THE BATTLE OF THE CRATER

Gaining a reputation for independent command after his successful expedition against coastal installations in North Carolina, General Ambrose Burnside twice rejected an offer to command the Army of the Potomac before finally accepting the post on November 7, 1862, after further success at Antietam. Relieved of command following failure at Fredericksburg, he remained in the army in a subordinate position and by 1864 commanded the IX Corps, Army of the Potomac. His support for the abortive mine operation of July 30 of that year led to his final resignation on April 15, 1865. (Library of Congress LOT 9934, p. 13)

THE MINE

According to the report of General Ambrose Burnside, commanding the IX Army Corps, the plan to mine the Petersburg defenses began when several noncommissioned officers and privates of the 48th Pennsylvania, a regiment which contained a number of miners from Schuylkill County, in east-central Pennsylvania, suggested the idea to their commanding officer, Lieutenant Colonel Henry Pleasants, who was described as "a skillful and experienced mining engineer." Born in Buenos Aires, Argentina, in 1833, Pleasants lived in Pottsville, Schuylkill County, Pennsylvania, before the war, and helped cut the railroad tunnels through the Allegheny Mountains. An ancient tactic in siege warfare with a first recorded use by the Assyrian army in 850 BC, military mining was by no means a new idea and had been employed previously in the Civil War with only limited success on June 25, 1863 during the siege of Vicksburg. Despite this, Pleasants became convinced that a mine would result in a Union breakthrough at Petersburg.

In preparation for presenting the plan to his divisional commander, Brigadier General Robert B. Potter, Pleasants personally conducted a reconnaissance to determine where his mine should be laid, during which a divisional staff officer who accompanied him was wounded in the face. An ideal target in the Confederate defenses known as Elliott's Salient, was identified within a distance of only 130 yards from the works occupied by the IX Corps midway along the Union siege lines. Pleasants next discussed his plan with other engineers, and also requested a list of all those with mining experience in his regiment. By June 24, he had a plan of action to present to General Potter.

Two days later, Burnside received a letter from Potter stating that he believed "a mine could be run under the enemy's works ... by which a breach could be made, if it was thought advisable." After consultation between these two officers, Burnside authorized the commencement of mining and informed General Meade who later reported, "When the subject was brought to my knowledge I authorized the continuance of the operations, sanctioned them, and trusted that the work would at some time result in an important part in our operations." However, he had reservations about the choice of location for the mine, believing it was too exposed to flanking fire. Grant did not specifically approve of the operation, but rather "consented to its advancement."

The mine was commenced along the slope leading to Taylor's Creek, about 100 yards behind the trenches of the 48th Pennsylvania, at midnight on

June 25, 1864. The work was overseen by Sergeant Henry Reese, a red-headed Welshman from Minersville, Pennsylvania, and an experienced miner. At first, only a few men were involved, but as tunneling progressed, more men were required to assist with the labor. By July, all 400 officers and men of the 48th Pennsylvania were working on the operation, with men digging day and night in two-and-a-half-hour shifts. Their reward at the end of each shift was a draught of whiskey.

Pleasants and his men had to deal with both mundane and highly technical difficulties during the excavation. The initial problem faced was a lack of the necessary tools and materials. They lacked proper picks, wheelbarrows, planks and nails. Worse, there was no effort by those in higher command to provide them. But the Pennsylvania miners remained undaunted and improvised. According to Pleasants' after-action report, dated August 2, 1864, "The mining picks were made out of those used by our pioneers." Hand-barrows to carry away the soil were constructed using hickory sticks nailed to cracker boxes. In the regimental history, Pleasants stated, "I had to do all the work move all the earth in old cracker-boxes; I got pieces of hickory and nailed on the boxes in which we received our crackers, and then iron-clad them with hoops of iron taken from old pork and beef barrels." Lumber to provide support beams in the tunnel was acquired by tearing down an old bridge. They also scoured the camps of the IX Corps for wood and commandeered local sawmills. One of the most important items required was a theodolite, or surveying instrument, needed to plot the course of the mining. An accurate estimate of the location of the tunnel was essential if the operation was to succeed. However, Meade's engineering staff was skeptical of the success of the operation, and stubbornly refused to comply, so Burnside ordered the purchase of one in Washington, DC. The instrument finally received by Pleasants was old-fashioned, but served its purpose.

