

Professor Lowe Directs Artillery from a Balloon **<http://civilwar150.longwood.edu>**

On September 28, 1861, Confederates withdrew from the prominence known as Munson's Hill in northern Virginia. This hill, nearly 400 feet above sea level, gave the Confederates a commanding view of the plain in front of them, called Bailey's Crossroads and also allowed them to see as far as the city of Washington, D.C. In Washington, fearful observers with spy glasses remarked on the number of large guns the Confederates had placed on Munson's Hill and pointed in their direction. After the Confederates abandoned the hill for Centreville, fifteen miles west, Union forces were embarrassed to find that most of these artillery pieces had been what were termed Quaker guns, large logs painted black and set up to look like the real thing.

One of the reasons for the Confederates withdrawing may have been an artillery barrage they had received four days before from real Union artillery. This barrage may have been unusually accurate as it was the first time in United States military history that artillery fire had been directed by aerial reconnaissance. Using a telegraph line and flag signals, aeronaut Professor Thaddeus Lowe ascended in his balloon from Fort Corcoran at Arlington Heights and was able to direct Union artillery stationed near Chain Bridge to zero in on the Confederates at Munson's Hill and at their headquarters in Falls Church, just behind the hill. The artillerists could not see their target, but with each shot Lowe could signal left, right, long or short.

While in June, a number of balloonists had converged on Washington in an attempt to convince Abraham Lincoln and his generals that the aerial reconnaissance had military value and that he was the man to be in charge of it, by fall 1861 Lowe had risen to the front of the pack.

His aerial observations just after the Battle of Bull Run showed that the Confederates were not advancing on Washington, as many feared, impressed many congressmen and military officers.

Between late August and late September 1861, Lowe made more than twenty ascents and while his observations of Confederate encampments were not critically valuable, he and his crew were able to hone their techniques. He also took aloft a number of influential Union military leaders, including Irwin McDowell, Fitz-John Porter and George McClellan.

Lowe was also hard at work on a piece of equipment that would be critical to making balloonists truly mobile and able to travel with an advancing army. For a number of decades, balloonists had largely relied on coal gas, which was distributed by pipes in large cities for lighting, cooking and heating, for ascension. This gas, largely composed of hydrogen, was lighter than air and would give the balloon the necessary buoyancy to stay aloft. A valve at the top of the balloon could release hydrogen to aid in descent of the balloon.

However, once a balloonist was away from city gas mains, this method became impossible. Lowe was able to design and create portable hydrogen generators that could be pulled by teams of horse to any location. The generators consisted of wooden tanks, five feet high and eleven feet long, lined with copper. Iron filings would be added to the tank and sat on shelves built within. When a large amount of sulfuric acid was then added to the tank, hydrogen gas was generated and could be siphoned off with a hose to the envelope of the balloon.

Lowe's political connections, his hydrogen generators, his pre-war ballooning experience and his success directing artillery against Munson's Hill gave him the confidence to ask George McClellan to consider forming a United States Balloon Corps. McClellan approved and gave Lowe the green light to begin making balloons and generators and to begin recruiting men for the

corps. By spring 1862, as McClellan began his Virginia Peninsula campaign, Lowe would be alongside the army, making several important observations.