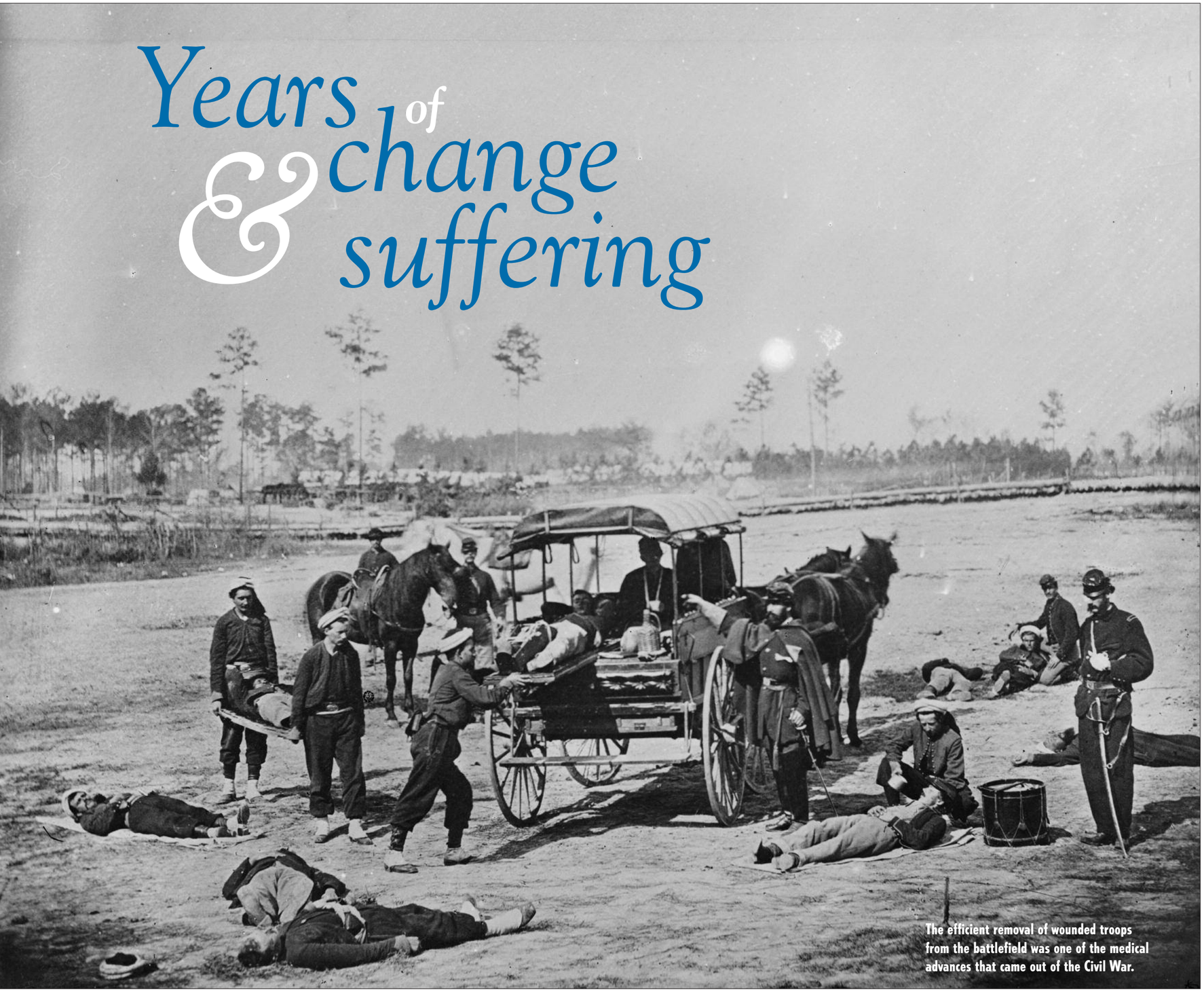
Years of change & suffering



LIBRARY OF CONGRESS (LC-B811-1078)

The efficient removal of wounded troops from the battlefield was one of the medical advances that came out of the Civil War.

Faithful, indeed, is the spirit that remembers
After such years of change and suffering!
—"Remembrance" by Emily Brontë

This April marked the sesquicentennial of the start of the Civil War. Here's a look back at those four bloody years—at how they altered the practice of medicine and at contributions made by soldiers and doctors from the Granite State and from Dartmouth.

By James M. Schmidt

On May 14, 1864, 22-year-old Samuel Hingley was on the outskirts of the Confederate capital of Richmond, Va., far from his adopted home of Boston and farther still from his native Nova Scotia. He was there with his comrades in the 3rd New Hampshire, the volunteer Union infantry regiment he'd joined the previous fall. He was about to "see the elephant"—soldier slang for being under fire—for the first time.

