

## INVENTIONS, COMMUNICATION, & TRANSPORTATION

### INVENTIONS

Though not necessarily invented during the Civil War, the following list of inventions saw their first serious applications in that conflict.

#### Military

- **On the land**
  - **The Gatling Gun** – invented by Dr. Richard Gatling, the Gatling gun operated by turning a hand-crank to rotate six gun barrels around a central shaft, each barrel firing 100 rounds per minute
  - **Land-mines** – highly explosive bombs placed under dirt or brush and exploded by contact (first used at the Battle of Yorktown by Confederate General Gabriel Raines' troops)
  - **Repeating rifles** – designed – and improved – by Christopher Spencer in 1860 to accommodate rapid re-loading of a lever-operated rifle
  - **Long-range rifles** – a rifle-musket designed to make accuracy from a distance possible; it used a far superior ammunition as well



- **Telescopic sights** – used primarily by snipers
- **Periscope** – used in trench warfare
- **On the water**
  - **Ironclads** – steam-powered warships covered with iron or steel plating first built by the French in the 1850s but never used in battle until the American Civil War
  - **Submarine** – not true submarines – except for the *Hunley* which destroyed both its target and its crew, these ships were generally ironclads with all but their smokestacks (they were steam-powered) and breathing tube projected above the surface of the water
  - **River gunboat** – developed during the war and put to great use by Union “naval” commanders
  - **Torpedoes** – a contact mine that floated on or below the surface of the water by means of a flotation device – sometimes moored to the river or sea bottom and were detonated on contact with a ship (primarily used by the Confederacy)
  - **Electrically exploded bombs** – some torpedoes could be detonated from on shore by the application of direct current instead of contact, allowing some level of choice regarding targets

For more information on land and sea weaponry, click on

[http://www.pbs.org/opb/historydetectives/investigations/201\\_innovationsfeature.html](http://www.pbs.org/opb/historydetectives/investigations/201_innovationsfeature.html)

- **In the air**
  - **Aerial reconnaissance** – hydrogen balloons were used by both sides during the war; Thaddeus Lowe demonstrated the possibilities – including telegraphy from aloft – with his prototype, the *Enterprise*, and inspired President Lincoln to authorize a civilian Balloon Corps. Unable to afford the equipment to produce hydrogen, the Confederacy employed hot air balloons.

### Civilian

- Elisha Otis patents the steam-powered elevator (1861)
- Gail Borden develops a process for concentrating fruit juice (1862)
- Ebenezer Butterick invents the first paper dress patterns sold in the United States (1863)
- James J. Plimpton invents the four-wheel roller skate (1863)
- George Pullman builds the first comfortable sleeping car for a railroad (1864)
- Linus Yale, Jr, invents the cylinder lock (1865)

### COMMUNICATIONS

- **Telegraphy** – the telegraph had been in the process of invention throughout the first half of the nineteenth century
  - Government funding of a 40-mile line between Washington and Baltimore in the 1850s finally got the new technology going
  - By 1861, the first transcontinental telegraph line had been built
  - Telegraphy was used from land stations, trains, and even balloons
  - The technology not only aided the war effort but also revolutionized newspaper reporting
- **Photography** – long pre-dated the Civil War
  - Perfected to a great extent during the war
  - Enabled men who would be called photojournalists today to present the public with authentic battlefield scenes in their homes far from the front

### TRANSPORTATION

- **Railroads** – played the most important role in war to date
  - Before the war, the states constituting the Confederacy had less than 9,000 miles of railroad tracks while the North had over 22,000 miles, making possible numerous cross-country direct routes between the East Coast and the Mississippi in the North but only on in the South
  - Both sides were hindered by the lack of a uniform gauge (width between rails)
  - The South made the first significant use of railroads to move troops
  - The North – relatively free from major battles – use the railroads more for supply and the maintenance of commerce
- **Riverboats** – an established means of commerce well before the beginning of the war
  - Most riverboat captains and pilots remained loyal to the North
  - Throughout most of the war, the Union controlled the major river systems
  - Converted almost immediately to military use while still handling commerce