Next there was the problem of what to do with the soil removed on an hourly basis by the miners. It first had to be carried from the mine face to the tunnel entrance. As the Confederates were watching and had signal towers peering down into the Union lines, the soil had to be surreptitiously disposed of. If the defending troops noticed soil being carried away, they would detect the location of the mine, and hinder or destroy it with countermining. Thus, the soil was transported to the rear in cracker boxes, where it was concealed in undergrowth or cut bushes.

Providing ventilation for the teams working in the mine presented one of the most technical challenges. This problem had deterred other engineers in the Army of the Potomac from undertaking the mining project. Most other engineers also thought the projected distance of the tunnel was too great. But Pleasants and his miners turned soldiers produced an ingenious solution, based on the experience of some of them in the Welsh coal mines. According to their regimental historian: "The ventilation was accomplished in a very simple way – after a method quite common in the anthracite coal mines. A perpendicular shaft or hole was made from the mine to the surface at a point inside of the Union rifle pits. A small furnace, or fire-place, was built at the bottom of this hole, or shaft, for the purpose of heating the air, and a fire was kept constantly burning, thus creating a draft. A door made of canvas was placed in the gallery, a little outside of this fire-place, thus shutting it in and shielding it from the outside air at the mouth of the mine. Wooden pipes, extending from the outside of this canvas door, along the gallery to the inner end thereof, conducted the fresh air to the point of operations, which,

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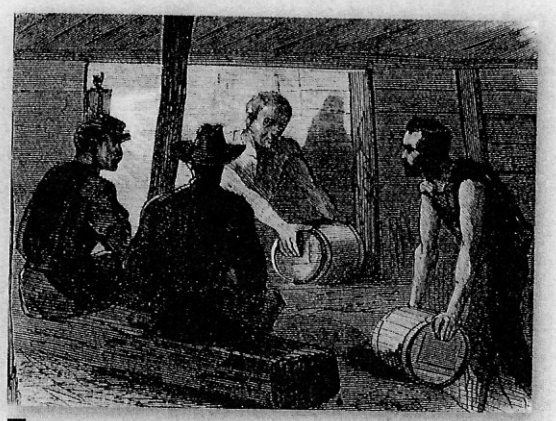

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Both main illustrated newspapers published retrospective engravings showing the Union mining operation at Petersburg. The front page of *Frank Leslie's Illustrated Newspaper* on August 20, 1864 **(a)** showed volunteers of the 48th Pennsylvania working by candlelight at the tunnel face. One man wields a makeshift pickaxe while the other two shovel soil into empty cracker boxes ready for shipping out of the mineshaft. An engraving which appeared in *Harper's Weekly* on the same date **(b)** captioned "Col. Pleasants superintending the arrival of the powder," was accompanied by a report from the artist, Alfred Waud, stating, "The mine being less than four feet in height, it was necessary to bend double in order to pass through it; the atmosphere was insufferably hot, and the ground so slippery as to quickly tire any one not used to such locomotion. Sitting at the end of it, the men passing in powder as silently as possible, speaking in low tones, and lighted by dimly burning dark lanterns, a queer sensation was felt on learning that not more than twelve or fourteen feet separated you from the rebel works in the earth-works overhead – an effect heightened by the sounds of the rebel workmen countermining, whose blows in faint thuds reached the ear." (Author's collection)

after supplying the miners with pure air, returned along the gallery towards the entrance of the mine, and, being stopped by the canvas door, the vitiated air moved into the furnace and up the shaft to the surface. By this means a constant current of air circulated through the gallery. As the work advanced, the inside end of the wooden pipe was extended so as to carry good air up to the face of the workings."

