the additional wounded. Supplies sufficient to the needs of a hard campaign had not been accumulated, however, and food was scarce even before the defeat at Chickamauga, so that many patients arriving at the hospitals had nothing to eat for two days.[50]

[48] *WOR*, ser. 1, 23, pt. 1:418–19; J. P. Barnum, "The Hospital Train," "The Rev. Mr. Hoblitt on Nashville Hospitals," David Welsh, "Negro Hospital," "Hospital Cars—Report of Dr. Barnum," "Report of Rev. F. H. Bushnell—Louisville and New Albany Hospitals," "Report of Mr. Loomis," and "Report of Dr. Read," all in *Sanitary Reporter* 1 (1863):25–26, 34, 51, 59, 77, 118–19, and 141, respectively; Ltr, Perin to G. Goddard (23 Feb 1863), RG 112, entry 12.

[49] Quote from *MSH* 1, app.:268; Rpts, Perin (22 Sep and 3 Oct 1863), both in RG 112, entry 12.

[50] Maxwell, *Sanitary Commission*, p. 214; USSC, *Sanitary Memoirs*, p. 16; "Report of M. C. Read," *Sanitary Reporter* 1 (1863):73–74.

After the battle, attempts were made to move the wounded from the Chattanooga area, in the belief that the city might soon be captured. A new tent hospital was established across the Tennessee River to the north, but not enough tents were available to shelter all of the 2,000 sent there, forcing surgeons to turn to use "bowers of branches and leaves" to protect their patients from the weather. Many patients were sent west on an exceedingly arduous trip to hospitals nearer Murfreesboro. In this effort, Perin encountered a familar problem in the persons of malingerers and the slightly wounded, anxious to escape further action. Medical officers were set to watch for them at the pontoon bridges across the river. In the confusion, however, many who were not seriously hurt succeeded in joining the supply wagons that were laboring westward carrying the more seriously injured sixty miles to where the railroad to Nashville was still open.[51]

Despite inexplicable claims by a medical officer in Louisville that shipments were getting through to the Army of the Cumberland, there was no escaping the fact that Chattanooga was almost completely cut off from significant outside help. The river was not navigable near the city, the railroad led into enemy territory, and mountain roads had been rendered almost impossible by weather and enemy raids. By October, many of the horses that pulled ambulances were so starved that they were no longer useful, and although the Sanitary Commission stationed agents along the roads used in evacuation, their aid was also limited by transportation problems. The wounded in the city suffered from their inadequate diet and shivered as autumn chills deepened and fuel became scarce. Help was on its way, however. In late September trains began bringing Hooker with two corps from the Army of the Potomac to Bridgeport, Alabama, west of Chattanooga on the Tennessee River. In late October they finally opened the way from Chattanooga to the navigable part of the river, supplies could come through freely, and patients could be removed from the city without danger.[52]

By this point, Grant was in command of all forces in the West, and Sherman was on his way to Chattanooga from Memphis with two corps from the Army of the Tennessee. Sherman's men found all the food they needed in the countryside as they marched, and when they reached Chattanooga in late November, they were healthier than they had been in some time. While Sherman was marching west, medical officers in Chattanooga were preparing for the battle they knew would come, laying in new supplies and readying hospital buildings in anticipation of as many as 5,000 casualties.

During the battle to lift the siege of Chattanooga in late November, by which time Maj. Gen. George H. Thomas had replaced Rosecrans, ambulances were able to come closer to the battlefield than before because the terrain tended to shield them from enemy fire. The 60,000-man Union force was victorious, and it was now the enemy who fled. Ambulance trains could function effectively, and there was no need to move field hospitals repeatedly. Tents were still scarce within the city, but lumber from nearby buildings was used to make temporary shelters and new bunks. With few exceptions, all casualties were soon "comfortably housed."[53]

[51]Quote from *MSH* 1, app.:288; Huston, *Sinews*, p. 233; USSC, *Sanitary Memoirs*, pp. 60–61.

[52]USSC, *Sanitary Memoirs*, pp. 16, 60–61; Ltr, Shumard to Hammond (1 Oct 1863), RG 112, entry 12.

[53]Quote from *MSH* 1, app.:290.

Unfortunately, the crowding of patients, many still debilitated, into hospitals in Chattanooga led to the rapid spread of infection among them. Patients in the division hospitals located for twenty-five days in tents outside the city did not develop gangrene, even when it appeared in a large percentage of amputation stumps in hospitals within the city. The weather made evacuation inadvisable, thus precluding an early end to the overcrowding. It was only in January that trains could again travel to Nashville, carrying the wounded from Chattanooga.[54]

Perin's organization of the Medical Department in Rosecrans' army was not as efficient as that of Letterman, but the basic reason for the suffering of the wounded from exposure, crowding, and deprivation lay not in Perin's management but rather in the nature of the campaign. Supply lines were unusually vulnerable, and the defeat at Chickamauga resulted in a rout and almost complete isolation. Neither the supply situation nor the shortage of beds would have been serious had medicines, food, and hospital stores come in freely and had patients been evacuated as soon as they could be moved.

[54]"Report of Dr. Read," *Sanitary Reporter* 1 (1863):142–43; USSC, *Sanitary Memoirs*, p. 61.

Conclusion

Although Union victories in 1863 in some instances simplified the evacuation and immediate care of the wounded soldier, even success in battle could not eliminate difficulties caused by lack of hospital space, nor could Medical Department attempts to emphasize the importance of what the soldier ate guarantee that diet would receive the serious consideration it deserved from officers commanding troops. The effects of underestimating casualty rates were worsened by the reluctance of commanding officers to complicate the marches and maneuvers of their armies by bringing along many wagons loaded with tents and other department supplies. Large-scale prevention of contagious disease was not yet possible, and the casual attitudes of line officers at all levels undermined attempts to improve the Army's health through greater attention to diet. Further improvement in the Army's health and in the care of the wounded would depend upon greater cooperation between all those responsible either directly or indirectly for the welfare of the Union soldier.

CHAPTER 11

The Civil War in 1864: The Beginning of the End

Under the direction of William Hammond, by 1864 an effective and more elaborate organization had replaced the simple structure characteristic of the Medical Department in the days of Lovell and Lawson. Able administrators ran the various functional and geographic divisions of the Department, and sick and wounded soldiers routinely moved in orderly stages from battlefield to general hospital, where a carefully organized staff, including civilian nurses and cooks, awaited them. The requisite medicines and supplies were usually available at every stage of the evacuation. Serious shortages or delays in the transportation of the wounded continued to occur but chiefly as the inevitable result of the unpredictable nature of battle, of the failure of commanding officers to cooperate in attempts to prevent disease, or of decisions made to enable an army to move swiftly. His very success, however, caused the brilliant and abrasive Hammond to become expendable and therefore vulnerable to the attacks of the many enemies he had made during the course of his short military career.

Hammond's Trial

Apparently never truly aware of his own vulnerability, Hammond was almost to the end convinced that a court-martial would find nothing of which it could convict him. He even pushed aside a final offer by Secretary of War Stanton to let bygones be bygones with an arrogant demand for an apology. Knowing that Hammond had both stepped on many toes and bent many rules, making enemies and providing them with the ammunition they needed to dislodge him from the position of surgeon general, not all of his friends shared his illusions as to the impregnability of his position.[1]

Increasingly determined to remove Hammond, Stanton named Hammond foes not only to the commission that investigated the surgeon general but also to the court that tried him. Although Stanton's responsibility for some of the problems Hammond encountered in planning his defense is not clear, papers needed by the defense apparently disappeared mysteriously, and some of Hammond's most distinguished supporters, after signing a petition in his behalf, later inexplicably denied having done so. The resultant implication of unscrupulous conduct on the part of Hammond or of someone acting in his behalf further blackened his name.[2]

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[1]Strong, *Diary,* pp. 394, 476, quote from p. 394; Blustein, "Hammond," p. 105.

[2]Blustein, "Hammond," p. 105; Strong, *Diary,* pp. 394, 396; Ltr, Hill et al. to "Sir" (1 Jan 1864), Ms C19, NLM; "Statement of the Late Surgeon-General

Hammond was arrested on 17 January 1864, shortly after his return to Washington from Tennessee, and his trial began two days later. The most serious and damaging charge against him maintained that he had exceeded his legal authority when he purchased blankets personally rather than through the medical purveyor and that the blankets were overpriced and of poor quality. Since Hammond was the purveyor's superior, the question of who actually accomplished the purchase might seem trivial, but the potential for graft when the department head purchased directly was not a new issue. During the American Revolution, accusations of impropriety in connection with supply led to the trial of William Shippen. Although in Hammond's case, evidence of personal profit was lacking and the questionable price and quality of the blankets he bought were easily explained by the existence of urgent requirements that could not otherwise be met, the hearts of his judges were not softened. In August he was found guilty on all charges. Sanitary Commission official George Templeton Strong maintained that the surgeon general was convicted of "little more than the technical sin of purchasing supplies too freely," but Hammond was dismissed from the Army and forbidden ever again to hold office in the U.S. government.[3]

Among those concerned with the trial and its verdict, some supported Hammond, but no one actively defended him during his ordeal. Strong proclaimed Stanton to be a man "whose hates are as unscrupulous as they are bitter and dangerous." Others, however, did not share Strong's indignation. One writer of a negative turn of mind accurately but rather unfairly pointed out that in two years Hammond had not succeeded in freeing the Medical Department from its reliance on millions of dollars of charitable donations or in establishing an Army-wide ambulance service, a concept opposed by General in Chief Halleck. At least one of Hammond's contemporaries concluded that it was "painfully certain that the evidence fully sustained the charges presented." When Hammond succeeded in having the conviction reversed in 1879, it was on the grounds that the court was prejudiced and that evidence that had not been admitted cast doubt upon the verdict. Although technically Hammond was guilty of at least one of the charges, it seems obvious that he was doing what was necessary under the circumstances to provide the best care possible for the sick and wounded and that an impartial secretary of war would not have placed formal charges against him. Nevertheless, the net in which Hammond was caught was partly of his own making, the result not of greed but of arrogance.[4]

Barnes' Administration

Since Hammond was arrested in mid-January, the work of the Medical Department for the entire year of 1864 was the responsibility of the man who in August would formally succeed him as surgeon general, Joseph K. Barnes. Barnes was a

of the United States," *Boston Medical and Surgical Journal* 7 (1865):364.

[3]Strong, *Diary,* p. 433, quote from p. 476; Blustein, "Hammond," pp. 12, 106–07; Maxwell, *Sanitary Commission,* p. 240; Ltr, Henry to Bache (21 Aug 1864), Incoming Corresp, A. S. Bache Papers, Smithsonian, Washington, D.C.; H. C. Friend, "Abraham Lincoln and the Court-Martial of Surgeon-General William A. Hammond," *Commercial Law Journal* 62 (1957):74–75.

[4]First quote, Strong, *Diary,* p. 476; second quote, "The Case of Surgeon-General Hammond," *Boston Medical and Surgical Journal* 71 (1865):125; Friend, "Lincoln," pp. 76–78; "United States Sanitary Commission," editorial in *Chicago Medical Examiner* 4 (1865):53–54; Blustein, "Hammond," pp. 109-10.

veteran of the Mexican War who had joined the department in 1840. Although he was one of the medical officers passed over when Hammond became surgeon general, he was by no means the department's senior surgeon. Because of the way in which he came to office, there was little chance that Barnes could please Hammond's supporters, but with the strong backing of the secretary of war and with the guidelines established by his hapless predecessor, Barnes was able to lead the Medical Department successfully through the final year and a half of the war.

Under Barnes, most of those projects closely associated with Hammond, among them the Army Medical Museum, the history of the Medical Department during the Civil War, and, ironically, the Army-wide ambulance corps, went forward without further delay. At the museum, or, in Barnes' words, the "National Pathological Cabinet," specimens were coming in rapidly. The medical illustrators Barnes hired for the history worked in the museum and also went out into the hospitals, where they sketched and painted illustrations of wounds and the effects of hospital gangrene and similar complications. In the summer of 1864, the department added a "photographic bureau" to support the efforts of both the museum and history, and at least one surgeon contributed to the department's endeavor a set of photographs he had made on his own initiative. Late in 1864, experiments in photomicrography began at the museum, where Joseph Janvier Woodward was beginning his work with stains for microscopic specimens. As a result of these efforts, by 1864 the work of the museum was attracting increasing attention, more so, apparently, among foreign physicians than among Americans.[5]

JOSEPH J. WOODWARD. *(Courtesy of National Library of Medicine.)*

When Congress passed the bill creating an Army-wide ambulance service in March 1864, Barnes again reaped the benefits of the crop that Hammond, in this instance with Letterman's aid, had sown. Among the significant features of the new legislation was the prohibition of the use of ambulances for any purpose except the moving of patients and, in an emergency, medical supplies. An officer who used an ambulance for any other purpose was to be reprimanded and, if the offense was re-

[5]First quote, Ltr, Barnes to Thomas Longmore (29 Jan 1864), RG 112, entry 2, 37:32; Brinton, *Memoirs,* pp. 285–87, second quote, p. 284; Ltr, B. F. Palmer to Barnes (8 Sep 1864), RG 112, entry 12; Otis Report, in Lamb, "History," p. 284; "Army Medical Museum," *American Medical Times* 8 (1864):306; Robert S. Henry, *The Armed Forces Institute of Pathology: Its First Century, 1862–1962* (Washington: Office of the Surgeon General, 1964), pp. 34–39.

peated, dismissed from the Army. Rather than giving each regiment a specific number of ambulances, Congress called for the ambulance allowance to vary with the size of the regiment. An infantry regiment of 500 or more men would have three ambulances, a regiment of fewer than 200 only one. In addition to the vehicles assigned to regiments, two ambulances were to accompany each corps headquarters and two army wagons each division ambulance train. Time proved the major flaw in this legislation to be the inadequate number of ambulances.[6]

The basic plan for the ambulance corps was unmistakably Letterman's. The medical director of each corps was, as he had intended, responsible for the ambulance service of that corps. A captain was in direct charge of the corps' ambulances, drivers, and attendants, and he reported to the medical director. A lieutenant commanded the ambulance corps of each division, a second lieutenant that of each brigade, and a sergeant that of each regiment. Three privates worked with each ambulance and one private with each wagon. All men detailed to the ambulance corps were to be examined by a board of medical officers to determine their fitness.[7]

The law of March 1864 strictly forbade line officers to appropriate ambulances for their own use, but no such understanding existed concerning hospital ships. The matter came to a head in September when Maj. Gen. Benjamin F. Butler, who demonstrated a generally high-handed attitude toward the Medical Department, matter-of-factly notified Barnes that he was temporarily taking over two hospital steamers, the only available vessels that would be safe for an oceangoing voyage, to return men from Confederate prisons in Savannah. Butler apparently thought he had Grant's approval of the move, but, upon learning of the takeover, Grant demanded that Butler explain his action. The secretary of war, unreservedly backing his new surgeon general, promptly informed Butler, "this proceeding is irregular, . . . you will please abstain from giving such orders," and added that no vessels were to be removed from Medical Department service without his prior consent.[8]

Other problems Barnes encountered in directing the Medical Department were also similar to those Hammond had faced. Medical officers continued to be frustrated in their efforts to preserve the soldier's health by improving his diet. Fresh vegetables remained scarce in the field and references to scurvy and scorbutic taint remained common in the records of the period despite a slight drop in the frequency with which actual scurvy was reported. Desiccated vegetables, some of which were high in vitamin A, were unpopular. Although, unlike vitamin C, vitamin A could be stored for a relatively long period in the body, by 1864 the vitamin A reserves of some of those who had joined the Army in the preceding three years were apparently seriously depleted, and the incidence of night blindness, the only reliable indicator of a vitamin A deficiency available from Civil War records, was increasing. The campaign to deliver more potatoes, high in vitamin C but relatively low in vitamin A, was apparently more successful than the ef-

[6]Letterman, *Recollections*, p. 178; *WOR*, ser. 3, 4:186-87.

[7]*WOR*, ser. 3, 4:186.

[8]Quote from *WOR*, ser. 1, 42, pt. 3:416; *WOR*, ser. 1, 42, pt. 1:1024, 1064 and pt. 3:416–17, 418, 432, 480; Ltrs, Butler to Stanton (26 Jan 1864) and McDougall to D. T. Van Buren (19 Apr 1864), both in RG 112, entry 12.

fort to induce the men to eat other vegetables in desiccated form.[9]

The probable increase in the incidence of a vitamin A deficiency was not representative of the overall trend in disease under Barnes. In spite of the increase in the number of wounded, the sick and wounded together numbered less than 16 percent of the Army's total strength, and the death rate was declining. In June the report for the preceding twelve months revealed 300,000 fewer cases of disease among white troops than had been reported for the year ending June 1863, with the average soldier sick 2.2 times a year rather than the previous figure of 2.4. The year's only epidemic killed 278 soldiers when yellow fever struck at New Bern, North Carolina, but diseases associated with poor sanitation and hygiene, such as diarrhea and dysentery, were taking a lower toll. The decreasing incidence of typhoid fever suggests that many were immune to it by 1864.[10]

Adding to the complexities of the work of the Medical Department at this time were the wounds and diseases of an increasing number of black soldiers. During the year ending 30 June 1864, almost 190,000 such cases, less than 4 percent of whom were suffering from wounds or other injuries, came to the attention of Army physicians. The disease rate among black troops in 1864 was almost twice that of whites, and their mortality from disease was four times higher. These statistics also indicated that while the rate of disease directly associated with poor sanitation was similar in troops of both races, blacks suffered from scurvy four times as often as their white counterparts, suggesting that they may have received fewer potatoes than the white troops. They developed night blindness, however, only half as often as whites; as relatively new recruits, most probably still had adequate reserves of vitamin A.[11]

The Army was caring for large numbers of newly freed blacks, not only soldiers but civilians as well, especially in the areas of such cities as Vicksburg, Mississippi, and Memphis, Tennessee, where the General Hospital for Freedmen was established for black civilians under the supervision of the medical director of the XVI Corps. Late in 1863, the adjutant general had called for 10 percent of the wages of employed blacks to be paid into a freedman's fund to aid their less fortunate brothers. This order allowed the Army to detail hospital stewards to the freedmen's hospital, paying them $17 to $36 a month from the fund. Army surgeons also worked in these freedmen's institutions. With conditions in refugee camps poor, the death rate among blacks was high, and Barnes opposed burdening the Medical Department with the enormous expenses that involvement with the care of freedmen could entail. In the summer of 1864, the adjutant general rescinded the order that made Medical Department aid possible, a decision that resulted in confusion and a certain amount of despair among the Army surgeons affected by it. Barnes' objection to aiding blacks, however, was presumably based on the enormity of the challenge rather than any objection on principle to aiding civilians, since early in the year he had shown no reluctance in expanding one Army smallpox hospital in Washington and opening

[9] *MSH* 1, pt. 1:455; *WOR*, ser. 1, 36, pt. 1:221, 255 and ser. 2, 4:481; "A Word to Aid Societies" and John E. Summers, "Testimony of Lieut. Col. Summers, Medical Inspector, U.S.A.," both in *Sanitary Commission Bulletin* 3:673–74 and 683, respectively.

[10] *MSH* 1, pt. 1:297, 300–301, 453, 456–57; SGO, *Annual Report*, 1864, pp. 4–5, and 1865, p. 6.

[11] *MSH* 1, pt. 1:300–301, 456–57, 665, 669 and pt. 3:6; Grace, *Manual*, p. 171.

another in Alexandria in order to take in civilian victims of that dread disease.[12]

By June 1864, the 190 general hospitals that sheltered most of the sick and wounded soldiers, both black and white, had more than 120,000 beds, a figure that again reflected an expansion of old facilities as well as the creation of new ones. Included among the latter were general hospitals established for the exclusive use of officers, one in each geographical department. The Medical Department still tended to return general hospital patients to institutions near their homes, sometimes apparently even to civil hospitals, especially when their period of disability would be long and the distance involved not too great. A desire to enable patients to vote in the upcoming presidential election reinforced this tendency in the summer and fall. The department also paid insane asylums for temporary housing for military patients, but in this instance, rather than sending patients to hospitals near their homes, it moved any whose illness was likely to be prolonged back to Washington and its government-run asylum.[13]

Although no buildings had to be constructed to create the new officers' hospitals, after July 1864 any new hospital construction that did occur had to follow the pavilion pattern originally favored by Hammond. Ventilation was an important consideration in new buildings, where each sixty-patient ward had to be separate from the others. Even so, the number of cases of hospital gangrene and similar infections was climbing and military surgeons still preferred to have their patients in small field hospitals where rates of infection were relatively low.[14]

Stanton's willingness to support the man he had chosen to be surgeon general led to the resolution of an old problem concerning the control of general hospitals. In December and at Barnes' urging, Stanton ruled that general hospitals were under the exclusive control of the surgeon general and that medical officers serving in these facilities, whether regulars or volunteers, were not subject to orders from local commanding officers. Within these institutions, medical officers had all the authority of commanding officers and were to be obeyed as such. Stanton did note, however, that although members of the Veterans Reserve Corps could still be used as guards and attendants, doctors were under no circumstances to retain able-bodied men in hospitals.[15]

In the fiscal year ending June 1864, the expense of hiring the contract doctors who formed most of the professional staff of general hospitals constituted roughly one-ninth of the department's budget. The decline in the total number of patients for

[12]Ltr, D. O. McCord to SG (with notes by Barnes and Eaton, 15 Sep 1864), SO (no. 94, 5 Nov 1863), and Ltr, Charles Lee to D. O. McCord (with note by McCord, 31 Oct 1864), all in RG 112, entry 12; Ltr, Barnes to Owen Lovejoy (13 Jan 1864), RG 112, entry 2, 36:535; George R. Bently, *A History of the Freedmen's Bureau* (Philadelphia: University of Pennsylvania, 1955), pp. 26–27.

[13]*WOR*, ser. 3, 4:207, 791; Ltrs, William C. Spencer to W. P. Jones (5 Jan 1864) and Barnes to Lovejoy (13 Jan 1864), to W. G. Sellick (30 Jun 1864), and to J. P. Gery et al. (22 Nov 1864), all in RG 112, entry 2, 36:498, 535 and 38:9 and 576–77, respectively; Shumard to L. G. Burbridge (31 Jul 1864), Herrick to Provost Marshal General (21 Nov 1864), and McDougall to Barnes (25 and 27 Jun 1864), all in RG 112, entry 12; "Army Medical Intelligence: Circular Letter," *American Medical Times* 8 (1864):226–27.

[14]*MSH* 2, pt. 3:825; Grace, *Manual*, pp. 204–07; E. Andrews, G. S. Hubbard, and R. H. Gilbert, "Report of the Committee on Military Hygiene," *Transactions of the American Medical Association* 15 (1864):171; *Armory Square Hospital Gazette* (Washington: 24 Dec 1864), p. 4.

[15]Grace, *Manual*, p. 103; "Surgeons in Charge of Hospitals as Military Commanders," *American Medical Times* 8 (1864):175; Cir Ltr (31 Dec 1864), Ms C24, NLM.

whom the Medical Department was responsible apparently led Barnes to reduce the number of contract physicians in January. In June, however, the medical director of Baltimore's general hospitals informed Barnes that he had hired a "large increase of Contract Surgeons and Nurses" and that $15,000 would be needed each month to pay the former and another $5,000 for the latter. With new casualties resulting from the start of the campaign season, Barnes was finding it difficult to locate an adequate number of able private physicians willing to take the required examination. By the end of the year, the overall shortage of physicians had become sufficiently severe to cause the surgeon general to mount an aggressive campaign to persuade former volunteer surgeons to sign up again and to advertise for men to fill openings in the regular staff as well.[16]

Having concluded early in the year that the department had more stewards than necessary, by December Barnes had decided to reduce the department's expenses by limiting the hiring of stewards to those who would be serving black regiments, even though medical officers still experienced occasional difficulties in obtaining stewards when they needed them. Further economies were achieved by reducing the salaries of white female nurses to 40¢ a day, even when white male nurses and cooks were still being paid $24 a month. The salaries of these contract employees were not always paid promptly, for on at least one occasion Barnes was forced to complain that late payments had caused "very great distress and destitution amongst the Employees."[17]

Although because of the lowered disease rate, the overall number of patients admitted to Army hospitals was dwindling, the drive to crush Confederate resistance continued to produce many wounded. Managing supply and the network of hospitals involved was complex. In May the department moved the office of the assistant surgeon general, Robert C. Wood, to Louisville, Kentucky, where he could more effectively oversee the assignment of surgeons and patients and the distribution of supplies in that part of the country. Despite the demands of the war, however, Stanton had apparently concluded that the department's network of medical inspectors could handle their responsibilities without the aid of Sanitary Commission inspectors. He refused to continue allowing the commission to send its own men into the field, enraging Sanitary Commission leader Strong, who maintained that "the corps of government inspectors [had] notoriously proved a nullity."[18]

The refusal to continue the Sanitary Commission's right to inspect hospitals and camps at the end of 1864 represented a general deterioration in its relationship with the Medical Department after Hammond lost control of the Surgeon General's Office. In the spring the secretary of war for a time even refused to issue the passes

[16]Quote from Ltr, C. C. Cox to Barnes (15 Jun 1864), RG 112, entry 12; Ltrs, Charles Crane to Sargent (9 Jan 1864) and C. C. Lee to J. L. Thompson (8 Aug 1864) and Advertisements (21 Sep and 29 Nov 1864), all in RG 112, entry 2, 36:519 and 38:116, 275, and 556–59, respectively; Ltrs, McDougall to Barnes (18 and 23 Apr and 21 May 1864), all in RG 112, entry 12.

[17]Quote from Ltr, Barnes to George Harrington (23 Sep 1864), RG 112, entry 2, 38:283; *WOR*, ser. 3, 4:512; Grace, *Manual*, pp. 98-99, 198, 203–204; Stimson and Thompson, "Women Nurses," p. 230; Ltrs, McDougall to Barnes (7 Jul 1864) and McParlin to Barnes (20 Jun 1864), both in RG 112, entry 12; Ltr, Crane to T. P. Drew (13 Jan 1864), RG 112, entry 2, 36:536.

[18]Quote from Strong, *Diary*, p. 521; *WOR*, ser. 3, 4:287; Ltr, Crane to J. Foster Jenkins (21 Nov 1864), RG 112, entry 2, 38:523.

commission representatives needed to move freely in the area where the Army of the Potomac was operating, making it impossible for them to deliver supplies during the battles of the Wilderness and Spotsylvania. Stanton also denied the Sanitary Commission the right to use the adjutant general's records in compiling its directory of Army patients and their locations. The Sanitary Commission, like Hammond, was no longer completely indispensable.[19]

The very fact that the Medical Department could now afford to be high-handed in its relationship with the Sanitary Commission suggests the strength of Barnes' position. Barnes' path had been well prepared by Hammond, who had created the department's administrative framework and had placed experienced men to function within it. Secretary of War Stanton was apparently quite willing to support Barnes against practically all comers. Because of the drop in the disease rate, the number of patients was dwindling, and the only real stress upon the department resulted from the demands of an aggressively waged campaign.

