



U.S. MILITARY MARKSMANSHIP: INDOOR GALLERY PRACTICE 1858-1921

DOCTRINE, METHODS AND EQUIPMENT

BY JOHN SPANGLER

“Shooting Gallery- a room or inclosure [sic] in which firing at small targets at short ranges with reduced charges can be conducted, sheltered from the weather.”
*Firing Regulations for Small Arms 1904*¹

A brief overview of military marksmanship and weapons history and the evolving doctrine for marksmanship training will provide the foundation for understanding how gallery practice came about. Various methods for “gallery practice” will be covered, followed by examination of various arms or equipment unique to gallery practice. Several more or less interchangeable terms have been used, including gallery practice, indoor shooting or armory practice. Figure 1 shows a typical military indoor gallery practice range circa 1920, but it is a good representation of such ranges from the 1870s to the 1960s.

The evolution of military combat weapons and ammunition are fairly well known. But, much less is known about how training the shooters evolved. Marksmanship training had several elements. The first was policy or doctrine outlining the training methods. Another was methods and location to be used. Finally, it was necessary to specify the details of the specific arms or ammunition or accessories which would be needed.

Outdoor training on full scale shooting ranges was obviously optimal and needed nothing other than normal service arms and ammunition and time on the range. However, weather or location precluded outdoor shooting by many troops for extended periods of time and was not feasible for militia forces with very short drill sessions in armories in urban areas.

Some preliminary or basic steps in marksmanship training could take place indoors in classrooms or shooting galleries. Gallery practice usually involved various combinations of specially made practice at-



Fig. 1 - Gallery Practice at the University of Connecticut's Hawley Armory circa 1920.
(Courtesy UConn Library Archives)

tachments or devices, standard arms, special ammunition, or modified versions of standard arms or totally different arms. Cost was always a concern with limited military budgets, so opportunities to cut costs or get more training within a limited budget were always very appealing. All of these create the opportunity (or some would say an excuse) for a serious collector to add to a U.S. martial arms collection.

MARKSMANSHIP HISTORY AND EVOLVING WEAPONS

THE SMOOTHBORE MUSKET ERA (Prior to 1860)

The popular myth is that all Americans are naturally superb marksmen, supported by occasional spectacular events such as the shooting of British General Fraser at Saratoga in the Revolution. Or, a Confederate sharpshooter killing General John Sedgwick at Spotsylvania, ironically just after he scolded those

around him with "Why are you dodging like this? They couldn't hit an elephant at this distance."

Frontiersmen and rural recruits probably did bring some shooting skills, but the U.S. military drew more heavily from immigrants and urban dwellers than rifle toting frontiersmen so marksmanship was not a universal skill among infantrymen.

In the smoothbore musket era, weapons training was pretty much limited to repetitive drilling in the manual of arms for uniformity and speed in loading and aiming. Remember, however, that "aiming" was having all soldiers lined up and pointing their muskets at precisely the same angle. Musket sights were no more than a small stud near the muzzle to attach a bayonet or sometimes a brass lump specifically serving as a front sight. Rear sights are notable by their absence on smoothbore muskets.

The linear tactics for smoothbore muskets involved massed lines of troops closing to roughly 100 yards exchanging volleys with the better disciplined survivors pressing the attack with fixed bayonets.

The limited capabilities of the old smoothbore musket were well known,² as shown by these two observations:

British Major George Hanger wrote circa 1814:

A soldier's musket, if not exceedingly ill-bored (as many are), will strike the figure of a man at 80 yards; it may even at a hundred, but a soldier must be very unfortunate indeed who is wounded by a common musket at 150 yards, provided his antagonist aims at him; and as to firing at a man at 200 yards with a common musket, you may as well fire at the moon and have the same hope of hitting your object. I do maintain and will prove that no man was ever killed at 200 yards, by a common musket, by the person who aimed at him.³

General, later President, U.S. Grant wrote of his Mexican War experience with flintlock smoothbores: "At the distance of a few hundred yards a man might fire at you all day without your finding out." This lack of accuracy was tactically overcome by the massing of troops in lines to increase the fire impact.⁴

THE TRANSITION FROM SMOOTHBORES TO RIFLES (1855-1870)

The importance of marksmanship training changed dramatically in 1855 when the .58 caliber rifle-musket adopted as the standard infantry arm provided a dramatic increase in effective range. With the conical Minie bullet and a rear sight graduated to 800 yards, the common soldier suddenly had a weapon capable of hitting a target at several hundred yards. Significant improvements in marksmanship training were essential if this potential improvement was to be realized. But:

Throughout this pre-1870 period, training was abysmal. Without central direction for real training, at best unit commanders only showed men simply how to

load and operate the weapon. Most of the army felt it was wasteful to study marksmanship with inherently inaccurate muskets."⁵

Indeed, many Civil War troops only fired their shoulder arm to unload them when coming off guard duty, and then seldom at a target. Despite the disinterest, or lack of opportunity during the Civil War for marksmanship training, the arms themselves were capable of very good performance when fired by men with some marksmanship training.⁶

MARKSMANSHIP TRAINING DOCTRINE

Formal Marksmanship Training Programs-Henry Heth's Manual (1858)

In 1858 the U.S. Army got its first book dealing with marksmanship, *A System of Target Practice for the Use of Troops When Armed With the Musket, Rifle-Musket, Rifle or Carbine, Prepared Principally From the French*, by Captain Henry Heth, published in 1858.