Early that day, Hingley's unit had been ordered to reconnoiter the enemy's position. "We had been marching through a forest for over an hour when all at once we came upon the enemy's pickets which were stationed near the edge of the wood," Hingley recalled some years later in an account titled "A Close Shave In the Civil War of the U.S." The Confederate soldiers fired a volley and then retired behind their works. The New Hampshire unit wheeled into line, advanced, and soon reached the edge of the forest, where they saw the enemy about 500 yards off.

"As soon as our presence was known they open a murderous fire on us, but we advanced a hundred yards or so and commenced firing. . . . We could only see a man's head once in a while when he raised himself to fire but we had no shelter and suffered terribly," Hingley continued. Soon, he was struck by a bullet, but it hit a fortuitously placed

Schmidt, who by day is a research scientist with a biotechnology firm near Houston, Texas, has an avocational interest in Civil War history. He is the author of two books on the Civil War and the coeditor—with Guy Hasegawa, Pharm.D.—of Years of Change and Suffering: Modern Perspectives on Civil War Medicine *(Edinborough Press, 2009), a series of invited essays. He recently added to his personal collection of Civil War-era memorabilia the 1866 letter and card pictured on page 41.*

For a WEB EXTRA with a link to the sources for this article and to further readings on Civil War medicine, see dartmed.dartmouth.edu/su11/we02.

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These soldiers were wounded at the Battle of Fredericksburg, 17 months before Hingley's New Hampshire regiment came under fire on the outskirts of Richmond, Va.

"The ground was covered with dead and dying men," Hingley remembered. "The firing of rifles, the whistling of the bullets, the boom of cannon . . . the bursting of shells, and groans and wailing of the wounded and dying was simply terrifying. No words can give any adequate idea of the awful scene."

looking glass that hung just above his belt. He continued to discharge his carbine in the direction of the enemy. "About five minutes later I was struck in the left thigh with a minié bullet. It did not hurt much, but my leg appeared parralized [*sic*] or stiff," Hingley wrote.

He started for the rear, using his carbine for support. "The ground was covered with dead and dying men," Hingley remembered. "The firing of rifles, the whistling of the bullets, the boom of cannon . . . the bursting of shells, and groans and wailing of the wounded and dying was simply terrifying. No words can give any adequate idea of the awful scene." He made his way as fast as he could and at last reached the shelter of the forest, where surgeons were at work at a field dressing station.

The doctors examined Hingley's wound and found that the ball had lodged in the back of his thigh. They bandaged his leg, and Hingley started again for the rear to get out of the range of enemy fire. He found a church, went inside, and was soon sound asleep from sheer exhaustion. Around midnight, he was taken to a field hospital by ambulance and the next day conveyed by a floating transport on the Potomac River to a general hospital at Point Lookout, Md.

"Shortly after entering the hospital . . . they put me under chloroform, made an incision in the back of my thigh and took out the ball," Hingley wrote. One side of the bullet was flattened where it had grazed his thigh bone in passing. A few weeks later, gangrene invaded Hingley's wound. "Before the gangrene was checked it had nearly eaten all the flesh off the side of my thigh," he went on. Late that year, Hingley was transferred to Webster General Hospital in Manchester, N.H.

When Hingley was discharged in September 1865—almost a year and a half after he was wounded—he could walk only with the aid of a crutch and a cane. "[My wound] was a long time healing," Hingley concluded. "It was several years before it healed up altogether."

Into the Union ranks

Although Hingley was not a graduate of either Dartmouth College or Dartmouth Medical School, his account offers a window into the experiences of the more than 600 Dartmouth alumni who served in the Union Army and Navy during the Civil War. One Dartmouth history maintains that the school sent a greater proportion of its students and graduates into the Union ranks than any other institution of higher education. (Not all of the combatants from Dartmouth fought for the Union, however; more on that later.)

The four years of fighting during the American Civil War left more than 600,000 soldiers dead; two-thirds of them succumbed to disease rather than to shot, sword, or shell. The war also put thousands of wounded and sick soldiers in the hands of surgeons, nurses, and hospital stewards, who witnessed suffering on an unprecedented scale. Among the 600-some Dartmouth enlistees were over a hundred graduates of its medical school, most of whom served as surgeons. (About a hundred more Civil War veterans earned a medical degree from Dartmouth during or after the war.)