Medical Care of Forces in Virginia

In the spring of 1864, Union forces launched two major drives against the Confederacy, one in Virginia and the other in Georgia. Units in Virginia fought directly under Grant, now in command of the entire Union Army. Major General George G. Meade's Army of the Potomac and Maj. Gen. Ambrose E. Burnside's independent IX Corps formed a 120,000-man force aided in the East by Butler's 33,000-man Army of the James and by various other units. During this final year of the war, however, the medical care of the Union's principal army in northern Virginia was no longer the responsibility of Jonathan Letterman, who asked to be relieved early in the year. The preparation of the Medical Department in the Army of the Potomac for the forthcoming campaign was, beginning in early 1864, in the hands of Thomas McParlin.[20]

The health of the Army of the Potomac at its camp along the Rapidan River during the first months of 1864 was relatively good. With the weather unusually cold, most of those who were sick suffered from respiratory infections, although venereal disease took a heavy toll among veterans returning from furlough. McParlin had the army vaccinated when smallpox appeared, and when he detected signs of scurvy in the form of a scorbutic taint, he urged commissaries and medical officers to make sure that a proper diet was available. By 1 May he was convinced that the men were "well sheltered, well fed, and well clothed, refreshed by a long rest, and visits to home and friends, and full of confidence in their cause and in its leaders . . . as nearly perfect in its health, strength, and morale as it is possible in so large a body of troops."[21]

Once the campaign was underway, however, malaria and digestive complaints began to haunt the Army of the Potomac. More patients suffered from these problems than from gunshot wounds. It is likely that many of those with other diseases had malaria as well—McParlin commented that he had observed a periodicity, or reg-

[19]Maxwell, *Sanitary Commission*, pp. 263, 266, 311–13.

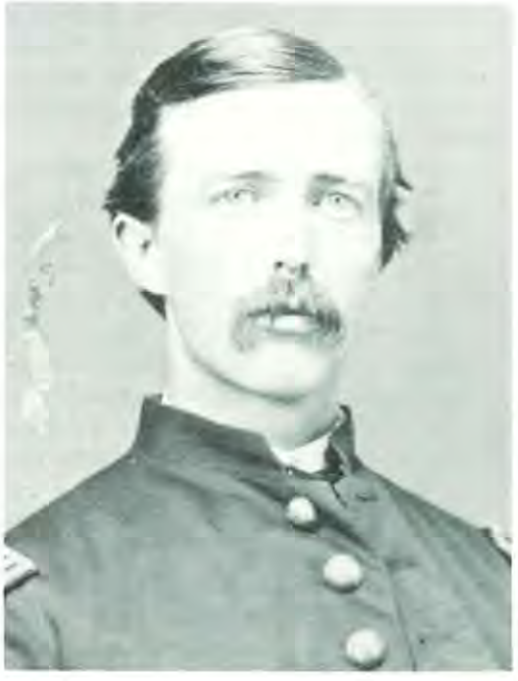
[20]Letterman, *Recollections*, p. 185. Unless otherwise indicated, material on the Army of the Potomac is based on *WOR*, ser. 1, 36, pt. 1:210–75, and *MSH* 1, pt. 1, app.:148–211.

[21]Quote from *WOR*, ser. 1, 36, pt. 1:213; Letterman, *Recollections*, pp. 183–84; Perry, *Letters*, pp. 155–56; "Army of the Potomac," *American Medical Times* 8 (1864):189.

ularly repeating pattern, of fever in most of his sick during the campaign. The quinine doled out at sick call was undoubtedly vitally important to the fighting ability of Union forces in Virginia.

Caring for the sick and wounded under McParlin at any one time were from 500 to 800 medical officers, among them an assistant medical director, two inspectors, and a medical purveyor and his assistant. McParlin assigned an assistant surgeon, John S. Billings, the principal responsibility for the collection of statistics, a challenge made more difficult by the fact that the medical staff was not large enough to guarantee the keeping of adequate records during those periods when battle was raging. Billings nevertheless took to his new assignment with enthusiasm. On 30 April he wrote to his wife that he was being sent "a barrel of whiskey . . . with which to preserve surgical specimens and immediately after the next battle, I expect to send enough pickled arms and legs to the surgeon general to make a museum of themselves."[22]

In April Meade named the specific surgeons who were to serve as surgeons in chief at the brigade and division levels, a move that lessened the influence of commanding officers who would otherwise have appointed their own chief surgeons. An average of from forty to sixty nonmedical officers served in the ambulance corps for the Army of the Potomac, supervising the work of 1,300 or more enlisted soldiers manning approximately 600 ambulances. Forty or more stewards worked in the corps hospitals.[23]



JOHN SHAW BILLINGS. *(Courtesy of National Library of Medicine.)*

When McParlin first took over from Letterman, he relied upon regimental hospitals to care for those who fell ill, but in February he also organized division hospitals for the sickest of his patients. The organization of the division hospital in the Army of the Potomac varied, but a surgeon in chief was routinely in charge, while a recorder, three operating surgeons, each with two assistants, and a medical officer responsible for food and shelter worked under him. The surgeon in chief, as one of the most experienced physicians on the staff, was usually a member of the operating team at the division hospital, where almost all surgery was performed. With division hospitals grouped together by corps, this system made it easier for the corps medical director to contact his immediate

[22]Quote from Garrison, *Billings*, p. 76; Duncan, "The Battle of the Wilderness," in *Medical Department*, pt. 9, p. 18.

[23]Duncan, *Medical Department*, pt. 9, p. 18.

subordinates. The absence of the division's chief surgeon from the battlefield was keenly felt, however, since he was needed to enforce discipline and order among the surgeons there.

In some division hospitals during battle, musicians managed the pitching and striking of tents, loading and unloading of the wounded, carrying of water and wood, burying of the dead, and policing of the hospital area. In one such facility, the 350 men and boys of the drum corps were organized into five companies, each led by a sergeant, and the whole commanded by a lieutenant. A provost's guard usually enforced discipline.

Although McParlin had thoroughly prepared for patient care, hospitalization, and evacuation, he made no attempt to provide cavalry units with ambulances. He believed that mounted men moved too fast and covered distances too great for hospital and ambulance trains to accompany them. After a cavalry engagement, surgeons appropriated nearby buildings and attempted to supply their patients by raids upon local resources.

McParlin was not initially responsible for the condition of the Medical Department in Burnside's IX Corps, which had left Annapolis at the end of April in great haste with inadequate transport and little room for medical supplies. The requisite number of ambulances moved with Burnside, but many needed repairs. The ambulance organization required by the legislation of March, furthermore, had not been fully implemented in Burnside's force. Most of the required stretchers were missing, and the civilians hired to drive the ambulances deserted in droves early in the campaign. When Grant ordered Burnside's corps officially added to the Army of the Potomac on 25 May, McParlin found that it was not only still badly in need of transport, but "badly supplied and organized" as well.[24]

Despite his careful planning, factors beyond McParlin's control threw continual challenges his way. Recognizing that the army must move swiftly, he sent all his sick and wounded as well as all property he considered unnecessary to the rear before the campaign started, but on 4 May Grant allowed only half the remaining ambulances to cross the Rapidan River with the troops. Since the number of these vehicles permitted to accompany the army still exceeded the legally required minimum, Grant apparently did not anticipate the difficulties that resulted from his order. McParlin was not profligate in his use of ambulances and was careful not to take chances with those that accompanied him, allowing only a limited number to be exposed to fire at any one time, but events proved that the number of ambulances allowed by Congress was far too small for the aggressive campaign Grant waged.

During the battle of the Wilderness that followed the crossing of the Rapidan, the removal of the disabled to ambulances proved unusually difficult. Dense scrub hid the injured, and fires raged in the dry brush and pine, burning or suffocating men too badly hurt to escape unaided, while the enemy inhibited rescue attempts by firing at every movement. Despite their bravery, stretcher-bearers were unable to remove all of the almost 9,000 wounded from the field. As many as 200 died from the effects of the flames alone. Grant could not wait for these casualties to be brought back to safety, nor for them to be removed back along the chain of evacuation in the usual, rather leisurely manner. On 7 May, Meade ordered all his wounded sent back to Wash-

[24]Quote from Ltr, McParlin to Barnes (30 May 1864), RG 112, entry 12.

ington at once. More than 300 army wagons had to join almost 500 ambulances in attempting to execute the command, and more than 1,000 men were unavoidably left behind. The next day, fearing that guerrillas might capture them if they went directly to Washington, Meade ordered that casualties be taken instead to Fredericksburg. Because of the change of plans the wounded spent thirty hours on the road, and evacuation vehicles were late returning to pick up the casualties from the battle that started at Spotsylvania on 8 May.[25]

The ambulance corps took two weeks to remove all who had been left behind at the Wilderness. A large number died while waiting. Their wounds were severe, and the supplies left for them proved inadequate after stragglers came out of the woods to share them. Casualties returned from captivity by the Confederates were also suffering from the same shortages that afflicted Lee's forces as the result of a successful Union cavalry raid that destroyed most of their medical supplies.[26]

Although they had not completed their count of the casualties from the Wilderness when Union and Confederate forces met again at Spotsylvania, after yet another day of battle, surgeons were struggling to care for over 9,000 more wounded. Few physicians remained in the field by this time, however, and McParlin's plans had been based on the assumption that patients would be evacuated from field hospital to general hospital before many had accumulated. But large numbers were held at depot facilities at Fredericksburg because Confederate guerrillas had cut the rail line to Aquia and were suspected of having mined the Rappahannock River. Because many of the surgeons accompanying the wounded to Fredericksburg had to stay there to care for them, medical officers remaining in the field were overworked and exhausted.[27]

Both confusion and delay characterized the evacuation of the Spotsylvania casualties because ambulances were still busy removing the wounded from the Wilderness. In addition, the wounded on the battlefield were too numerous for the available stretcher-bearers to handle. Two to four healthy soldiers could often be seen escorting a severely wounded comrade to safety. Meade again ordered all available vehicles, regardless of type, made ready to remove the wounded. On 10 May the ambulances finally returned from Fredericksburg, but both horses and attendants were worn out. Since renewed action was expected, Meade had ambulances and spring wagons (highly regarded as substitutes for ambulances) retained at the front and those of the wounded not yet removed to Fredericksburg sent off in returning supply wagons.[28]

The night of 11 May was dark and wet, but despite the exhaustion of men and beasts and the poor condition of the roads, the evacuation twelve miles back to Fredericksburg continued. Medical inspectors supervised the move of another 3,500 casualties on 12 May alone. The proportion of severely wounded among them was so high that fewer than a quarter of the injured could move themselves. Once again the lack of transportation prevented the prompt removal of many, and it was not until the 15th that 600 who had been left

[25]"Fredericksburg Correspondence," *Sanitary Reporter* 2 (1864):18; Ulysses S. Grant, *Personal Memoirs*, ed. E. B. Long, 2 (New York: Charles L. Webster & Co., 1866):290; USSC, *Documents* 2, no. 76:1–2.

[26]Grant, *Memoirs* 2:227; Duncan, *Medical Department*, pt. 9, pp. 19–20.

[27]Ltr, McParlin to Barnes (10 May 1864), RG 112, entry 12.

[28]Grant, *Memoirs* 2:290.

behind earlier were picked up for the trip to Fredericksburg. The next day McParlin estimated that 18,500 patients had already gone through his field hospitals.[29]

On 19 May, McParlin had to order vehicles collected from other units for the use of newly arrived artillery regiments that had brought with them neither medicines and supplies nor transportation for their wounded. His surgeons assisted the artillery's medical officers in chosing men for their ambulance corps and advised them concerning the Medical Department's routine in caring for the sick and wounded, both on the march and during battle.

The sick and wounded were not McParlin's only concern in the early weeks of the campaign. Malingerers by the thousands became a problem for him as they had been for Tripler and Letterman. Some appeared to have inflicted their own wounds. According to McParlin, they tended to present themselves not to military surgeons but to Sanitary Commission doctors, who could be more easily impressed by "bloody bandages and judicious limping." Malingerers added to the confusion at Fredericksburg, where the establishment of a large depot hospital system on short notice left McParlin with no chance to stockpile supplies for the 26,000 casualties who would eventually pass through that city.[30]

Initially supplies could come into Fredericksburg and patients could leave only through Belle Plain, on the Potomac River. The harbor there was shallow and, until the engineers intervened, had no wharf. The road from Fredericksburg to Belle Plain, furthermore, could be attacked by guerrillas. As a result, supplies did not reach Fredericksburg until 10 May. The first twenty ambulances sent in to supplement those already with Meade's army arrived at Belle Plain on the 11th, when Sanitary and Christian Commission supplies also began coming in. To expedite food delivery to the hospitals, Meade assigned a lieutenant to each division facility to assume responsibility for hospital subsistence.[31]

In Fredericksburg enlisted patients occupied the usual churches and public buildings, although medical officers tried to locate the hospitals of each corps near one another. Wounded officers initially stayed in private homes where the owners cared for them. Facilities in Fredericksburg soon became crowded and infection took a heavy toll despite generally adequate ventilation and a good water supply. Near the end of the month, however, tents began to arrive, and doctors could move their patients out of doors, where infection spread less rapidly. At this time, the Medical Department also established an officers' hospital at Fredericksburg.[32]

Because medical officers were required both at the front and in Fredericksburg, too few surgeons were available to meet the need at either place. On 9 May, for example, only thirty physicians were caring for 7,000 patients in Fredericksburg. On 8 May, therefore, Barnes put out a call to the surgeons general of Pennsylvania, New York, and Massachusetts for ten surgeons each for ten days' service, broadening the call three days later to include other states in a request for five more physicians each.

[29]Grant, *Memoirs* 2:237; Ltrs, McParlin to Barnes (13 and 16 May 1864), RG 112, entry 12.

[30]Quote from *WOR*, ser. 1, 36, pt. 1:235.

[31]Brinton, *Memoirs*, pp. 268–70; Maxwell, *Sanitary Commission*, p. 251; William Howell Reed, *Hospital Life in the Army of the Potomac* (Boston: William V. Spencer, 1866), pp. 13–14; Ltrs, Brinton to Barnes (two of 10 May, one each of 11 and 12 May 1864) and SO (16 May 1864), all in RG 112, entry 12.

[32]Ltr, McParlin to Barnes (22 May 1864), RG 112, entry 12.

Among the professional men to come to Fredericksburg was dentist William T. G. Morton, one of the developers of ether anesthesia, who, according to Joseph Janvier Woodward, anesthetized as many as 100 patients a day. Although the help of these civilians was invaluable, they also contributed to the confusion because of their unfamiliarity with Army routine.[33]

The road from Fredericksburg to Belle Plain was rough, the weather wet, and the confusion at the depot great. No facilities for the injured existed at Belle Plain. Since the wounded suffered greatly when moved any distance in ambulances and wagons, McParlin decided to keep the seriously wounded in Fredericksburg until the rail line to Aquia had been repaired and gunboats had cleared the Rappahannock. By 14 May the situation at Belle Plain had improved, and supply was "profuse," but 8,000 wounded remained at Fredericksburg. With the river and railroad clear, McParlin had all those whose condition would keep them out of action for more than a month evacuated to Washington. By 22 May fewer than 6,000 remained in Fredericksburg facilities.[34]

Days before the last of the wounded left Fredericksburg on 28 May, Meade had ordered the next depot for the advancing army established downstream at Port Royal. On 25 May he had the sick and wounded still with the army sent there, once again using wagons to the extent possible to spare ambulances for work nearer the battlefield. The Medical Department, however, had not had time to prepare for the arrival of patients at Port Royal, and although it was raining when the first ones arrived, doctors had to leave them in their vehicles until the next day. Within a few days the army had advanced too far beyond Port Royal to use it as a base. On 30 May, even while boats were still removing patients from Port Royal, the Medical Department was beginning to set up tents at White House.[35]

From 23 to 31 May the Army of the Potomac moved south toward Richmond and then east around that city toward Petersburg. Early engagements resulted in fewer than 2,800 injured, but in early June the battle of Cold Harbor accounted for almost 7,000 wounded. In addition, many who were sick rather than injured also had to be evacuated. For more than a month, the men's rations had included no vegetables. Scurvy was appearing among soldiers already suffering from malaria and, with sanitation in the trenches poor, bowel complaints as well. Only after mid-June did shipments of the new crops of vegetables begin to arrive for Grant's men, including a large supply for the depot at White House. By then, however, thousands of the seriously ill and wounded had left White House for general hospitals to the north.[36]

Although surgeons returning from their duties at Fredericksburg eventually relieved the shortage of physicians with the Army of the Potomac, transportation for the wounded remained inadequate, even after the arrival of forty-eight new ambulances and eight medicine wagons that

[33]Woodward, *Outlines,* pp. 151–52; Ltrs, Barnes to various SGs (8, 11, and 12 May 1864), all in RG 112, entry 2, 37:403, 419, and 420, respectively.

[34]Quote from Cuyler to Crane (14 May 1864), RG 112, entry 12; Reed, *Hospital Life,* pp. 15–16, 41; Ltrs, Cuyler to Barnes (13 May 1864) and McParlin to Barnes (20 and 24 May 1864), all in RG 112, entry 12.

[35]Reed, *Hospital Life,* pp. 47–48; Ltrs, McParlin to Dalton (27 May 1864), in Edward Barry Dalton, Correspondence, Documents, and Certificates Pertaining to Dalton's Medical Career, 1861–72, Ms fB29, NLM; Ltr, McParlin to Barnes (24 May 1864), RG 112, entry 12.

[36]Grant, *Memoirs* 2:290; *WOR,* ser. 1, 36, pt. 1:188.

JOHN BRINTON *(center, seated)* AND HOSPITAL ATTENDANTS *at Petersburg. (Courtesy of Library of Congress.)*

could also be used to move the sick and wounded. A corps from Butler's Army of the James joining the Army of the Potomac in time for Cold Harbor caused further difficulties by bringing with it only eighteen ambulances and no tents. Surgeons from another unit had to aid the doctors with Butler's men during the battle. Once again after Cold Harbor, because of the shortage of transportation, two or three able-bodied men could be seen escorting a single wounded companion from the front to the hospital.[37]

At the White House depot, surgeons attempted to load the patients from Cold Harbor onto hospital boats for evacuation as soon as they had received emergency care and had been screened to eliminate malingerers. The Quartermaster's Department worked closely with the Medical Department in this endeavor, but casualties were soon coming in as fast as they could be sent off. Medical officers shipped almost 1,300 patients north on 2 June alone, but on 4 June, when they sent off a similar number, 1,460 still remained at the White House depot, and McParlin was forced to turn to the Sanitary Commission to supplement his nursing force.

In mid-June, the Army of the Potomac resumed its movement to the south, and once again the ambulances following it

[37]Reed, *Hospital Life,* pp. 54–55.

GENERAL HOSPITAL FOR ARMY OF THE POTOMAC *at City Point, Virginia. (Courtesy of Massachusetts Commandery Military Order of the Loyal Legion and the U.S. Army Military History Institute.)*

were soon filled with the sick, many suffering from heat stroke. By 17 June field hospitals sheltered almost 1,900 sick and wounded. By the next day, however, surgeons had established a new depot facility at City Point, on the south bank of the James northeast of Petersburg, and four days later White House stood abandoned.[38]

Although the siege of Petersburg eased the difficulties caused by the rapid movement of Grant's army, the wounded continued to come in, especially after the battle of the Crater on 30 June. Problems resulting from poor sanitation and disease increased. In the heat of July the disease rate was twice the May average of 2.3 percent. Swarms of flies led McParlin to order mosquito nets for his patients. When the weather was dry, dust filled the tents where the sick and wounded lay, but when it rained, stagnant pools became so numerous that McParlin urged greater attention to drainage. Approximately 40,000 new recruits unfamiliar with the necessity for sanitation reinforced Grant's force in the course of the campaign of 1864, a fact that may explain why soldiers were once again relieving themselves wherever they were, ignoring latrines. Typhoid fever as well as diarrhea and malaria, diseases that together caused more than half of the hospitalizations in the last six months of the year, became a greater danger to the Army

[38]Order (McParlin's copy, 15 Jun 1864), RG 112, entry 12.

of the Potomac than the Confederate soldiers besieged in Petersburg.[39]

The length of the siege required modifications in the way in which hospitalization was managed. When Grant's force took up its position outside the city, regimental surgeons established themselves within several hundred yards of the trenches, near ambulance stations, and McParlin kept division hospitals in tents. As winter approached, however, he had fifty- by twenty-foot log structures erected to shelter his patients from the cold. Most of the sick remained in these division hospitals, but when they became overcrowded, medical officers sent some of their patients back by train to the depot at City Point.[40]

The City Point depot covered an area of several hundred acres and contained five corps hospitals. A hospital at Point of Rocks, six miles up the Appomattox River, apparently sheltered Butler's remaining sick and wounded, but one of the City Point facilities was set aside for the black troops from Butler's command. Although not all reports agree, in the summer these institutions may have been able to house as many as 10,000 patients, but in the colder months, when pavilions replaced many of the tents, their population was probably less than 6,000. Despite much initial confusion, the huge facility was soon operating smoothly, with a steam laundry and two steam engines keeping a 6,000-gallon tank filled with river water for bathing and washing, while dug wells provided drinking water. A rail line went through the center of the depot so that patients could be taken from the cars directly to their beds, without the use of ambulances. Although opponents of the practice pointed out that the use of convalescents as hospital attendants was harmful to their health, these men handled many of the duties at the City Point hospitals, including nursing and police. They apparently worked with great goodwill, since accounts of the period mention decorations put up by nurses and wardmasters to make hospital rooms more cheerful. Blacks within the lines were ordered to duty as laundresses and cooks, while stragglers and suspected malingerers might also be put to work. Special-diet kitchens were often run by women who, in McParlin's opinion, "were of much more use [there] than when employed as nurses in wards."[41]

Once again sending patients out and bringing supplies in was at first difficult. Piers were crowded, but temporary ponton wharves, including one for the Medical Department's exclusive use, were soon in place. Shallow draft vessels could come directly to these wharves, leaving only deep draft boats to be unloaded by lighter. Severely wounded patients could then be quickly evacuated north. McParlin stored medical supplies that were temporarily unneeded in barges so as to free wagons for other uses. Although wagon traffic kept the area dusty in dry weather, as soon as an adequate pumping system had been installed, water was available for spraying on the dust to lay it. During periods of rain, however, the entire area still became a quagmire. When rain fell during an attempt to move a hospital that had proved to be both inadequate and badly located,

[39]Grant, *Memoirs* 2:239–89.

[40]Reed, *Hospital Life*, p. 94.

[41]Quote from *MSH* 1, pt. 1, app.:165; Reed, *Hospital Life*, pp. 94–95; Huston, *Sinews*, pp. 227, 230; Adelaide W. Smith, *Reminiscences of an Army Nurse During the Civil War* (New York: Greaves Publishing Co., 1911), pp. 80–81; "City Point: From Dr. McDonald," USSC, *Sanitary Bulletin* 2:812; GO, Butler (no. 161, USSC Bull, 6 Dec 1864), RG 112, entry 12.

the effort became an ordeal of mired ambulances and exhausted men and horses.[42]

The management of the wounded was more than ordinarily difficult for units that for one reason or another temporarily left the immediate Petersburg area, usually in attempts to cut enemy supply lines. In one such instance, the II Corps moved to the north of the James River, sending its sick on to City Point before the move. Twenty ambulances followed each division of the corps as it marched to pick up the many men who became too exhausted in the July heat to continue on their own. Surgeons established a temporary hospital on the north bank near the ponton bridge by which the troops had crossed and a regular field hospital on the south bank, from which patients were taken to City Point. During a similar but longer-lived operation, malaria became such a problem that surgeons had ditches dug around hospital sites to improve drainage and issued whiskey and quinine prophylactically for a brief period. Whenever possible they took over houses for use as hospitals and sent the sick back to City Point each time a move was necessary.

As the weather turned cold, medical officers with these expeditions found themselves confronting the effects of cold weather and exposure upon men who had impatiently discarded heavier clothing and blankets during a warm spell. When rain and sleet accompanied the arrival of very cold weather, the rate of respiratory disease climbed among those who were forced to use temporary and inadequate shelter. To meet the needs of units leaving the immediate vicinity of Petersburg, medical officers in one corps set up what they called a flying hospital, which consisted of a medicine wagon, a hospital wagon, and half the number of ambulances allowed each brigade involved.

Grant's 1864 campaign took a heavy toll among members of the Medical Department of the Army of the Potomac, especially among the men of the ambulance corps. From 1 May through 31 July alone, one medical officer and ten men from the ambulance corps were killed in action. Five surgeons, three hospital stewards, and sixty-five members of the ambulance corps were wounded in the first three months of the campaign in eastern Virginia.

In striking contrast to Grant's energetic campaign was that of Butler and his Army of the James, which never got farther than the junction of the James and Appomattox rivers despite the fact that Lee was at first totally unprepared to meet an attack from this source. Like the Army of the Potomac, Butler's army moved initially with a bare minimum of medical supplies, ambulances, and the like, leaving its sick behind in hospitals in the Hampton-Portsmouth-Fort Monroe area. A steamer served as a storeship and as a shelter for the wounded. Several other smaller vessels took casualties back to Fort Monroe as soon as they could be moved. One corps soon established a permanent hospital at Point of Rocks, and the others followed its example soon thereafter. Because Butler got no further than Bermuda Hundred, however, his medical officers never faced the problems with evacuation and hospitalization that plagued their counterparts with Grant in May and June.[43]

Units fighting in western Virginia and Maryland experienced little success until they were consolidated under Maj. Gen.

[42]Ltr, McParlin to Barnes (24 Jun 1864), RG 112, entry 12.

[43]Ltrs, McCormick to Barnes (3, 5, 11, 18, and 20 May 1864) and McClellan to Barnes (14 May 1864), all in RG 112, entry 12.

GENERAL HOSPITAL AT POINT OF ROCKS, VIRGINIA. *(Courtesy of Library of Congress.)*

Philip H. Sheridan's command. Their setbacks resulted in the capture of many of their wounded. Sheridan's medical director, James Ghiselin, was forced to put together a medical organization more or less from scratch, but using Letterman's plan as his guide, he successfully created both a medical team and a network of hospitals. The surgeon general cooperated promptly with requests for supplies and more surgeons to man facilities established in Winchester. In so doing, Barnes made it possible for Ghiselin to avoid the difficulties McParlin experienced during the battle for Spotsylvania, when his surgeons were spread thin trying to care for patients both in Fredericksburg and near the battlefield at the same time.

Although the pattern of care and evacuation was generally similar to that of the forces facing Lee in eastern Virginia, the shortage of ambulances here was less serious. It led to delays in retrieving the 4,000 wounded after the battle for Winchester, but the use of army wagons to supplement ambulances enabled the latter to remain with the army as it advanced. Most of the more than 10,000 wounded from 20 August to 31 October moved smoothly and quickly from field hospitals to depot facilities and thence by hospital train to general hospitals in Philadelphia, York, Wilmington, and Baltimore. In the course of caring for them, however, one surgeon was killed and three more died of their wounds, while two others were hurt but survived. The only major crisis, a temporary lack of food for hospitalized patients caused by Con-

federate guerrilla activity, was quickly resolved by the commanding general's decisive action in ordering rations intended for troops in the field diverted to hospitals.[44]

Medical officers serving in Virginia in 1864 faced a variety of challenges, most of which arose from the fast-paced nature of Grant's campaign. His rapid moves against Lee in the spring and early summer complicated evacuation and hospitalization and emphasized the need for a larger ambulance allowance for aggressively waged campaigns. The siege of Petersburg, on the other hand, brought with it all of the difficulties involved in keeping standards of sanitation high among troops camped long in one area. In western Virginia, the medical director of Sheridan's new army grappled with the problems that arose from the hasty creation of an army from a hodgepodge of units with varying standards of medical care. Surgeons could not meet all of these challenges with complete success, yet even in the face of partial or temporary failure, they managed to function in a rational, disciplined manner to limit the suffering of the sick and wounded.