Henry Heth (1825-1899) graduated from the U.S.

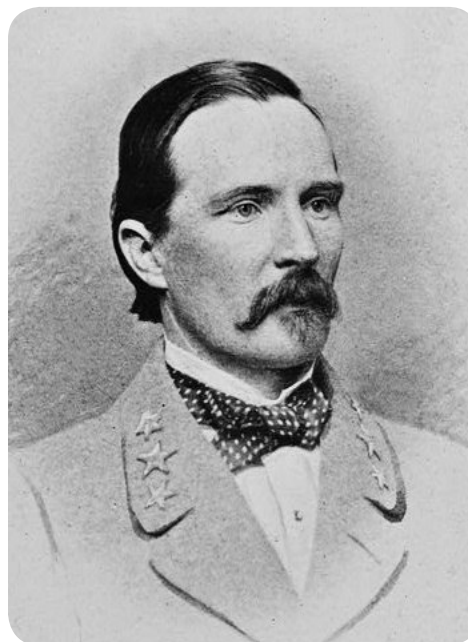


Fig.2 - Henry Heth circa 1862 (Courtesy Library of Congress)

Military Academy in 1847, ranked last in his class and served in infantry units prior to writing the manual. He later became a Major General in the Confederate Army.

Heth's manual (or more accurately the original French authors) included the basics of marksmanship training- sight picture, trigger squeeze, positions, range estimation, familiarization firing with caps only, then blanks, then ball ammunition. These were somewhat new ideas compared to the earlier volley firing, and tactics employed by leaders lagged behind the improved weaponry. However, the newly prescribed marksmanship training seems to have been largely ignored and during the frantic expansion of the Army during the Civil War was largely forgotten. Again,

about the only practice firing done was by troops going off guard duty, unloading their guns by firing them, but seldom at any sort of target.

Indoor (Gallery) Practice Begins- Aiming and Candle Practice

Heth's manual also introduced the first indoor marksmanship activity, albeit in a very limited way, with aiming practice to teach a proper sight picture

A

SYSTEM OF TARGET PRACTICE.

FOR THE USE OF TROOPS

WHEN ARMED WITH THE MUSKET, RIFLE-MUSKET,
RIFLE, OR CARBINE.

PREPARED PRINCIPALLY FROM THE FRENCH,

BY HENRY HETH,
Captain Tenth Regiment U. S. Infantry.

PUBLISHED BY ORDER OF THE WAR DEPARTMENT.

NEW YORK:
D. VAN NOSTRAND, 192 BROADWAY.
1862.

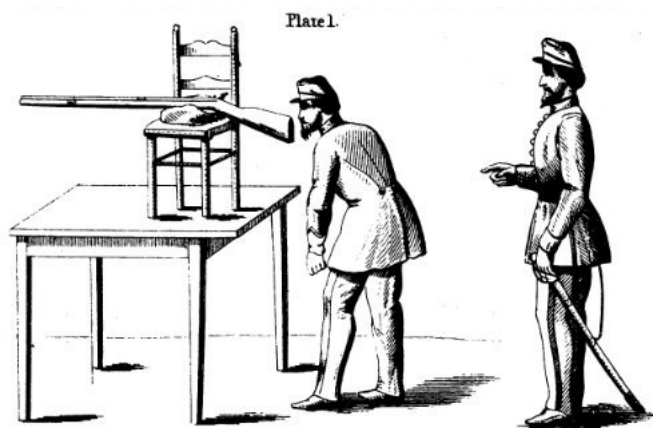


Fig. 3, Fig. 4 - Heth's 1858 Manual, with indoor aiming practice, the beginning of U.S. military gallery practice .

to soldiers using a rifle resting on a chair atop a table and pointed at a target on the wall. This was followed by "candle firing", or simulated firing with percussion caps only.

