

# *Edward P. Alexander versus Albert J. Myer*

**Success and failure at the  
Battle of Bull Run  
21 July 1861**

*By Steven J. Rauch*

*(This is the first of a series of articles commemorating the 150th anniversary of the U.S. Army Signal Corps during the American Civil War. Future articles will feature key events at or near the 150th anniversary of the event.)*

On 21 July 1861 the first great battle of the Civil War occurred near Manassas Junction and Bull Run Creek in Northern Virginia. There a 35,000 man Union Army commanded by BG Irvin McDowell fought two Confederate armies of about 33,000 men under BG Pierre G.T. Beauregard and GEN Joseph E. Johnston. Both sides anticipated the battle to be decisive and perhaps end the war quickly.



The United States Civil War pitted former comrades and close allies against one another; as was the case with Albert J. Myer and Edward P. Alexander who were early practitioners of the wig-wag signaling system that transformed battlefield communications.

What neither side anticipated however, was that the application of a new communications system would prove decisive in determining the outcome of the battle in favor of the Confederates.

Ironically, it was during this battle that two of the most prominent figures in Signal Corps history found themselves on opposing sides, having once been close colleagues in developing the visual communications system known as "wig-wag." Both MAJ Albert J. Myer, serving as the signal officer of the U.S. Army, and CPT Edward Porter Alexander, serving in the same capacity in the Confederate Army, experienced the excitement of the first major battle of the Civil War. However, both had very different experiences and it was Myer's Army that suffered a major defeat because of the successful employment of the wig-wag system by his former colleague Alexander. The result was that both armies, north and south, understood the usefulness of Myer's system which could change the tide of battle as it did that day at Bull Run 150 years ago.

## **Pre-war Signaling Experiments**

Albert J. Myer was an imaginative and enterprising military leader, who conceived, equipped, trained, organized, and directed the U.S. Army Signal Corps during the Civil War. Initially studying as a physician, in January 1854 Myer passed the Army medical board examination and received an appointment as an assistant surgeon in the Regular Army a year later. He was assigned to various frontier posts in Texas where he supported Army units engaged in operations on the frontier. Myer often accompanied the patrol columns where he had many opportunities to observe Indian scouts and their methods of signaling by means of crude flags, which inspired him to create a signal system of his own.

Myer spent almost two years devising a visual signal alphabet that could be taught quickly and be easily understood. He used flags in a system called "Wig-Wag" based on using motion where "one" was indicated by waving the flag to the left and "two" by a motion to the right and "three" with a wave to the front. This system could transmit about three words a minute during daylight hours up to a distance of 15 miles. The system could also be employed at night by using torches.

In 1859 Secretary of War John B. Floyd arranged



**Albert J. Myer, father of the U.S. Army Signal Corps.**

for Myer to present his ideas before an Army board. LTC Robert E. Lee presided during the evaluation of Myer's system and he concluded it would be a

useful supplement for the current methods of sound and messenger. Floyd eventually granted Myer an absence from his medical duties to conduct further study of the wig-wag. Myer spent considerable time in the combat development process experimenting with flag and torch devices, working with various manufacturers, and perfecting operations techniques.

To assist Myer, Floyd assigned engineer officer LT Edward Porter Alexander, who had graduated third in the West Point class of 1857. Alexander and Myer traveled to New York City where they worked constantly to determine the feasibility of the wig-wag system. As a result, Alexander became an expert in the Use of the wig-wag and wrote in his memoirs: "We spent the whole fall [1859] and until Christmas



**The Signal Corps celebrated its 150th anniversary in 2010. The Corps proved its worth in the midst of the Civil War.**

about N.Y. experimenting. Usually I would go down to Sandy Hook on Mondays and he would go to Fort Hamilton. I would board in the light hoUse with the keeper and Myer and I would signal to each other, 15 miles apart, all day and until near midnight every night - experimenting with different devises and methods - until Saturdays, when we would meet at St. Nicholas Hotel in N.Y. and compare notes."