JAMES T. GHISELIN. *(Courtesy of National Library of Medicine.)*

Sherman's Campaign in Georgia

The second major campaign of 1864 was that led by Maj. Gen. William Tecumseh Sherman, under whose command three armies that had been fighting west of the Appalachians were consolidated to take Atlanta and then to push on to the coast. Sherman, like Grant, launched his campaign on 4 May, but the distance to be covered was great and, unlike Grant, he made slow progress during the summer, needing seventy-four days to move the first 100 miles. The path Sherman took lay for the most part along a railroad, and his medical officers were able to make extensive use of hospital trains during the first half of the campaign, but transportation became increasingly uncertain because of enemy raids upon lengthening supply lines. Although his men had become skilled in the art of rebuilding track and bridges rapidly, in leaving Atlanta Sherman finally decided to end his reliance upon support from the rear. His men would live off the land as he moved east, and he would keep with him those who fell ill or were wounded after his departure.[45]

[44]Brinton, *Memoirs,* pp. 293–301; *WOR,* ser. 1, 43, pt. 2:163; Maxwell, *Sanitary Commission,* pp. 269–70; *MSH* 1, app.:223-26; Ltr, Campbell to Barnes (17 Oct 1864), RG 112, entry 12.

[45]Unless otherwise indicated, all material on Sherman's campaign is based on *MSH* 1, pt. 1, app.:297–327, and Matloff, *American Military History,* pp. 270–74.

GEORGE COOPER. *(Courtesy of National Library of Medicine.)*

When the campaign began, Sherman's medical officers had not had time to activate Letterman's system in its entirety. Field hospitals were for the most part still organized by brigade rather than division. The medical officers who were to perform surgical operations for the Army of the Cumberland, one of Sherman's three armies, were initially named by brigade, but in June George Cooper, the newly arrived medical director, adopted the division method of organization, thus making it a simple matter for each division's physicians to assist one another regardless of the units to which they were attached. The medical director of the Army of the Ohio, Henry Hewit, initially appointed a committee of surgeons at the army level to perform surgery, but he, too, eventually turned control over this aspect of the care of the wounded to his division chiefs.[46]

The system of Union Army hospitals that evolved during the summer of 1864 in Georgia varied to some degree from army to army and from place to place. As a rule, however, ambulances and, when necessary, army wagons initially evacuated patients to field division hospitals. If these units had to move on with the army before depot facilities could take in all their patients, surgeons sent the sick and wounded to mobile general field hospitals, and then finally to the depot for the train trip back to Chattanooga, 136 miles from Atlanta. Casualties were often sent beyond that city, with one train going 151 miles to Nashville, another the 185 miles from Nashville to Louisville. Hewit pointed out that his patients had to continue immediately on to Knoxville, which could be very hard on the wounded, especially if they had to change trains. It was desirable, however, to keep the Nashville and Chattanooga hospitals available for the newly wounded, and thus those who had been treated were usually moved on, further from the battlefield. The casualties of the small Army of the Tennessee were for a time sent to a hospital in Rome, Georgia, rather than to Chattanooga. Cavalry units with Sherman, like those with Grant, had neither hospitals nor ambulance service, and their wounded had to enter infantry facilities or houses along the route of march where private families could be paid to care for them.[47]

At least one of the problems of evacuation was caused by Sherman's commanding officers who, following the time-

[46]Ltr, Perin to Barnes (6 Jan 1864), RG 112, entry 12.

[47]Ltrs, Hewit to SG (9 Mar 1864) and to Edward E. Potter (copy, 13 Mar 1864), both in RG 112, entry 12; *MSH* 2, pt. 3:970–71.

honored custom of trying to appoint the weakest men to ambulance duty, ignored the strenuous nature of this assignment. Ambulances were also in a poor state of repair as the campaign got under way, but the necessary work was completed during the season. The animals that pulled the ambulances, however, were chosen from among those that had almost starved to death at Chattanooga the previous fall and winter. Many had not recovered from that ordeal and were unfit for arduous work.

Since forage was not easily found as supply lines lengthened, and since a campaign many had expected to be short continued month after month, a substantial amount of supplies and equipment was left behind to reduce the number of animals that had to be fed. Nevertheless, Sherman allowed the Medical Department to bring an adequate supply of medicines and hospital needs. He also assigned an acting commissary of subsistence to the field hospital organization. Between Sherman's effort and those of the various volunteer commissions, the diet of the sick and wounded in the field was reportly as good as that of their counterparts hospitalized in the rear, and this even when able-bodied soldiers were suffering from scurvy.

Many of the men in the field with Sherman were veterans who, with the scent of victory in the air, had reenlisted. At the start of the campaign, they were reported to be in good health, but the condition of men who were new to the army was, as usual, poor. Once again, many had been accepted without adequate medical screening. A diet low in vitamin C and an arduous campaign caused scurvy to appear early and by June men were breaking down. At least one surgeon blamed the lack of vegetables for the difficulty that many men had withstanding the rigors of the campaign. By July definite signs of scurvy had appeared in an average of 20 percent of those in one division of the Army of the Ohio and what was described as a scorbutic taint was sufficiently pronounced to be identified in more than half of the men. The problem began to diminish in importance only when green corn became edible in the fields. Blackberries and many vegetables ripened at the same time as corn and were probably responsible for the improved health ascribed by many to corn.

As Sherman's force moved slowly toward Atlanta, surgeons caring for his sick and wounded showed flexibility in their approach to the problems they encountered. On at least two occasions in the campaign, when a division hospital of the Army of the Cumberland needed help, surgeons from other divisions came swiftly to its aid. When the rail line was cut or a bridge destroyed, surgeons established temporary hospitals to shelter patients until the route back to Chattanooga had been restored. One such facility was located in an abandoned Confederate hospital at Kingston in Tennessee, a second at Acworth in Georgia after the enemy had cut a railroad bridge. After the bridge had been rebuilt, surgeons at Acworth did not wait for the arrival of hospital trains but shipped their patients west on returning freight cars.

In late June, medical officers faced a particularly unpleasant situation when ordered to move the casualties resulting from the battle of Kenesaw Mountain within twenty-four hours. Division hospitals were six to nine miles from the nearest depot, and surgeons had to use every kind of transport they could find, including baggage wagons, to move the 2,000 wounded along roads rendered virtually impassable by days of rain. Scurvy was by this time almost rampant among Sherman's men and proper food was apparently not yet available for the casualties who boarded

the trains after the battle. The situation became all the more difficult when the trip took three times longer than had been anticipated, but Cooper asked the Sanitary Commission to aid the wounded by setting up rest stops at Kingston, Tennessee, and at Resaca and Dalton, Georgia. Not all attendants on board the train were conscientious about their duties, but physicians could not walk from car to car to check on their work while the train was moving. Given the hasty nature of the evacuation, however, the Medical Department probably could not have done better.[48]

As Sherman's troops drew nearer Atlanta, field hospitals followed, moving finally from Marietta to Vinings Station, where they remained until Atlanta fell and they moved into the city itself. Even within Atlanta, however, these facilities never became fixed. When the initial location of one of these hospitals was needed for new fortifications, medical officers moved it from its original site to a less desirable one. Almost 6,000 were wounded in action near Atlanta, and at least half that number remained in Atlanta hospitals in October, when Confederate attacks upon the railroad leading back to Tennessee virtually cut Atlanta off from supplies for several weeks. Until the rail line could be repaired, food supplies were supplemented by items brought in by foraging parties.[49]

On 29 October, with the railroad finally repaired, Sherman sent the division field hospitals of his three armies back to Resaca in boxcars, no hospital trains being available. Since medicines could not be found in the countryside and Sherman planned to destroy the rail line behind him to prevent the enemy from using it, surgeons would from that point onward have to manage with what they could carry with them. Sherman took with him, therefore, only his fittest men, hoping to minimize the depletion of medical supplies by sending the weak, whose the health might fail under the rigors of the march, back west with the sick and wounded.[50]

Before leaving Atlanta, Sherman and his medical officers determined carefully what they should take with them. They allowed each division of 6,000 men approximately thirty ambulances, a medicine wagon carrying sixteen tent flies, a month's allowance of the most useful medical supplies, and several army wagons that could be used to move the packs of men who became too weak to carry them. Their plans proved entirely adequate, since relatively few fell ill on the march, and the rate of sick and wounded averaged only 19 per 1,000. The clear air and food gathered from the countryside, including berries and sweet potatoes, actually brought about an improvement in health. Medical officers examined the few who did fall ill each morning before breakfast and loaded those unable to march into ambulances. Each unit had its own foraging party to bring in food for the sick, including fresh meats, vegetables, fruits, and honey. Cows accompanying the march provided milk. One soldier wrote his wife that the men had "not lived so well before in the army." John Moore, medical director for Sherman's command in the fall of 1864, was concerned that the medical supplies taken

[48]Duncan, *Medical Department*, pt. 10, p. 12; "Extracts From the Report of Mrs. J. T. Horner, State Agent for Iowa," *Sanitary Reporter* 2:131.

[49]Maxwell, *Sanitary Commission*, pp. 268–69; Duncan, *Medical Department*, pt. 10, p. 14; "Letter From Mr. Tone," "Report of Dr. Read," and "Letters From Mr. Hoblit," all in *Sanitary Reporter* 2 (1864):95, 99, and 100–101, respectively.

[50]"Letters From Mr. Hoblit," *Sanitary Reporter* 2 (1864):100–101; E. Andrews and J. M. Woodworth, *The Primary Surgery of Gen. Sherman's Campaigns* (Chicago: George H. Fergus, 1866), pp. 2–3.

along would not be sufficient and had arranged for a new supply to be kept ready for shipment to Savannah or any other site along the coast should it be needed. His concern proved unnecessary, but when Savannah surrendered on 21 December, four ocean-going hospital transports met Sherman's army with supplies for 5,000 patients.[51]

Sherman's preparations for his march to the sea included sending Maj. Gen. George H. Thomas with part of the Army of the Cumberland back to Tennessee to protect Nashville, a vital supply center, from Confederate forces under General John B. Hood. Although in late November Thomas still did not consider himself ready to commit his main forces against the enemy, two corps saw heavy action outside Nashville as they attempted to gain time for him. While Union forces dropped back first to Franklin and then to Nashville itself, ambulances and wagons evacuated as many as possible of the sick and wounded either to a train depot or directly to Nashville.

Within the city, preparations for defense went forward, but considerable confusion prevailed because of the manpower shortage. Thomas gathered all available men into an "extemporized" unit and called in all surgeons in the area on leave or otherwise unassigned to serve as its medical staff. His medical officers scoured the city for ambulances. Only one corps' medical department was effectively organized. As the time for decisive action approached, its surgeons methodically broke up their facilities, moved their sick to general hospitals, and placed their ambulances and wagons by the side of the road, ready to move out. The director of the general hospitals in Nashville took over every building that could be used to house casualties until he had 4,000 vacant beds awaiting them. Just as his new patients began to arrive, however, so did reinforcements in the form of troops from Missouri, and these units added to the problems facing medical officers because they were "deficient in almost everything belonging to the hospital department."[52]

JOHN MOORE. *(Courtesy of Library of Congress.)*

On 15 December Thomas attacked Confederate forces besieging Nashville and drove them beyond the Tennessee River in

[51]Quote from Ltr, J. R. Zearing to his wife (15 Dec 1864), in Luelja Zearing Gross, "A Sketch of the Life of Major James Roberts Zearing, M.D. (1828–1911)," *Transactions of the Illinois Historical Society* 2 (1921):191; "Report of Dr. Read" and "Letter From Rev. J. C. Hoblit," both in *Sanitary Reporter* 2 (1864):130–31; War Department, SGO, *Annual Report*, 1865, p. 3; Ltr, Huntington to Barnes (7 Jan 1865), Ms C130, NLM.

[52]Quote from *MSH* 1, pt. 1, app.:323; Brinton, *Memoirs*, p. 327.

great confusion. By this time the weather was exceedingly cold, and the incidence of fevers, respiratory problems, rheumatism, and diarrhea increased among his troops. The wounded suffered greatly, but medical officers cared for them promptly in the field and quickly moved almost 8,000 back to the city. Since the railroad had been cut, the wounded had to use ambulances for the entire trip. As Thomas pursued the enemy, surgeons collected growing numbers of casualties in hospitals in towns along the way, including Franklin, where they discovered 185 survivors from the more than 200 Union casualties of the battle of Franklin. They also found approximately 1,500 Confederate wounded abandoned there, "in a lamentable condition," a state of affairs a Sanitary Commission representative attributed in part to "bad nourishment." Trains evacuated all the wounded from Franklin and other communities back to Nashville as soon as they were in a condition to be moved and the track had been repaired.[53]

Although as many as 3,600 beds were available at Chattanooga and over 800 at Murfreesboro and Tullahoma—among the cities to which Army of the Cumberland patients were taken—Nashville held more than any other. In June general hospitals there sheltered 6,000, of which more than 2,000 were in tents, but by November a pavilion hospital for 2,000 was nearing completion. Among other hospitals in that city were an Army-run facility for smallpox victims and another for blacks, both soldiers and civilians.[54]

Many Army of the Cumberland patients sent to Chattanooga during Sherman's drive on Atlanta eventually arrived in Nashville, since Chattanooga facilities, including a convalescent camp, were crowded during the summer despite the use of tents taken from the enemy. When Nashville began to receive patients directly from the battlefield, however, the medical director there could not relieve the resultant crowding of his hospitals by sending casualties back to Chattanooga, presumably because the enemy was between the two cities. Chattanooga facilities were by then far from crowded, however, since they received no patients from Sherman after he left Atlanta. The city's military hospitals ended the year with fewer patients than usual, many of whom were well on their way to recovery. Army of the Ohio patients continued to go through Chattanooga. Although 2,000 remained at Knoxville at year's end, almost 10,000 filled general hospitals in Louisville, Kentucky, or the nearby communities of New Albany and Jeffersonville, Indiana.[55]

Trans-Mississippi Campaign

The least fortunate part of the Union Army's plans for 1864 involved an ill-conceived expedition led by Maj. Gen. Nathaniel Banks designed to take Shreveport, Louisiana, and to free the Red River from Confederate control. The campaign was a

[53]Quotes from "Report of Dr. Read," *Sanitary Reporter* 2 (1864):124; "Letter from Mr. Ruggles," and "The Wounded at Franklin—Report of Mr. C. B. Ruggles," both in *Sanitary Reporter* 2 (1864):123 and 133, respectively; Ltr, Cooper to Barnes (19 Dec 1864), RG 112, entry 12.

[54]Brinton, *Memoirs*, p. 340; "Report of Dr. Read," "Report of Rev. Mr. Ingraham," and "Report of Mr. Ruggles," all in *Sanitary Reporter* 1 (1863):166 and 2 (1864):30 and 98–99, respectively; R. Wallace, "United States Hospitals at Nashville," *Cincinnati Lancet and Observer* 7 (1864):587, 590, 598.

[55]Duncan, "When Sherman Marched Down to the Sea," pt. 10 of *Medical Department*, p. 3; "Report of Rev. F. H. Bushnell," "Report of Rev. H. B. Hosford," "Report of Dr. Read," "Report of Mr. M. C. Read," and "Letters From Rev. H. B. Hosford," all in *Sanitary Reporter* 1 (1863):170 and 2 (1864):29, 99, 124, and 126, respectively.

failure from the outset, and its failure inevitably complicated the work of medical officers. The 15,000-man force led by Maj. Gen. Frederick Steele that should have left Arkansas to meet the main part of the force under Banks at Shreveport had to turn back. Banks' drive north toward that city in early April also fell short of its goal, and left more than 1,600 of his men injured. The enemy captured almost 500 Union wounded, 9 medical officers, and 70 ambulances, evacuation having been seriously retarded by a "stampeded mass of wagons, artillery, infantry and cavalry." Four more medical officers voluntarily remained behind to help care for the captured Union wounded. Although surgeons had to abandon division hospitals with little food or "ordinary comforts" for their occupants, Confederate authorities allowed Union doctors to bring several loads of medical supplies to the casualties, whom the enemy commanding general agreed to parole as soon as they could be moved. Medical officers sent Banks' wounded on to general hospitals in New Orleans and Baton Rouge.[56]

The medical director who would normally have kept the records for Steele's force was in the East for Surgeon General Hammond's trial from late January to early May, and the records of the medical care for this half of the Red River force during April are missing. Some of the wounded were arriving at hospitals in Arkansas by the time of the medical director's return, however, a few at Pine Bluff and the rest at Little Rock. Medical officers had taken over private homes to house their patients in Little Rock but, sharing the belief of so many of his colleagues that such buildings were too poorly ventilated to serve adequately as hospitals, the medical director ordered tents set up around the general hospital for the use of the wounded. Erysipelas had already appeared among them, however, and convalescence took unusually long. Surgeons eventually had many of the wounded moved to northern hospitals, either accompanied by a medical officer or, if convalescent, in small unattended groups on passenger vessels.

Although the Army dropped its Red River campaign, Arkansas saw further action when a Union force of 6,500 men came through in pursuit of Confederate guerrillas in September. The Union general sent his sick, numbering more than 600, to the hospital at Duvals Bluff and his convalescents to a camp established for them in Arkansas. These new patients added to the strain placed upon the hospital system by the sick and wounded of units normally in the area, where the disease rates were high and the proportion of medical officers to men was low.

Conclusion

The campaign west of the Mississippi was not a failure as far as the Medical Department was concerned, despite military defeats, the capture of many of the wounded and a number of medical officers, the loss of ambulances, and the absence of one of the leaders of the department in Arkansas during the first five months of the year. Surgeons were also plagued by temporary shortages of vegetables and supplies caused by low water in the Arkansas River, unexpectedly low temperatures, and the destruction in a fire of quinine reserves. But experience with the demands of war had by now taught the leaders of the Medical Department in both the West and the East the nature of the challenges they could

[56]Quotes from *MSH* 1, pt. 1, app.:336. Unless otherwise indicated, material on the Red River expedition and action in Arkansas is based on *MSH* 1, pt. 1, app.:336, 345, and on Smith, Ms C126, NLM.

expect to meet, and many of their subordinates the nature of military medicine. Despite adversities, therefore, the Department was able to keep the situation in the West under control and to handle the difficulties encountered in the course of the year as well as circumstance permitted.

The armies that would bring about the final defeat of the Confederacy, however, were fighting in the East. It was in Virginia and Georgia that medical officers were experiencing unfamiliar challenges. Grant's constantly moving army made a shambles of an evacuation system that had under other circumstances been adequate. The long and vulnerable supply lines in the wake of Sherman's force as it penetrated deep into enemy territory called for the exercise of more than ordinary ingenuity in anticipating and meeting medical and hospital needs. Because they had the active support of both the surgeon general and the secretary of war, medical directors of the armies of Sherman and Grant could concentrate upon meeting these new challenges, and the members of the Medical Department as a whole could function effectively as a team in the final months of the Civil War.

CHAPTER 12

The End

From January to early April 1865, the Civil War continued in full fury, but on 9 April, after pushing his men close to the limits of their endurance, Grant forced the surrender of Lee's Army of Northern Virginia at Appomattox. Further south, Union armies took Mobile and swept through Alabama and southwestern Georgia. Sherman led his army north from Savannah through the Carolinas, forcing Confederate General Joseph Johnston to abandon the struggle a few days after Lincoln's assassination on 14 April. Weeks before the last Confederate army formally surrendered on 26 May, the bloodiest conflict the nation had ever known had essentially come to an end.

The Union's sick and wounded from recent campaigns had never been the only patients for whom the Medical Department was responsible. Thousands of Confederate soldiers in Northern prisons as well as a trickle of sick and wounded Union soldiers released from captivity in the South during the course of the war looked to Union medical officers for help. The campaigns of 1865 began to release Union prisoners of war in the thousands, and the health of many was shattered. Thus, even as it prepared to cut back its operations to a peacetime level, the Medical Department was taking on increased wartime obligations.

Administration

Other than the collection of routine reports and the coordination of the work of the various branches of the Medical Department, much of the administrative work of the Surgeon General's Office in the first half of 1865 continued to involve the reduction of the department's size and expenses to a peacetime level. In January 1865 the number of general hospitals still operating was already three less than the 204 that marked its peak. These installations had treated more than a million white troops during the conflict, but by the end of June, after the Army began mustering patients out directly from hospitals, 170 were closed. The War Department's order of 28 April to cut back on expenses was followed by the reduction of the department's small fleet of ocean-going hospital transports from four to one, the return of all its river transports to the Quartermaster's Department, the elimination of all hospital trains but one in the West, and the collection of excess medicines and hospital supplies for sale at public auction. Barnes dismissed the medical boards that had been examining surgeons for the wartime Army and ordered his purveyors to stop buying until all surpluses had been consumed. He began closing purveying depots, keeping open only seven distributing sites

and the main depots at New York, Philadelphia, and Louisville. He started reducing the size of the department's laboratories. His medical directors intensified the process of consolidating patients, both Union soldiers and Confederate prisoners of war, and of converting large hospitals to post facilities, while Barnes began discharging contract doctors and hospital attendants. The surgeon general also decided that the department could loan its excess bedsteads, bedding, and blankets to soldiers' homes. All the while, the Department was processing requests for confirmation of death from the Pension Bureau, averaging 5,500 a month in May.[1]

Among the expenses the Medical Department could not reduce in the spring of 1865 were those involving sick and injured freedmen and refugees, for although Congress voted aid to these men in March, the law was apparently not quickly implemented. Thus for several more months in 1865, much of the cost of the care of such patients, including that incurred in hiring contract surgeons and nurses, continued to be borne by the Medical Department, with the understanding that it would be reimbursed, and the War Department continued to detail medical officers to assist in the care of the unfortunate new citizens.[2]

Even with the end of the war in sight and much to occupy his mind, Barnes continued the department's efforts to improve the status of its most burdened medical officers. Less than two months before Lee's surrender, the War Department finally ordered the pay of medical directors increased. Medical directors of armies in the field composed of two or more corps and medical directors of military departments whose general hospitals housed 4,000 or more patients were given the rank and pay of colonels, and those with lesser responsibilities were given the rank and pay of lieutenant colonels. These increases, however, were to be effective only while these officers bore exceptional responsibilities, and at least two-thirds of these positions were reserved for surgeons and assistant surgeons of the volunteers. Thus, with the end of the war, very few regular officers in the Medical Department would be entitled to retain ranks above major.[3]

Although the surgeon general's support and influence in Washington was invaluable, by 1865 medical directors were experienced enough to need little guidance from Barnes. While the surgeon general coordinated the efforts of his various subordinates, prepared the Department for a return to peacetime duties, and supervised the collection of records and specimens that would be used for the Medical Department's history and museum, his subordinates followed familiar routines, caring for their patients on the battlefield and in the various hospitals that sheltered the sick and wounded.

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[1]War Department, SGO, *Annual Report*, 1865, pp. 2–5; *MSH* 1, app.:205; Brown, *Medical Department*, pp. 244–45; Ltrs, William J. Sloan to SG (28 and 31 Mar and 8 Apr 1865), A. K. Smith to McDougall (2 May 1865), R. Crowell to SG (17 May 1865), Magruder to SG and Clymer to SG (both 25 May 1865), A. J. Phelps to Wood, Sloan to SG, and Sloan to Alfred Henry Thurston (all 31 May 1865), Abadie to SG (15 Jun 1865), and C. W. Ballard to SG (27 Jun 1865), all in RG 112, entry 12; Ltr, Alexander N. Dougherty to Lincoln R. Stone (4 May 1865) and Circ Ltrs (2 and 5 May 1865), U.S. Army, General Hospital, Gallipolis, Ohio—Correspondence, orders, internal regulation, all in Ms C24, NLM.

[2]GO, AG (no. 1, 1 Jan 1865); filed with Ltr, Hennell Stevens to SG (10 Jan 1865), and Ltrs, McCord to Lee (10 Jan 1865), Stevens to SG (10 Jan 1865), and Cooper to SG (27 Feb 1865), all in RG 112, entry 12; *WOR*, ser. 1, 47, pt. 1:492, 704 and pt. 2:80, 477; Commission of the Bureau of Refugees, Freedmen, and Abandoned Lands, *Circulars, etc., . . . With Copies of Acts and Joint Resolutions of Congress, and Proclamations by the President . . .* (Washington, 1867), pp. 1–3, in Freedmen's Bureau Papers, RG 105.

[3]Grace, *Manual*, p. 105.

Grant's Campaign in Northern Virginia

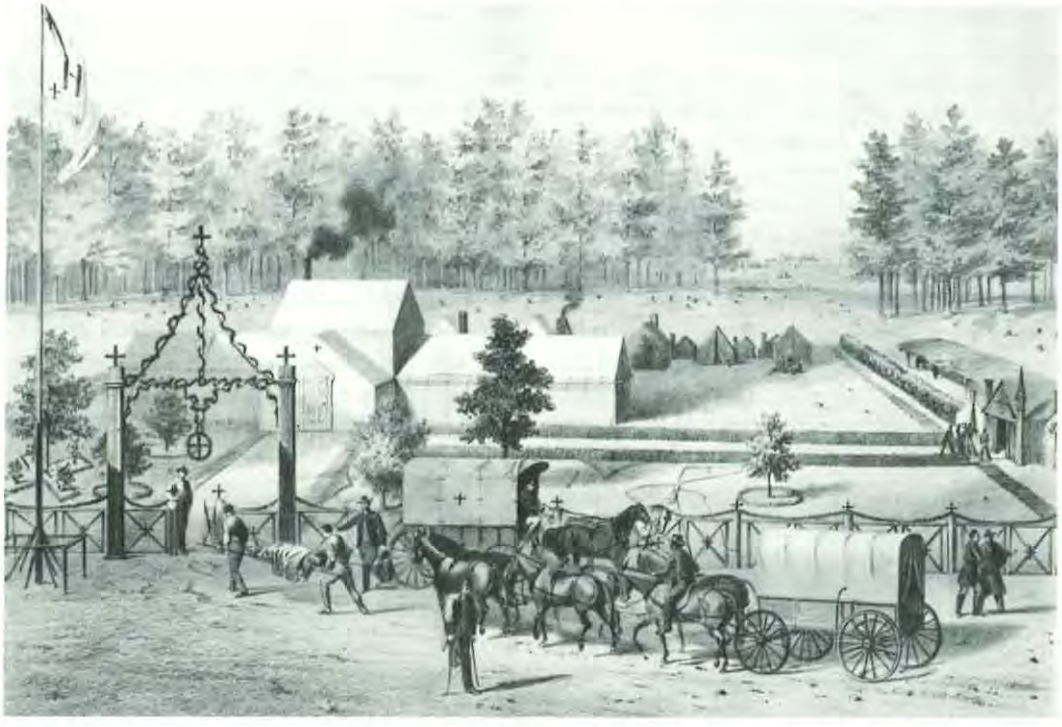
In January 1865 the battlefield for the Army of the Potomac lay around Lee's besieged force at Petersburg. More than 500 medical officers and 40 hospital stewards served 4 army corps, a cavalry division, and several independent commands, including artillery and Signal Corps units. More than 1,900 men and 43 officers formed the ambulance corps, although the former figure dropped to 1,600 as the campaign continued. Field hospitals housed 2,500 patients, another 2,900 occupied the City Point depot hospital, and almost 8,000 had been sent to general hospitals in the North. Slightly more than 22 percent of the soldiers of this army were sick in January, many of them with bowel ailments or fevers, usually typhoid or malaria. Respiratory problems and rheumatism were not uncommon. Scurvy was specifically diagnosed in only 52 patients in January, but at least 1 medical inspector blamed the severity of the diarrhea that prevailed on a lack of fresh vegetables caused by a shortge of transportation. It is highly likely that many men were suffering from a subclinical form of scurvy.[4]

In addition to the diseases that almost invariably afflicted armies in the Civil War, surgeons in the field with Union troops around Petersburg contended with diseases associated with poorly located camps and inadequate shelter or contracted by men on furlough. Around Petersburg the campsite that military requirements dictated might be poorly drained, and shallow wells were easily contaminated by surface water. The health of two V Corps divisions camped in a particularly marshy area did not improve until these units moved elsewhere. Circumstances also forced the men of one division to live several days without adequate shelter or blankets, and their health suffered accordingly. In mid-January men returning from leave added to these difficulties when they brought smallpox back with them. The mass vaccination program ordered as a result was not completed until mid-February, but surgeons established a smallpox hospital where they could isolate victims of that highly contagious disease.