Squads assembled in the quarters will be made to aim at a lighted candle, which will be placed three feet or more from the muzzle of the gun. The line of sight

will be brought to bear...[and if correctly sighted the explosion of the cap will extinguish the candle.]⁷

Candle firing continued to be an important part of marksmanship training for several decades, shifting to use of primed cases (with no powder or ball) in the cartridge era, and was included in George Wingate's early manuals discussed below. The advent of the Wingate Indicator, a needle type device in the late 1870s eventually replaced candle firing.⁸



Fig. 5 - Can of primers "For Candle Practice Only" circa 1870-1880 (Courtesy International Ammunition Association)

George Wingate's Manual (1872)

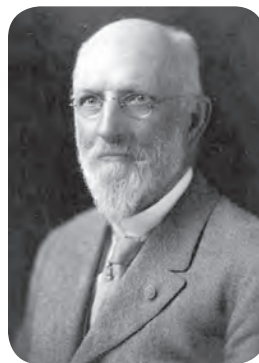


Fig. 6 - George W. Wingate, NRA co-founder and relentless advocate for rifle marksmanship. (Courtesy www.Wikipedia.org)

MANUAL FOR RIFLE PRACTICE.

INCLUDING SUGGESTIONS FOR PRACTICE
AT LONG RANGE AND FOR THE FOR-
MATION AND MANAGEMENT
OF RIFLE ASSOCIA-
TIONS.

BY
GEN. GEO. W. WINGATE,
GENERAL INSPECTOR OF RIFLE PRACTICE, N. G. S. M. Y.

SEVENTH REVISED EDITION.

Go—bid the soldiers shoot.—HARLEY, Act V, Scene 2.

NEW YORK:
W. C. & F. P. CHURCH,
ARMY AND NAVY JOURNAL, 240 BROADWAY,
1879.

Fig. 7 - Title page of Wingate's Manual. Although widely used by the Militia, this was not formally adopted by the U.S. Army.

Civil War veteran George Wood Wingate (1840-1928) was appalled at the lack of marksmanship skills, and was a tireless advocate for improvement. He was co-founder of the National Rifle Association of America in 1871 and was its first Secretary and later President.

Wingate wrote his "Manual for Rifle Practice" in 1867 for his New York National Guard unit and his unit's success using it resulted in the manual's adoption by the New York National Guard in 1872. It was soon adopted by the newly formed National Rifle Association, and eventually most state militias.

Both Heth and Wingate devoted most of their manuals to outdoor range activities, firing at distance, range estimation, etc, with the indoor activities a relatively small part of the overall program.

However, Wingate and others, especially in the Militia or National Guard (as opposed to active duty Regular Army) recognized that while marksmanship depended on practice, conveniently located outdoor rifle ranges suitable for military use were scarce, and incompatible with the weekly or monthly drill schedule of National Guard units. Non-shooting aiming or candle firing could take place in just about any classroom or drill hall.

However, most Armories (as National Guard meeting places are called) had or could add a shooting gallery space suitable for indoor shooting practice with light loads. A typical indoor range might be about 15-20 feet wide by 60-70 feet long, usually in the basement.

The use of special light gallery loads was first proposed by Wingate in his manuals. In 1879 this became official U.S. Army practice (Per T. T. S. Laidley's manual, see below). Initially the gallery load was 10 grains, later reduced to 7 then 4 grains of black powder. Frankford Arsenal was authorized to make molds and loading equipment. The earliest possible gallery mold would be 1879. The various special gallery practice arms and ammunition will be discussed in detail in a separate section below.

T. T. S. Laidley's Manual (1879)



Fig. 8 - Theodore Thaddeus Sobieski Laidley, author of the U.S. Army's first serious manual dealing with marksmanship. (Courtesy www.goordnance.army.mil)

Colonel Theodore Thaddeus Sobieski Laidley (1822-1886), finished 6th in his West Point class of 1842, serving as an Ordnance Officer at various posts, wrote the 1861 Ordnance Manual, and later commanded Frankford Arsenal and then Springfield Armory.

In 1877, the Chief of Ordnance tasked Laidley to prepare a marksmanship manual. *A Course of Instruction in Rifle Firing*, published in 1879, was the Army's first comprehensive marksmanship manual and included Laidley's own designs for a revolving target, a practice rifle, and aiming stand. Laidley retired in 1882 after 40 years service.⁹

Laidley's efforts were comprehensive and "official Army doctrine" compared to Wingate's "civilian and militia suggestions" approach or Heth's "information on how the French do things." Wingate and Laidley argued for years over alleged plagiarism by Laidley, but while many concepts were similar, Laidley had footnotes for his sources, and impressive qualifications to write on the subject.¹⁰

Stanhope Blunt's Manual (1885)

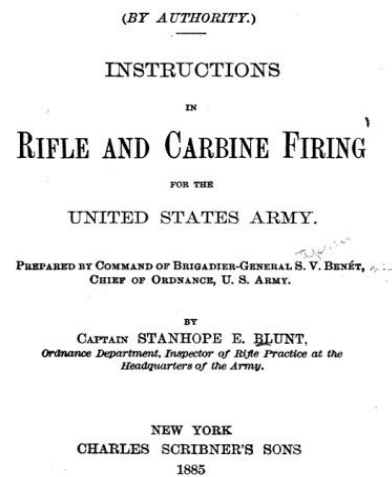


Fig. 9, Fig. 10 - Stanhope E. Blunt's manual laid out Army marksmanship training in detail and was the foundation for all subsequent manuals.

