

2016 Ammunition Hall of Fame Inductee

BRIGADIER GENERAL JOHN PITMAN



Brigadier General John Pitman was born in Providence, Rhode Island, on November 12th, 1842. He served an extensive and distinguished career in the ordnance field. His expertise provided the Ordnance Department with timeless contributions in small arms, small arms ammunition, standardization, and the enhancement and establishment of smokeless powder in the United States. His contributions to the ordnance department were critical to an era where warfare tactics and strategy were changing dramatically. BG Pitman's determination, attention to detail, and fervor for small arms were essential to accomplishing the challenge of developing a U.S. variety of smokeless powder.

As a child, Pitman was educated in the Schools of Providence at the University of Brunswick in Germany for three years. At the outbreak of the Civil War he and his father returned to the United States to fight for America's civil liberties. Pitman enlisted in the 1st Rhode Island Volunteer Infantry in July 1861. Three days later Pitman was transformed from student to Soldier and served our country in the first Battle of Bull Run.

From September 1862 to April 1863, Pitman continued service as a Private in the 10th Rhode Island Volunteer Infantry. During this tour he was promoted to rank of Sergeant Major. He became a 2nd Lieutenant in the 11th Rhode Island Volunteer Infantry until July of 1863. Honorably noticed for his intelligence and capabilities, President Abraham Lincoln appointed Pitman to the United States Military Academy in September of 1863 where he graduated number ten out of 63 classmates. After West Point, he chose service with the Ordnance Department and began his ordnance career at the St. Louis Arsenal.

After the Arsenal, he went into teaching and taught at the United States Military Academy as Principal Assistant Professor of Chemistry, Mineralogy, and Geology, and Assistant Instructor of Ordnance and Gunnery, until he requested to be replaced in 1872.

Pitman then worked at Watervliet Arsenal in Troy, New York for three years until 1876. From 1876-1886, he was assigned to Watertown Arsenal in Massachusetts. Under the command of Colonel T.T.S. Laidley, whom he admired and deeply respected, he was the officer in charge of the Emery Testing Machine. He conducted many experiments and tests for the government and for private parties. Before he received the opportunity to establish the Frankford chemical laboratory, he had gained some experience in the establishment of a chemical lab at Watervliet. In this lab he conducted various analyses and tests, mostly of metals, which were tested by the Emery machine to determine metal physical characteristics.

After his experiences at Watertown Arsenal, Pitman was appointed Chief Ordnance Officer of the Department of Dakota, in charge of the Ordnance Depot, Fort D.A. Lincoln in North Dakota. Here he performed work that was fairly routine, issuing arms, ammo and

equipment to troops. However, Pitman took every position he held seriously and he paid the same attention and detail to the distribution process as he would have paid in a chemical experiment. He never allowed a shipment to leave the warehouse without his personal inspection. He also improved methods of equipment and arms care to enhance the lifespan of military ordnance equipment and aid soldiers.

When Ft. Lincoln was abandoned he was commanded to reestablish the Ordnance Depot at Fort Snelling, Minnesota. Pitman's continued diligence helped establish the depot by November of 1889. In 1890 he was detailed to West Point Foundry at Cold Spring across from the Academy. Here he inspected 8 inch B. L Rifles once again providing his expert scrutiny to specific measurement and detail.

Pitman's work at Watertown was detached by a few years of service in Newport, Rhode Island in the Interior Department. Here he worked with chemicals in the Division of Mining Geology of the United States Geological Survey for the tenth census. His prominent mentors, Professor Raphael Pumpelly, Andrew A. Blair (well-known iron and steel chemist), and Frank Austin Gooch (professor of Chemistry at Yale University), taught him valuable information in the field of chemistry that Pitman was able to build upon throughout his career, to become a prominent figure in the small arms field.