In November 1859 Myer asked Alexander to prepare a report for Adjutant General of the Army Samuel Cooper. In the report, Alexander pointed out the speed with which he had learned Myer's system and the success they had "far exceeded our expectations and is conclusive evidence to myself of the absolute perfection, as well as ... simplicity of the system." Alexander discussed both day and night testing that occurred, "In ordinary weather over a distance of 15 ¼ miles" using an apparatus that was "very light and simple and so portable that one man, mounted or on foot," could transport and use it.

Alexander concluded, "In short, it is capable of mathematical demonstration that the System is the most perfect, comprehensive and simple that can possibly be devised."

On 29 November 1859, Myer reported to Cooper that the system had not been "sufficiently elaborated to be sent into the

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**This illustration depicts Albert J. Myer's ill-fated balloon expedition as the craft became entangled in trees along the road to Bull Run. Myer abandoned the balloon effort and served the rest of the battle as a mounted courier while Edward P. Alexander successfully employed Myer's wig-wag system.**

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field." Both Myer and Alexander were directed to continue their experiments and during the period just before Christmas, they carried out a final series of trials with Myer stationed on the New Jersey Highlands and Alexander 15 miles away at Fort Tomkins on Staten Island. They continued to learn through trial and error about the visibility of daytime signals under differing conditions of light, shadow, background and the color of their flag. They also concluded that the four foot flag should be the standard size because it became the one they used the most in the experiments. Alexander commented that he could read signals made with a four-foot flag on a 12-foot pole "with [only] a small and weak glass." If no one else, at least two people in the Army were convinced of the value of Myer's system.

Myer's vision was realized on 21 June 1860 when Congress established the position of signal officer on the Army staff and Myer was appointed to that position as a major. He was also authorized to purchase \$2,000 worth of signal equipment for use by the U.S. Army.

### The Battle of Bull Run--July 1861



This illustration shows BG Thomas J. Jackson at the battle of Bull Run on 21 July 1861. It was here he attained the sobriquet of "Stonewall," from a comment made by BG Bernard Bee, for his units' firm stand during the battle.

On 16 July 1861 the people of Washington D.C. cheered as BG Irvin McDowell's 35,000-man Army marched out of town to heed the cry of "On to Richmond" and to put a quick end to the rebellion started in April at Charleston, S.C. McDowell's Army consisted of raw volunteers, none of whom had the faintest idea of the nature of combat. The inevitable victory was an attraction which enticed many men, women, children and even congressmen, to follow the Army, with many carrying picnic baskets filled with refreshments for consumption during what all expected would be a wonderful show.

McDowell's slow-moving columns were aimed at the vital railroad junction at Manassas, Va. If McDowell could seize that junction, he would control the best overland approach to Richmond. On 18 July McDowell's Army reached Centreville. Five miles ahead a meandering stream named Bull Run lay across the route of advance, and there, guarding the fords, were 22,000 Confederate troops under command of GEN Pierre G.T. Beauregard. McDowell spent the next two days scouting the Confederate left flank looking for a way to avoid the main enemy defenses. In the meantime, Beauregard asked Richmond for help. GEN Joseph E. Johnston, stationed in the Shenandoah Valley with 11,000 Confederate troops, was ordered to support Beauregard. Johnston did so, starting his brigades toward Bull Run quickly, and to some, unexpectedly by using the Manassas Gap Railroad, one of the first examples of operational movement in that manner.

On the morning of 21 July, McDowell sent his columns in a long march northwest towards Sudley Springs Ford where he correctly determined the Confederate left flank was weakest. He planned for a diversionary attack on the Confederate right flank where the Warrenton Turnpike crossed Bull Run at the Stone Bridge. At 0530 hours the bark of a Union 30-pounder Parrott rifle shattered the morning calm, signifying that the first major battle of the Civil War had begun. For McDowell's plan to succeed, he needed to achieve speed and surprise, both difficult with inexperienced troops.