Stanhope E. Blunt (1850-1926) ranked third in his West Point class of 1872, and proved to be an exceptional officer, advancing to an Ordnance officer and Inspector of Rifle Practice at Headquarters, Department of Dakota, and Inspector of Small Arms Practice for the Army. Blunt later served as Aide to General of the Army, Phil Sheridan, Commanding Officer of Rock Island Arsenal 1897-1907 and Springfield Armory 1907-1912, retiring as a Colonel after 40 years service.¹¹

His *Instructions in Rifle and Carbine Firing for the U.S. Army, Prepared by Command of Brigadier General S.V. Benet, Chief of Ordnance* was published in 1885. This manual evolved into the *Small Arms Firing Regulations* of 1904, 1906 and 1908, and firmly established the foundation of all modern U.S. Army marksmanship training.

The sections on gallery practice are similar to those developed by Heth, Wingate and Laidley (to whom he gives credit) but the entire manual is in much greater depth and more prescriptive in tone than its predecessors.¹²

Knowing the sources of marksmanship training doctrine it is finally time to review how gallery practice grew from the initial mention of indoor sighting practice and candle firing in Heth's manual into more complex exercises.

INCENTIVES FOR MARKSMANSHIP

As doctrine for marksmanship training grew, so did the incentives to reward those who excelled, and perhaps for those who did not. Heth's 1858 manual established awards at the regimental and company level consisting of a silver or brass "stadia" (a primitive range finding device) which would be awarded annually, and worn on the uniform on dress occasions. While a soldier could be proud of winning one, he best take care of it as his pay would be docked for the cost if it were not turned in at the end of the year. As with most of Heth's other suggestions, these awards were seldom made. In the post-Civil War era a few commanders promoted some shooting competition and local prizes, or even resurrected the old stadia awards, but they were the rare exception to the general apathy towards marksmanship in the Army at the time.

In the late 1870s and 1880s as the mania for shooting competition swept the country and the Army, a new series of "badges" for achieving marksmanship skills and "prizes" for winning major competitions were instituted. At the lower levels the best marksman might be rewarded by a day off from duty, or a pass to go into town, or similar small but welcome recognitions. Conversely, those who failed to meet expectations might find themselves with extra duties or fewer passes. Most of this was in the context of regular outdoor rifle range shooting, but occasionally gallery practice achievements were recognized.¹³ At higher levels of competition awards might even in-

clude specially inscribed rifles or trophies.

In the National Guard, where gallery practice was the predominant form of marksmanship activity, qualification badges were awarded, and a soldier was able to earn another in subsequent years. New York, inspired by Wingate's enthusiasm was especially active with this sort of award for both gallery practice and outdoor shooting skills.



Figure 11a, 11b, 11c, 11d, 11e-Marksmanship incentives included such tangible awards as medals for gallery practice such as this long string of annual awards by the 47th Regiment of the New York National Guard as well as outdoor shooting. Even rifles were awarded as top prizes in major competition. (Rifle courtesy R. Sadler collection)

The subject of marksmanship badges and prizes is beyond the scope of this paper and best studied in William H. Emerson's excellent *Marksmanship in the U.S. Army: A History of Medals, Shooting Programs and Training* which covers them in great depth, along with an overview of shooting programs in general.

GALLERY PRACTICE WITH STANDARD SERVICE RIFLES

The earliest gallery practice used standard service rifles for basic skills such as sight picture and basic aiming. Candle practice required only the rifle and a candle and percussion caps for muzzle loaders or empty primed cases for breechloaders, as discussed previously. But several other devices were invented to be even more precise than the candle practice.

NEEDLE TYPE DEVICES- WINGATE, HOLLIFIELD AND SUB-TARGET

The Wingate Indicator

George Wingate seems to have been the first to develop a needle type "Indicator for Aiming Drill" inserted in the barrel of a rifle, where a rod would be pushed forward a short distance when struck by the firing pin. As shown in figure 12, the muzzle end had an offset arm with a sharp point at the height of the front sight. A shooter could aim at a target on the wall a foot or two from the muzzle, and the pin pricks would indicate if they were aiming properly, squeezing the trigger and holding to get a good group. A wooden guide at the breech and a brass one for the muzzle with a square hole for the square shank of the rod kept the offset arm aligned with the sight, and the rod centered in the bore and aligned with the firing pin. Wingate patented the "Indicator for Aiming Drill" in 1876¹⁴ and its first mention is in the 1879 dated 7th edition of his manual. The author has never seen photo of one of an actual Wingate Indicator device, only advertising drawings, suggesting that the survival rate is very low.