Among the DMS graduates who served was Dr. Luther Bell, Class of 1826. He was 55 years old—well beyond the age at which service was expected—when he volunteered for the Union Army. "The whole volume of military surgery was opened to me . . . with illustrations horrid and sanguinary," wrote Bell in a letter to a friend soon after the First Battle of Bull Run in the summer of 1861. "[The] hundred wounded victims will form a picture in my sick dreams as long as I live," he continued.

Even though Bell suffered from a pulmonary disease, he had signed on as a surgeon for a Massachusetts regiment and soon advanced to the post of division medical commander in General George McClellan's Army of the Potomac. Unfortunately, Bell died only a few months after writing that letter, on February 11, 1862, from a severe attack of pulmonary distress. (Before the war, Bell had played a seminal role in founding the field of psychiatry. For a web-extra with a link to an article about his career, see **dartmed.dartmouth.edu/su11/we02**.)

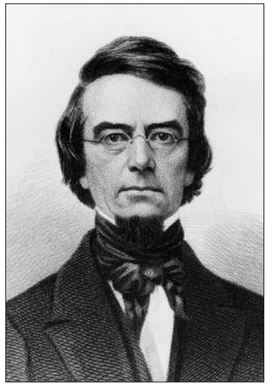
At the start of the war, the Union Army's medical department was ill-equipped and overwhelmed. The old-school leadership in place in 1861 was more concerned with politics and budgets than with improving the existing system. The Confederate States were in even worse shape, since they had to build a medical service from scratch.

The bitter fruit of this lack of foresight—on both sides—was unmistakable after the war's first major battle, at Bull Run in July 1861: wounded soldiers were left unattended for hours, ambulance service was nonexistent, and regimental surgeons often refused to treat soldiers from other units.

Many histories of the war are critical of the medical care that soldiers received—one historian considered it "one of the war's most dismal failures"—but a true appreciation of the situation requires an understanding of medicine in the middle of the 19th century. Medical knowledge, as we know it now, was still emerging; basic medical theories and surgical techniques had remained relatively unchanged for hundreds of years. Awareness of the link between infectious organisms and wound contamination—including the work on pathogens and sepsis by Pasteur and Lister—was not reported until after the war's end. Doctors of the day still believed in "miasmas"—foul odors and vapors in the air that supposedly spread infection. These misunderstandings were compounded by a lack of basic hygiene in camps and hospitals.

NEW HAMPSHIRE HISTORICAL SOCIETY

Above are members of another company in the 3rd New Hampshire regiment, in which Hingley served. And below is Luther Bell, a DMS alumnus who enlisted at age 55.