Most of the 3,000 wounded and 6,400 who fell ill while in camp or field in January and February 1865 were initially sheltered in division hospitals. Surgeons sent those whose recovery was not likely, as well as all those sick when the division was about to march, back to City Point. Should the number in a division hospital exceed its capacity, which in at least one instance was 100, the excess was also sent to the depot facility. The twenty-bed brigade artillery hospital, unlike other field hospitals, remained at Petersburg until the end of March; artillerymen falling ill or suffering wounds elsewhere entered the hospital of the division with which they were serving. The cavalry division had its own 120-bed hospital and ambulance corps with 26 ambulances, 3 medical wagons, and 15 army wagons.

Sick and wounded officers, however, did not have their own facility. Disabled officers in the field often took shelter outside hospitals, a practice McParlin wished to discourage, but no rules existed to dictate how their expenses should be handled if they were hospitalized. In March McParlin finally sent out a circular calling for officers to meet the cost of feeding themselves and any servant who attended them in the hos-

[4]Unless otherwise indicated, all information concerning the Armies of the Potomac and the James is based on *MSH* 1:491–92, 495, and app.:202–23.



FIELD HOSPITAL NEAR PETERSBURG, VIRGINIA. *(Courtesy of Library of Congress.)*

pital, but forbidding the levying of any other charges.[5]

McParlin's order meant that the depot hospital at City Point would shelter officers from both the Army of the James and the Army of the Potomac, since patients from Butler's army outside Richmond had been using the City Point depot as a way station, whence they were soon sent to the Army of the James hospital at Point of Rocks. City Point's popularity resulted in large measure from its easy accessibility by both water and rail, in the latter instance either directly or by means of a single change of trains at an intermediate station. Although there were some complaints of inadequate care, neither gangrene nor any form of epidemic appeared at City Point, and those familiar with the conditions under which it had to operate regarded it highly.[6]

City Point experienced staffing problems, however, once Grant's force began to prepare for the final stages of the campaign in northern Virginia, and McParlin had to order regimental medical officers on duty at the depot hospital to join their units. To replace them the surgeon general sent in contract surgeons, some recent graduates of the Harvard Medical School, committed to serve three months. The fact that contract nurses worked only in general hospitals left City Point short of attendants when commanding officers ordered the

[5] *WOR*, ser. 1, 46, pt. 2:609, 616.

[6] Rpt, Proceedings of Board of Inquiry (26 Jan 1865), RG 112, entry 12.

musicians serving as nurses to prepare to march. Veterans in the Reserve Corps who could serve in hospitals were few, and the need for a hospital corps was particularly evident. Despite the shortage of attendants, McParlin ordered the capacity of the City Point hospital, then variously estimated as between 5,400 and 6,000, expanded by 1,000 beds or more; one surgeon reported that tents were to be pitched to increase its overall capacity to 8,800. McParlin also ordered hospital transports readied to remove all patients destined for general hospitals.[7]

Union troops suffered more than 1,200 wounded in the enemy's unsuccessful attack on Fort Stedman, outside Petersburg, on 25 March and captured large numbers of Confederate casualties as well, all of whom were sent to Union facilities. In the hospital of a Union division not involved in the defense of Union lines, Confederate wounded were cared for "as promptly and as kindly . . . as our own men." These patients, quickly sent back to City Point to free the division hospitals to take newer casualties, were the first of a flood that would fill Union hospitals from this point on until Lee's surrender.[8]

Realizing that the last stage of the campaign would require the transport of many casualties over increasing distances back to City Point, McParlin had hospital cars placed on the military railroad. His effort to have the quartermaster keep a reserve train of ambulances available for his use failed, forcing him to rely entirely on vehicles that were old and much repaired and wagons whose number had been substantially reduced. In order that unexpected demands could be met, a 36-wagon train loaded by the medical purveyor accompanied the army as it moved, and McParlin ordered supplies for 10,000 to 12,000 men kept at City Point to meet any emergency.[9]

It had been raining heavily before Grant began his attack on Lee on 31 March, and the downpour had turned the Virginia clay into a treacherous quagmire that rendered roads virtually impassable. Supplies were left behind to lighten wagons. Although stretcher-bearers moved with their commands, ambulance drivers pitched in to help those trying to improve the roads. Enemy action had wounded more than 1,500 from 29 to 31 March, and delays in evacuation necessitated keeping field hospitals in operation even after the troops moved on, requiring the establishment of new facilities as the army advanced even while the old ones remained open in the rear. Surgeons had to use tents to supplement available buildings along the way.[10]

As Union troops moved forward after Lee evacuated both Richmond and Petersburg in the first days of April, McParlin ordered the chief medical officer of the City Point depot hospital to establish a subdepot facility as far forward as the railroad was open. He hoped, apparently, that this hospital could be set up at Burkeville, or Burke's Station, fifty miles from Petersburg where the rail line to Lynchburg crossed that from Richmond to Danville. Twenty-five medical officers, 3 hospital stewards, and 100 attendants started out for the new depot with tents and food for 2,500 wounded, but when they arrived at Wilson's Station on 7 April, they found they could go no further by rail. While

[7]Ltrs, Adam Neill McLaren to SG (6 Feb 1865), Charles Page to SG (10 Mar 1865), John Campbell to SG (17 and 30 Mar and 7 Apr 1865), and McParlin to SG (25 May 1865), all in RG 112, entry 12; *WOR*, ser. 1, 46, pt. 2:609.

[8]Grant, *Memoirs* 2:619; quote from *MSH* 1, app.:220.

[9]*WOR*, ser. 1, 46, pt. 1:609.

[10]*WOR*, ser. 1, 46, pt. 1:707, 843–45.

awaiting the completion of repairs to the track and its conversion to a uniform gauge, they set up a facility at that intermediate point. Patients from Sheridan's command received care at Wilson's Station, and surgeons of the IX Corps, assigned to guard the Burkeville junction, set up their division hospitals to accommodate all the wounded from units that had pushed beyond Burkeville in their pursuit of the enemy. Confederate wounded had crowded the Burkeville hotel, so the division hospitals were housed in private homes, warehouses, tents, and makeshift shelters. Foragers were sent out to find food, while the medical purveyor's wagons continued beyond Burkeville in the wake of the troops.[11]

As Grant drove his men in a relentless pursuit of the enemy, the strain took its toll. Hospital wagons and ambulances experienced difficulty keeping up with the troops, who were covering twenty to thirty miles a day. Some of the ambulance horses were "completely used up." As ambulances from the IX Corps at Burkeville shuttled to and from the front, stretcher-bearers were hard pressed because of the shortage of vehicles in which to remove the casualties. By the time the two armies reached the vicinity of Appomattox, even General Meade was among the sick, "hardly able to get out of bed," as Grant recalled, although Meade continued to obey Grant's orders "with great energy." Under the stress, Grant himself was suffering from a persistent headache that responded neither to mustard plasters on his wrists and neck nor to mustard and hot water baths for his feet. Grant wrote later, however, that "the instant" he heard of Lee's readiness to surrender, he was "cured."[12]

The end of the war in Virginia led to a gradual closing of the field and depot hospitals that had served Grant's men, including, finally, the main depot hospital at City Point. McParlin estimated that this facility had admitted more than 11,000 wounded from units under Grant from 1 January through 31 May 1865. Including the sick, in the first six months of 1865, over 26,000 patients passed through City Point. Of these, more than 12,000 were returned directly to duty. McParlin sent those wounded in the last days of the campaign back to City Point as promptly as possible and after Lee's surrender continued to empty his field hospitals by sending 2,000 more back. On 30 April, he ordered the capacity of the City Point hospital reduced to 2,500 beds. On 4 May the Medical Department moved the facility to Alexandria, and destitute former slaves apparently took shelter in the vacant buildings. Three weeks after its final move, the hospital closed and its remaining patients were transferred to general hospitals, whence they were eventually discharged from the Army.[13]

The Burkeville subdepot of the City Point hospital took in 660 sick and 192 wounded during its existence, from 9 to 30 April, 838 of whom went on to City Point. For part of this period, both the Army of the Potomac and the Army of the James camped at Burkeville, and Confederate wounded still occupied a hotel there, but many of the wounded at the facility also came from Farmville, where after occupying the town, Union forces had shared a large Confederate hospital. By 11 April, railroad cars supplied with straw for bedding were available to move 1,450 of the 2,200 patients in the various facilities in

[11]Reed, *Hospital Life*, pp. 160, 168.

[12]Quotes from Grant, *Memoirs* 2:466, 482–83, 485.

[13]A. W. Smith, *Reminiscences*, p. 47; Ltr, McParlin to SG (12 Apr 1865), RG 112, entry 12.

the Burkeville area. Two attendants accompanied each car, and medical officers rode every train to City Point. Another 600 patients started back on 12 April, but because of a transportation shortage, 150 Confederate patients remained at Burkeville. Ambulances continued arriving at this subdepot from field hospitals, however, so by the 13th, another 450 awaited transportation. On 29 April ambulances began moving Confederate patients from Farmville to the subdepot on the first leg of their journey to hospitals set up for them within the city of Petersburg. Small numbers of sick and wounded continued to arrive at Burkeville even after McParlin closed the facility and sent its supplies and hospital train on to City Point.[14]

In mid-April, with the war all but over, a surgeon with the Army of the Potomac noted that disease had become a greater problem than it had been when the troops were in action. Perhaps it was easier for disease to spread when the men remained longer in one spot and water sources were more likely to become contaminated with the organisms that cause diarrhea. The cases of diarrhea that McParlin was encountering, however, were markedly more severe than they had been. The surgeon blamed not only bad water but fatigue and, above all, the lack of vegetables. No obvious cases of scurvy confronted him except for a few in men newly returned from southern prisons, but these returnees, wherever they were, caused much anxiety among Army physicians, since their deprivations in the South had severely undermined their health.

Nevertheless, the fighting was over for the Army of the Potomac. For the medical officers who accompanied it, the months of struggle to keep pace with an aggressive, at times very fast-moving campaign that often left them without an adequate number of ambulances and sometimes without adequate field facilities as well, were behind them. The war was not yet over, however, for further south the army of Confederate General Joseph Johnston still struggled on.

[14]Grant, *Memoirs* 2:513.

Sherman's Campaign

For the four Army corps of the Military Division of the Mississippi that would defeat Johnston, the first months of 1865 brought a march from Savannah, Georgia, to Raleigh, North Carolina, during which the men once again lived largely off the land. Sherman had great confidence in the "quiet, industrious, and most skillful" surgeons who accompanied him, but the nature of his campaign placed a considerable burden upon them from the outset by once again requiring that what they took with them be strictly limited. Sherman did not on this occasion, however, plan to keep his sick with him, and by having them promptly evacuated east to ports whence transports could move them north, he also limited the number of patients who would draw upon the supplies he brought with him.[15]

In Savannah, preparing for the campaign to come early in 1865, John Moore, medical director under Sherman, set up hospitals, staffed for the most part with contract surgeons, where he could leave those unable to march. He drew one month's supplies from the resources accumulated for his use by the medical purveyor at Hilton Head, South Carolina, apparently planning to rely heavily upon

[15]*WOR*, ser. 1, 47, pt. 1:17, 119; quote from 1:46. Unless otherwise indicated, all material on Sherman's campaign is based on *MSH* 1, app.:321–23, 327–29, 337–39.

what his foragers could find along the way. He attempted in vain, however, to acquire new ambulances to replace the aged and worn vehicles that were all he had. In mid-January Sherman and 60,000 men started out, but the rains that had flooded swamps and rivers forced the temporary abandonment of the move. While they awaited a change in the weather, surgeons sent those who fell ill back to the hospitals in Savannah and contained an incipient epidemic of smallpox by isolating the twenty-five cases that appeared in a three-day period.[16]

Sherman's men were able to advance again early in February, and on the 17th the right wing entered Columbia, South Carolina, which had been virtually abandoned by its defenders. As Confederate garrisons along the coast began to surrender, Union soldiers also occupied such cities as Charleston and Wilmington, North Carolina. Medical Director Moore noted that, despite the weather, an average of only 2 percent of the army was sick. He concluded that the variety and abundance of food gained by foraging and the absence of opportunities for drunkenness, as well as the high spirits of the men, contributed to the army's health.[17]

The Union force paused for a few days when it reached Fayetteville in North Carolina on 11 March. Surgeons then shipped 200 to 300 of the approximately 1,500 disabled, most of whom were sick rather than wounded, by river east to Wilmington, where the surgeon general ordered five contract surgeons sent to assist in their care. The men remaining with Sherman were at this time still in good condition, according to that general. Relatively few had been wounded, and although their wounds tended to be severe, causing more deaths than might otherwise have been expected, amputees did surprisingly well after surgery, presumably because of a low rate of infection. When Sherman arrived at Goldsboro, however, the disease rate had doubled. Over 3,000 of his men were ill and more than 1,100 wounded as a result of encounters with Confederate forces. Surgeons once again sent the seriously disabled east to the coast, on this particular occasion to New Bern, North Carolina, where Barnes sent five more contract surgeons to assist in their care.[18]

Despite the difficulties he encountered as Sherman's force moved north, Moore believed that his care of the sick and wounded was adequate. Letterman's system for managing evacuation and field hospitals was proving successful. The 100 new ambulances that arrived during the course of the campaign were, however, but one-fifth of what Moore needed, and since these vehicles were still scarce, surgeons once again had to rely on army wagons to evacuate their patients. Moore reported during March that he was experiencing no shortage of items necessary to the care and comfort of his patients, and after the occupation of Goldsboro at the end of the month, the supplies that had been awaiting them arrived from New Bern. He noted that by the 26th all the sick and wounded were comfortable in bunks set up in tents or private homes and that all patients did well, partly because their health was excellent when they were wounded.[19]

[16]Sherman, *Memoirs* 2:260; *WOR*, ser. 1, 47, pt. 1:439–41; Ltrs, Moore to SG (30 Jan and 30 Mar 1865), Campbell to SG (13 Jan 1865), and Clymer to SG (4 Feb 1865), all in RG 112, entry 12.

[17]*WOR*, ser. 1, 47, pt. 1:440.

[18]*WOR*, ser. 1, 47, pt. 1:188, 440; Sherman, *Memoirs* 2:296, 298, 305; Ltrs, Campbell to SG (13 Mar 1865) and Moore to SG (14 Mar 1865), both in RG 112, entry 12.

[19]*WOR*, ser. 1, 47, pt. 1:441; Ltrs, Clymer to SG (14 Mar 1865) and Moore to SG (30 Mar 1865), both in RG 112, entry 12.

Although Moore was happy about the condition of the men and Sherman himself described them as "saucy" despite their "dirty, ragged" state, the Sanitary Commission had received a contrary impression of the state of affairs. Not allowed by the general to come near troops in the field because he believed that the commission members favored men from their own communities, they nevertheless concluded that the men must be in poor physical shape. Since, by his own admission, Sherman had "gained the ill-will of the agents of the Sanitary Commission," some commission officials may have been eager to conclude the worst.[20]

While Sherman was leading one army north from Savannah, Maj. Gen. John M. Schofield was leading another in a successful campaign to take Wilmington, through which Sherman could then receive supplies and evacuate his sick and wounded by hospital transport. Apparently unaware of the secretary of war's firm instructions to General Butler late in 1864 and of the issuance of general orders forbidding the removal of hospital vessels from Medical Department control early in 1865, Schofield appropriated the *S. R. Spaulding* for use as his headquarters. He pointed out, when taken to task, that the vessel had been merely "lying idle without a single sick or wounded man on board, . . . of no use but to furnishing quarters to three assistant surgeons, who had nothing to do but lounge in the steamer's cabin." He added that the *Spaulding* could still be used as a hospital ship when he was aboard, and, indeed, was all the better suited for that purpose, since as his headquarters, she moved up and down the river, following the action and thus close to the largest number of wounded.[21]

Schofield and troops from New Bern and Wilmington joined Sherman's troops before they left Goldsboro on 10 April. The Confederates retreated before this enlarged force, which was still pursuing Johnston toward Raleigh when the news of Lee's surrender arrived. The main body of Johnston's army no longer formed a real threat to Sherman's men, and in his haste Sherman moved ahead of a group of convalescents accompanied by twenty-three hospital attendants, leaving them vulnerable to an attack by guerrillas on 11 April, when all but two were captured. Sherman continued north despite the attempts of Confederate cavalry to slow him, and entered Raleigh on 13 April, where the next day he received a Confederate request for a truce. The process of finding an acceptable formula for Johnston's surrender proved surprisingly tedious, but word of the truce was sent to other units fighting under Sherman, and fighting in the Deep South came to an end.[22]

While Moore moved north with Sherman to manage the care of those wounded or falling ill with the army, members of the medical staff of the Department of the South struggled to care for the men left behind. Those who could no longer fight presented a considerable problem for the medical director, surgeon of the volunteers Meredith Clymer. The release or exchange of many former prisoners of war only added to his difficulties. In March, anticipating that disease might create a need for a temporary general hospital in Charleston, Clymer prepared to open one on short no-

[20]Sherman, *Memoirs* 2:306, 392, quotes from both; Maxwell, *Sanitary Commission*, pp. 280–81; *WOR*, ser. 1, 47, pt. 1:190; "Report of M. C. Read" and "Letter From Mr. Seymour," both in *Sanitary Reporter* 2 (1864):165 and 191, respectively.

[21]*WOR*, ser. 1, 47, pt. 2:342–43, 545, 832–33, quote from 2:833; *WOR*, ser. 3, 4:1156.

[22]Sherman, *Memoirs* 2:342–44, 346–63.

MEREDITH CLYMER. *(Courtesy of National Library of Medicine.)*

tice, a step he apparently was never actually required to take. Clymer tried to prevent overcrowding in his department by moving patients retained at Savannah north as soon as they could tolerate the voyage and transports could be obtained. He lowered his patient load there from 2,800 in late February to 800 a month later. He hoped that by continuing to send patients north he could reduce any facilities he might have to establish in Charleston and Savannah to post hospitals and concentrate future casualties at port cities further up the coast.[23]

Contract surgeons staffed many of the facilities serving returning prisoners of war as well as the men Sherman left behind. Clymer distrusted these physicians, however, and rejoiced in May when he discovered that the sick rate was lower than he had anticipated among the 4,000 who returned to Union control in Florida and that his earlier request for six contract surgeons had become unnecessary. Permitted to terminate their contracts after three months, acting assistant surgeons tended to head north when the sickly season began. Having repeatedly but apparently vainly urged that they be signed for six-month terms, Clymer could only hope to function without them. After the war ended, several assistant surgeons of the volunteers were assigned to the quarantine stations at such yellow fever-threatened ports as Charleston, Savannah, and Fernandina, Florida, reducing the number of physicians available to care for the new, unacclimated troops that were arriving in the South to man new posts. Although recovering patients were being discharged from the Army directly from hospitals, Clymer was forced to call again and again for contract surgeons to replace those who went north for the summer.[24]

Adding to Clymer's woes in the Department of the South was the fact that authorities there did not initially honor the law of March1864 concerning ambulances and their use. For more than two months Clymer agitated and appealed, pointing out that, contrary to law and custom, the Medical Department in his area exercised no control over the use of ambulances. He cited stories of pleasure jaunts from which neither the line officers appropriating the vehicles nor the ambulances always returned safely. Only on 5 May did Maj. Gen. Quincy A. Gillmore, commanding in the Department of the South, order that all

[23]Ltrs, Cuyler to SG (17 and 23 Mar 1865) and Clymer to SG (22 Mar and 22 Apr 1865), all in RG 112, entry 12.

[24]Ltrs, Clymer to SG (29 and 30 Apr, 6 and 19 May, and 8 and 24 Jun 1865), all in RG 112, entry 12.

ambulances, medicine wagons, and similar vehicles be placed under the control of his medical director.[25]

Units under Sherman's command were not limited to service on the coast. Men led by Maj. Gen. James H. Wilson crushed the last significant Confederate resistance in Alabama and western Georgia. Fifty medical officers accompanied Wilson and his 13,500 men through Alabama from west to southeast, beginning in late March. Despite daily marches that sometimes covered more than twenty-five miles, neither wounds nor diseases caused major losses. On 2 April Wilson's surgeons established a hospital in a church at Plantersville, where 2 doctors and attendants remained to care for 40 wounded and 18 sick while the command continued on to Selma. After Wilson launched a night assault, Confederate Lt. Gen. Nathan B. Forrest retreated from Selma back to Plantersville and captured the unguarded Union hospital. Forrest required the attendants and those patients who were only slightly wounded to swear not to participate further in the war before paroling them, but he let the surgeons care for the seriously injured without interference. When Forrest left Plantersville, Union medical officers brought the patients there south to Selma, where they had established corps hospitals to care for the 24 officers and 212 men wounded in taking the town. When the command resumed its march, 2 surgeons remained at Selma with the 68 patients who could not be moved, keeping with them forty days worth of rations and other supplies. All who could endure travel, however, were loaded into ambulances and wagons for the journey to Montgomery.[26]

When Montgomery surrendered to Union forces on 12 April, medical officers entering the city were alarmed to discover that a smallpox epidemic was "raging furiously." Fortunately, vaccination proved effective for Wilson's men, and the epidemic did not spread among them. Doctors unloaded the wounded and placed them in a local hospital. Because the disabled had proved a serious encumbrance when moved with the army, Wilson now decided to leave 144 of them in Montgomery with an assistant surgeon when he continued east on 14 April. The division that went on to Columbus, Georgia, sustained an additional 28 wounded in capturing that city four days later. The taking of West Point the same day produced 30 more Union wounded. Leaving 35 patients at Columbus, Wilson moved on to take Thomaston on the 19th and Macon on the 20th before word of Sherman's armistice agreement with Johnson ended his campaign.[27]

Wilson's medical director, Surgeon Francis Salter, was quite pleased with the way his branch of the Medical Department had functioned during this campaign. Despite the speed with which the army moved, no patients were left by the roadside or cared for in makeshift shelters. "Regularly furnished hospitals" received all casualties. Although Salter had apparently been concerned about whether an ambulance corps could function effectively for cavalry units, his experience in this campaign led him to conclude that such an

[25]Ltrs, Clymer to W. S. M. Burger (copies, 23 Feb and 29 Apr 1865) and to SG (29 Apr 1865) and GO, Gillmore (no. 56, 5 May 1865), all in RG 112, entry 12.

[26]Unless otherwise indicated, all material on Wilson's march is based on *MSH* 1, app.:327–29. A report of 22 rather than 212 men wounded is probably a typographical error, since 35 were killed in taking Selma: *WOR*, ser. 1, 49, pt. 1:406.

[27]Quote from *MSH* 1, app.:328–29.

organization could be as effective for cavalry units as for infantry.[28]

The medical officers caring for the sick and wounded of the two corps that took Mobile on 11 April encountered few significant problems, despite the fact that Maj. Gen. Edward R. S. Canby allowed only a single ambulance for every 400 men (under the law of March 1864, a regiment of 500 men should have had two ambulances). He had an additional ambulance permanently attached to each artillery battalion, and two more for each army headquarters and each corps headquarters. Three wagons were to accompany each division hospital train to carry hospital tents and other equipment. Predictably, the number of ambulances available during the seige of Spanish Fort and Blakely, Alabama, guarding Mobile, proved inadequate, and once again wagons had to be used to carry some of the wounded.[29]

No deficiencies appear to have marked the work of Canby's ambulance corps or the organization and management of division hospitals, to which were allotted one hospital tent for every 600 men in the division. At Spanish Fort enemy fire delayed the removal of casualties from the field until dark each day. Their able-bodied comrades covered the wounded with rubber blankets, thus limiting their sufferings in the heavy rain. At Blakely, shells from the enemy gunboats forced surgeons to move division hospitals several times. Boats removed casualties from field hospitals at both Spanish Fort and Blakely to general facilities in New Orleans within two or four days.[30]

The ordeal that Mobile was to endure at the hands of the Union Army was not yet over. Late in May ammunition stored in a warehouse there exploded, causing what a witness described as "a terrible calamity—beyond description. Acres of ground were covered with flames. . . . The loss of life [was] terrible . . . several steamers were torn to pieces." The hospital serving Army engineer units was totally destroyed, and the interior of the building used as a freedman's hospital was gutted. All the injured were initially taken into the city's hospital for merchant seamen, where white victims remained while blacks were quickly moved to another facility. Because the accident occurred just as regimental medical officers were leaving the city with their units, the surgeon in charge of the general hospital at Mobile sent out a frantic call for more physicians, and Canby ordered that all medical officers in the area come to the aid of the injured.[31]

Except for those areas in which Union troops commanded by Grant or Sherman were fighting the last major battles of the war, Army surgeons were already beginning to return to their peacetime occupations. In Arkansas the surgeon at Helena converted the 250-bed general hospital into a post facility in March. At Fort Smith, newly reoccupied after its evacuation in 1864, the chief health problem was apparently scurvy. The countryside had been so devastated that no vegetables were available locally, and guerrillas continued to threaten shipments coming in. A Sanitary Commission agent offered seeds to start a post garden, the Western Sanitary Commission furnished some vegetables, and the department's commanding officer ordered a special issue of vegetables to control the

[28]Quote from *MSH* 1, app.:329.
[29]*WOR*, ser. 1, 49, pt. 1:791; *MSH* 1, app.:337–39.
[30]*MSH* 1, app.:337–39.
[31]*WOR*, ser. 1, 49, pt. 2:741, 911–14, quote from pp. 912–13; Ltr, Samuel Kneeland to Abadie (26 May 1865), RG 112, entry 12.

inroads of scurvy until local crops could mature.[32]

It was also west of the Mississippi, at Brownsville, Texas, that on 13 May 1865 a small number of Union and Confederate soldiers fought the last battle of the Civil War. Although the 26 May surrender of this last Confederate army formally ended the war, for the Medical Department a considerable challenge remained. The end of the conflict brought with it the release of the last prisoners remaining in captivity in the South and the beginning of the return of Confederate prisoners to their homes, with Union surgeons being responsible for the care of the sick and wounded in both groups. The apparatus of war also had to be dismantled, and the transformation of the Medical Department to a peacetime organization would not be complete for many months.

Prisoners of War

Although the difficulties involved in maintaining or restoring the health of prisoners of war peaked in 1865, the challenge was not new. From the outset, the Medical Department of the Union Army had been responsible for the prevention of disease in Northern prisons, for the health of Confederate captives, and for the care of sick and wounded Union soldiers returned through exchange or released by successful Union armies. Union surgeons had little to do, however, with the care of Northern men while they were in Southern prisons, since during most of the war, medical officers were not held captive, and when they were imprisoned, they were apparently concentrated at Richmond rather than distributed among the various prisons throughout the South.[33]

In the earliest months of the war, the governments of the Union and Confederacy had not agreed upon the status of physicians. Medical officers taken in April 1861 in Texas were paroled and allowed to return home after swearing not to care for combatants until formally exchanged. Surgeons on both sides were held captive for varying periods of time until the spring of 1862, when the Union War Department ordered all medical officers "unconditionally released." This order was not invariably obeyed, as there were apparently some misunderstandings about it, but generally for a time thereafter both sides released surgeons unconditionally, allowing medical officers to stay with the captive wounded of their own armies until their captors could provide adequate medical attendance.[34]

In 1863, however, the state of Virginia claimed that a certain captured Union medical officer had committed crimes punishable under state law. He was, therefore, ineligible for return under any circumstances until he had been tried. Union authorities reacted by claiming the right to hold a Confederate physician hostage against the safe return of the Union surgeon. The agreement to return medical officers unconditionally collapsed completely in July when Confederate authorities refused to recognize the Union's right to hold a hostage. As a result, although it was still possible to be released by means of exchange, many medical officers apparently concluded that the possibility of long impris-

[32] "Report of Mr. Carpenter," *Sanitary Reporter* 2 (1864):166; SGO, *Sanitary Report of the Army of Arkansas, 1865–66*, Ms C126, NLM; U.S. Army, Medical Department, *U.S.A. General Hospitals in Existence*, January 1865, Ms B125, NLM.