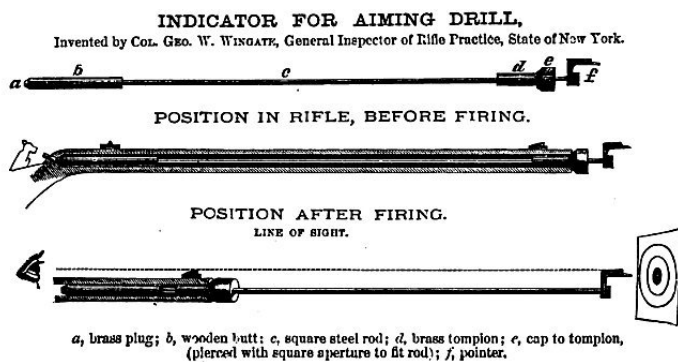


Fig. 12 - Wingate's "Indicator for Aiming Drill" patented in 1876 and widely used, replacing candle practice

The Wingate Indicator gradually replaced candle practice as it served the same purpose, and the Indicator was adopted by several states, and was made and sold by Winchester. The Illinois Adjutant General's Report of 1879 is quite informative:

Candle practice in armories having been very generally abandoned in favor of Col. Wingate's Indicators for Aiming Drill, I would earnestly recommend to the commanding officers of regiments and battalions the purchase at once of a sufficient number of these In-

dicators for their respective commands, or as soon as instruction is begun in armories in the preliminary drill of musketry.

I have thoroughly tested this Indicator, and take great pleasure in recommending it to the National Guard of Illinois. To make a fine score with it at 18 inches (its maximum range) standing, kneeling or lying requires as steady nerves and as careful holding and sighting on the part of the rifleman as at 200 or 500 yards.

These indicators are now being manufactured by the Winchester Repeating Arms Company of New Haven, Conn., fitted for the Springfield rifle 45 and 50 caliber, and cost packed ready for shipment \$1.50 each. Three for each company, or thirty for each full regiment are about the requisite number.

The state of New York has purchased for the New York National Guard over fifteen hundred Indicators, and I have been informed that that state has already in less than a year saved their cost, and they have been proved of the greatest value, rendering a drill that was formerly monotonous, interesting and improving.

I have been informed that the Winchester Repeating Arms Company has recently received an order from the United State government for several hundred Indicators, which is a strong endorsement of its merit.

The Inspector General of Rifle Practice will furnish on application samples of the target and score cards used with the Indicator, and also furnish full instructions as to its use.¹⁵

The Hollifield Dotter

The "Hollifield Dotter" patented in 1907 by Hiram Hollifield of Middletown, NY, was basically an improved and simplified version of Wingate's "Indicator" which could be used with bolt action rifles as well as single shots. The U.S. Army began limited use of the "Hollifield Dotter" target practice rod system as early as 1908, with a reported 500,000 in use by WW1, but that figure may be advertising hype as these are somewhat uncommon on the collector market.

The Dotter allowed troops to practice sighting and firing (without any ammunition) and seeing what sort of group they would get, in an indoor classroom, with no need for a range. The Hollifield Dotter was built around the concept of a thin tube which would fit into the bore of the weapon, containing a spring loaded rod with a needle point at the muzzle end. When fired, the firing pin would strike the rear of the marker rod, forcing it forward in the tube and projecting the sharpened tip forward a few inches. A small printed target was mounted on a wood block with a rubber facing, allowing the pinpoint to prick the target, showing impact of successive shots. The printed target actually had two bullseyes, one over the other, so the shooter would aim at the upper bullseye and the rod would

mark the group on the lower bullseye, eliminating the need for a bent arm as used by Wingate's device. The target block was normally mounted in a narrow wooden box that also served as storage for the various parts of the kit. The box would be hung on the wall at whatever height was appropriate for prone, sitting or standing position and could be adjusted up or down slightly to accommodate the needs of different shooters. Two lengths of rod were provided for the Model 1903 or 1917 rifles, the long one for use in slow fire single shot practice just for sight picture and trigger squeeze. The second, shorter rod would be used that only extended from the muzzle to where the point of a cartridge would be when a round was chambered in the barrel. In this case, special dummy "Dotter cartridges" were used which had their own spring loaded plunger which would transmit the impact from the firing pin to the back of the rod in the barrel. With the short rod and the dotter cartridges, troops could practice rapid fire, and loading from stripper clips into the magazine."¹⁶