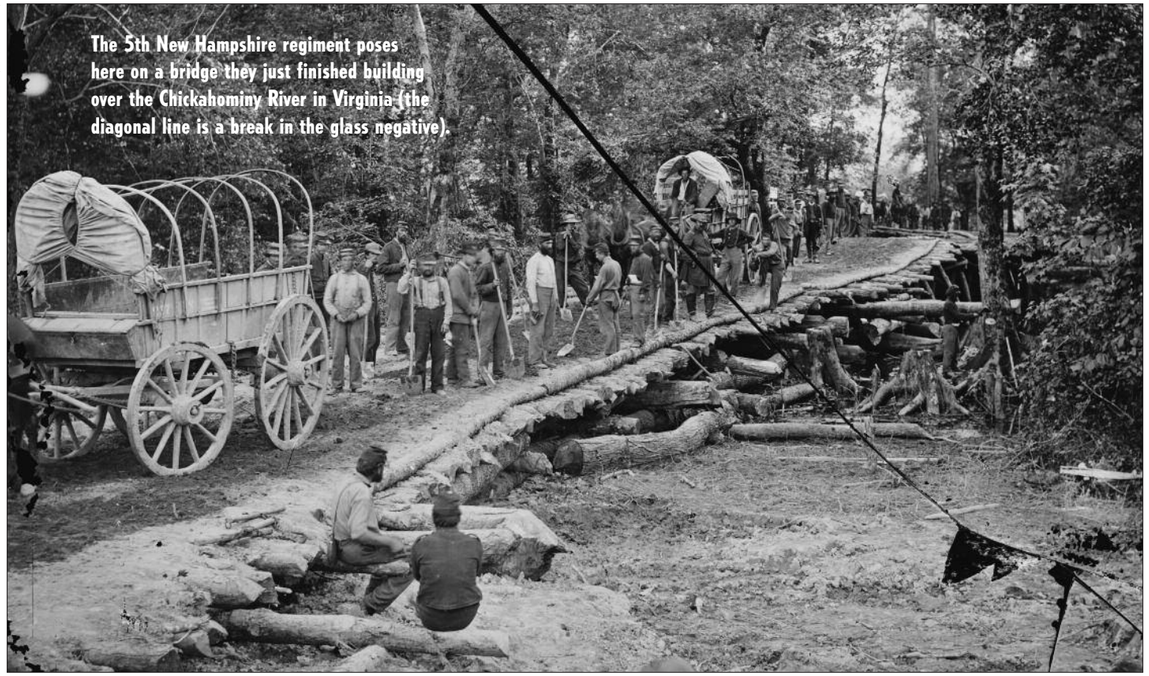
DARTMOUTH COLLEGE LIBRARY / RAUNER SPECIAL COLLECTIONS

It was also an era of "heroic medicine." Physicians believed in older treatment methods such as bleeding and purging and in the healing power of a complex array of drugs administered in massive doses. Indeed, the Union Army's drug supply table included over a hundred distinct pharmaceutical preparations, including an infamous mercurial purgative known as "blue mass." That concoction led the famous poet-physician Dr. Oliver Wendell Holmes—a member of the Dartmouth medical faculty from 1838 to 1840—to remark, "I firmly believe that if the whole *materia medica* as now used could be sunk to the bottom of the sea, it would be all the better for mankind and all the worse for the fishes."

Real improvement in care of the war's wounded and sick would come, but it called for facing a number of challenges, including advances in military technology, removal of wounded troops from the battlefield, hospital design, trauma surgery, medical supply acquisition and distribution, and more.

Dangerous duty

Being a surgeon, indeed any medical officer, during the Civil War was a dangerous assignment—a fact known all too well by the DMS alumni who signed up. Dr. Moses Evans, Class of 1843, for example, was a surgeon with the 96th Illinois Infantry. He came in for mention in official reports for his brav-



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The 5th New Hampshire regiment poses here on a bridge they just finished building over the Chickahominy River in Virginia (the diagonal line is a break in the glass negative).

A very unusual unit was the "Dartmouth Cavalry," composed almost entirely of Dartmouth alumni, plus a few additions from Norwich University and Bowdoin, Williams, and Amherst Colleges. The unit served in Virginia for three months in mid-1862.

ery in attending to the wounded on the battlefield, and he was even wounded himself when his ambulance train was fired upon.

Over the course of the war, hundreds of medical officers were killed in action or died in prison, in accidents, or due to sickness or exposure. Among the Dartmouth medical graduates was one surgeon who was killed by guerrillas in North Carolina while riding with some other officers. And another—Dr. Rufus Gilpatrick, Class of 1834—was killed in action in 1863 in a battle in the Indian Territory (present-day Oklahoma) while attending to wounded soldiers. Other Dartmouth surgeons, such as Bell, died of disease during the war or shortly thereafter from the privations of their service.

Although surgeons were recognized as noncombatants, patriotic fervor sometimes compelled them to act in a more martial manner. Dr. Calvin Cutter, Class of 1832, was a surgeon with the 21st Massachusetts Infantry and was involved in many of the great battles during the war's first years. At the Second Battle of Bull Run, in the summer of 1862, Cutter was acting division surgeon. When one of the regiments in the division broke and retreated, Cutter tried to rally the men and was seen falling and was assumed dead. But a few days later he walked into camp quite healthy and told his tale: he had in fact been hit, but the bullet had struck his waistbelt, and he fell senseless. When a Confederate soldier tried to attack him with a bayonet, Cutter declared that he was a surgeon and thus protected, but the rebel pointed to the sword that Cutter had used to rally the troops. He was taken prisoner but was treated well, and eventually he was allowed to return to his unit.

It was surely patriotic fervor that inspired two of the oldest Dartmouth medical graduates—Drs. Ebenezer Hunt and Benjamin Walton, both in the Class of 1822 and both in their sixties—to serve as surgeons in the Army and Navy, respectively.

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Rebels from the North

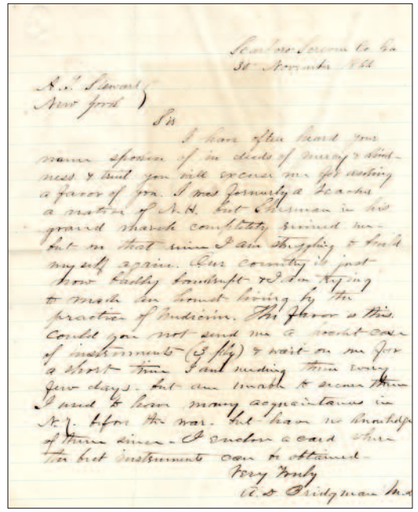
But despite Dartmouth's Yankee bona fides, not all of the College's alumni chose to join Union forces or to support its cause. Indeed, Dartmouth had a largely unearned national reputation for being pro-slavery, mostly owing to the sympathies of its long-time president, the Reverend Nathan Lord. Lord—who was described in pro-Union New England newspapers as a "most profound worshipper of the South and slavery"—at least held an ultraconservative Biblical interpretation of slavery. He felt compelled to resign from the presidency in 1863, after coming in for criticism from the Dartmouth Trustees and the Merrimac County Conference of Congregational Churches. To be fair, a similar stigma was attached to the leaders of many other academic institutions.