[33] *WOR*, ser. 2, 5:953 and 6:619.

[34] *WOR*, ser. 2, 1:62, 73–75, 4:27, 33, 37, 39, 44, 101–02, 268–69, 272, and 5:164, 262, quote from 5:262.

onment dictated that they take fewer chances of being captured.[35]

The impasse ended late in 1863, when finally Confederate authorities returned the Union surgeon whose plight caused the problem, apparently still untried—his guilt appears highly questionable—and both sides ordered the release of all medical officers. Captives were by then in prisons far from the front, however, and their return proved tedious. Word that physicians were to be released did not always reach prisons in a timely fashion. In one instance, Confederate refusal to allow a flag-of-truce boat to carry Confederate physicians on the final leg of their journey home led to additional difficulties when General Butler concluded that the alternative of letting these doctors through his lines in Virginia would be unsafe because they would then "know too much." The status of hospital stewards caused further confusion, but in March 1864 the War Department ruled that these men were to be treated in the same manner as surgeons.[36]

Although they rarely cared for men held in Confederate prisons, Union surgeons assumed responsibility for their health when they returned from the South. Until Union armies began to occupy large areas of the Confederacy, only limited numbers of captives returned home, but as the war went on, these men presented a growing challenge to the Medical Department because of their numbers and their condition. Many were sick before they started north, and those who remained in captivity until the last months of the conflict suffered increasingly from the effects of an inadequate diet and often from the effects of exposure and poor sanitation as well.

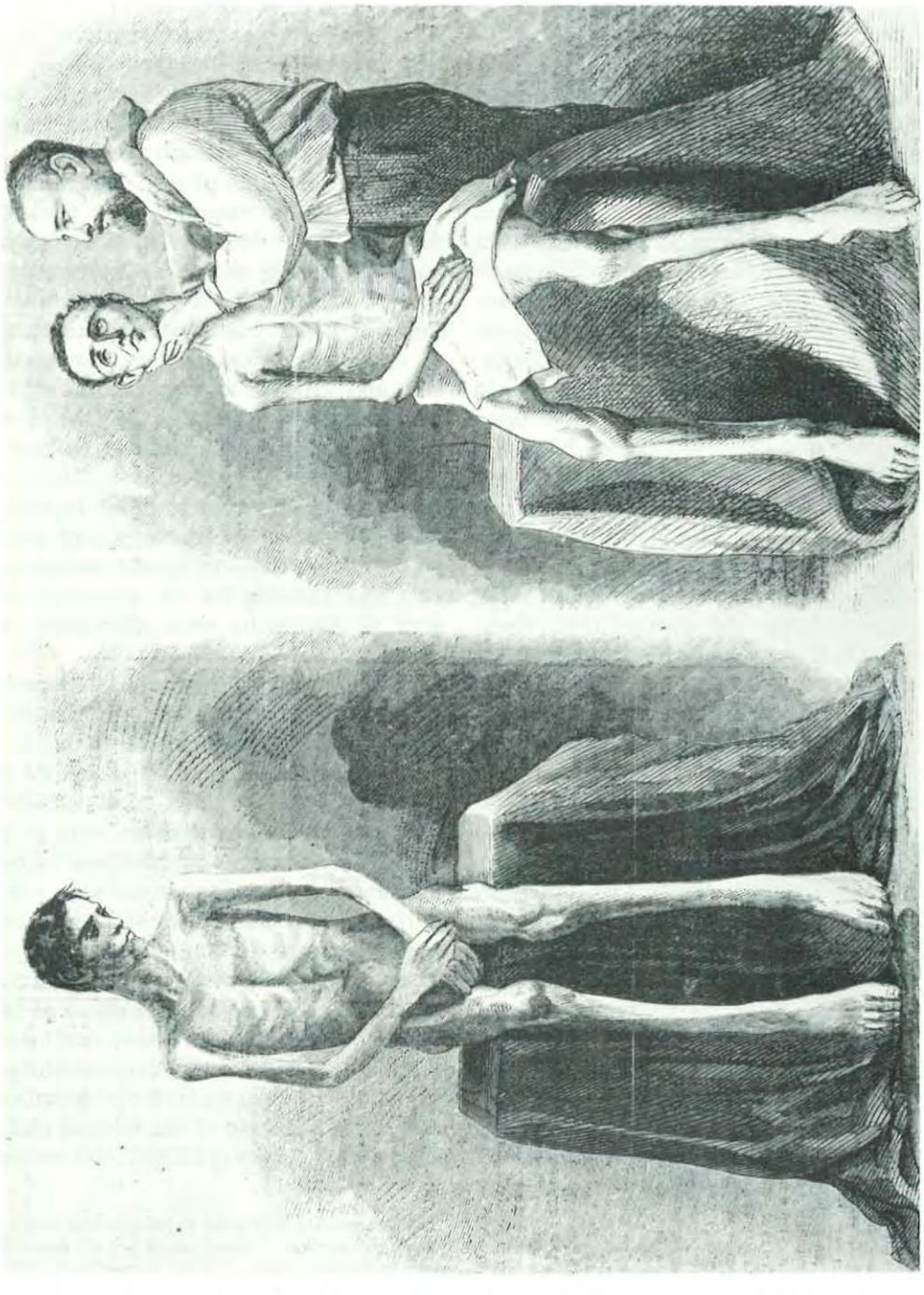
Despite a formal agreement in 1862 calling for the parole of all prisoners within ten days of their capture, actual exchanges were erratic because of squabbles concerning interpretation. Some difficulties apparently arose from the Union's lack of enthusiasm for a step that would renew the Confederacy's dwindling manpower supply by returning healthy prisoners. The Union seems to have been less reluctant to take part in exchanges of those "who will not soon be fit for service." The cartel of 1862 called for most exchanges, whether of healthy or disabled men, to take place through the City Point area or Vicksburg, but wounded prisoners could also be returned directly to their units shortly after battle on the initiative of individual commanders involved.[37]

By the fall of 1863, the effects of malnutrition upon invalids returning from the Richmond area via City Point were pronounced. As often happened, a few of the disabled men sent from City Point to Annapolis hospitals died before reaching Maryland. Many returnees had diarrhea, and chronic diarrhea was the most common cause of deaths occurring soon after exchange, although pneumonia and debility added to the toll. Some taken at Gettysburg maintained that their wounds had never received medical attention. With sick prisoners returning in such precarious health, Union authorities soon realized that extraordinary measures would be necessary to limit suffering and the number of deaths. Medical officers began to accompany the vessels that picked up the returnees at City Point, and at the end of

[35] *WOR*, ser. 2, 5:212 and 6:13, 18, 26–27, 35–36, 81, 85, 88–89, 157–58, 208–09, 250, 283, 335–36, 473–74, 762; Solon Hyde, *A Captive of War* (New York: McClure, Phillips & Co., 1900), p. 54.

[36] *WOR*, ser. 2, 6:1078, 7:127–28, 141, 481, 491, 710, 853, 860–62, and 8:156, quote from 7:412–13.

[37] *WOR*, ser. 2, 1:518, 4:266–68, 6:124, 129, 134, 512, 523, 599, 615, 629, 995, and 7:76, 108, 215, quote from 7:75; Hyde, *Captive*, p. 51.



CONDITION OF RETURNEES FROM SOUTHERN PRISONS. *(Courtesy of Library of Congress.)*

November 1863 the surgeon who acted as medical inspector of prisoners of war, Augustus M. Clark, reported that a contract surgeon, a contract hospital corpsman, and two nurses were serving on the truce ship.[38]

On an average run, the truce ship carried 600 men, only 5 percent of whom needed immediate care during the 16- to 20-hour voyage to Annapolis, and no addition to her fifty-six hospital bunks was necessary. But when the ship carried exclusively sick returnees, facilities on board were inadequate, even when an additional ten bunks were set up on deck. By early 1864, however, the Medical Department had succeeded in obtaining hospital transports to move the sick and wounded. Sometimes, if the patients' condition permitted, these vessels took them beyond Annapolis to hospitals in Baltimore and Philadelphia, since even before the start of 1865, thousands of sick and wounded returnees whose condition was "indescribable" were almost overwhelming Annapolis facilities.[39]

In 1865, as Sherman drove north through the Carolinas, newly released prisoners, many in need of medical care, began gathering in Wilmington for transportation to hospitals farther north. By March 1865, 3,700 sick former captives were crowding facilities in North Carolina. The surgeon general diverted medical supplies and officers intended for Sherman and Schofield to the care of the newly released prisoners. Quick attention and prompt transfer north interrupted a typhoid fever epidemic, but a shortage of clothing and bedding rendered the voyage arduous, and the "wretched condition" of many made it advisable in some instances to terminate it at Fort Monroe. A contract physician at Annapolis, where many returnees from Wilmington arrived in the spring of 1865, maintained that they were being shipped without medical attendance, crowded, and "in a most horrible plight." The most desperately sick or wounded were packed in the hold, where the ventilation was entirely inadequate. The medical officer responsible for loading the ships at Wilmington, however, pointed out that it was impossible to spare a physician to accompany each ship and insisted that only those who appeared able to withstand the voyage were sent north. Prisoners had started arriving at Wilmington only five days after Union forces took the city, he said, but he insisted that, although the quartermaster general was initially unable to supply enough blankets and bedding for all returnees, those sent to Annapolis were adequately provided for.[40]

The situation in which sick and wounded prisoners returning through Vicksburg found themselves was similar to that in the East, and many patients died before they had been long in Union hands. Prisoners released from Andersonville were in particularly deplorable shape, almost all needing medical care. Exchanges were cut off during several months of 1863 while Grant was closing in on Vicksburg, but in 1865 so many prisoners were returning that the city's hospitals had to be emptied of other patients. Surgeons sent many north to St. Louis and even beyond, but hospital steamers could not keep up with the demand. In April, the explosion of the steamer *Sultana* after it left Vicksburg killed 1,100 returnees

[38] *WOR*, ser. 2, 6:446, 474–75, 494, 593, and 1089.

[39] *WOR*, ser. 2, 6:535, 593, and 7:69, 101, 1161, quote from 7:1160; Ltr, McCormick to SG (17 Apr 1864), RG 112, entry 12.

[40] First quote, Ltr, Cuyler to SG (23 Mar 1865), and second quote, Ltr, J. Simpson to SG (12 Mar 1865), both in RG 112, entry 12; Ltrs, Cuyler to SG (25 Mar 1865) and Shippen to SG (23 Feb and 26 Mar 1865), all in RG 112, entry 12; *WOR*, ser. 2, 8:464–65; War Department, SGO, *Annual Report*, 1865, p. 7.

and added still further to the strain on the evacuation system, although surgeons were able to send the 500 injured survivors on to Memphis.[41]

When caring for enemy prisoners rather than their own returnees, authorities in the North and South alike occasionally exhibited a certain vengefulness. The "Instructions for the government of armies of the United States in the field" issued by the Union in April 1863 maintained that the Confederate prisoner was a "public enemy," who should be "penitent" and should not be coddled. Prisoners should not receive clothing beyond that absolutely necessary, regardless of whether the clothing came from the federal government or from friends. In 1864 Union authorities, including Surgeon General Barnes, General Halleck, and Secretary of War Stanton, agreed not to furnish able-bodied captives a diet any better than the one Confederate soldiers were receiving from their own army in the field. A Southern medical officer fulminated against what he took to be "the indifference and brutality" of the federal government, as typified by the inadequate diet, shelter, and hospital facilities made available to Southern prisoners of war.[42]

Union authorities were kinder to the sick and wounded among their captives than to the able-bodied. After the battle of Gettysburg, they ordered medical officers to ensure that Confederate patients were treated with all the care granted Union casualties, but that they should be confined in separate facilities from those sheltering Union soldiers and receive "only such [clothing] as is absolutely necessary." The hospitals themselves, according to advice given by an officer responsible for prisoners of war, were not to be "fitted up with all the conveniences which are provided in hospitals for Federal soldiers," but only to be adequate "to meet all necessary wants of the sick." Ideally, furthermore, prisoners should not be hospitalized south of Nashville.[43]

In spite of the restrictions placed on the care given Confederate prisoners and the accusations made by each side concerning the treatment of prisoners of war, some observers, both North and South, excluded medical officers from their diatribes. The same Southern physicians who wrote of Northern indifference and brutality noted that Union surgeons were compassionate. Speaking for the Union, General Butler informed Secretary of War Stanton in February 1864 that he had "received less complaint of the treatment by rebels of our prisoners in hospitals than elsewhere." He added that he had had "occasion to know, the treatment in the hospitals by rebels of our soldiers prisoners in their hands [has] been reasonably proper and sufficient."[44]

Although the death rate among Confederate soldiers in Union hands was less than that of Northern soldiers in Southern institutions, more than 26,000 of 220,000 rebel captives died during the course of the war. This rate of 12 percent compared favorably with the almost 18 percent characteristic of Confederate prisons, where 22,576 of approximately 126,950 Union

[41] *WOR*, ser. 1, 48, pt. 1:217 and ser. 2, 8:477–78, 492–93; Benjamin Woodward, "Among the Prisoners" and "Letters From Mr. Tone," both in *Sanitary Reporter* 2 (1864):188 and 190, respectively; Ltr, Azpell to Wood (8 Apr 1865), RG 112, entry 12.

[42] *WOR*, ser. 2, 6:602, 7:151, and 8:161, first and second quotes from 5:674 and third quote from 6:102; J. A. Wyeth, *With Sabre and Scalpel, the Autobiography of a Soldier and Surgeon* (New York: Harpers, 1914), pp. 286–92, fourth quote from p. 286; *MSH* 1, app.:324–25.

[43] *WOR*, ser. 2, 5:676, 6:98, 106, and 8:5, first quote from 6:149 and second and third quotes from 7:468; A. W. Smith, *Reminiscences*, p. 133.

[44] Wyeth, *With Sabre and Scalpel*, p. 287; *WOR*, ser. 2, 6:601, quotes from 956.

prisoners died, despite the fact that from the outset many Confederate prisoners suffered from the effects of an inadequate diet. Although they were sick as often and suffered from the same diseases as Confederate soldiers in the field, twice as many Confederate captives died. One authority suggested that it was possible that the least healthy were the most likely to be taken prisoner. Almost 6,000 deaths in Union prisons resulted from diarrhea and dysentery, over 5,000 from respiratory diseases, and just under 3,500 from smallpox, measles, erysipelas, scarlet fever, and similar rash-producing diseases.[45]

Setting the policies that governed the management of prisons and the hospitals that served them was a relatively simple matter, but the attitudes that lay behind these policies may well have contributed to the relatively high death rate in many of these institutions. Northern camps were hastily established at a time when large numbers of prisoners, many in poor health, were coming in. As a result, these camps often acquired unenviable reputations that challenged Army physicians, but improvements were not always immediately forthcoming.

Medical inspectors and prison doctors attempted to prevent diseases at these prison camps as well as to cure them, inspecting sanitation and living conditions in the prisons and their hospitals and making recommendations for improvements. Worst among the institutions for which they were responsible was Elmira, New York, "a perfect pest-hole" established in 1864, where 241 of every 1,000 prisoners died each year it was in operation. Diarrhea and dysentery killed almost 1,400 of the 12,000 men who were at one time or another imprisoned at Elmira. One factor contributing to the high disease rate was the drainage of effluent from the sinks into a pond within the camp's boundaries. Another was the paucity of fresh vegetables available in the diet. Since the vitamin C reserves of most of the men confined there were undoubtedly low, scurvy afflicted a large number, at one point as many as 2,000 at a time.[46]

Conflict between the camp commander at Elmira, Benjamin Franklin Tracy, future secretary of the Navy, and the chief medical officer, a surgeon of the volunteers, contributed to the difficulties in both the camp and the hospital attached to it. The entire medical staff, which in addition to the chief surgeon included seven contract surgeons, an assistant surgeon to a militia unit, and a New York State National Guard assistant surgeon, accused Tracy of interfering in the management of the hospital and thereby making their work more difficult. Although the Medical Department's investigation of the prison hospital confirmed the surgeons' complaints, Commissioner General of Prisoners William Hoffman concluded that all concerned, medical staff and camp commander alike, were incompetent. Under Hoffman's prodding, however, Tracy improved camp drainage and pushed the building of better accommodations for the prisoners.[47]

So much illness among so many men at Elmira initially threatened to overwhelm hospital facilities regardless of what anyone could do. The hospital was still under con-

[45] *MSH* 1, pt. 3:47; *WOR*, ser. 2, 8:948; USSC, *Documents* 1, no. 55:22.

[46] *MSH* 1, pt. 3:63, quote from p. 56; *WOR*, ser. 2, 7:465, 1093.

[47] Benjamin Franklin Cooling, *Benjamin Franklin Tracy, Father of the Modern American Fighting Navy* (Hamden, Conn.: Shoe String Press, Archon Book, 1973), pp. 22, 28–33; *WOR*, ser. 2, 7:878, 892, 918–19, 989–90, 997, 1025, 1042–43, 1050, 1092, 1093–94, 1124, 1133–34, 1135.

struction when the first Confederate soldiers began arriving, and the sick among them had to lie on bare bunks. Straw for bedding and medical supplies arrived only after several weeks, but by October the hospital contained six new wards with an average of sixty-two beds each. The completion of yet another ward in November allowed the abandonment of an old one. Construction continued until, by the end of the year, four more hospital buildings were approaching completion.[48]

Sickness was on the increase, however. Smallpox had broken out and, since a delay in the arrival of vaccine made the immediate immunization of the entire camp impossible, new cases continued to appear. By 24 January 1865, 397 men had been sent to the tents hastily pitched to isolate smallpox patients, and hospital accommodations remained inadequate. Perhaps motivated by the need to reduce the population at Elmira, the surgeon in charge was less discriminating than he should have been in selecting patients for the 41-hour voyage to the exchange point, and some men broke down under the strain. Even so, the hospital remained crowded, and in February 1865 a medical inspector found 200 patients being cared for in their quarters when in his opinion they should have been hospitalized. In mid-March the excess hospital patient load was still being cared for in quarters, and more than 1,700 of 6,000 prisoners were sick. An inspector reported their condition as "pitiable." Only the end of the war and the return of warm weather led to significant improvement in conditions at Elmira shortly before its closing late in June.[49]

The Medical Department regarded Johnson's Island, on the other hand, as one of the healthiest prisons. It opened early in 1862 on a 360-acre island near Sandusky, Ohio. Drainage was excellent, the water good, and the diet almost ideal. Most of the prisoners were officers, however, and thus may have been in better health at the time of their capture than the enlisted men who formed the majority of prisoners at camps like Elmira. The regimental surgeon in charge at Johnson's Island for much of the time it was in operation was a Union physician, but he was assisted by Confederate surgeons, doctors who had been serving in the Confederate Army as line officers and therefore were not released. The surgeon in charge was authorized to hire contract surgeons when he needed them, but the isolation of the prison made finding civilians willing to serve for $80 a month difficult.[50]

Medical Inspector Clark found much to criticize at Johnson's Island in spite of its wholesome location and the health record of its inmates. In the fall of 1863, the hospital was in need of repair and improved ventilation, the wards were crowded and badly kept, more physicians were needed, and the nursing, which was probably done by prisoners, was careless. The latrines were badly maintained, and some of the beds "in a horribly filthy condition." Even when improvements were made at the hospital, the camp kitchens and latrines remained filthy, policy in such matters having been "left to the caprice of the prisoners themselves," and the patients' clothing was inadequate for cold weather. By late July 1864, although the hospital was well-policed and the patients were receiving good care, the prison itself had not improved. The number of sick was growing rapidly, principally because of diarrhea

[48] *MSH* 1, pt. 3:56; *WOR*, ser. 2, 7:1173, 1272.

[49] *MSH* 1, pt. 3:57, quote from p. 57; *WOR*, ser. 2, 8:181, 232.

[50] *WOR*, ser. 2, 3:196 and 6:827–28; *MSH* 1, pt. 3:54.

UNION ARMY PRISONER OF WAR CAMP, *Johnson's Island, Ohio. (Courtesy of Library of Congress.)*

and dysentery. Under the stress of imprisonment and disease, some prisoners developed scurvy, and the surgeon increased the allotment of onions to sixty pounds for every 100 men twice a week. Nevertheless, the annual sick rate of 811 per 1,000 and the death rate from all causes of 35.4 per 1,000 were less than a fifth that of the second most healthy prison.[51]

The health problems experienced at many of the prisons were similar—diarrhea, dysentery, fevers, respiratory diseases, and occasionally scurvy. At many prisons, smallpox, classified as an eruptive fever, was a minor problem, but at Alton, Illinois, it was responsible for greatly increased disease and death rates. The fact that from Alton healthy prisoners were usually sent quickly to other prisons, leaving their sick comrades behind, contributed to misleading statistics, but the long-lasting epidemic at Alton raised the annual sick rate to 10,000 per 1,000, compared to 1,544 at Elmira. The death rate at Alton was also higher than that at Elmira, although dysentery and diarrhea took a higher toll at the New York hospital. The prison surgeon at Alton had believed that he could successfully isolate his smallpox patients within the prison, and by the time he realized he was wrong, smallpox was afflicting guards as well as inmates and was threatening the civilian population of the area as well. Despite a policy of vaccinating every new prisoner on arrival, the disease flared anew as each new group of prisoners

[51] *WOR*, ser. 2, 6:364–66, 826–28 and 7:484–85, first and second quotes from 6:365 and 827, respectively; *MSH* 1, pt. 3:61.

arrived, and the surgeon in charge finally concluded that the vaccine he was receiving from St. Louis was worthless. The medical inspector who came to the prison at the end of July at the request of the desperate medical officer recommended that a smallpox hospital be established outside the confines of the prison. In August, despite opposition from property owners, land was finally obtained two miles from the town and the surgeon general ordered the erection of a tent hospital. By March 1864 Alton had only five patients with smallpox, and these were all convalescent.[52]

When a contagious disease appeared at a prison, the threat of its spread was not always limited to the immediate vicinity. Apparently unaffected prisoners were sometimes moved from a fort where smallpox had appeared to another or sent south for exchange. If they fell ill in transit with this highly contagious disease, they endangered the populations of the areas through which they moved as well as those at their destinations. In October 1863 the appearance of smallpox in prisoners moving toward City Point from Fort Delaware caused so much anxiety that delaying future exchanges from the fort seemed advisable. The disease at Fort Delaware apparently arrived with a prisoner from Camp Chase. Although no surgeon would permit a man obviously suffering from smallpox to travel, men known to be suffering from chronic diarrhea did make the journey south for exchange. Some had to be hospitalized along the route, and others died.[53]

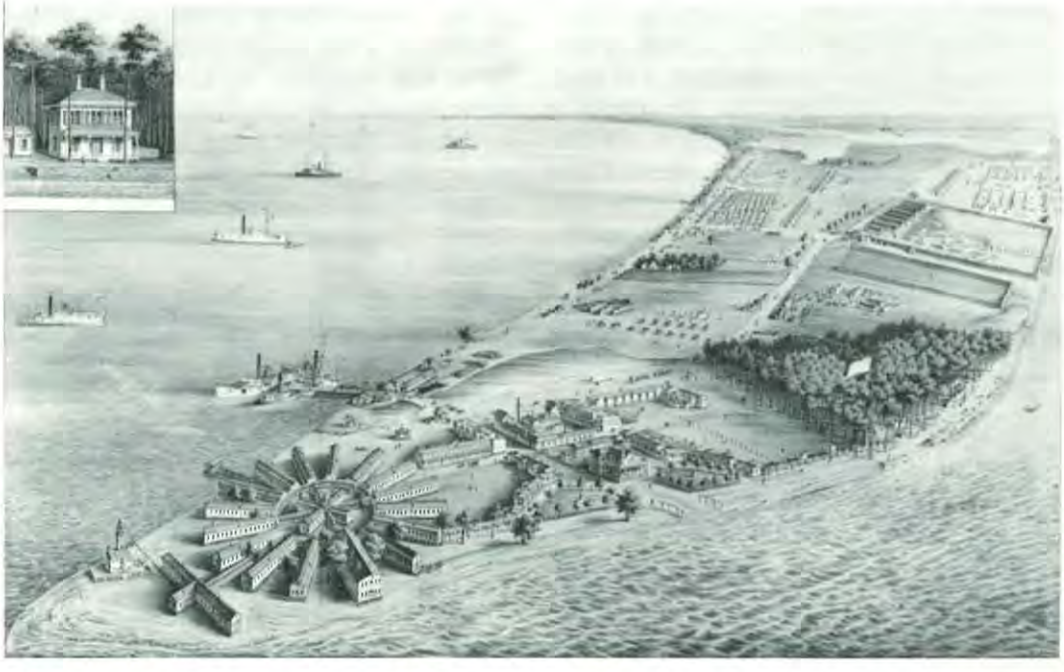
As the end of the war drew nearer, the challenge to prison physicians grew. New prisoners poured in, especially to facilities in the more southern locations. The population at Ship Island in the Mississippi River was 4,000 in April, and during the same month that at Point Lookout, between the Potomac River and the Chesapeake Bay, rose from less than 8,000 to almost 12,000. The sick and dead at Point Lookout were particularly numerous—203 died in April, when more than 1,700 were sick. By May, when nearly 1,600 left Point Lookout, prisoners were heading home in great numbers. Sick rates remained high at Point Lookout, however, where another 1,800 were ill during May. Almost all detainees at Ship Island left before June, and prisoners departed from other camps so rapidly that by the end of the month relatively few remained except for those too sick or too weak to be moved.[54]

Men in blue or gray were not the only patients for whom Medical Department physicians were responsible during 1865. The chief elected officers of both Union and Confederacy, the one an assassin's victim, the other a defeated, harrassed, and ailing prisoner at Fort Monroe, received medical care at the hands of Army surgeons. The first doctor to come to the aid of Abraham Lincoln in his box at Ford's Theater on 14 April 1865 was 23-year-old Charles Leale, assistant surgeon of the volunteers. It was Leale, an ardent Lincoln admirer who apparently came to the theater that night only because he knew the President would be there, who determined the nature of Lincoln's wound. Leale directed the efforts of two other physicians, one an Army contract surgeon, Charles Taft. Taft joined him in the President's box, attempting to revive the victim by pumping his arms up and down, clearing his throat, and blowing into his mouth. The physicians repeatedly removed the clot that clogged the

[52] *MSH* 1, pt. 3:50–51, 61–62, 67; *WOR*, ser. 2, 6:96–97, 104–05, 157, 160, 179, 476, 1123, and 7:535.

[53] *WOR*, ser. 2, 6:96, 422, 477 and 8:231.

[54] *WOR*, ser. 2, 8:173, 259, 480, 482, 493, 1001–02.