After the Civil War the Ordnance Department recognized the need to keep pace with other countries making advancements. Prior to the Spanish American War, gun powder used to propel ammunition left heavy traces of smoke in the air after a shot was fired. Tactically, this was obviously a great disadvantage, for a soldier, Navy ship, or entire Army's location because smoke lingered in the air for the enemy to see and shoot back at. Several other countries acknowledged the need for a smokeless propellant and accomplished development in less than two years. Although Pitman was not the first to create smokeless powder, Pitman notably contributed to the standardization and advancement of smokeless powder in the United States for the Ordnance and War Department.

In 1886, France adopted "Powdre B," its version of smokeless powder. The French formula was not perfected, however it made weapons and ammunition obsolete in all other countries. Almost immediately, militaries around the world took action to develop a smokeless propellant. In 1888 Alfred Noble invented the second powder called "Ballistite" which was produced in Germany. A year later England developed a similar version named "Cordite." In the United States, the Navy was the first to experiment in making a superior, chemically pure smokeless powder. Their efforts were not producing the expected results and in 1892, the War Department set forth its own campaign to produce a United States formula for the powder.

In 1892, D. W. Flagler requested Captain John Pitman's expertise at Frankford Arsenal in Philadelphia, PA to set up the chemical laboratory to study smokeless powders used with smaller caliber ammunition and weapons and to work on fuzes and field artillery ammo. Initial development of smokeless powders originated in the discovery of nitration of organic materials made in University Labs in the US and abroad. Flagler desired Pitman to become a powder inspector and work with the DuPonts to gather and analyze data from their formula for powders. DuPont had been producing powder and the Ordnance Department wanted to take over this

mission. After a new smokeless substance was developed he then wanted to work with powder manufacturers to produce formulas based on the new formula. Flagler offered Pitman the opportunity to plan Frankford's most beneficial way of experimentation with explosive powders for the Ordnance Department.

It has been said to be Flagler's wisest decision to recruit Captain Pitman to establish and manage the laboratory. In 1892 Pitman accepted Flagler's request and reported to Frankford Arsenal to begin setup of the proposed laboratory, although there was no funding or equipment available at the start of the mission. Correspondence between Flagler and Pitman show his meticulous effort to start up the laboratory. Pitman immediately began procuring equipment, books, journals, and powder samples to begin testing the powders being utilized by militaries abroad. By October, arrangements were coming into place, and the lab was put at the east end of artillery ammunition storehouse number 46.

As the only chemist, Pitman took complete charge of the lab and completed all of the analytical work single-handedly. Because this project was started from scratch and testing methods had not been crafted, he invented many of the testing and analysis procedures used and adapted others from foreign publications. Out of necessity, most of the equipment needed to conduct testing was developed by Pitman. During his tour, the lab was also used as a reference office for the questions concerning powders and their manufacture and function.

Pitman resourced powder producers and other arsenals to acquire the equipment and powder he needed to begin experimentation. His expertise in experimental testing, chemistry, and physics can be seen in his notebooks containing calculated tables on velocity, pressure, etc. as he strived to study different powders effects in controlled, unbiased studies. For example, upon request of a powder, he would ask that the sender ship powder in certain ways, controlling for humidity and temperature.

Pitman conducted analyses on powders from firms producing powder for the Arsenal and samples from foreign firms interested in selling powders for small caliber and artillery weapons. He performed many tests of storage under cold, hot, wet, or sunlight conditions, physical tests of grain, crushing strength, gravimetric density, burning time and etc. were done. He also worked on metals for bullet jackets, primer cups, pressure gauges, and other developments. Ballistic tests for velocity, pressure, and accuracy were also conducted to determine the powder effectiveness in various weather conditions.

Pitman conceived new designs for ammunition to obtain a greater armor piercing capability. He achieved this through establishment of powder standards. As a result of his findings and developments, specifications were created to which all lots of powder submitted to the Government by contractors had to comply with. Pitman's work with smokeless powder development was undoubtedly one of his greatest contributions to ordnance. He paved the way for further development and systemization for determining its properties in the United States. As he was gaining ground in his mission, he began to acquire staff. In 1896, Captain B. W. Dunn joined the lab to organize a study of all types of explosives. Later in 1896, Pitman engaged the services of W. J. Williams F. R. S., who became the Arsenal's first chief chemist.