Southern parents often sent their sons to northern colleges, so it is not surprising that students and graduates from institutions as far north as Bowdoin in Maine and as far west as Notre Dame in Indiana, plus many others in between, joined the Confederate forces. Some sons of Dartmouth served the Confederate cause as well. Although the exact number has never been tallied, published "class sketches" and alumni bulletins tell of young men from Dartmouth who served the Confederacy with distinction, or at least were content to do their duty for the South.

One of the most interesting Dartmouth rebels—perhaps a reluctant one—is Dr. Addison Bridgman. Born in 1832 in Hanover, N.H., he was the fourth of nine children of Daniel and Harmony Bridgman. The family was struck with scarlet fever in 1832, and two of Addison's older sisters died. (The disease left another of his sisters, Laura, deaf, blind, and mute and with no sense of smell or taste. She later became a nationally noted personality thanks to the intervention of a member of the DMS faculty, Dr. Reuben Mussey, who referred her to Dr. Samuel Gridley Howe, the founder of the Perkins School for the Blind. Howe taught her to write and do arithmetic, making her the first educated deaf-blind person in the country. Several decades later, an account by Charles Dickens of Laura Bridgman's life prompted Helen Keller's mother to seek treatment for her daughter.)

Addison Bridgman attended Thetford Academy, across the Connecticut River from Dartmouth in Thetford, Vt., and Kimball Union Academy, 15 miles south in Meriden, N.H. He enrolled next in Dartmouth College, from 1852 to 1854, and then did a year of medical studies at Dartmouth. In 1856, for unknown reasons, he settled in Georgia, teaching at schools in Macon and Hawkinsville before opening his own school in Screven County. In the 1860 census, Bridgman is listed as a teacher in Screven County, but his birthplace is shown as North Carolina rather than New Hampshire. It's interesting to consider whether he represented himself as being from the South so locals wouldn't suspect him of having Union sympathies.

After the war, Bridgman wrote to a New York department store magnate named A.T. Stewart. "I was formerly a teacher," Bridgman declared, "a native of N.H., but Sherman in his grand march completely ruined me. But on that ruin I am struggling



BOTH: COLLECTION OF THE AUTHOR

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Above is Dartmouth President Nathan Lord, who was compelled to step down from the presidency due to his sympathies for the South. And at left is a letter, as well as a business card enclosed with it, that was written by Addison Bridgman, a DMS alumnus who served in a Confederate infantry regiment.

In the 1860 census, Bridgman is listed as a teacher in Screven County, but his birthplace is shown as North Carolina rather than New Hampshire. It's interesting to consider whether he represented himself as being from the South so locals wouldn't suspect him of having Union sympathies.

to build myself again. Our country is just now badly bankrupt and I am trying to make an honest living by the practice of medicine." He closed the letter by asking Stewart to send him some medical instruments on credit.

Bridgman left out of this letter a very important piece of information, however. In simply stating that "Sherman . . . completely ruined me," Bridgman failed to mention that while Sherman was marching through Georgia in the late fall of 1864, Bridgman was fighting in the 25th Georgia regiment of the Confederate infantry! Whether or not Bridgman himself was shooting at troops from the Granite State is hard to say. Although the 25th saw significant action during the latter part of the war, Bridgman's service records indicate that he spent most of the war away from the battlefield.

In early 1862, Bridgman was reported as being on sick leave back in Screven County. Later that year, he was detailed to work on a "floating battery" at Savannah. In November of 1863, he appeared on the rolls of the Ocmulgee Hospital in Macon, Ga., with the complaint of "anasarca," also known