HOSPITAL AND PRISONER OF WAR DEPOT *at Point Lookout, Maryland. (Courtesy of Library of Congress.)*

wound, after having noticed that their patient's breathing and heart rate improved when they did so. Although they were certain almost from the outset that the injury would prove fatal, one of the physicians administered a few drops of brandy. They ordered that a room nearby be procured where the President's last hours could be spent and helped carry Lincoln to a nearby house. Leale then sent for his patient's regular physician and for Surgeon General Barnes. Until Barnes and Surgeon Charles Henry Crane, who would be Barnes' successor as surgeon general in 1882, arrived a short while later, Leale continued to direct the patient's care, which included the application of mustard plasters the length of his body. Barnes probed the wound deeply and repeatedly without encountering the bullet, and agreed with the other physicians gathered around the bedside that Lincoln could not survive his injury. Crane and Taft alternated holding Lincoln's head as they waited, and Leale was holding his patient's hand when Barnes pronounced him dead shortly after seven in the morning of 15 April.[55]

The physicians responsible for the health of Jefferson Davis after his capture were also military surgeons. When Davis first arrived at Fort Monroe on 19 May, John J. Craven, surgeon of the volunteers, reported on his health. By the time Surgeon George Cooper, former medical director for the Army of the Cumberland, assumed the

[55]Jim Bishop, *The Day Lincoln Was Shot* (New York: Bantam Books, Bantam Pathfinders, 1955), pp. 208–14, 230, 256, 263–64; Charles Sabin Taft, Notes on Abraham Lincoln, Ms C108, NLM; *MSH* 2, pt. 1:305–06.

PROBE AND BULLET FRAGMENTS FROM LINCOLN'S BRAIN. *(Courtesy of Armed Forces Institute of Pathology.)*

responsibilities initially handled by Craven, Davis' health or lack of it was beginning to become a cause of controversy. During the two years he remained a prisoner, the former president of the Confederacy suffered from a variety of conditions, including neuralgia, boils, erysipelas, "dyspeptic symptoms," and "severe hemorrhoids." Cooper's concern for his patient's health and the effect of imprisonment upon it led the officer in charge of the prison to accuse the surgeon of being "entirely under the influence of Mr. and Mrs. Davis" and to refer disparagingly to Mrs. Cooper's Southern connections. In making this last comment, the commandant may not have realized that Surgeon General Barnes himself, despite his birth in Philadelphia and education in New England, also had ties with the Confederacy, for his brother had worked actively for the Southern cause.[56]

Conclusion

In mid-1865, only Davis and a relatively few seriously ill soldiers and prisoners of war still remained to remind Medical Department surgeons of the great conflict that

[56] *WOR*, ser. 1, 52:171 and ser. 2, 8:56, 558, 571, 577, 711, 720, 740, 754–55, 775, 846, 871, 875, 883, 919, first, second, and third quotes from 8:846, 919, and 976, respectively; James M. Phalen, *Chiefs*, p. 47.

had just ended. Surgeon General Barnes was occupied principally in preparing his organization for a return to peacetime status. The quiet was welcome after the tumultuous last months of the war. Returning prisoners in fragile health had poured in. Grant's army in its final drive had moved so rapidly that the countryside between Petersburg and Appomattox had been strewn with wounded, Union and Confederate. Sherman had once again covered great distances with a minimum of medical supplies. Ambulances had been in short supply and many vehicles in poor repair. Although prisons were not managed with the health of their occupants as the main consideration, nor campaigns planned with the care of the wounded as the prime concern, the Medical Department had functioned as effectively in prisons as it had in the field under conditions it could not control. But now the war was over; it continued to exist only in the memory of survivors and in an enormous volume of records that would as the years went by be compiled, published, and studied, so that from this hideous conflict, something worthwhile might still emerge.[57]

[57]SGO, *Annual Report*, 1865, p. 6; *MSH* 1, app.:205; Brown, *Medical Department*, pp. 244–45.

CHAPTER 13

Achievements and Failures During the Civil War

The Medical Department had intended that its detailed and copious records concerning the Union's sick and wounded guarantee the emergence of something of value to medical science as well as to the Army from the most frightful conflict that the nation had ever faced. During the struggle and the months immediately following it, more than 12,000 medical officers—regulars, volunteers, and contract—examined over 250,000 wounds and treated more than 7 million cases of disease. In the course of their duties, more than 300 Army surgeons died from wounds, disease, or accidents.[1]

In spite of their heavy case loads, many were able to record what they saw for posterity. The value of their observations, however, was to some degree negated by the fact that they, like their civilian counterparts, knew little of bacteria and the methods by which one microscopic creature could be clearly distinguished from another. Furthermore, the heavy demands placed on Army surgeons left little time for the careful consideration of the significance of what they saw. As a result, their observations were haphazard and often of little value. Since surgery was usually performed in great haste and under difficult circumstances, there was also little time available for trying new or intricate techniques. The frightening mortality that resulted from infection obscured the possible achievements of new approaches to surgery. The most important progress made by the Medical Department during the Civil War involved practical matters of organization and administration and resulted in the creation of an effective and efficient medical department for the large and active Union Army.[2]

Disease

In the nineteenth century, disease exacted a heavy toll when large groups of men were gathered closely together under conditions of stress and poor sanitation. In the Civil War, it killed twice as many men as battle. The conflict thus provided millions of cases of various diseases for study, but Union surgeons, like their counterparts everywhere, were still unable to distinguish harmless organisms from those causing disease—the developments that would make this possible were yet to come.[3]

[1]Brown, *Medical Department*, pp. 245–46; *MSH* 2, pt. 3:1, 3–4, 910.

[2]*MSH* 2, pt. 3:1, 3–4, 910; Phyllis Allen, "Etiological Theory in America Prior to the Civil War," *Journal of the History of Medicine and Allied Sciences* 2 (1947):514.

[3]*MSH* 1, pt. 3:1; Bayne-Jones, *Preventive Medicine*, p. 99.

The book devoted by the editors of the *Medical and Surgical History of the War of the Rebellion* exclusively to the greatest scourge of nineteenth century armies, dysentery, illustrates both the intensity with which the Medical Department conducted its attempts to learn more about this problem and the reasons why these efforts were unavailing. More than 1.6 million cases of diarrhea and dysentery were diagnosed in the Union Army, and an average of 14.31 per 1,000 mean strength died from it. A Union medical officer found "the prevalence of diarrhoeas among the rebel prisoners . . . absolutely astonishing." But the gradual realization that living organisms might be causing this and other major problems would gain impetus only after the Civil War. Lacking the staining and culturing techniques available a few decades later, physicians were also unable to compile records that would enable the modern scientist to identify positively the organisms responsible for the Union Army's epidemics of dysentery. It seems probable that *Entamoeba histolytica, Shigella, Giardia, Salmonella,* and *Campylobacter* were afflicting the soldiers of 1861–1865. Nevertheless, fourteen years after the end of the war, Joseph Janvier Woodward, editor of the volume on dysentery and since 1864 a pioneer in the art of staining specimens, was still skeptical about the possibility that minuscule forms of life could be causing diarrhea and dysentery. He, like others of his contemporaries, refused to take seriously an 1876 publication maintaining that an ameba might be capable of causing this disease.[4]

Since they did not know what was really causing diarrhea and dysentery, medical officers had little chance of devising a cure. Shrewd observation based on trial and error was the only hope for progress, but they were also handicapped by their apparent assumption that dysentery was a single disease. Although occasional success was reported with the use of ipecacuanha, which is effective against amebiasis, when trials at a Washington hospital proved disappointing, this drug was rarely used. Among other medicines used to treat diarrhea, opium was often mistrusted, especially after medical officers began to realize it was only a palliative and not a cure. Bismuth subnitrate, also somewhat effective in easing the symptoms of dysentery, was used with caution because the presence of arsenic as an impurity was "exceedingly common." Strychnine, oil of turpentine, and cathartics, including mercurials and castor oil, were among other remedies tried without success. A few surgeons used lead acetate, but the very genuine risk of lead poisoning made many others reluctant to try it. Since malaria could cause diarrhea, quinine was "extensively employed," and "with a liberal hand." Although they had little control over the purity of the water the men drank in the field, doctors took great care to ensure the purity of the water their dysentery patients consumed, preferring rainwater, distilled water, or boiled water, or, as a last resort, the addition of a little claret to whatever was available. Their efforts to treat dysentery and diarrhea were to no avail, however. Although only 1 in 178 dysentery patients died in the first year of the war,

[4]Quote from "Chronic Diarrhoea at Camp Douglass," *Boston Medical and Surgical Journal* 67 (1863):266; *MSH* 1, pt. 2; USSC, *Sanitary Memoirs*, p. 291; Henry, *Armed Forces Institute*, pp. 34–36; Joseph Janvier Woodward, "On the Use of Aniline in Histological Researches . . . ," *American Journal of the Medical Sciences* 49 (1865):106–13. Unless otherwise indicated, all material on dysentery and diarrhea in the Union Army is based on *MSH* 1, pt. 2. *Campylobacter* has only recently been identified as a cause of dysentery: Jack E. Welsh and R. Clark Gillett, telephone conversation with author.

by June 1865, when long campaigns, disease, and deprivation had weakened many soldiers, 1 in 29 was failing to survive.[5]

The most effective steps taken against the diarrheal diseases involved sanitation. Without knowing precisely why, military experts had long realized that filth, especially when large numbers of men were grouped together, was associated with disease. But in an army composed largely of amateurs, enforcing strict standards of sanitation and hygiene posed great problems. When many were afflicted with diarrhea, these problems became even more urgent, both in hospitals and in camps. Officers often ignored regulations requiring the digging of sinks for every camp. Men ignored trenches that were dug for this purpose, which were "often so badly managed that it was disgusting to use them." When drinking water came from shallow wells, pollution was inevitable, and typhoid as well as diarrhea and dysentery resulted. The need for improved camp sanitation inspired sanitary commissions from the beginning of hostilities, and with time, and perhaps as the men themselves began to understand the importance of sanitation, the number of diarrheal cases per 1,000 men began to drop, from 770 in the year ending June 1862 to 686 three years later, and this despite the rising death rate.[6]

Unlike dysentery, malaria no longer formed a serious threat to the Union Army as long as adequate supplies of quinine could be obtained. Wishing to reduce the amount of even temporary disability caused by malaria, Union surgeons continued to experiment with the prophylactic use of quinine, mixing the dose with whiskey to increase its attractions. It was not always possible, however, to obtain enough of both ingredients, and even when several times the normal dose of three to eight grains was administered daily, fever paroxysms might still occur. The disease was reported to return with even greater severity if the prophylactic doses were stopped once started, and prophylactic quinine never became routine.[7]

The Medical Department's interest in malaria extended to the question of the relative susceptibility of blacks and whites. Perhaps on the assumption that blacks were less likely to be disabled by this disease, the Army tended to send black regiments to areas with higher malaria rates. Although department statistics suggested that blacks contracted and died from malaria more frequently than whites, Charles Smart, editor of part three of the Medical

[5]*MSH* 1, pt. 2, first quote from p. 793, remaining quotes from p. 800; Woodward, *Outlines*, pp. 216–17, 222, 229; Charles Beneulyn Johnson, *Muskets and Medicine, or Army Life in the Sixties* (Philadelphia: F. A. Davis Co., 1917), p. 162; "Subnitrate of Bismuth . . . ," *American Journal of the Medical Sciences* 44 (1862):213–32; USSC, *Surgical Memoirs* 1:304–05; Thomas T. Smiley, "Medical and Surgical Cases at Port Royal, S.C.," *Boston Medical and Surgical Journal* 67 (1863):271

[6]Quote from *MSH* 1, pt. 2:617; Woodward, *Outlines*, p. 50; Maxwell, *Sanitary Commission*, pp. 33–34, 38; Steiner, *Disease*, p. 26; Reed, *Hospital Life*, p. 68; Howard D. Kramer, "Effect of the Civil War on the Public Health Movement," *Mississippi Valley Historical Review* 35 (1948):461; USSC, *Documents* 1, no. 1:7, 11 and no. 5:7 and no. 46:41–42; William A. Hammond, *A Treatise on Hygiene With Special Reference to the Military Service* (Philadelphia: J. B. Lippincott Co., 1863), p. vii.

[7]*MSH* 1, pt. 3:77–78, 154, 167, 170–71, 180; Bispham, *Malaria*, p. 136; Ltr, Moore to SG (4 Aug 1863), RG 112, entry 12; William H. Van Buren, "Quinine as a Prophylactic Against Malarial Disease," *Military Medical and Surgical Essays Prepared for the U.S. Sanitary Commission*, ed. W. A. Hammond (Philadelphia: J. B. Lippincott Co., 1864), pp. 96–97; "Quinine as a Prophylactic, *American Medical Times* 3 (1861):262; USSC, *Documents* 1, no. 8:248; USSC, *Surgical Memoirs* 1:135–36. It might be noted that during World War II, the Medical Department found daily doses of 0.3 g (4.6 gr.) of quinine relatively ineffective in preventing vivax malaria in both New Guinea and West Africa: Havens, Jr., *Infectious Diseases*, p. 532.

volume of the *Medical and Surgical History*, blamed this situation on the greater exposure of blacks to the disease. The death rate for blacks with malaria was twice that of whites suffering from that disease, but he remained convinced that blacks had a lesser susceptibility to malaria than whites, a belief that modern research has to some extent confirmed.[8]

Typhoid was yet another disease about which medical officers discovered little that was new during the Civil War, despite devastating epidemics. Although many soldiers coming from the North were exposed to both typhoid and malaria at essentially the same time, the announcement that the resultant collection of symptoms constituted typhomalarial fever merely added to the confusion. Medical officers, though aware of the connection between poor sanitation and typhoid, remained as much mystified by the disease in 1865 as in 1861. The data collected in the *Medical and Surgical History* did, however, help Army physicians after the war to realize that water was indeed one source of typhoid infections.[9]

Smallpox was no longer the formidable threat it had been during the American Revolution, but medical officers still had to treat many cases, since an average of 5.5 per 1,000 mean strength among whites and 36.6 among blacks contracted the disease. It was not always possible to immunize immediately the thousands of volunteer troops who came pouring in, and doctors were already aware that periodic revaccination was necessary if the spread of smallpox was to be prevented. Surgeons learned that possible complications made it advisable, however, not to immunize those suffering from scurvy. They also discovered that vaccine could be safely preserved and shipped in narrow glass tubes, three inches or less in length, for each dose so stored. Because of the efforts of the Medical Department, during the autumn of 1863 and the winter of 1864 more people were vaccinated than had ever been immunized before in a comparable period of time.[10]

The inroads of other diseases, including the very prevalent respiratory infections that also afflicted Union soldiers, were relatively easy to appreciate, but the effects of a deficient diet were not. Medical officers, helpless to solve the transportation problems that led to the deficiency, were well aware that the standard ration of the soldier in the field was likely to lead to scurvy, although they were not aware that the soldier who refused to eat desiccated vegetables was also in danger of suffering from a lack of vitamin A. Surgeons usually recognized cases of scurvy at its worst, but the less obvious effects of subclinical scurvy were hard to pinpoint. As a result, one can only conjecture about precisely how much the vigor and effectiveness of troops in the field were affected by the depression and lethargy that accompanied the earliest stages of a vitamin C deficiency, since they could have resulted from or been reinforced by other health problems as well. It is difficult, too, to estimate to what extent a deficient diet, sometimes low in protein and calorie content as well as in vitamins, contributed to the prolongation of other ills, to the failure of injuries to heal, and to devastation wrought by

[8]Bispham, *Malaria*, pp. 34, 119; *MSH* 1, pt. 3:12–13, 80, 85, 89, 92, 107, 109, 110–11.

[9]*MSH* 1, pt. 3:372–73, 375, 494; Kenneth F. Maxcy, *Preventive Medicine and Public Health*, 8th ed. (New York: Appleton-Century-Crofts, 1956), pp. 180–81.

[10]*MSH* 1, pt. 3:625–27, 635, 638; F. G. Smith and Alfred Stille, "Vaccination in Armies," *Military Medical and Surgical Essays*, ed. W. A. Hammond, pp. 148–49, 151–52; USSC, *Surgical Memoirs* 1:137–38, 142–50, 162–63, 165; USSC, *Documents*, no. 9:15, 25.

open wound infections. A Sanitary Commission official familar with the problems caused by scurvy commented, however, that "The pecuniary loss to the nation, by badly regulated and insufficient army ration, constitutes one of the great burdens of taxation now pressing upon the people."[11]

Although the Army did what it could to treat the sick, many soldiers returned to their homes and to civilian life with their health permanently impaired by chronic disease. Usually the lingering illness involved diarrhea that, even when inactive, hung like the sword of Damocles over the veteran's head, likely to fall when his body was overstressed. Many deaths from dysentery acquired during the war occurred in peacetime in soldiers whose health declined slowly even after they returned to their families. Veterans suffering from malaria acquired when they were far from their northern homes became a potential source of infection for local *Anopheles* mosquitoes. A study of former soldiers in Massachusetts made in the 1890s showed that they also suffered from such diseases as tuberculosis and rheumatism at a rate far greater than that of the general population of that state. The rate of diarrhea and dysentery among veterans was almost fifty-six times that among the rest of the population, that of rheumatism five times, that of heart and circulatory problems six times (possibly as a legacy of streptococcal infections), and that of consumption twice. There was no indication, however, whether returning soldiers spread dysentery and diarrhea among those who had remained at home.[12]

Except for offering supportive care, doctors could do little during the Civil War to help those stricken with diseases other than malaria. Except for improved sanitation, they could do little to prevent diseases other than smallpox, but their renewed appreciation for sanitation undoubtedly contributed to a marked drop in the disease rate in the postwar Army as compared with the prewar force. Despite voluminous records, medical officers made no significant progress during the Civil War toward finding ways in which to prevent or cure the diseases that ravaged the Union Army.[13]

Infection and Wounds

Although aware that scurvy or even a scorbutic taint delayed healing, medical officers were ignorant of how infections spread from wound to wound. As a result, they were initially unable to combat the horrors of what now appear often to have been streptococcal infections. These bacteria spread through hospital wards, turning even small wounds into gaping, oozing pits of hospital gangrene, poisoning the bloodstream, and spreading the rash of erysipelas among wounded and unwounded alike. On the basis of the many cases they saw during the war, some surgeons did begin to suspect that these infections as well as scarlet fever, rheumatism, and some forms of heart disease might all be related,

[11]USSC, *Surgical Memoirs* 1:51, 88, 274, 276, 278, quote from 278; USSC, *Documents* 1, no. 17:11–12; *MSH* 1, pt. 3:68–70, 684, 705–07, 713. Desiccated vegetables were prepared by cleaning and slicing, drying in hot air, pressing, and then sealing in cans, a process likely to destroy vitamin C: E. N. Horsford, *The Army Ration*, 2d ed., rev. (New York: D. Van Nostrand, 1864), p. 11.

[12]*MSH* 1, pt. 2:651 and pt. 3:77-78, 82; Johnson, *Muskets and Medicine*, p. 170; John S. Billings, "The Health of the Survivors of the War," *Forum*, Jan 1892, p. 656.

[13]Kramer, "Effect of the Civil War," p. 456, 462; Steiner, *Disease*, p. 5.

but they blamed them on miasmas or the poisons produced by decaying flesh.[14]

Medical officers could not afford to take these infections lightly. Some had a very high mortality; of 2,812 cases diagnosed as pyemia, a systemic infection, 2,747 were fatal. Surgeons recorded surprisingly few cases of tetanus, but much gangrene, which killed 45 percent of its victims and necessitated surgery that would not otherwise have been performed. Of the wounded afflicted with erysipelas with its spreading areas of swollen, empurpled skin, 41 percent died. Surgeons observed once again that patients in tent hospitals suffered less from infection than those housed indoors and that good ventilation reduced the infection rate. Although some theorized that erysipelas spread through the blood, many were convinced that it moved through the air, noting that it seemed to spread in the direction the wind was blowing. Case histories revealed patients who suffered first from one form of infection, then another, gangrenous wounds that healed only to be followed by erysipelas and then even pyemia.[15]

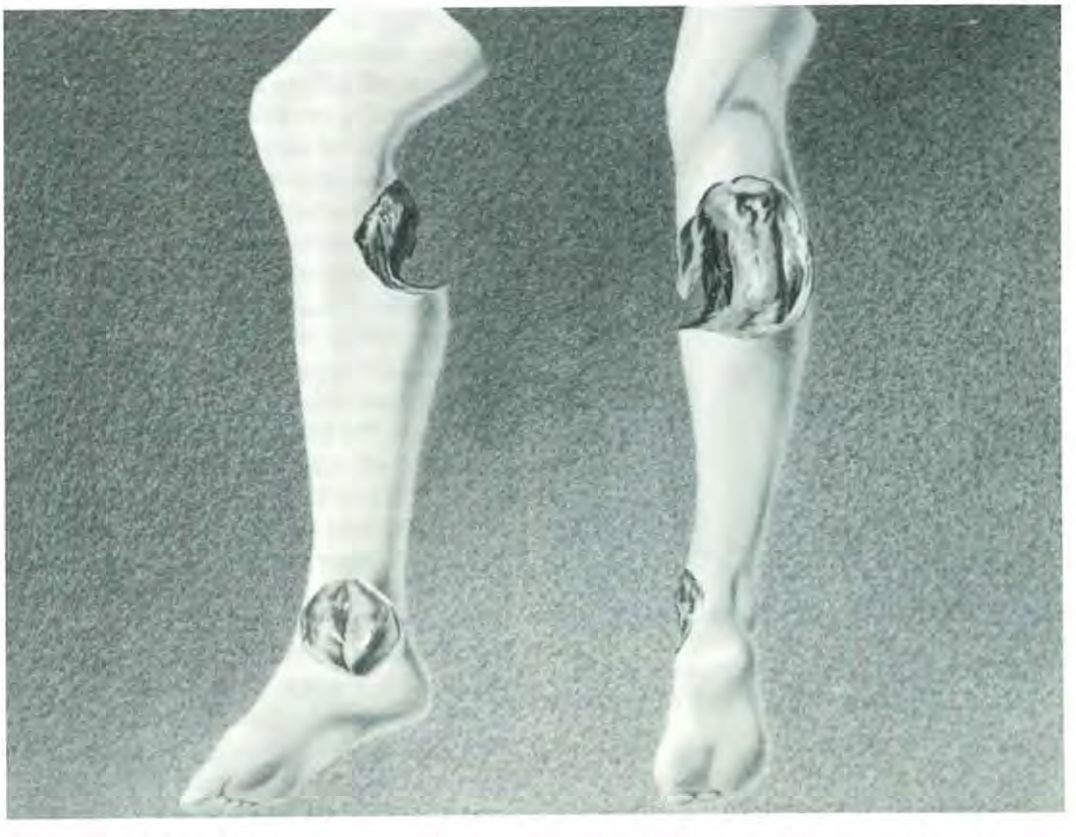
Hospital gangrene, probably caused by *Streptococcus pyogenes*, had such a rapid and horrible effect on wounds that it inspired both dread and strong efforts to find a cure. The skin around gangrenous wounds sloughed off, revealing flesh that slowly turned "reddish, greenish, purplish, or black," while the gray edges of the opening grew wider at the rate of half an inch an hour. Arteries and even bones were rapidly exposed and the stench of rotten meat filled the air. As his skin turned gray the patient's breath became sickly sweet, his body alternated between chills and sweats, and his pulse grew ever faster, ever feebler. So great was the fear of the spread of this infection that in several areas medical officers established special facilites to isolate its victims.[16]

Gas gangrene was not the infection that caused so much alarm in the military hospitals of the Civil War. Civil War records reveal that one of the most terrifying aspects of hospital gangrene was the rapidity with which it spread from patient to patient, but gas gangrene is not contagious. The presence of a clostridial infection cannot be ruled out, however, especially since the occasional mention of a sweetish odor from the wounds strongly suggests its presence. We know, however, that less than a third of all wounds become infected with clostridia, and only 5 percent of these actually develop gas gangrene. Gas gangrene, moreover, tends to appear in deep wounds, especially when damage to major blood vessels has reduced the oxygen supply to the muscles, a type of injury that during the Civil War usually led to relatively prompt amputation before gas gangrene

[14]USSC, *Surgical Memoirs* 1:274; C. H. Cleaveland, "Hospital Gangrene in the U.S. Military Hospital at Memphis, Tenn.," *Chicago Medical Journal* 21 (1864):15–16; M. Goldsmith, *A Report on Hospital Gangrene, Erysipelas and Pyaemia, as Observed in the Departments of the Ohio and the Cumberland, With Cases Appended* (Louisville: Bradley & Gilbert, 1863), pp. 7–8 n. 7–8, pp. 14–15, 20–21; E. Andrews, "Diathesis: Their Surgical Relations and Effects," *Transactions of the American Medical Association* 14 (1863):125; Alfred North, "Report of Sixty Cases of Hospital Gangrene," *American Medical Times* 6 (1863):258.

[15]*MSH* 1, pt. 3:663, 673; 854; *MSH* 2, pt. 3:32, 34, 37, 818; Goldsmith, *Gangrene*, pp. 13–14; Keen, "Reminiscences," pp. 104–05; Mitchell, "Medical Department," p. 1446; Frank Hastings Hamilton, ed., *Surgical Memoirs of the War of the Rebellion*, 2 vols. (New York: Hurd & Houghton, 1870), 1:509–10; William Thomson, "Report of Cases of Hospital Gangrene," *Chicago Medical Examiner* 5 (1864):675, 689–90; Stewart Brooks, *Civil War Medicine* (Springfield, Ill.: Charles C Thomas, 1966), p. 83.

[16]Quote from Cleaveland, "Gangrene," p. 5; *MSH* 2, pt. 3:823, 825–30, 843; Brinton, *Memoirs*, pp. 225–26; Hamilton, *Treatise*, pp. 570–71, 573; Wangensteen and Wangensteen, *Rise of Surgery*, pp. 63, 394; Goldsmith, *Gangrene*, pp. 25, 27.



HOSPITAL GANGRENE *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

could develop in the wound. Hospital gangrene, on the other hand, actually caused a higher death rate when it originated in flesh wounds than it did in wounds accompanied by fractures.[17]

The horror of hospital gangrene inspired urgent efforts during the Civil War to find both a preventive and a cure. Among the remedies used, the halogens—iodine, chlorine, and bromine—proved to be more useful against hospital gangrene than nitric acid, which was also tried but with less widespread enthusiasm. Apparently finding bromine the easiest to use, surgeons began applying it to wounds and the rash of erysipelas, vaporizing it to disinfect the air,

[17]*MSH* 2, pt. 3:31, 824; Wesley W. Spink, *Infectious Diseases: Prevention and Treatment in the Nineteenth and Twentieth Centuries* (Minneapolis: University of Minnesota Press, 1978), pp. 302–03; James F. Coupal, "Pathology of Gas Gangrene Following War Wounds," sec. 2 in *Pathology of the Acute Respiratory Diseases, and of Gas Gangrene Following War Wounds*, vol. 12 of *The Medical Department of the United States Army in the World War* (Washington: Government Printing Office, 1929), pp. 412–14, 419; Rene J. Dubos and James G. Hirsh, *Bacterial and Mycotic Infections of Man*, 4th ed. (Philadelphia: J. B. Lippincott Co., 1965), pp. 553, 555; Wintrobe et al., *Harrison's Principles*, pp. 783, 852–53.