The need to keep the fire going constantly caused another problem, since its smoke might alert the Confederates to the mining operation. Thus, other fires were kept burning so that the smoke being emitted from the ventilation hole looked nothing out of the ordinary. A further difficulty was encountered on July 2, when the miners struck a thick layer of clay or marl. As a result, work slowed down considerably as the diggers chiselled away at the putty-like material. To overcome this problem, Pleasants ordered his men to tunnel upward at an incline until they encountered the extent of the marl layer. He then required them to resume digging on a level plane.

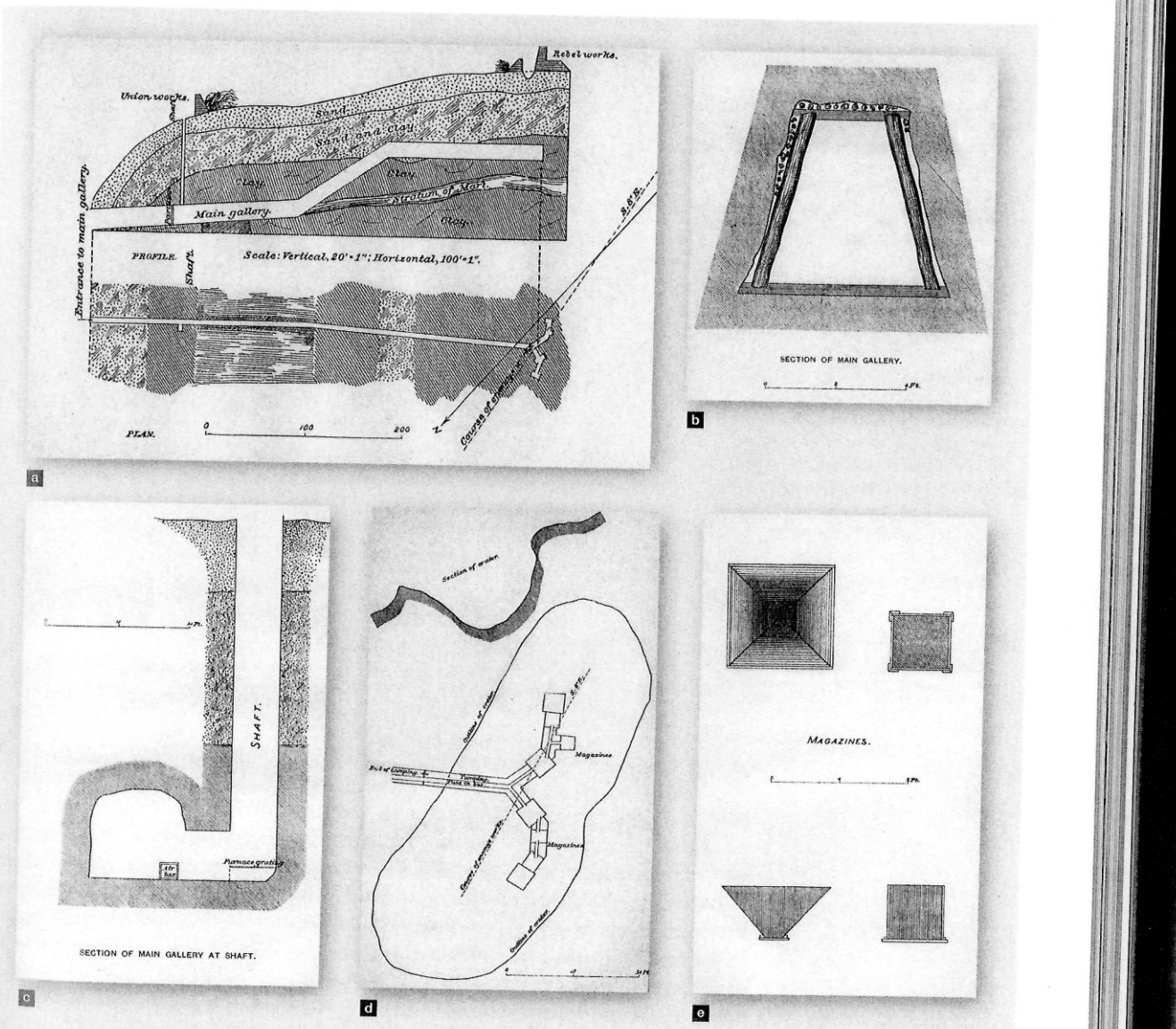
A constant fear for the miners was detection. As they approached their designated target beneath the enemy works, extreme care had to be taken to reduce the noise generated by tunneling. As a result, support timbers were notched outside the tunnel so they could be quietly wedged into place once carried in. There was also the possibility that information about the tunnel might reach the Confederates via word of mouth. Thus, the men involved in the operation were sworn to secrecy and ordered not to reveal the plan to their comrades or the folks at home via letter. To help preserve secrecy, IX Corps troops were ordered to keep up a continuous fire on the enemy line in their sector in order to keep the possibility of fraternization with the enemy to a minimum. Regardless of this, rumors did circulate among the ranks of