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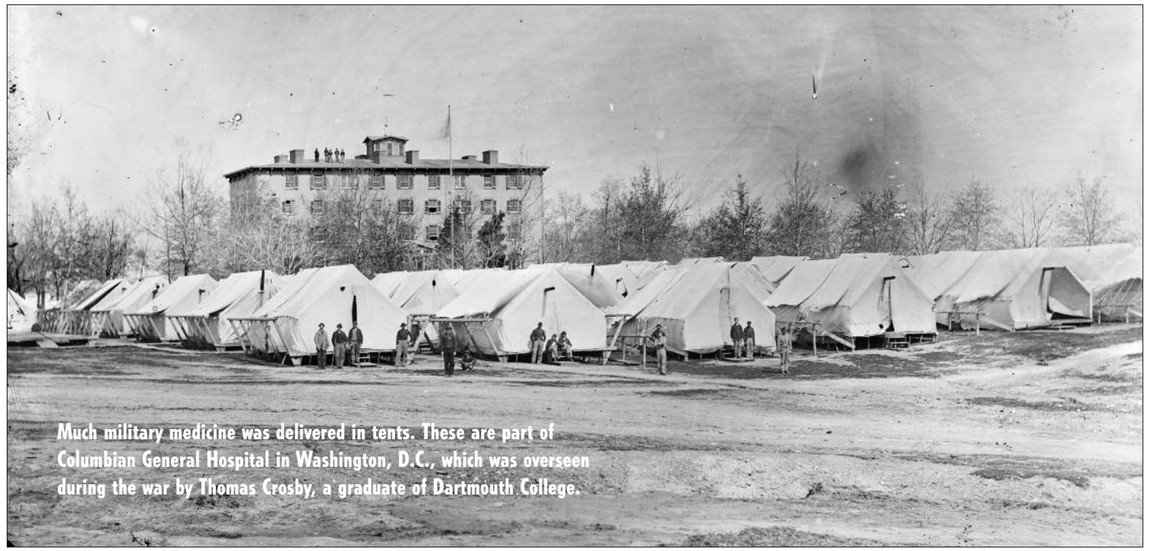

Much military medicine was delivered in tents. These are part of Columbian General Hospital in Washington, D.C., which was overseen during the war by Thomas Crosby, a graduate of Dartmouth College.

Nearly 2,000 New Hampshire troops were killed or mortally wounded in battle, and nearly 3,000 died from disease. The 5th New Hampshire volunteer infantry regiment was distinguished for having lost the greatest number of soldiers in battle of any Union regiment.

as "dropsy," a generalized swelling of the body due to fluid buildup. For most of 1863—and to the end of the war—Bridgman made use of his year of formal medical education by working as a nurse and then as "acting hospital steward," first at City Hall Hospital in Macon and later at Lee Hospital in Columbus, Ga.

When the war ended, Bridgman returned to New Hampshire and took another year of medical courses at Dartmouth, earning his M.D. in 1866. He then returned to Screven County to practice medicine, teach, and serve as postmaster.

In 1874, Bridgman and his wife moved to Decatur, Ill., where he resumed his medical practice until passing away in 1916.

Granite State contributions

Although Dartmouth alumni made impressive contributions to the Civil War, they constitute only a fraction of the more than 35,000 residents of the Granite State who joined the Union ranks. Nearly 2,000 New Hampshire troops were killed or mortally wounded in battle, and nearly 3,000 died from disease. The 5th New Hampshire, a volunteer infantry regiment, was distinguished for having lost the greatest number of soldiers in battle of any Union regiment. And an untold number of men from New Hampshire—at least 200—served as surgeons for Granite State regiments, as well as for units from other states.

New Hampshire women also served the Union in a medical capacity during the Civil War. Among the most famous was Harriet Dame. Born in Barnstead, N.H., in 1815, she was living in Concord with her parents when war broke out. Prohibited from shouldering a musket, she instead volunteered as a nurse with the 2nd New Hampshire, a volunteer infantry regiment. Although almost all female nurses worked in hospitals, Dame had the distinction of serving very close to the battlefield—within earshot of hostile gunfire—and she was even reported to have been taken prisoner.

After the war, she was invited to veterans' reunions, and the state of New Hampshire gave her for her service a gift of $500—quite a sum at that time—which she donated to help build a home for Granite State veterans.

The Dartmouth alumni and other New Hampshire men—and women—who served as surgeons and nurses during the Civil War witnessed significant changes in their discipline. The same held true for their patients. Indeed, from beginning to end, Samuel Hingley's medical journey was something of an everyman experience; luckily for him, by the time he was wounded in mid-1864, many of the early mistakes in the care of the war's wounded and sick had been corrected.

The wartime years also saw many changes outside the realm of medicine that had an impact on medical practice. Numerous technologies—such as railroads, telegraphy, ironclad warships, machine guns, and mines—were used effectively in a major conflict for the first time during the Civil War. The most devastating new missile was quite small: the minié bullet, which struck Hingley in the thigh. Named for a French captain, Claude Minié, the soft, leaden, conical "Minié ball" was fired from a rifled musket and struck with a force that caused tremendous injury to soft tissue and even worse damage when it hit bone; in such cases, amputation often offered the only chance of saving the life of the patient.