HOSPITAL GANGRENE *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

and mixing it with glycerine for internal use, not thinking, however, to use it to sterilize instruments. One successful technique involved inserting bromine on wooden sticks into diseased tissue; another called for injecting bromine by hypodermic into healthy tissue bordering the infected area. These procedures could cause so much pain as to require the use of anesthesia. Used in adequate strength and quantity, bromine prevented the spread of gangrene both in the individual patient and among patients. Although some surgeons using bromine reported that deaths from hospital gangrene had been entirely eliminated, others remained skeptical and apparently regarded the approach as something of a fad.[18]

Attempts to find the cause of hospital gangrene and other infections met with less success than efforts to find a cure. Microscopic studies revealed an elevated white blood cell count in the victims of hospital gangrene, but beyond that "only the ordinary bacteria which are to be observed in every decomposing animal substance." This last comment, although strange to modern ears, was the natural result of ignorance about the range and variety of disease-causing organisms and the absence of stains and other techniques that would emphasize the characteristics of cells seen under the microscope.[19]

The injuries that were the sites of such grim infections usually resulted not from bayonet or saber but from the slow-moving minie ball, which shattered bone and crushed soft tissues, carrying into the body bacteria-laden bits of clothing and other debris. A few minie balls were actually explosive and, while shattering bone still further, embedded bits of copper, lead, and pewter in the shredded flesh. Many victims bled to death on the battlefield. Even without infection, the fractures caused by the minie ball would challenge a twentieth century orthopedist. When streptococci filled the wound and spread ever more widely beyond the injury, even amputation often failed to save the victim. Thus the death

[18]Wangensteen and Wangensteen, *Rise of Surgery*, pp. 318–20, 323–25, 507; John Brinton, "Bromide in Hospital Gangrene," *American Medical Times* 6 (1863):250; *MSH* 2, pt. 3:837, 845; Goldsmith, *Gangrene*, pp. 29, 31, 32, 35, 81–84; Cleaveland, "Gangrene," pp. 6–7, 10; Mitchell, "Medical Department," pp. 1446; Thomson, "Gangrene" 5:676, 677–78, 692; North, "Gangrene" 6:255; Roberts Bartholow, *The Principles and Practice of Disinfection* (Cincinnati: R. W. Carroll & Co., 1867), pp. 44–47.

[19]*MSH* 2, pt. 3:827, 832, 848–49, 862–65, quote from p. 832; Wangensteen and Wangensteen, *Rise of Surgery*, pp. 508–09; Reed, *Hospital Life*, pp. 35–36; Keen, "Reminiscences," pp. 103–04; Willis G. Diffenbaugh, "Military Surgery in the Civil War," *Military Medicine* 130 (1965):491.

rate was high. Sixty-two percent of those with chest wounds died, as did more than 87 percent with abdominal wounds, usually within two days of the moment when the bacteria-filled contents of the injured intestines spilled into the peritoneal cavity. Few surgeons would open the abdomen unless fecal material was actually oozing from the wound. Of the 253,142 wounds recorded in the Surgeon General's Office, however, most involved the extremities, more than 35 percent the legs and feet, and another 33 percent the arms and hands.[20]

Confronted with so many injuries and imbued with the pragmatism characteristic of their profession, surgeons tried to test the effectiveness of both old methods and newly proposed approaches. One area of experimentation involved the hermetic sealing of chest wounds. Although this procedure gave instant relief for breathing difficulties and bleeding, it also eliminated the possibility of external drainage and thus provided no improvement in the management of infection. Many surgeons vigorously opposed its use. Another area of relatively intense study involved nerve injuries. Medical officers tried various forms of stimulation upon paralyzed patients, including electrical currents and alternating applications of cold and heat. Although 55.5 percent of those with spinal injuries died of their wounds, in at least one instance doctors were able to keep a "nearly complete paraplegic" whose bladder could be emptied only by catheter alive for at least seventeen years.[21]

So great was Surgeon General Hammond's interest in nerve injuries that he turned an entire hospital over to S. Weir Mitchell, a pioneering neurologist, for the exclusive use of patients with nerve injuries and nervous diseases. Here Mitchell, George R. Morehouse, and William W. Keen, Jr., studied the victims of phantom limb and nerve damage, epileptics, malingerers, and shell-shock victims (although "shell shock" is a term of more recent origin), men whose ills were psychological in origin and who usually received little attention from physicians. In one year alone Mitchell used 40,000 injections of morphine in his attempts to relieve the torments of his patients. He experimented also with hypodermic injections of atropine to ease muscle spasms. In this facility he took thousands of pages of notes in preparation for later publication.[22]

Since such a large proportion of wounds involved the extremities, much of the data collected on wartime surgery dealt with amputation, excision (the removal of a major portion of bone), and attempts to preserve bone essentially intact. Surgeons

[20]*MSH* 2, pt. 2:434 and pt. 3:2, 685, 702, 723; John Hill Brinton, "Address: Closing Exercises of the Session 1895–96, Army Medical School," *Journal of the American Medical Association* 26 (1896):603; Duinell Medical Report; Frank H. Hamilton, "Lecture on Gunshot Wounds of the Abdomen," *American Medical Times* 8 (1864):230; Johnson, *Muskets and Medicine*, pp. 131–32; "Scenes in Hospitals," *Sanitary Reporter* 1 (1863):162; "Military Medicine," *MD* 12, no. 6 (1968):130; Keen, "Reminiscences," p. 107; Robert L. Reid, "The British Crimean Medical Disaster—Ineptness or Inevitability," *Military Medicine* 140 (1975):425; Dean Thomas, "The Gardiner Explosive Shell," *North South Trader* 2 (Jul–Aug 1976):23–24; Robert Reyburn, *Fifty Years in the Practice of Medicine and Surgery, 1856 to 1906* (n.p., 1907), p. 9; Diffenbaugh, "Military Surgery," p. 492.

[21]*MSH* 2, pt. 1:424, 452, 497–98, 500n, 509–11, 618, 634, and pt. 1, app.:200, and pt. 3:725, 727–28, quote from 3:727.

[22]Anna Robeson Burr, *Weir Mitchell: His Life and Letters* (New York: Duffield & Co., 1929), pp. 104–06, 122; Mitchell, "Recollections," pp. 91–93; Ernest Earnest, *S. Weir Mitchell: Novelist and Physician* (Philadelphia: University of Pennsylvania Press, 1950), p. 52; S. Weir Mitchell, George R. Morehouse, and W. W. Keen, Jr., *Reflex Paralysis*, Cir no. 6 (SGO, 10 Mar 1864; New Haven, Conn.: Yale University School of Medicine, 1941), pp. iii–vi; S. Weir Mitchell, *Injuries of Nerves and Their Consequences* (New York: Dover Publications, 1965), pp. v, xviii–xix.

CASUALTIES OF BATTLE: AMPUTATED LIMBS. *(Courtesy of Burns Archive Historic Medical Photographs.)*

seeking to preserve a limb tried many devices to immobilize it, but apparently distrusted casts, fearing impaired circulation. Sandbags and elongated box splints limited motion during transportation, and several different kinds of splint were used in the hospital, including one designed by an Army surgeon. In cases where the femur, or thigh bone, was fractured, extension or traction devices were rarely used. Such treatment might prevent solid contact between the broken ends and thus inhibit or preclude healing, but without it, a leg tended to mend inches shorter than it had been and at times could be badly deformed as well. Other complications included abscesses and sinuses or abnormal channels that lasted for years and drained the patient's strength, and splinters of shattered bone left in the wound that continued to work their way to the surface, adding to the patient's lingering anguish. Some of the wounded thus died after years of suffering and slow decline. Medical officers attributed most deaths in those whose limbs they had tried to save to pyemia or other forms of systemic infection.[23]

[23] *MSH* 2, pt. 2:811, 814, 841, and pt. 3:179–83, 190, 193, 198, 346n, 350, 428–29, 568; "The Week," *Amer-*

Since the treatment to be accorded fracture cases was chosen on the basis of the patient's condition rather than at random, the death rates do not necessarily reflect the merits of the various forms of treatment. Although there was much disagreement on the value of a conservative approach to the management of shot fractures, the mortality of patients chosen for conservative treatment proved less than that of those treated with excision or amputation. In a series of 386 men with shot fractures of the hip, for example, 249 of 304, or 82 percent, treated conservatively died, but 53 of 55, or 96 percent, undergoing excision failed to survive, and 25 of 27, or almost 93 percent, enduring amputation died. Of 2,369 victims of shot fractures of the shoulder, only 25.1 percent treated conservatively died, while 36.6 percent of excision patients died, as did 29.1 percent of the amputees.[24]

The chief value of excision, with its high death rate, lay in the fact that it could preserve some function of the arm and, when the periosteum (the bone-forming connective tissue covering all bones) was preserved, doctors could hope for some bone regeneration. One surgeon maintained that he had seen the entire shaft of the tibia (the principal bone of the lower leg) regenerated. Even without regeneration, however, an arm could be surprisingly useful despite the removal of a large amount of bone, and doctors regarded any function as better than none. Such removal might mean, however, that the limb would dangle loosely from the shoulder. Unfortunately, time might cause such an arm to deteriorate and to swell because it was dangling unsupported. In one such case, although Army doctors considered the result to be satisfactory, a pension examiner recommended amputation in 1867. Excision became less popular as the war went on—the chances for infection were great, the period of healing was long, and the results, except in the instances when the usefulness of a hand was retained, were questionable, if not actually disastrous. The death rate, furthermore, was comparable to or greater than that in amputations, with pyemia the chief danger and hemorrhage a significant problem.[25]

WILLIAM W. KEEN. *(Courtesy of National Library of Medicine.)*

Although occasional reports of excessive enthusiasm for amputations did surface during the Civil War, this form of surgery

ican Medical Times 4 (1861):268; Tripler and Blackburn, *Handbook*, p. 56.

[24]*MSH* 1, pt. 1, app.:311; *MSH* 2, pt. 2:660 and pt. 3:65; Hamilton, *Treatise*, pp. 13–14; *WOR*, ser. 1, 38, pt. 2:526.

[25]*MSH* 2, pt. 2:518, 548, 563, 611–12, 670, 966, 992 and pt. 3:874–76; USSC, *Papers* 1:5–7; "Conservative Surgery," *American Medical Times* 3 (1861):295.

was apparently often undertaken only after careful consideration of the alternatives. Excision was generally viewed as the least desirable choice, however, in cases where there was damage to the upper leg, and damage to a joint was often regarded as necessitating amputation. The records concerning the number of amputations performed are not complete, but the figure was at least 30,000. The most common amputation was that of the hand or fingers, while the highest fatality rate, of 83.3 percent, occurred after amputation at the hip joint. Surgeons discovered that amputation at the knee took a surprisingly high toll of 57.2 percent, and even amputation of the lower arm was followed by the deaths of 20.7 percent of those operated on. Considerable difference of opinion existed as to how the amputation was to be performed in any event, with many favoring a flap procedure that could be quickly done on the field and involved less danger from bleeding than the circular form of the operation. Some surgeons favored immediate operation, others a very brief wait until the first shock had worn off. The surgery itself was apparently a rapid procedure even though anesthesia was generally used. A hip amputation reportedly took two minutes, including the time needed to tie off the femoral artery.[26]

Some surgeons were still a little wary of anesthesia, however, and avoided its use when the patient's condition was very poor. Few deaths were actually blamed on these agents, but surgeons noted the adverse effects on appetite and the nausea and vomiting that followed their use. Some continued to believe that anesthesia prevented quick healing and therefore led indirectly to increased rates of infection and hemorrhage. Nevertheless, by the time of the Civil War, most Army surgeons, even conservative Surgeon General Thomas Lawson, had accepted its use.[27]

Anesthetics were used in at least 80,000 cases during the Civil War. More than 76 percent of the time the agent used was chloroform, but ether was popular in general hospitals, and a combination of ether and chloroform was used in 9.1 percent of the cases. A failure to use any form of anesthesia was recorded only 254 times. The debate over which anesthetic to use centered around the difficulties and dangers involved. Deaths from chloroform averaged 5.4 per 1,000 cases, those from ether 3 per 1,000. Ether was flammable and particularly hazardous when operations were performed by candlelight, while chloroform caused some inexplicable deaths, although it was easy to take and even a small amount acted with considerable speed. Surgeons well aware of its dangers and its reputation still preferred to use this anesthetic, although they did so with care, attempting to limit the length of time it was administered and to ensure that an adequate amount of air was inhaled with it.[28]

An anesthetic, whether ether, chloroform, or a mixture of the two, was appar-

[26]*MSH* 2, pt. 2:746 and pt. 3:20,134, 339–40, 411, 877, 879; Hamilton, *Treatise*, pp. 420–23, 426–28, 431, 436; Charles H. Rawson, "Visit to the Hospital at Springfield, Mo.," *American Medical Times* 3 (1861):364.

[27]Hamilton, *Treatise*, pp. 612, 621–22; *MSH* 2, pt. 3:134–35; Ms C24, p. 26, NLM; G. W. H. Kemper, "The Surgeons of the Civil War," *Journal of the Indiana Medical Association* 11 (1918):368; "Anesthetics in Military Surgery,"*American National Times* 3 (1861):151; Gross, *Manual*, p. 81.

[28]*MSH* 1, pt. 1, app.:200; *MSH* 2, pt. 3:887–89; "Anesthetics," p. 151; Keen, *Reminiscences*, p. 109; William Williamson Wellington, "Modern Medicine: Its Need and Its Tendency," *Medical Communications of the Massachusetts Medical Society*, ser. 2, 11, no. 7 (1874):163; Jones, "Medical History," p. 188n; J. Mason Warren, "Recent Progress in Surgery," *Medical Communications of the Massachusetts Medical Society*, ser. 2, 10, no. 6 (1866):273.

ently usually administered by means of an impregnated cloth, which might have been rolled into a cone with an anesthetic-soaked sponge at its apex, held over the mouth and nose. Experience taught medical officers that in the open air where so many amputations were performed, merely pouring an anesthetic on a cloth was not effective. Premedication, if given, might take the form of a dose of whiskey. As a rule no ill effects resulted from the inhalation of an anesthetic. On occasion, however, a patient inhaling chloroform would begin to make convulsive movements, and the veins in his neck would start to swell. The physician would often note that his patient's heart was either at the point of arrest or had already stopped beating. In such cases, respiration soon also ceased, and all the efforts of doctors and nurses were often to no avail. It was only in March 1865, however, that the surgeon general was sufficiently disturbed over the problem of anesthesia deaths to order his surgeons to report on their experiences with these agents.[29]

In addition to anesthetics, medical officers used analgesics, including both alcohol and opiates, in their battle against pain. Alcohol was used not only to relax a patient before the administration of anesthetics, but also to serve as a vehicle for quinine. Some physicians, including Letterman, feared that this free use of alcohol could induce addiction or mask symptoms, but alcoholism did not become a significant problem during the Civil War. Authorities should perhaps have been more concerned about the possible overuse of opiates, since many cases of addiction after the war were blamed on the free prescribing of such drugs during the conflict. Opium itself had long been prescribed for diarrhea, but during the Civil War morphine was also dusted in wounds or administered by hypodermic. Occasional mention was also made during this period of the use of cannabis for patients with tetanus or head injuries.[30]

The hypodermic, apparently used chiefly to inject morphine, was one of a few new devices slowly gaining in popularity in the Army during the Civil War. It was regarded to some extent as experimental. Although the Medical Department did have clinical thermometers, they were not in common use, and the model available was very long, intended for use in the armpit. Such instruments as hemostatic forceps, retractors, and dilators were not available, and few doctors knew how to use an ophthalmoscope or laryngoscope. Microscopes were few and far between. Real progress, however, was being made in the design of artificial limbs, enabling crippled soldiers to walk with only a limp or, with the aid of gloves, to conduct their lives with few aware that they had lost a hand or an arm. A relatively new development was mobility in the ankle of an artificial leg. A device developed by one firm for patients with resections of the elbow or shoulder was so effective that it permitted a greater reliance on this form of surgery as opposed to am-

[29]Frederick E. Lente, "Sulphuric Ether as an Anesthetic in Military Surgery," *American Medical Times* 4 (1862):365; *MSH* 2, pt. 3:888; 890–91, J. H. Thompson, "Report of the Wounded at the Battle of Newbern, N.C.," *American Medical Times* 5 (1862):6; Cir, SG (Cir no. 2, 15 Mar 1865), Ms C24, NLM.

[30]Woodward, *Outlines*, p. 170; Hall, *Researches*, p. 173; *MSH* 1, pt. 1, app.:232–33, and pt. 3:171, 890; *MSH* 2, pt. 1:646 and pt. 3:818; A. W. Smith, *Reminiscences*, p. 129; R. N. Barr, "Army Diseases," *Ohio Medical and Surgical Journal* 14 (1862):107–08; Letterman, *Recollections*, p. 183; USSC, *Surgical Memoirs* 1:13; Brooks, *Civil War Medicine*, p. 103; "Blue Velvet: The New Look in Drug Addiction," *The Sciences* 4 (1964–65):8; Barry M. Parsinen and Karen Kerner, "The Development of the Disease Model of Drug Addiction in Britain, 1870–1926," *Medical History* 24 (Jul 1980):275–77.

putation. Medical officers also developed considerable ingenuity in devising for those whose lower jaws had been torn away prostheses that limited drooling and made taking liquids possible. The actual selections of the firms to make prostheses and of the designs to be used was apparently significantly influenced by a committee of distinguished doctors appointed by Surgeon General Hammond. The soldier whose artificial limb was approved by the Medical Department could choose any limb costing $50 or less from one of several authorized manufacturers.[31]

The benefits to medical science arising from the Civil War are not easily established, but undoubtedly the civilian population profited from the presence of surgeons like S. Weir Mitchell and his colleagues who had received more training and experience during that conflict than they would otherwise have had in a lifetime. Although the records and specimens that would form the *Medical and Surgical History*, and the Army Medical Museum were of little help in improving the care of the sick or wounded during the struggle, both would be of value to future generations, just as would be the techniques in staining specimens for the microscope and in photomicrography pioneered in the museum late in the war.[32]

Organization and Administration

The effect of Civil War experiences on the size, organization, and administration of the Medical Department was more pronounced than the Civil War experiences' effect on medical science. A more effective use of the department's newly huge medical staff was but one of its achievements. Great flexibility proved necessary to care for the enormous numbers of sick and wounded that poured in from battlefields and camps, both east and west. No ratio of surgeons to men that would be adequate under all circumstances could be efficiently established for a given unit. To deal with this situation, the Department departed from the Mexican War pattern to create positions for surgeons and assistant surgeons of the volunteers, who could be assigned as needed and whose qualifications were determined by the Medical Department. More than 500 of these physicians worked with a Regular Army staff numbering less than half that figure. Almost 6,000 regimental medical officers, whose qualifications were initially ascertained at the state level, also served at one time or another in the Union Army. An equivalent number of civilian doctors unwilling or unable to join the Army worked as contract surgeons, either for short periods when necessity dictated or in general hospitals in the cities where they lived. Although a few Army doctors, especially in the early months of the war, earned unenviable reputations, the Department was apparently

[31] *MSH* 1, pt. 3:965; *MSH* 2, pt. 1:398; Ltrs, Brinton to Barnes (8 Dec 1864), RG 112, entry 12. Byrne to Reed and Barton (9 Apr 1863) and Edward S. Dunster to James W. Queen (10 Jun 1863), both in RG 112, entry 2, 34:497 and 35:187, respectively; Keen, "Reminiscences," p. 109; W. W. Keen, "Military Surgery in 1861 and in 1918," *Annals of the American Academy of Political and Social Science* 80 (1918):20; Charles R. Greenleaf, *A Manual for the Medical Officers of the United States Army* (Philadelphia: J. B. Lippincott Co., 1864), p. 25; A. W. Smith, *Reminiscences*, p. 189; Samuel D. Gross, *Autobiography of Samuel D. Gross, M.D., With Sketches by His Contemporaries*, ed. by his sons, 1 (Philadelphia: George Barrie, 1887):133–34; Andrews, *Surgery*, pp. 414–15; James M. Minor, "Report on Artificial Limbs," *Bulletin of the New York Academy of Medicine* 1 (1860–62):177; Henry, *Armed Forces Institute*, p. 8.

[32] Henry, *Armed Forces Institute*, pp. 34–39; Anderson Hunter Dupree, *Science in the Federal Government* (Cambridge, Mass.: Belknap Press of Harvard University, 1957), p. 129.

able to gather a medical staff that was on the whole highly regarded. The new type of organization, where regular medical officers shared their responsibilities at all levels with a large volunteer staff, was needed more in war than in peace, but it blazed a trail that would not be forgotten.[33]

The war also served to emphasize the necessity for abandoning the customary haphazard approach to the problem of providing an adequate number of hospital attendants, nurses, clerks, and guards. Expecting to find a sufficient number of able and disciplined men and women to work in hospitals on short notice proved unreasonable. Complaints about the caliber of the nurses rounded up to care for military patients were numerous, yet by the end of the war, the problem remained only partially resolved. Line officers understandably resented having to leave healthy and competent men behind to care for the sick. As the war progressed and the number of invalids grew, the Invalid Corps significantly eased the staffing shortage, but few were available early in the war. Since these men had no training in the care of the sick, their usefulness was limited. Moreover, few women had any formal training in nursing, although their practical experience in caring for their families stood many in good stead. The obvious need for professional training of nurses influenced those responsible for staffing civilian hospitals after the war, not only to give nurses the expertise needed but also to separate the dedicated from the dilettante. Of the latter, many had found their way to the hospitals in the guise of nurses during the war.[34]

The Medical Department also introduced greater system into the management of field hospitals. Early in the war, surgeons started organizing these facilities principally on a division basis rather than a regimental one. Medical officers also established small stations near the battlefield and evacuation hospitals at rail depots or near wharves along waterways. Tents, marked as hospitals by yellow flags with green numerals, became an increasingly common sight in the field, since they offered many advantages over the buildings that might be available near a battlefield. They could be pitched in an hour by someone familiar with them, and although those designed for hospital use could accommodate only eight patients comfortably, their design permitted two or more to be joined to serve larger numbers of wounded. Smaller tents could be used to shelter medical officers and medical and kitchen supplies. Surgeons found that there was less infection among patients sheltered in tents, where in good weather the walls could be raised to achieve perfect ventilation. An experienced Army surgeon concluded, "One of the most valuable lessons taught by the experience of the American War of 1861–65 was the demonstration of the inestimable value of the tent as a hospital.[35]

Unlike field hospitals, base or general hospitals were located almost entirely in buildings, although tents were occasionally

[33]Hamilton, *Treatise*, pp. 34–35, 38–39; USSC, *Surgical Memoirs* 1:40; Walt Whitman, *The Wound Dresser* . . . (Boston: Small, Maynard & Co., 1898), p. 44; Mitchell, "Medical Department," p. 1448.

[34]Jane Stuart Woolsey, *Hospital Days* (New York: D. Van Nostrand, 1868), pp. 41, 123; *MSH* 1, pt. 3:958; Whitman, *The Wound Dresser*, pp. 42–43; Charles S. Tripler and Chris C. Cox, "Report of the Committee Appointed to Memorialize Congress in Regard to the Medical Department of the Army," *Transactions of the American Medical Association* 16 (1865):578; Hall, "Lessons," p. 93.

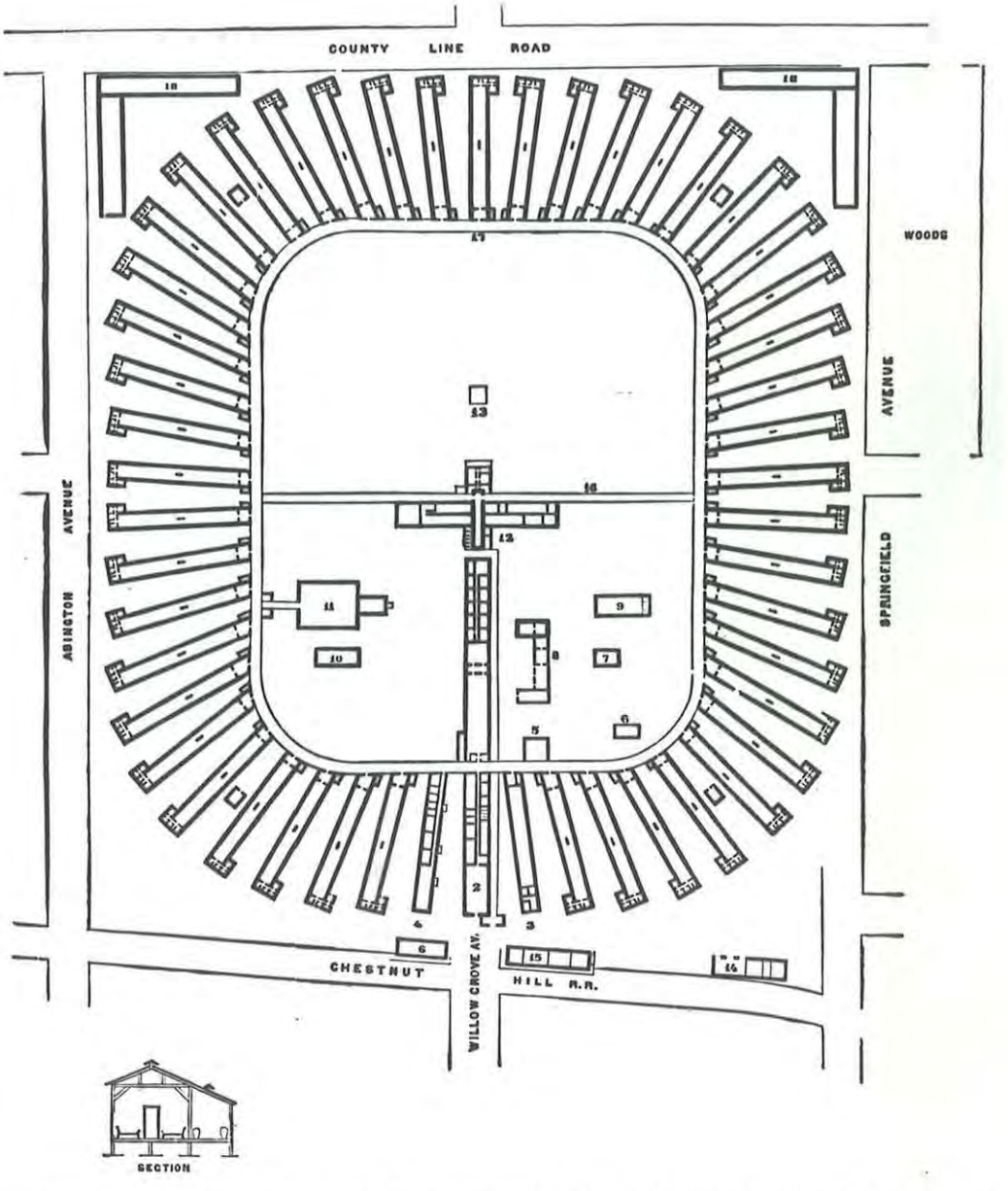
[35]Irwin, "Notes," p. 122, quote from p. 128; *MSH* 2, pt. 3:909–12; Hamilton, *Treatise*, pp. 134, 136–37; Johnson, *Muskets and Medicine*, p. 129; Mitchell, "Medical Department," p. 1446; Woodward, *Outlines*, p. 117; "Army Medical Intelligence," *Cincinnati Lancet and Observer* 7 (1864):129.