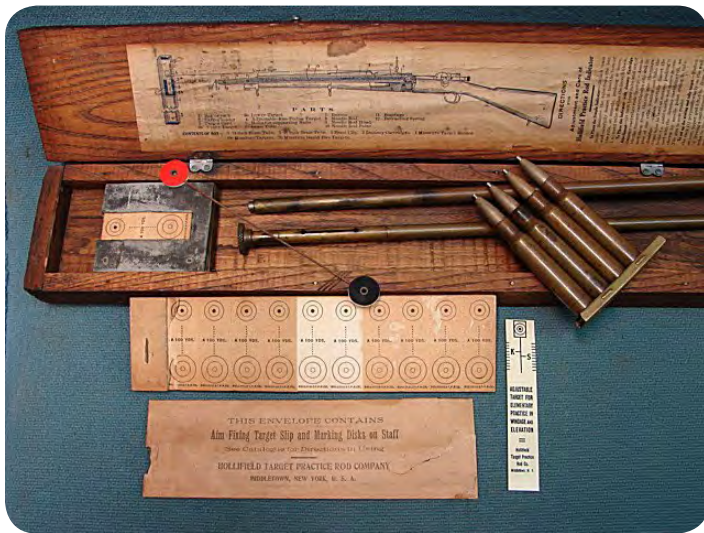


Fig. 13 - Hollifield Dotter kit for Model 1903 Springfield Rifles.



Fig. 14 - Hollifield Dotter kit for M1911 Pistol

Partial Hollifield Dotter sets are not too hard to find, but most are missing some of the pieces- the car-

tridges, targets, spotting discs, etc. The most common sets are for the U.S. Model 1903 Springfield and the U.S. Model 1917 Enfield rifles. The only difference between the two models is the barrel insert rods are longer for the Enfield to match its longer barrel length. Dotter outfits were also made for the Model 1911 pistol, and reportedly for the Model 1898 Krag although the author has not seen any of the Krag sets. The "Dotter Cartridges" with their spring loaded plunger are easy to spot, but construction details vary greatly, as visible in the photograph.¹⁷

SUB-TARGET MACHINES



Fig. 15 - Hollifield Dotter cartridges for Model 1903 and 1917 rifles showing variations in construction details (Courtesy International Ammunition Association)

While the Hollifield Dotter was the model of simplicity, the Sub Target Machine Company contraption was the model of complexity, albeit intended for more sophisticated use. This used the same basic concept of a needle hitting a miniature target when the trigger was pulled as Wingate and Hollifield. However, the Sub Target Machine was intended for use while aiming at a target at longer ranges, either in gallery practice or even outdoors. The target to be aimed at would be maybe 50 feet to 100 yards, not mere inches from the muzzle. The bulky machine was carefully aligned with the large target far away.



Fig. 16 - Sub-Target Machine, the ultimate complexity of a needle type marking device, contrasted with the cheap and simple Wingate and Hollifield devices. (Courtesy Arms Heritage Magazine)

When the sights on the rifle permanently connected to the machine were pointed directly at the distant target, the needle mechanism would be aligned at the same point on the miniature target mounted on the Sub-Target machine frame, mere inches from the needle.

When the trigger was pulled, a complex mechanical linkage attached to the rifle would cause the needle to poke the miniature target at the point where the sights were aimed when the trigger was pulled. A counterbalance weight forced the shooter to support the rifle, not merely aim it. When the shooter was done, the results recorded on the miniature target on the machine were instantly available, and a new miniature target could be inserted for the next shooter.

Despite the bulk, complexity and obviously greater cost, these seem to have been used by a number of countries around the world, at least according to company advertising. They were also used by some New York City schools, and by the U.S. Army.

These were patented by Henry H. Cummings in September 1903, and various publications espousing or explaining its use were issued periodically, with the latest noted being U.S. Army Pamphlet 1879, *Sub-Target Gun Machine in 1918*. The author has not seen a surviving example of the Sub-Target machine, or even a recent photo so they may be extinct. U.S. Krag rifle receivers are sometimes found with the left rear corner left square, reportedly for Sub-Target machine use. Brophy's books show the linkages attached to a Krag and a M1903 rifle. Presumably they were also used with Lee Enfields and perhaps other rifles, but unique distinguishing characteristics (if any) are unknown.¹⁸

The foundation for all marksmanship skill is learning the correct sight picture, then the ability to hold that while aiming the rifle and squeezing the trigger. Once the sight picture is learned, the use of a percussion cap or primed case to create a puff of air to blow out a candle or one of the needle type devices provides good practice. These could be done in virtually any indoor space. For the activities above, regular service arms were used with no modifications needed. Once trainees had mastered skills of aiming it was time to move on to actual indoor shooting gallery practice.

GALLERY PRACTICE WITH STANDARD SERVICE RIFLES AND SPECIAL AMMUNITION

Progressing to actual "live fire" shooting could take place on outdoor ranges if available and the weather was favorable. Unfortunately, poor weather and/or distance often precluded timely opportunities to practice live firing. Indoor ranges, sometimes referred to as a shooting "gallery" or "Armory" ranges were used, especially by National Guard or militia units.

Indoor "gallery practice" shooting was almost always limited to use of reduced power ammunition due to backstop construction methods, but at the usual 50 foot to 25 yard distance the reduced loads were sufficient and also had the advantage of less recoil so shooters were less likely to develop the habit of "flinching" from recoil.

