


## Chapter 121g -- A Military-Industrial Complex Starts Up

 A portrait of Samuel Colt, a man with a beard and curly hair, wearing a dark coat and holding a hat. The name "Samuel Colt" is written at the bottom of the portrait.	<b>Dates:</b> 1840	<b>Sections:</b> <ul style="list-style-type: none"><li>• An Early Arms Industry Forms Up In The North</li><li>• The South Trails Far Behind On Weaponry</li><li>• Manufacturing Round Shot</li></ul>
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Time: 1840

### An Early Arms Industry Forms Up In The North



As always, it is demand for military weaponry that plays a leading role in manufacturing advances.

The arms industry in America begins in 1777, after the outbreak of the Revolutionary War, when George Washington commissions the first armory, in Springfield, Massachusetts. Two years later the facility, under General Henry Knox, is able to manufacture the nation's first flintlock musket. It fires a ½ inch lead ball, cradled in a paper cartridge, and rammed down the barrel on top of gunpowder loaded from a horn. The charge is ignited by a flint stone in the hammer that creates a spark when the trigger is pulled. The weapon takes 30 seconds to set up, misfires about half of the time, and is accurate to only 100 yards.

Samuel Colt (1814-1862)

In addition to muskets, Washington's army also requires cannon to survive. Most of these are European models captured during battle. But gradually large forges in the iron rich regions of Pennsylvania begin to

cast reliable cannon in the two most widely employed size – one capable of firing an 18 pound solid iron ball, the other a 12 pounder, with accuracy up to roughly one mile.

The uncertain supply of arms during the Revolutionary War prompts the call for greater manufacturing capacity and efficiency in anticipation of further conflict.

In 1798, it is Eli Whitney, famous for patenting his cotton gin five years earlier, who steps up with the promise of supplying the government with 10,000 muskets from his factory in New Haven, Conn. The process he uses involves some 195 separate steps to produce and assemble 50 distinct parts, from woodstocks to hand-bored barrels, intricate triggers, and various mountings, each of which must work reliably on the battlefield. The task takes Whitney ten years to complete.

The Ft. Pitt Cannon Foundry in Pittsburg starts up in 1804 and turns out much of the heavy duty artillery used in the War of 1812, including 50 pound “Columbiads,” designed by Lt. Colonel George Bomford and placed in seacoast fortifications to thwart naval attacks. Some thirty years later, it becomes the Knapp Rudd & Company, famous for eventually producing the massive 100-200 pound Rodman guns used in the Civil War.

In 1816 twenty-three year old Eliphalet Remington II picks up where Whitney left off. His father runs a forge in Herkimer County, New York, which leads to his determination to craft a new, improved rifle that will win him prizes for marksmanship. After showing off his gun, orders pour in for duplicates from those who observe its accuracy. By 1828 the firm of E. Remington & Sons has mastered the know-how required to form and ream iron barrels and is shipping them to gunsmiths across the country.

In 1836 the foundry at West Point, New York, established after the War of 1812, hires Robert Parrott as its new Superintendent. He will remain in the post for four decades and perfect what is christened the Parrott Rifle, noted for a wrought iron band reinforcing the breech. His 30 lb. gun will become the largest infantry cannon in the Civil War.

The demand for hand-guns also grows, and, in 1836, twenty-two year old Samuel Colt starts up Colt’s Patent Fire-Arms Manufacturing Company in Hartford, Connecticut. Colt pioneers the concept of machining interchangeable parts for his guns and the “assembly lines” approach to insure efficiency and consistent quality. By the time Colt dies in 1862, his firm leads all competitors in the mass production of and he is one of America’s wealthiest men.

Other notable armament factories up North operating by 1840 include the Cyrus Alger & Co. works in Boston, and the Scott Foundry in Reading, Pennsylvania.

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Time: 1840

### **The South Trails Far Behind On Weaponry**

In 1840 the Southern economy is becoming even more concentrated on its cotton crop and on breeding excess slaves for sale in the west.

As such its interest in manufacturing, including armaments, remains low.

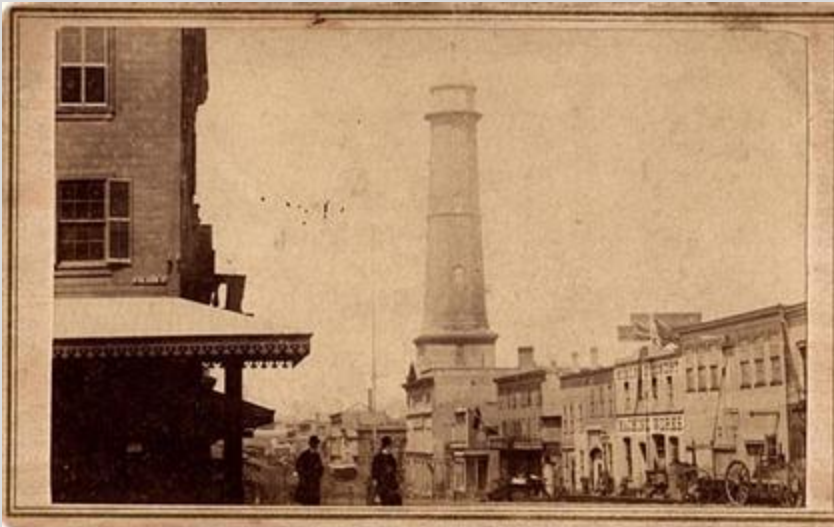
Some pig iron facilities are in operation by that time.

The Clarksville Foundry in Tennessee has been up and running since 1797. The Tannehill Ironworks open in 1830 to take advantage of the vast mineral deposits in Alabama. These two are joined by Moses Stroup's Ironworks (1831) in Georgia, and Catharine Furnace (1837) in Chancellorsville, Virginia.

But the only Southern factory capable of eventually making muskets and cannon is the Tredegar Iron Works, located on 22 acres in Richmond, which opens in 1837.

Its mission at the time, however, is not armaments, but rather to address the growing needs in the railroad sector. Under the guidance of superintendent, Joseph Reid Anderson, from 1841 forward, Tredegar will supply some seventy steam locomotives and thousands of miles worth of railroad tracks before it ever becomes the dominant supplier of cannon, rifles and munitions for the Confederate Army.

#### Sidebar: Manufacturing Round Shot



A "Shot Tower" Turning Out Ammunition

In 1782 William Watts of Bristol, England invents an improved method for producing the perfectly round and solid shot used as ammunition for muskets and cannon. Instead of the slow and costly use of moulds to cast the balls, Watts builds a 200 foot tall vertical factory known as a "shot tower." At the top of the tower, lead is heated to a molten state and then passed through various sized "sieves" and allowed to drop freely to ice water pools at the base. Gravity forms the lead into the desired roundness during the fall, and the water bath solidifies the lead and locks in the shape.

The "shot tower" in the photo stands at the corner of First and Howard St. just east of San Francisco Bay, around 1868. It is operated since 1865 by the Shelby Smelting & Lead Company, owned by one Thomas Shelby, the 13<sup>th</sup> Mayor of San Francisco.