MOWER GENERAL HOSPITAL *in West Philadelphia, Pennsylvania. (Courtesy of National Library of Medicine.)*

used to increase their capacity. Authorities soon discovered that structures erected for some other purpose did not usually make good base hospitals. In a former hotel or barracks, no amount of purification, cleaning, and disinfecting could disguise the odors that spoke of inadequate ventilation. Maximum efficiency by a large staff, furthermore, was impossible in a badly designed building; every 1,000 patients required a staff of 20 wardmasters, 100 nurses, 5 or 6 cooks, 8 to 10 assistant cooks, 4 or 5 launderers with occasional assistants, 3 or 4 bakers, 10 to 15 men to run the stables and shops, 3 or 4 more men to manage the morgue and cemetery, 10 in the headquarters and library, about 15 physicians, and an undetermined number of medical cadets, all under the command of a regular or volunteer medical officer.[36]

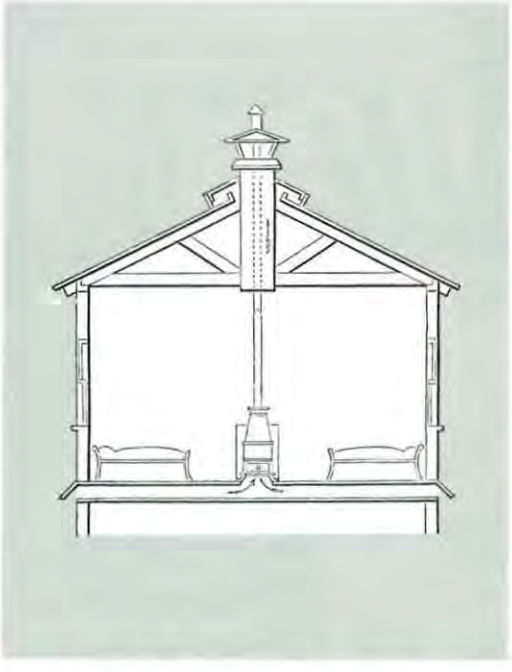
As a result of the inconvenience and the sanitation problems involved in using existing buildings to house general hospitals, the Army began to design and erect structures intended from the outset for this purpose. Small post facilities had been designed and built specifically to house sick and wounded soldiers ever since the days of Lovell, but the Medical Department had never before encountered such a pressing need to design very large hospitals. Experiments undertaken in its drive to create them contributed considerably to civilian medicine too. The concept of the pavilion hospital was later adopted by such famous institutions as the Johns Hopkins Hospital, for which John Shaw Billings, who as a

[36] *MSH* 1, pt. 3:956–57; *MSH* 2, pt. 3:902, 908; Woodward, *Outlines*, p. 120; *Northern Monthly* (no. 2, Dec 1864), in U.S. Armory Square General Hospital, Washington, D.C., Orders, Correspondence, and Printed Matter, 1862–1869, Ms C60, p. 191, NLM.



GROUND-PLAN OF MOWER HOSPITAL, CHESTNUT HILL, PA.—Scale 195 feet to the inch: 1, 1, 1, 1, Wards; 2, Reception-room, laundry, etc. In the building between this and 12 is the kitchen, etc.; 3, Knapsack-room, band quarters, etc.; 4, Store-rooms, etc.; 5, Operating-room; 6, Butcher's shop; 7, Guard-house; 8, Boilers, coal, etc.; 9, Sutler's; 10, Carpenters' shop; 11, Chapel; 12, Administration building; 13, Ice-house; 14, 15, Railroad depots; 16, 17, Corridors; 18, 18, L-shaped buildings, used as barracks, store-rooms, etc.

FLOOR PLAN OF MOWER GENERAL HOSPITAL *as illustrated in the* Medical and Surgical History of the War of the Rebellion.



DESIGN FOR VENTILATION OF HOSPITAL STOVE *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

young medical officer worked on the design of the Army's new general hospitals, drew the plans.[37]

In the pavilion hospital, thousand of patients could be sheltered and the spread of infection and contaminated air limited by the division of patients into relatively small groups, each kept separate from the others. Since the separation could result in administrative problems, various arrangements of the pavilions were tried to achieve the best combination of good ventilation and efficiency. On occasion, a hybrid hospital design was created by adding pavilions to a preexisting structure, which was used as the administration and storage building. Some of the earliest facilities, hastily erected, were of frail construction as well as poor design, and their walls eventually required buttressing to prevent their collapse. One design that proved satisfactory called for pavilions 24 to 25 feet wide and 12 to 14 feet high, which represented a 7-foot increase in width and a 4- to 6-foot increase in height over the earliest models, with the length cut from 200 feet to 150 feet. This plan also called for ridge ventilation on well-spaced buildings.[38]

Hospital designers believed that the ideal facility would consist of one-story buildings set 3 to 4 feet above ground level where each patient had 1,000 cubic feet of air. In warm weather, ventilators at the ridge of the roof, sheltered from the rain by a small roof of their own, would keep the air circulating, and open corridors would add to the fresh air available. Cold weather ventilation would be achieved by closing shutters in the ridges and using a system of shafts that minimized the loss of the heat generated by stoves.[39]

Although city water and city sewers were available to some general hospitals, the problems involved in achieving sanitation goals, already difficult when so many patients suffered from diarrhea, were in some instances exacerbated by water shortages and the need to dispose of patient waste without city plumbing. The Medical Department was forced to experiment with solutions to such difficulties. In a Wilmington, Delaware, hospital, where city water was available but city sewers were not, a long trough under the seats of

[37]Mitchell, "Medical Department," p. 1446; *MSH* 1, pt. 3:896–98; Fielding H. Garrison, *An Introduction to the History of Medicine*, 4th ed. (Philadelphia: W. B. Saunders Co., 1929), p. 669.

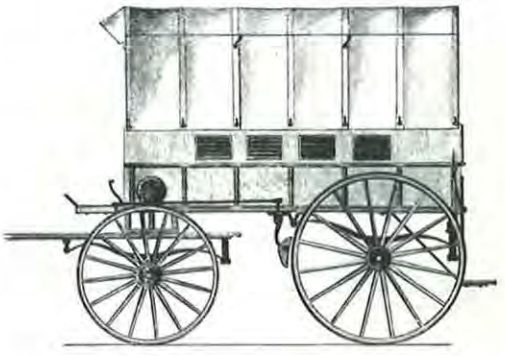
[38]Quote from Hamilton, *Treatise*, p. 124; *MSH* 1, 3:920, 922, 930, 394–95; Diffenbaugh, "Military Surgery," p. 494.

[39]Woodward, *Outlines*, pp. 115–16, 118; *MSH* 1, pt. 3:935, 943–45, 952–53; Hamilton, *Treatise*, pp. 127–29; Hammond, *Treatise*, pp. 324–25.

the latrine was flushed two or three times a day and emptied by pipe into a deep covered pit some distance from the buildings. When hospital effluvia was discharged near the building or retained any length of time within it, odor became a problem, a particularly alarming one because doctors assumed that with odor came infection.[40]

As a rule, base hospitals sheltered patients suffering from every kind of disease, wound, and infection, but a few specialized facilities were beginning to appear. One such facility was the hospital in Philadelphia, where Mitchell, Moorehouse, and Keen studied patients with neurological and nervous problems. In 1863 the Army also established an eye and ear hospital in St. Louis, while in Nashville patients with erysipelas had their own facility. At Wilmington, Delaware, patients who had lost feet or toes to frostbite were hospitalized together, and in the fall of 1862 Surgeon General Hammond ordered the establishment of a facility for "mutilated soldiers" in New York City.[41]

Innovative thought was as necessary in dealing with evacuation as it was with hospitalization. The enormity of the conflict made it plain early in the war that the casual approach of peacetime would not be adequate for the wounded and sick of 1861–1865. The two-wheeled ambulance proved too fragile and too uncomfortable for wide use on the battlefield. The Army was forced to experiment to find a conveyance that could move the wounded quickly from the battlefield to the nearest aid station and sturdier models to move them thence the longer distance to a hospital, hospital train, or hospital transport. Ironically, although many ambulance designs were tried, some of which were presented for approval by such Army surgeons as Finley and Tripler, the most useful one was the work not of a medical officer but of Brig. Gen. Daniel H. Rucker, a Quartermaster's Department officer. Mule litters of varying design were also tried, but without significant success. The best stretcher proved to be one weighing less than twenty-four pounds and designed to be carried by man rather than beast.[42]



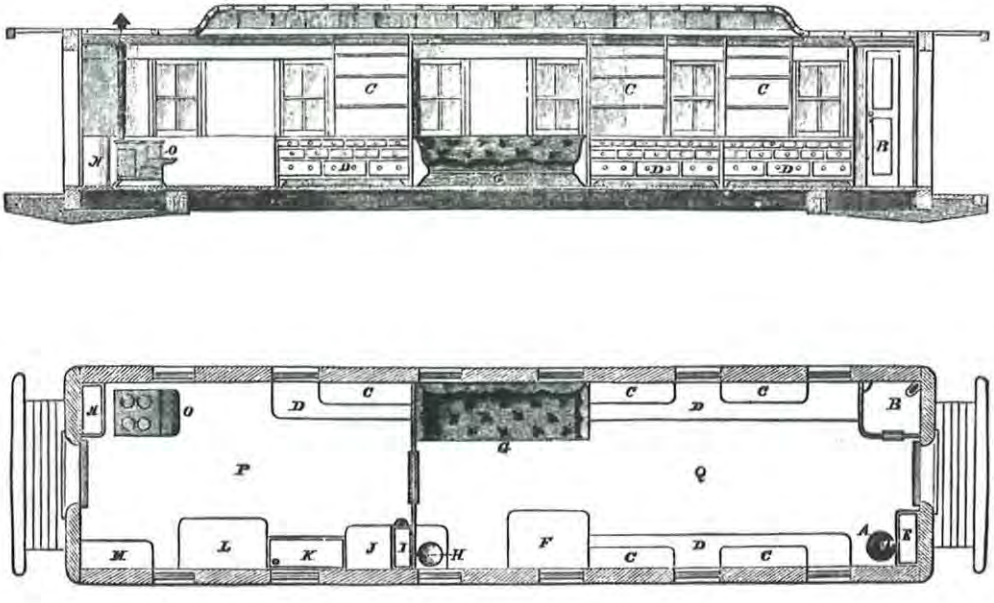
RUCKER AMBULANCE *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

The Medical Department also discovered that it was highly desirable to have trains and ships equipped specifically for the evacuation of the wounded. Early in the war, the wounded who traveled by train lay on straw in boxcars or, if they could manage it, sat up in passenger cars. Gradually, however, with the help of charitable organi-

[40] *MSH* 1, pt. 3:919–20, 922, 924, 928, 953.

[41] Andrews, *Surgery*, pp. 413–14, quote from p. 413; *MSH* 1, pt. 3:50, 665; USSC, *Documents* 2, no. 87:14; Ltr, McDougall to Hammond (25 Oct 1862), RG 112, entry 12; Western Sanitary Commission, *Report*, p. 11.

[42] *MSH* 2, pt. 3:866–67, 923–31, 944–57; Hamilton, *Treatise*, pp. 158, 166–67; "Flying Hospitals," *American Medical Times* 5 (1862):263; Otis, *A Report to the Surgeon-General*, p. 11n; Thomas Longmore, *A Treatise on the Transport of the Sick and Troops* (London, 1869), pp. 357–58; War Department, SGO, *Report on the Extent and Nature of the Materials Available for the Preparation of a Medical and Surgical History of the Rebellion* (Philadelphia: J. B. Lippincott Co., 1865), p. 84.

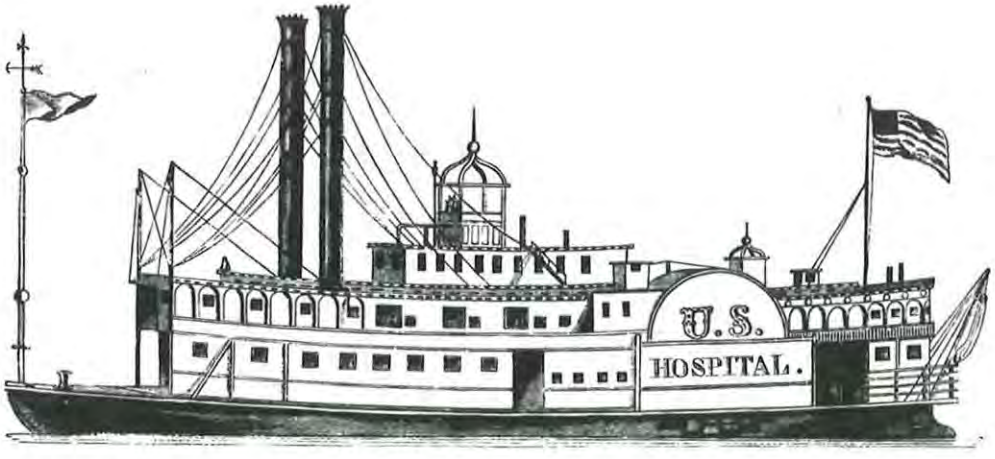


KITCHEN AND DISPENSARY CAR FOR HOSPITAL TRAIN, *longitudinal view (top), and horizontal view (bottom), Army of the Potomac, as illustrated in the* Medical and Surgical History of the War of the Rebellion.

zations, more and more hospital cars of varying design and offering greater comfort began to appear, and in time these were combined into hospital trains that might include cars used specifically for cooking, dining, storage, or sleeping quarters for the medical staff. In Sherman's army, civilians hired by the Quartermaster's Department served as conductors and train crew, while enlisted men served as cooks and nurses. The Medical Department staff present on such a train usually consisted of a surgeon in charge, an assistant surgeon, and a hospital steward. Clearly identified by its bright red smokestack, engine, and tender, and its three red lanterns at night, the hospital train was apparently never molested by the enemy. The various sanitary commissions also helped outfit specially equipped hospital ships and provided more vessels of their own when necessary.[43]

Although the most important obstacle had been surmounted when the Medical Department recognized the simple fact that a formal organization, careful planning, and trained and disciplined personnel

[43] *MSH* 2, pt. 3:959, 961, 964, 970–73, 977–98; John E. Ransom, "The Development of Ambulance Service in the Armies of Great Britain, the United States and Other Countries," *Ciba Symposia* 8 (1946):554–59; Linus Pierpont Brockett and Mary C. Vaughn, *Women's Work in the Civil War: A Record of Heroism, Patriotism and Patience* (Philadelphia: Ziegler, McCurdy & Co., 1867), pp. 151–52; "Hospital Care—Report of Dr. Barnum," *Sanitary Reporter* 1 (1863):147; Longmore, *Treatise*, p. 474; Turner, *Victory Rode the Rails*, pp. 300–301.



U.S. ARMY HOSPITAL STEAMER, D. A. JANUARY, *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

were necessary to successful evacuation, not everyone within the Army was willing to grant the department the control necessary to ensure its efficient operation. Letterman's struggle to have the ambulance corps placed under the command of medical officers succeeded in the Army of the Potomac only with General McClellan's support, and his approach was officially adopted throughout the Army late in the war. Medical Department control over hospital transports was not generally conceded until early 1865.

The improvements in the management of hospitalization and evacuation achieved during the course of the Civil War were considerable. By the end of the war, evacuation tended to be as prompt and as systematic as the military situation permitted. As a result, the number of regimental medical officers and attendants drawn away from the battlefield was minimal, and the need for tents and equipment for field and depot hospitals was limited. Although many patients still had to endure the heavy ride of Army wagons for short distances, increasing numbers made the major portion of their journey north or east in the comfort of well-appointed hospital ships or trains. The hospitals they stayed in along the way were more likely to be efficiently organized, and there was a better chance that the hospitals they reached at the end of their trip would be carefully designed and ventilated institutions where the staff was able to work with maximum efficiency.

In 1865 Army surgeons remained to a large degree helpless in the face of disease, and because of the devastating infections they confronted, they made little progress in their handling of wounds. The Medical Department did, however, reestablish order after a chaotic beginning and create an organization competent to meet the de-

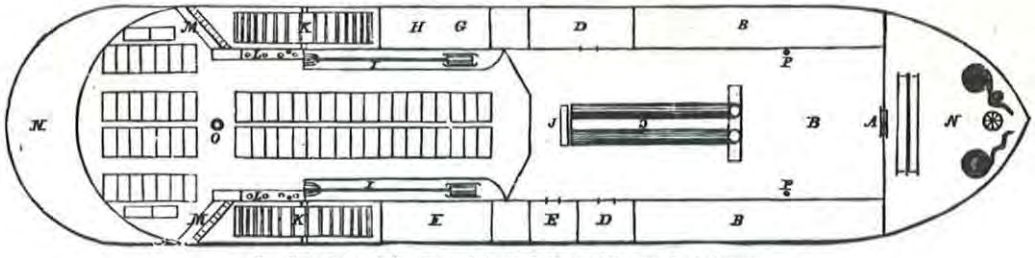


FIG. 506.—Lower Boiler Deck of the U. S. Hospital Steamer D. A. January.

A	Foot of stairs.	E	Pastry room.	I	Engines.	M M	Water-closets.
B B	Space for wood and coal.	F	Kitchen.	J	Donkey engine.	N N	Main deck.
C	Boilers.	G	Carpenter's shop.	K K	Wheels.	O	Stoves.
D	Stores.	H	Blacksmith's shop.	L	Washstands	P P	Cold water.

LOWER BOILER DECK OF D. A. JANUARY, *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

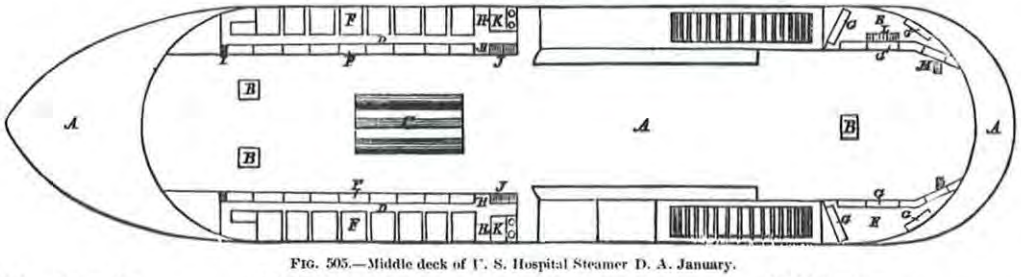


FIG. 505.—Middle deck of U. S. Hospital Steamer D. A. January.

A A	Lower deck.	D D E E	Middle deck.	I	Side or middle deck.	K K	Water-closets.
B B B	Hatchways.	F F	Space for sick.	J	Stairs to lower deck.	L	Nurses' stairs from cabin deck.
C	Boilers.	G G	Nurses' quarters.		Stairs to upper deck.	M M	Nurses' stairs to lower deck.
		H H	Cold water.				

MIDDLE DECK OF D. A. JANUARY, *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

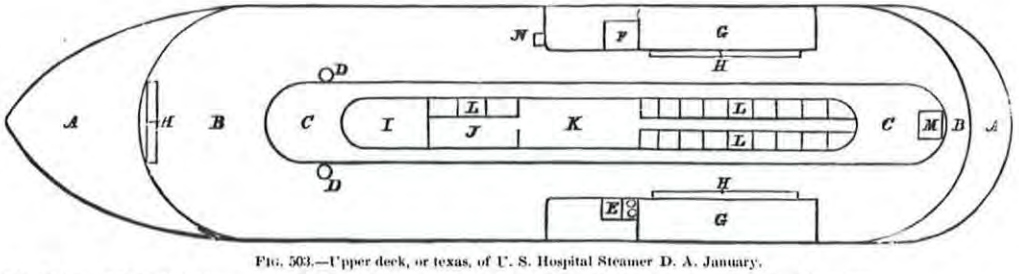


FIG. 503.—Upper deck, or texas, of U. S. Hospital Steamer D. A. January.

A A	Projections of lower deck.	E	Water-closets.	I	Captain's room.	M	Private rooms.
B B	Roof.	F	Wash-house.	J	Social hall.	N	Dummy, or provision railway, extending from lower deck to hurricane deck.
C C	Cabin roof above skylights.	G G	Wheels.	K	Texas dining-room.		
D D	Smoke-stacks.	H H H	Water-tanks.	L L L	Rooms for steamboat officers.		

UPPER DECK OF D. A. JANUARY, *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

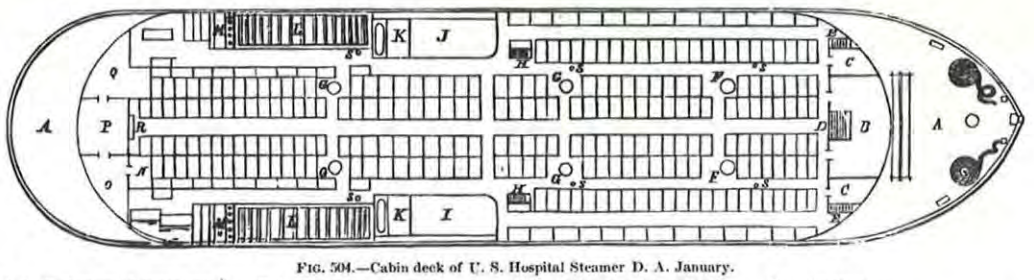


FIG. 504.—Cabin deck of U. S. Hospital Steamer D. A. January.

A A	Projections of lower deck.	F F	Steamboat chimneys.	K K	Bath-rooms, hot and cold.	P	Surgery.
B	Office.	G G	Stoves.	L L	Steamboat's wheels.	Q	Linen-room.
C C	Private rooms.	H H	Middle ward stairs.	M M	Water-closets.	R	Space occupied by the mirror.
D	Front stairs.	I	Nurses' dining-room.	N	Private room.	S S	Cold-water pipes.
E E	Texas stairs.	J	Kitchen.	O	Drug-store.		

CABIN DECK OF D. A. JANUARY, *as illustrated in the* Medical and Surgical History of the War of the Rebellion.

mands of a war that was waged on a scale never before encountered. These accomplishments were initally impossible, however, because those who shaped the Medical Department policies understood neither the unprecedented nature of the conflict nor the demands it was placing upon them. After William Hammond inspired the department's overwhelmed medical officers to withstand frustration and adversity while he initiated new and determined approaches to their problems, there was no turning back to the old ways. By cooperating closely with one another, the very men who had been Hammond's undoing were able to continue successfully along the path he had laid out.

Epilogue

The creation of the Medical Department on a permanent basis in 1818 had far-reaching consequences both for the U.S. Army and for medical science. Endowed by Congress with the responsibility for a permanent organization rather than a temporary wartime expedient, the surgeon general was in a position from this time onward to make long-range plans for the care of the Army's sick and wounded in war and peace and to direct continuing efforts to contribute to the sum of medical knowledge. Much depended, however, on the ability of the physician who served as surgeon general.

The first man to head the Medical Department was the young and brillant Joseph Lovell, who quickly moved to improve the caliber of his staff and to begin collecting information on factors that might be affecting the Army's health. Because of Lovell's efforts, the highly trained and disciplined physicians who gradually replaced the motley crew that formed the department in 1818 began to regard themselves as members of a proud profession. The beneficial effects of this change in attitude were soon evident, for, on the whole, the first career military surgeons in the nation's history worked diligently to meet the responsibilities placed upon them.

The appointment of the most senior surgeons in the department rather than the most able as Lovell's two immediate successors did not augur well for further progress in the Medical Department. Nevertheless, Thomas Lawson's enthusiasm for the department and its work led to the winning of rank for Army surgeons. He also obtained the right to enlist hospital stewards, continued the collection of data started by Lovell, and worked to develop an effective ambulance. Lawson grew old and ill in office, however, and when he died, the department was still unprepared for war. Lawson's successor, Clement Finley, while healthier than his predecessor, was probably less competent and came to office entirely because of his seniority.

As a result, the Medical Department began to meet the challenge of the Civil War only when Finley was succeeded by a physician who was, like Lovell, both young and talented. Appointed surgeon general despite his lack of seniority, William Hammond built upon the small but sturdy foundation laid and maintained by his predecessors. Forcing through the changes in the department's organization and administration that were necessary to meet the needs of vast numbers of sick and wounded, with the assistance of the Department's small nucleus of Regular Army surgeons, Hammond, like his successor, initiated thousands of civilian physicians into the mysteries of their wartime duties.

Unlike his predecessors during the Civil War, Joseph Barnes, who took over as surgeon general upon Hammond's disgrace, was regarded with great favor by Secretary

of War Stanton. He was, therefore, able to continue along the lines set out by Hammond with far greater ease than Hammond himself. During Barnes' tenure, Congress finally created the ambulance corps for which Hammond and his supporters had fought. In the last months of the war, Barnes finally gained for the Medical Department complete control of evacuation and the management of hospitals. The last Civil War surgeon general so pleased his superiors that he was brevetted major general in March 1865.

Although five surgeons general directed the Medical Department from 1818 through 1865, two of them were principally responsible for the shaping of the department's character to meet the demands placed upon it. Lovell professionalized the care that the Army's sick and wounded would in the future receive and, in insisting on regular and detailed reports on all matters that might relate to the soldier's health, let it be known that the Medical Department planned to play a major role in the world of medicine. Circumstances required that Hammond create the department anew, but even as he worked to reorder the structure under which the sick and wounded received care, he demonstrated his agreement with Lovell's ambition for the department by calling for the gathering of case histories and specimens from his surgeons. As they strove to adapt the Medical Department's structure and operations to the needs of their times, both Lovell and Hammond blazed clear paths that their less talented successors could follow.

Nevertheless, the willingness of the first surgeons general to take advantage of the department's potential for contribution to science and their determination to improve the medical care offered to the nation's soldiers did not result in major scientific discoveries. The era when clinical observations and statistical compilations were the principal approach to the mysteries of human health was rapidly passing. As the tribulations of William Beaumont proved, even in peacetime the Medical Department of the 1818–1865 period was not in a position to foster experimental research.

The department was able during this period to contribute to medical science in lesser, practical ways because the use of any remedy or treatment in relatively large numbers of patients by physicians working under the discipline of a single organization inevitably constitutes a trial of its worth. It was the Army's experience since 1800 that clearly demonstrated the benefits of mass vaccination against smallpox. Army surgeons established both the advisability and safety of using higher doses of quinine than those customary outside the South and the powers of bromine against infection. The Army's Civil War use of anesthetics demonstrated on a large scale the benefits and the relative safety of these agents when carefully used.

With the acceptance of the germ theory, however, would come the discovery of the causes of typhoid, malaria, dysentery, and other major diseases, and the resultant development of better ways in which to prevent and treat these scourges. In comparison to these dramatic events, the Army's informal testing appears insignificant. As the end of the century approached, however, and medical science moved forward with great rapidity, medical officers of the U.S. Army would be in the forefront of many great advances. Army surgeons would be increasingly able to prevent and cure disease and infection. With new and better weapons, post-Civil War physicians would wage a more successful struggle against disease and infection, but they would never conduct a more gallant fight than the Army surgeons of 1818–1865.

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The National Archives in Washington, D.C., and the National Library of Medicine in Bethesda, Maryland, hold a majority of the manuscripts and other unpublished material used in the research for *The Army Medical Department, 1818–1865.* As always in this series on the history of the Army Medical Department, the Records of the Office of the Surgeon General, Record Group (RG 112), and particularly the letters to and from the Surgeon General, have been invaluable. Other important material in the National Archives is contained in the Records of the Adjutant General (RG 94), the Records of the Inspector General (RG 159), the Records of the Judge Advocate General (RG 153), and the Records of the Bureau of Refugees, Freedmen, and Abandoned Lands (RG 105). The National Library of Medicine collections include a wealth of correspondence, diaries, reports, orders, and similar material, both printed and unprinted, originating with the Surgeon General's Office, individual surgeons, individual hospitals, and the U.S. Sanitary Commission.

Other repositories consulted for this volume include the New York Academy of Medicine, which holds the Nathan Jarvis papers, the Library of Congress, where there is a small collection of the papers of such surgeons as Benjamin King and Thomas Lawson, and the U.S. National Museum, better known as the Smithsonian Institution, which holds the papers that resulted from the work of various surgeons who gathered data and specimens for the Smithsonian.

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