GEN Beauregard decided to use economy of force by positioning several brigades on his left flank to guard key crossing points south of Bull Run creek while he massed the main force on the right to attack north toward Centreville. What he did not know was that BG McDowell had much the same plan and as a result both were strongest where their enemy was weakest. The winner

would be determined by which Army could most quickly identify the enemy actions and cope with the resulting chaos that followed.

### **CPT E.P. Alexander Confederate States of America**

During the 1861 secession crisis, Georgia native Alexander resigned his U.S. Army commission and sought appointment in the Confederate Army to fight for his state and new country. Ironically, President Jefferson Davis, who had been a staunch opponent of Myer and his system of signals prior to the war, assigned Alexander



**CPT E. P. Alexander  
Confederate States of America**

to Beauregard's staff to provide a wig-wag signal capability. Alexander quickly trained a detachment of infantry soldiers as signalmen and located four signal stations on hilltop positions behind Bull Run from where activities within the area of operations could be easily observed.

On the morning of 21 July, Alexander was at the Signal station on the Wilcoxon farm, east of Manassas. At about 0830 as he was looking towards his Signal station near the Van Ness house on the left flank, the sun behind him reflected a bright light on objects several miles west of that position.

Alexander recalled, "I was about eight miles from me...a faint gleam, but I had a fine glass and well trained eyes, and I knew at once what it was. And careful observation also detected the glitter of bayonets all along a road crossing the valley, and I felt sure that I was 'on to' McDowell's plan." What he saw was McDowell's movement to cross Bull Run at Sudley Springs Ford. Alexander had discovered the Union flanking maneuver! He quickly wig-wagged the Van Ness station which was collocated with COL Nathan G. Evans' brigade,

the closest CSA unit at the far left of the line, with a warning that said, "Look out for your left You are turned." Receiving this information, Evans moved his 1,100 man brigade northwest to Matthews Hill where he formed a blocking position until reinforcements could arrive. Alexander then sent a written message to Beauregard who was not near a signal station. Alexander's note read: "I see a column crossing Bull Run about 2 miles above Stone Bridge. Head of it is in woods on this side; tail of it in woods on other side. About a quarter mile length of column visible in the opening. Artillery forms part of it."

After receiving Alexander's warning, Beauregard ordered several infantry brigades to the threatened flank, thus parrying what would have been a surprise attack on his left. Speed and surprise was what McDowell needed, however Alexander snatched those elements away from him because he effectively employed Myer's wig-wag in a tactical network.