While the always parsimonious Army initially authorized using broken up .44 caliber percussion revolver cartridges for unit assembly of gallery loads, they later approved special factory loaded gallery practice ammunition. Frankford Arsenal began experiments with gallery practice loads in 1879, initially with specially made full length .45-70 cases with very small powder capacity, but in 1880 approved the cheaper and simpler expedient of using regular cases with a single round lead ball and a 5 grain charge of black powder. See Figure 17 for a sectioned example of this cartridge. Most of this type ammunition was apparently procured commercially as "Government Standard Armory Practice" ammunition. Brass four cavity bullet molds such as the one in Figure 18 were issued for local use to cast .45 caliber round balls for reloading .45 caliber gallery practice cartridges. (Melting down the fired bullets recovered from the backstop to avoid any added expense, of course.) Gallery Practice round balls were also provided by commercial sources, such as the ones from Winchester in Figure 19. The circa 1880 .45 caliber reloading kits shown in Figure 20 could be used for this purpose although the low pressures involved meant it was more depriving,



Fig. 17 - Gallery practice cartridge for .45-70 rifles or carbines with round ball and 5 grains black powder.

repriming adding powder and pressing a round ball into the case without needing the more complex resizing and crimping operations for a full power load.



Fig. 18 - Frankford Arsenal .45 caliber round ball mold for local use casting gallery practice bullets, dated 1880.



Fig. 19 - Winchester Gallery Practice .455 diameter round balls for use in reloading.

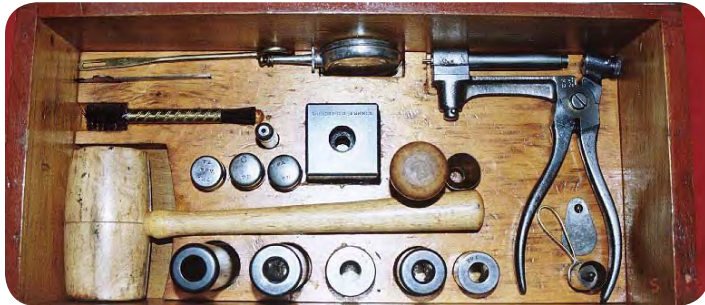


Fig. 20 - Frankford Arsenal .45 caliber reloading set for use at the unit level, circa 1881.



Fig. 21 - Gallery practice cartridge for .45-70 rifles or carbines with 230 grain conical bullet.

In 1902 Frankford Arsenal loaded "Special Ball Cartridges, Reloading" for gallery practice with a 230 grain lead bullet (same as being used for the .45 revolver cartridges) with 20 grains of black powder, as shown in Figure 21.¹⁹

Development of .30 caliber gallery practice cartridges for Krag rifles in the mid 1890s followed a similar pattern. In 1895 the first .30 caliber gallery practice cartridge adopted used a case turned from solid brass with a small cavity for a 5 grain black powder charge loaded with a round lead ball. Cost and cleaning problems led to this being replaced by the Caliber .30 Gallery Practice Cartridge Model of 1896 which used a standard case with neck cannellure, 5 grains of black powder and a round lead ball, and smokeless powder was authorized for use starting in 1901 (see Figures 22-23). Brass five cavity bullet molds were issued for local use to cast .30 caliber



Fig. 22 - .30 caliber gallery practice cartridge for Krag rifles and carbines with round ball and smokeless powder.

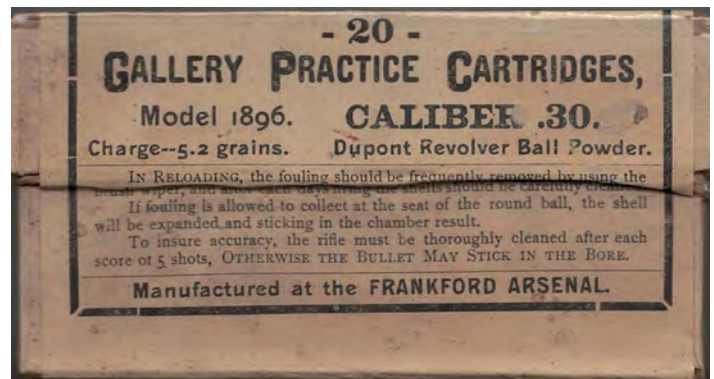


Fig. 23 - Box of Frankford Arsenal .30 caliber Model 1896 gallery practice cartridges with round ball and smokeless powder.



Fig. 24 - Frankford Arsenal .30 caliber mold for five round balls for gallery practice, dated 1896.

round balls for reloading .30 caliber gallery practice cartridges such as the one in Figure 24.

In 1904 a semi-pointed 107 grain lead bullet with a reduced powder charge was adopted as the Caliber .30 Gallery Practice Cartridge for Model of 1898 Rifle.²⁰ Examples are shown as a full box from Frankford Arsenal and a sectioned round in Figures 25-26.