By 1900 the laboratory was considered the explosives testing center of the United States. Commercial firms and government agencies consulted the staff and used its facilities. Newly created explosive labs were modeled after the Frankford Laboratory. The Frankford Arsenal reports to the Chief of Ordnance from 1892-1897 reveal what a tireless worker and his interest and scope of knowledge in this discipline were incredible. In 1948, the Ordnance Lab was given the name Pitman-Dunn Laboratory. His most notable contribution was the extrusion perforated smokeless propellant grain which is still in use. Until Frankford Arsenal's closure the lab was a flexible scientific organization in ballistics, chemistry, physics, electronics, mathematics, mechanical engineering, and mycology, covering the fields of explosives, lubricants, electroplating, protective finishes and welding.

The time spent at Frankford by Pitman was too short for extensive development of smokeless powders and other explosives. But his successors had a basis to work from and a laboratory to continue Pitman's work. A Frankford Arsenal bulletin recognizes the chemical laboratory in 1918. By this time the lab had been operating has the government authority of standards of materials and ingredients entering into the manufacture of small arms and artillery ammunition.

Pitman was the first serious student of American military small arms and ammunition and realized the inseparable link between the two subjects. His unpublished works show how his passion for U.S. small arms and ammo never died throughout his life. He had several experiences that led D.W. Flagler to recognize his superior expertise in chemistry, and metallurgy.

After this most excellent contribution to the Ordnance Department, Pitman continued his career in ordnance at Springfield Armory and then in 1903 he commanded the San Antonio Arsenal as Chief of Ordnance Officer for the Department of Texas. At the age of 64, he retired at the rank of Colonel. On 12 November 1906, he was promoted to rank of Brigadier General as the law stated his Civil War Service obligated him this privilege.

Pitman's expertise and interest gained from his precise efforts in the Army extended beyond his workday. He dedicated his life to ordnance; in his free time his hobby involved collecting data on small arms and collecting cartridges and their components. Pitman's work in collecting small arms reached back to all those used in this country for military purpose from the time of the Revolutionary War. He collected experimental guns, specialties, pistols, and certain foreign arms. He also collected ammunition for these arms with an equal diligence.

Pitman gained guns for his collection from many friends. He made drawings of the guns and each part of it with absolute accuracy and detail and included dimensions and weights. Pitman's collection includes 16 volumes of large amounts of data on small arms, which would be impossible to capture if it weren't for the prints, photos, government publications, memos, letters he collected from several resources that may have been lost if he hadn't gathered and organized it himself.

Pitman's cartridge collection was equally impressive. He also completed full size drawings which illustrated the cartridges and components. Pasted on the drawings are the

original covers and labels from the original packaging of ammo, providing a very realistic display. Pitman paid extra attention to paper cartridges. He also completed hundreds of tables providing various pieces of data. For example, he made yearly lists of arms and ammo manufactured and purchased by the Army as far back as 1795. His voluminous compilations are invaluable historical records for reference, and there is no bank of information on this subject that matches his detail. Combined with his library of books on the topics, Pitman created an important reference for the Ordnance Department.

General Pitman's cartridge collection is kept in three cabinets with over 100 drawers at the West Point Ordnance Museum. The drawers trace the development of cartridges used by the Army by year. The contents of each drawer contain a cartridge ready to fire and a cut away traverse section. The powder is also presented in a small glass tube. Some of the drawers exhibit various additional things such as methods of ignition, bullets, and more. Pitman's collection made him an expert in the area of small arms. His experience and information at his disposal led various Government and private organizations to consult him on technical matters even after his retirement.

Brigadier General Pitman greatly contributed to the Ordnance Department in his 42 years of service to the military. Throughout his career Pitman was intrigued by anything pertinent to small arms and continuously collected and analyzed data on the subject. His son remembered his dedication and scrupulous demeanor during his workday; he attended to nothing but the work set forth by the Government. John Pitman died August 29th, 1933 and was buried in Swan Point Cemetery in birth city, Providence.