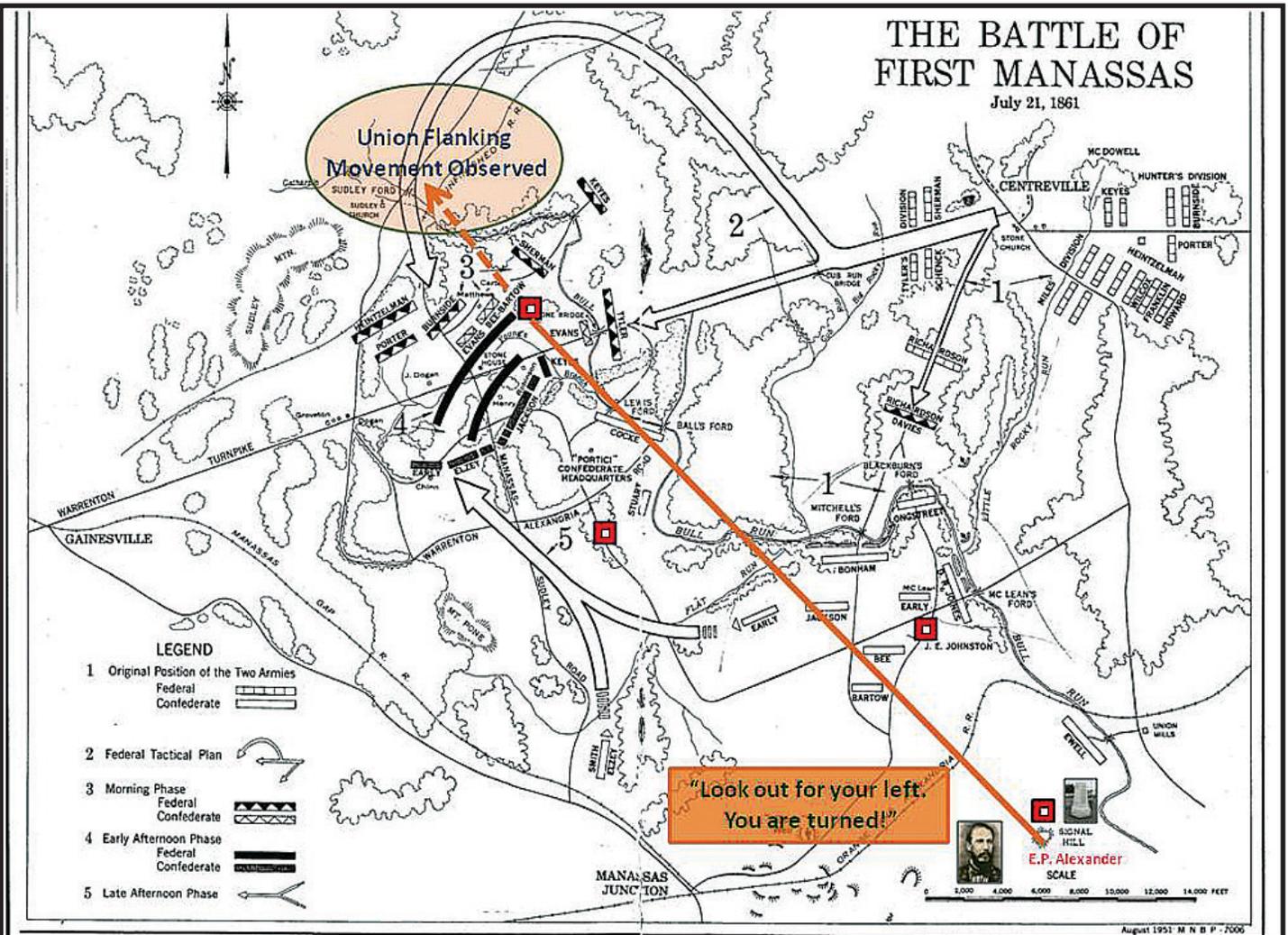
Meanwhile, Alexander continued his observations throughout the battle space and he noticed on the right flank, "Where I was watching its gradual development from my high hill and getting messages from my Stone Bridge station until the Federal advance, after driving back the Hampton Legion and the Georgians, compelled everything to quit the west side of the pike."

He then turned back to the left where he witnessed first-hand how effective railroads would become during the war relating: "Something else began to attract my attention. I could overlook the country to the west - out left - and now I began to notice clouds of dust begin to form. . . I of course sent prompt messages to the

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**Monument to E.P. Alexander and his actions at Bull Run erected on Signal Hill by the Signal Corps Regimental Association. The monument is inscribed with Alexander's warning message to Evans as the first battlefield telecommunication in U.S. history.**



This map depicts Alexander's wig-wag information network on 21 July 1861 during the battle of Bull Run/First Manassas. From his position on Signal Hill, he detected the Union flanking maneuver over eight miles away. His wig-wag message was relayed to the station nearest Evans' brigade which then moved to block the enemy movement, thus saving the Confederate left flank.

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generals by my couriers, and by signals to all points, and I reported too what I could see of the fight, which was making more and more noise on the left . . . And as the sun got higher the dust clouds in the west also grew denser and taller, until they became veritable pillars in the air . . . It turned out to be made by the trains of GEN Johnston's Army."