Picture of practice

It is ironic, then, that if asked to conjure up a picture of Civil War medical practice, many people today imagine callous surgeons indiscriminately hacking limbs off of soldiers whose only medication was a swig of whiskey. Even during the war, the increasingly common sight of amputees led many citizens to conclude that limbs were being removed too often. In fact, it was the most successful major operative procedure of the time. Despite the criticism that surgeons came in for from the public, their contemporaries in medicine, as well as more recent historians, have concluded that too few amputations were performed, not too many.

The popular conception of Civil War medicine is also at odds with the conditions under which amputations were performed. Hingley wrote of being under the influence of chloroform when surgeons removed the bullet from his thigh. Contrary to countless misinformed Hollywood dramatizations of 19th-century soldiers "biting the bullet," anesthetics, such as chloroform and ether, did exist and were in regular use back then. And despite Holmes's quip about dumping the medicaments of the day in the ocean, many medicines used during the Civil War actually had therapeutic benefit. Opium and morphine, for example, were used to relieve pain and make patients comfortable following surgery. Perhaps the most effective and popular drug was quinine, which was routinely given to soldiers to prevent and treat malaria.

In fact, the war hastened the development of the burgeoning American drug industry. According to a journal article published in early 1865, "It is altogether certain that no gigantic pharmaceutical operations have ever been carried on in Europe, as the past three years have witnessed in the supply of the armies of the United States." Many firms that became household names in the 20th century—Squibb, Pfizer, Wyeth, Lilly, Merck, Warner, Parke-Davis—can trace their roots to the Civil War or to the boom that followed, in no small part due to the training that talented chemists received during the war in industrial or government laboratories.

Improvements were also made in the accommodations for wounded soldiers on and near the battlefield, as well as in the design of hospitals behind the lines. Hingley's journey from a field-based first aid station to a general hospital reflects that change. The most significant improvement was known as the Letterman system, named for Dr. Jonathan Letterman, the medical director of the Union's Army of the Potomac. Letterman's system, which was in use by late 1862, involved forward first-aid stations, where the principles of triage were first instituted; mobile field hospitals; an efficient ambulance corps; and a process for the positioning and distribution of supplies. Letterman is considered the "Father of Battlefield Medicine," and his system is still used today in both battlefield and civilian settings.

General hospitals—such as Point Lookout in Maryland and Webster in New Hampshire, both of which claimed Hingley as a patient—were another wartime innovation. At first, existing structures near battlefields or in cities were used as hospitals; however, they proved too small and dirty for long-term use. So both sides developed "pavilion-style" general hospitals: single-story barrack-type wards fanning out from a central administrative structure that housed laundry, pharmacy, kitchen, and baking facilities; sometimes there was even a garden to supply fresh produce for the patients. There was not a single general hospital in the United States when the war began; by its end, there were nearly 200, with a capacity of more than 100,000 beds.

Hingley's lament that his wound "was a long time healing" makes the point that many veterans continued to live with wounds and diseases they contracted during the war. In 1862, the federal government passed legislation to compensate disabled veterans, widows, and orphans of the Civil War (and Hingley received a disability pension upon his discharge from the hospital in 1865). Revisions to the law over the next dozen years increased the payments for certain disabilities and added coverage for other conditions. While providing compensation for disabled veterans, the pension system also generated a complicated tangle of medical and legal regulations that could make applying for and securing benefits difficult.

Emotional scars

Hingley also commented on the terrifying sights and sounds of combat. Today, we take it for granted that psychiatric casualties are an inevitable byproduct of warfare. But whatever we call the affliction—shell shock, combat fatigue, post-traumatic stress disorder (PTSD), or something more poetic, such as "soldier's heart"—it is clearly not limited to modern combat.

Consider the views of Dr. Thomas Crosby, an 1841 graduate of Dartmouth College who during the war was chief of the Union Army's Columbian General Hospital in Washington, D.C., and after the war returned to join the faculty at his alma

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This major in the New Hampshire 5th was one of more than 35,000 residents of the Granite State who served in the Union ranks.

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Years of change & suffering

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mater. Like most surgeons of the day, Crosby almost certainly entered wartime service holding conventional, even primitive, ideas about the nature of psychological illness.

Yet by 1864, he was able to recognize these invisible wounds of war, writing in a letter to a colonel that one of his patients had a disease "rather mental and moral than physical" and that he did not recommend releasing the soldier from the hospital.