Based on an original sketch by Alfred Waud, this engraving illustrates how the 48th Pennsylvania hid from Confederate observers the powder kegs they shipped into the mine by carrying them in sandbags. (Courtesy of the National Park Service)

the Union troops, some of which claimed it was intended to blow up the whole of Petersburg. Inevitably, these stories were communicated to the Confederates via boasts and taunts of pickets, while some Union deserters told the enemy about the mine but provided insufficient information to permit the defending garrison to detect its exact location.

By July 17, 1864, the miners had dug a tunnel 510 feet long which had reached its destination under the Confederate defense works. At this stage, Pleasants ordered a temporary halt to work after information was received that the enemy suspected what the Yankees were up to. However, although a countermine was under way, it never came close to detecting the true location of the Union mine. Assured that they remained undetected, the Union miners next dug galleries to the left and right of the main tunnel. The former was extended to 37 feet, while the latter was dug to a distance of 38 feet. Eight chambers, or magazines, were incorporated into these for placing the powder charges.

The mine was complete and ready for the placement of the charge by July 23, and Meade was notified. There next followed a dispute between Burnside and Meade over the size of charge to be used. Experienced in the use of gunpowder as one-time proprietor of the Burnside Arms Company, Burnside requested the use of 12,000 pounds of explosive material. Several fellow officers felt differently, and advised Meade that a charge of that size might endanger Union troops in the adjacent works. Meade decided that only 8,000 pounds of powder should be used. Despite protests from Burnside, who maintained that 12,000 pounds would create a crater easier for assault troops to capture and pass through, Meade would not be swayed, and the designated charge remained at 8,000 pounds.



Accompanying the official report of Lieutenant Colonel Henry Pleasants dated August 2, 1864, this series of engravings, after drawings prepared by that officer, show detailed aspects of the Petersburg mining operation. **(a)** The cross section of the entire main gallery indicates the change of course made on July 2 after the miners encountered a thick layer of clay or marl. **(b)** The cross section detail shows the notched timbers used to support the roof and sides of the main gallery. Pleasants noted in his report, "The work progressed rapidly until the 2d of July, when it reached an extremely wet ground; the timbers gave way and the gallery nearly collapsed, the roof and floor of the mine nearly meeting. Retimbered it and started again." **(c)** Based on techniques employed in coal mining, fresh air was channelled into the main gallery along a six-inch square wooden tube, while foul air was drawn out via a vertical shaft with a constantly burning fire at its base. The furnace grating, air box and shaft are shown in this drawing. **(d)** Note the extent of the crater caused by the explosion in this plan of the lateral galleries. According to Pleasants' report, "The charge consisted of 320 kegs of powder, each containing about twenty-five pounds. It was placed in eight magazines connected with each other by troughs half filled with powder. These troughs from the lateral galleries met at the inner end of the main one, and from this point I had three lines of fuses for a distance of ninety-eight feet." **(e)** Plans showing one of the eight six-foot square, funnel-shaped magazines used to hold the 8,000 pounds of powder used in the mine explosion. (Author's collection)