The CSA delaying forces swelled to about 2,800 men who held Mathews Hill for about one and a half hours until a stronger defense was established at Henry House hill. Soon the CSA brigades of BG Barnard Bee and COL Francis Bartow marched to Evans' assistance. Attempting to rally his men on Henry House hill, Bee looked to GEN Thomas J. Jackson's newly arrived brigade as an anchor to stem the tide. Pointing to Jackson's position, Bee shouted to his men, "There stands Jackson like a stone wall! Rally behind the

Virginians!" GEN Johnston and GEN Beauregard then arrived to assist and rally the brigades. Johnston would write in his 22 July report: "About 8 o'clock GEN Beauregard and I placed ourselves on a commanding hill in rear of GEN Bonham's left. Near 9 o'clock the signal officer, CPT Alexander, reported that a large body of troops was crossing the valley of Bull Run some two miles above the bridge. GEN Bee, who had been placed near COL Cocke's position, COL Hampton, with his Legion, and COL Jackson, from a point near GEN Bonham's left, were ordered to hasten to the left flank. The signal officer soon called our attention to a heavy cloud of dust to the northwest and about 10 miles off, such as the march of an Army would raise." (OR Series I, Vol. II p.474)

What had happened during that hour at Bull Run was an astounding event - for the first time in military history tactical information had been transmitted by wig-wag network more rapidly

than a courier could ride and led directly to the Confederate victory. Alexander had used his training with the wig-wag to save the day, but where and what was Myer doing while his wig-wag system was being used against his own Army?

**MAJ Albert J. Myer  
United States Army**

Ironically, while Alexander was proving the value of the wig-wag information network, Myer was attempting to incorporate new technology into the fight. Myer involved himself with an observation balloon operated by civilian contractor John Wise, which he hoped to use for reconnaissance and communication at McDowell's headquarters. Wise had brought



the balloon to Washington D.C. on 20 July, inflating the balloon just before midnight. The balloon party consisted of Myer, who took command, 20 men from the 26th Pennsylvania Volunteer

Infantry Regiment who served as the ground crew holding the ropes (much as a parade balloon is today), Wise, his son Charles and civilian wagon teams carrying various equipment.

At about 0200 hours on 21 July, the group walked the balloon up Pennsylvania Avenue to Georgetown, arriving there about dawn. Then they moved along the Chesapeake and Ohio Canal, crossed the Potomac and arrived about at Fairfax road around noon. By this time the sound of battle could be heard from Manassas, the effect of which quickly led to the abandonment of all patience and care. Myer, anxious to get to the battle, ordered the balloon tethered to one of the

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On the morning of 21 July 1861, Confederate BG Bernard Bee, having recently resigned from the United States Army and still wearing his blue uniform, realized that the army's left flank was seriously exposed. Bee ordered the Fourth Alabama to advance rapidly in order to plug the gap in the Confederate line. Along with Evans' brigade, Bee and his brigade held their positions for over an hour and repulsed several Union regiments, stalled the Union advance and gave the Confederate forces more time to regroup.

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wagons for faster movement. The inflated balloon subsequently became entangled in the trees along Fairfax road and could not move. When Myer tried to force it out of the snare by whipping the horses, the action tore large holes in the bag and in a few minutes it had deflated into a pile of torn shreds. Myer ordered the group to return to Washington, asked Wise to repair the balloon and bring it back to Manassas, thinking the battle would continue for several days. Abandoning the balloon idea, Myer sped to McDowell's headquarters, arriving at about 1500 hours just as the Union Army began to collapse. Myer then served as a mounted messenger for the remainder of the battle. Thus Myer found

himself without a wig-wag information network or any other unique Signal capability for the first major battle of the Civil War.

### **Battle of Bull Run Outcome**

The battle continued until just after 1600 hours when fresh Southern units crashed into the Union right flank on Chinn Ridge, causing McDowell's tired and demoralized Soldiers to withdraw. At first the withdrawal was orderly but then turned to panic as the road to Washington was jammed with the carriages of civilians who had come out to watch the fight. The retreat quickly became a rout and the Confederates would celebrate a decisive victory.

The Union lost about 460 killed, 1,124 wounded, and 1,312 missing for 2,896 casualties.