And many soldiers continued to bear emotional scars when they returned to civilian life. Anecdotal evidence of associated problems abounds: domestic abuse, divorce, alcohol and drug abuse, and more. It is clear that Civil War veterans' combat-related mental-health tribulations did not stop with the end of the war.

Recent research has made us even more aware of just how debilitating such injuries can be. (And it bears mentioning that much of the research about what we now call PTSD has come from the Veterans Affairs National Center for PTSD, which is housed at the Dartmouth-affiliated White River Junction, Vt., VA Medical Center.)

Remembrance

The nation was not long in waiting to commemorate the Civil War after the cessation of hostilities. Memorials were built and encomiums were offered to the living and the dead of both the North and South.

In 1913, the Dartmouth Class of 1863 raised funds for a large bronze plaque listing the name, rank, and unit of all 56 classmates who had served in the Civil War—including three who had fought for the Confederacy. The College then had a similar plaque made, as a companion piece, listing by class the 73 alumni who had died in the war—63 for the Union cause and 10 for the Confederacy. Including the names of troops from both sides is "very rare on war memorials," according to the late Charles Wood, Dartmouth's Daniel Webster Professor of History, in *A Guide to Dartmouth's War Memorials*. "It must be remembered, though," Wood explained, "that this memorial was created only in 1913, a half-century after the event and at a time when the elderly veterans of both sides were beginning to hold joint encampments at major battle sites where for the first time they found it possible to salute each other's valor and honor."

Today, 150 years later, the Civil War still maintains an almost unmatched hold on the imagination of Americans. Each year, millions of people visit Civil War battlefields and museums, research ancestors who fought in the war, participate in re-enactments, watch Civil War-related films and television programs, read a seemingly unending stream of books and magazine articles (including this one!), and collect artifacts, photographs, and ephemera.

The Civil War sesquicentennial, which runs from 2011 to 2015, will likely spark, renew, and intensify interest in the now long-ago struggle. Thankfully, recent scholarship has resulted in a shift in attitude among informed Civil War enthusiasts toward the conflict's medical casualties and caregivers and the challenges they faced.

Nevertheless, myths still prevail among the general public. There is more yet that can be learned, and shared, about those "years of change and suffering." ■

On the Record

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doctors how their patients fare compared to patients cared for by other doctors is a powerful way to inspire changes that can lead to better care. "The value of an electronic health record is that you are able to acquire that actionable data and then feed it back to the clinical community for them to make changes," Gettinger says. He notes that CIS was able to track some basic measures, such as a list of medications and a patient's height, weight, and other similar information, but it could not be used for more sophisticated data-gathering.

The ability to collect and analyze data is also integral to DH's involvement in a new national group—the High Value Healthcare Collaborative, a collective effort by 14 leading health systems to compare the quality, outcomes, and costs of care for a number of common conditions, such as knee replacements. (For more about this initiative, see dartmed.dartmouth.edu/sp11/v02.)

Following go-live for eD-H, Bernat said that the transition had gone about as he had expected. It was taking time to master all of the features available in eD-H and to figure out how to use the system efficiently. But, he added, "once we all learn how to use it well, I'm sure it will go smoothly."

An early test of eD-H will come when the organization attempts to qualify for federal "meaningful use" payments later this year. The initial standards that must be met in 2011 and 2012 include keeping track of patients' demographic information, as well as safety features such as checking for potentially dangerous interactions among the medications a patient is taking.

Starting in 2013, there will be still more requirements, which could earn DH and other institutions additional payments. And, by 2015, the Centers for Medicare and Medicaid will likely penalize organizations that remain unable to meet the meaningful use requirements.

Vogt says eD-H has everything needed to earn meaningful use payments—it's up to staff to be sure the system is used effectively. "It's not a technical issue, it's getting folks to change the way they deliver care," he says. "And I think we're going to be successful."

Gettinger admits, as he shows off his iPad and smartphone, that he's a technophile. He believes technology can be used to even greater effect in health care in the future. "Technology is going to become much more user-friendly," he says. "It's going to be much easier to bring it in to clinical care."

"This is a golden opportunity," agrees Vogt. "You don't often get the funding and the staff for two years to think about how you want to improve what you're doing. . . . I think we've done a good job of really leveraging all of the resources that Dartmouth has committed to making this a successful project."

Despite the difficulty of the transition, Bernat points out that the limitations of CIS made it essential to change. "There are many really valuable features in eD-H," Bernat adds, mentioning the evidence-based order sets as but one example.

And Merrens believes that merely making the transition was beneficial. "You look for challenging experiences to test your group," he says. And this one, he maintains, "has strengthened our culture." ■