The Confederate loss was 387 killed, 1,582 wounded, and 13 missing for a total loss of 1,982 men. By dawn the next day, the Union Army was back behind its defensive positions of Washington D.C., no longer a threat to Richmond.

The battle at Bull Run demonstrated that the Civil War would not be decided by a decisive battle in the style of Napoleon. In the North, President Lincoln called for an additional 500,000 volunteers for three-year enlistments. In the South, once the euphoria of victory had worn off, Jefferson Davis called for 400,000 additional volunteers. Both sides thus began preparing for a long and bloody conflict - the most deadly in American history.

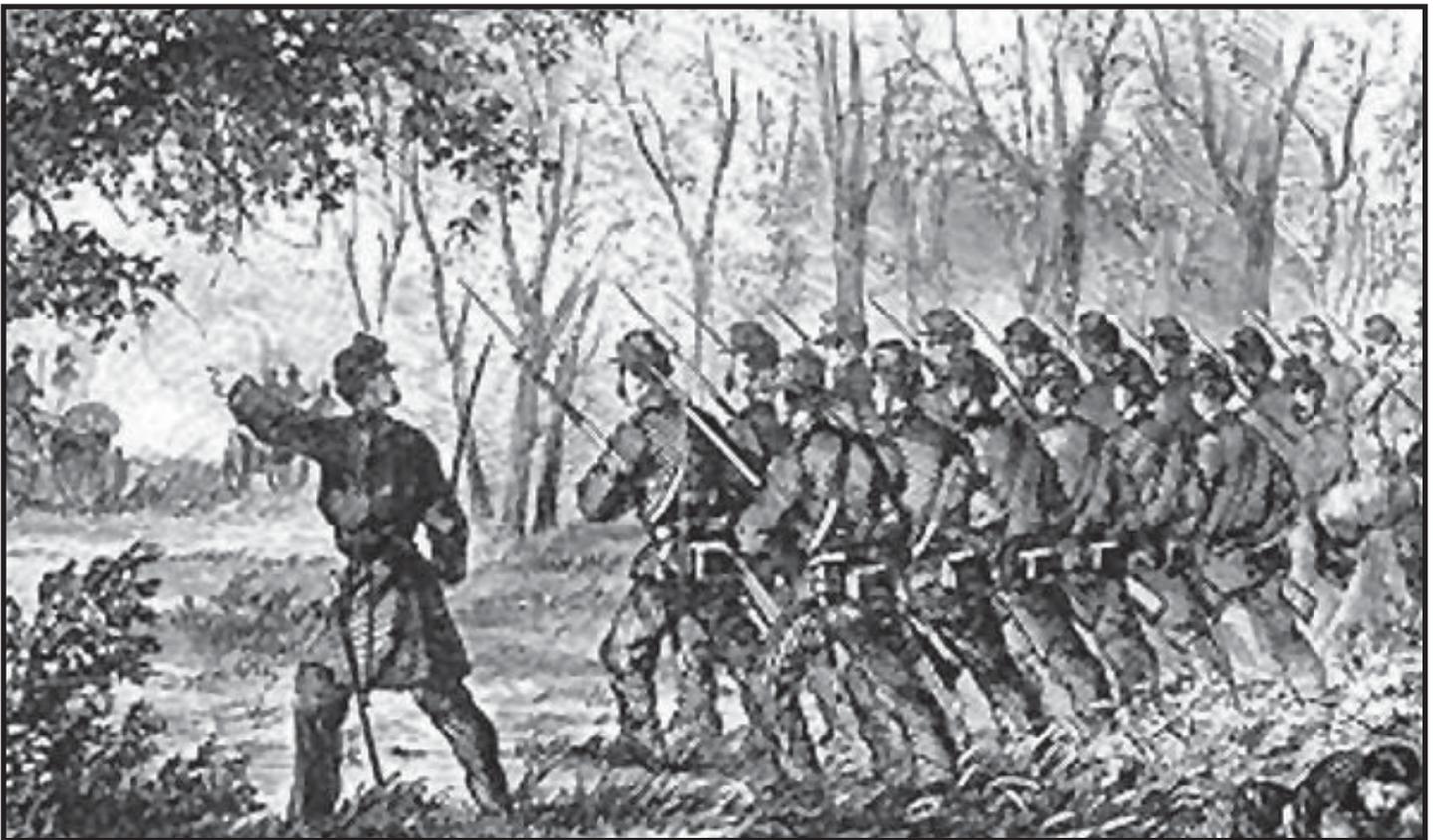


Illustration depicts a charge by Soldiers engaged in the Battle of Bull Run on 21 July 1861.

## A Triumph for the Wig-Wag System

The Confederate victory at Bull Run can be directly attributed to Alexander and his network of wig-wag signal stations. After Bull Run, Alexander maintained control of CSA signal operations but also assumed the duties as Johnston's chief of ordnance.

In April 1862 the Confederate Signal Corps was formally established as a separate branch, but Alexander turned down the position of chief signal officer. He did however take charge of the short-lived Confederate air force, consisting of an observation balloon tethered to a river boat on the James River from which he reconnoitered the enemy line. In effect, Alexander had used the first aircraft carrier in military operations. Alexander would achieve everlasting fame at Gettysburg where he commanded all First Corps artillery and conducted the intense bombardment of Union positions on Cemetery Ridge to prepare the way for 15,000 CSA infantry to attack the Union line on 3 July 1863.

Alexander would be promoted to brigadier general on 26 February 1864 and in June wounded in the shoulder by a sharpshooter during the siege at Petersburg, Va. He continued with the Army until the surrender at Appomattox in April 1865.

Many years later, on 28 April 1910, he died in Savannah, Ga. and was buried in Magnolia Cemetery in Augusta, Ga. Edward Porter Alexander is remembered daily by Soldiers at the U.S. Army Signal Center of Excellence when they use the auditorium in Alexander Hall, named in his honor.

Myer must have felt a bitter satisfaction that he had been absolutely correct about the capability of the wig-wag system that was employed so successfully against his own Army.

It was just a beginning. During the course of the Civil War, Signal Soldiers from both sides deployed on high ground, in tree tops, on roof tops and on signal towers to locate enemy troop movements and help adjust artillery fire. They served as intelligence gatherers who could often intercept and read each other's messages. Both also employed their Signal personnel and systems in joint operations with the navy. In the Union Army it became routine to station Signal officers and men aboard naval vessels operating along the rivers and coasts in support of ground operations.

By the end of the Civil War, commanders on both sides and at all levels had grown to depend upon the wig-wag information network. The war

had proven that specially trained Signal Soldiers were required to harness the ever growing communications technology which allowed commanders to effectively control armies over vast distances and react to unexpected developments in a timely manner.  
Pro Patria Vigilans!

## Sources and Further Reading

Alexander, E. Porter, *Fighting for the Confederacy*. Edited by Gary W. Gallagher. Chapel Hill: University of North Carolina Press, 1989.

Davis, William C., *Battle at Bull Run*. Baton Rouge: Louisiana State University Press, 1977.  
Hennessy, John. *The First Battle of Manassas: An End to Innocence, July 18-21, 1861*. Lynchburg, Va.: H. E. Howard, 1989.

Hennessy, Juliette A., *The United States Army Air Arm: April 1861 to April 1917*. Washington D.C.: Office of Air Force History, 1985.

Raines, Rebecca Robbins, *Getting the Message Through: A Branch History of the U.S. Army Signal Corps*. Washington D.C.: U.S. Army Center of Military History, 1996.

U.S. War Department, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*. Washington, D.C.: Government Printing Office, 1893. Vol. 2, ser. 1, contains documents and reports concerning First Bull Run.

Robertson, William Glenn, "First Bull Run, 19 July 1861." in *America's First Battles 1776-1965*. Kansas: University Press of Kansas, 1986. pp. 81-108.

Sterling, Christopher H., ed. *Military Communications: From Ancient Times to the 21st Century*. Santa Barbara, California: ABC-CLIO, Inc., 2008.

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