As an accessory, there was a special front sight cover designed by "Major Parker" which provided a higher front sight picture so the point of aim and point of impact would match at gallery distances.

The early development of the Model 1903 .22 caliber Hoffer-Thompson rifle in 1905 (discussed below)

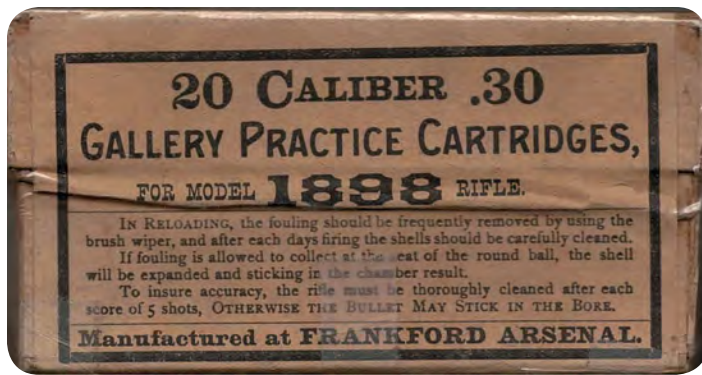


Fig 25 - Frankford Arsenal box of .30 caliber Krag conical bullet gallery practice cartridges.

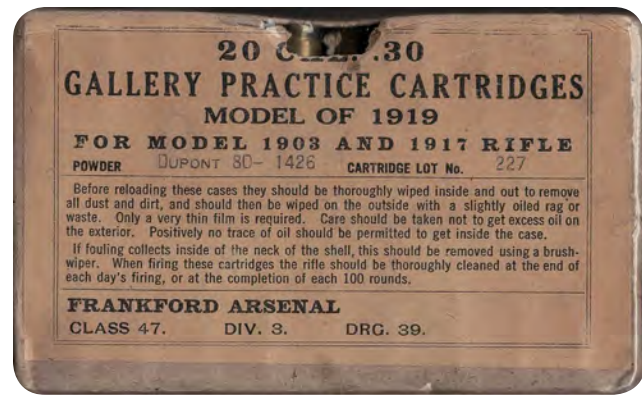


Fig. 28 - Frankford Arsenal box of Caliber .20 Gallery Practice Cartridges Model of 1919.



Fig. 26 - Sectioned Frankford Arsenal conical bullet gallery practice cartridge.

initially precluded the need for any .30-06 gallery practice ammunition. However, a Caliber .30 Gallery Practice Cartridge Model of 1906 was adopted in 1917 for U.S. Navy use, using a reduced powder charge and the same semi-pointed 107 grain lead bullet used in the Krag gallery practice loads.

In 1919 dissatisfaction with the accuracy and difficulty cleaning involved with the Hoffer-Thompson rifles, the Army adopted the Caliber .30 Gallery Practice Cartridge Model of 1919 so that service rifles could be used instead. These cartridges used standard .30-06 cases with a 10.5 grain charge of smokeless powder and a 140 grain round nosed lead bullet, and were issued as loaded cartridges (Figure 27-28) or as components for local reloading using the Frankford Arsenal Model 1907 Bench Reloading tools. (See Figure 29-30.)



Fig. 27 - Caliber .20 Gallery Practice Cartridge Model of 1919, sectioned.

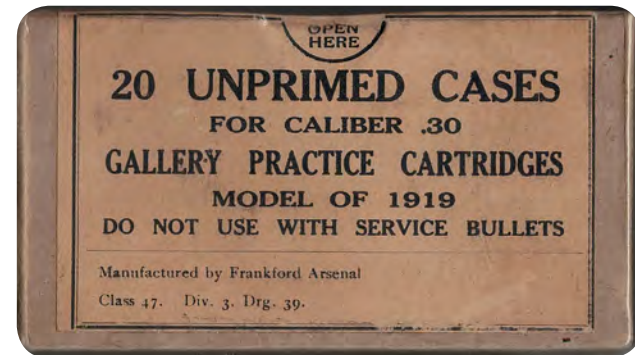


Fig. 29 - Frankford Arsenal box of Caliber .20 Gallery Practice Cartridges cases for reloading at the local level.



Fig. 30 - Frankford Arsenal box of Caliber .20 Gallery Practice bullets cases for reloading at the local level.

These were to remain the standard gallery practice ammunition until the Model 1922 series of .22 caliber rifles assumed the gallery practice mission. Surplus stocks of the Model of 1919 Gallery Practice cartridge were redesignated as the Caliber .30 Cartridge, Guard, M1 in 1933.²¹

GALLERY PRACTICE WITH SPECIAL RIFLES

With full charge ammunition not generally usable in indoor gallery ranges, the search continued for cheaper and more convenient options than use of reduced charge ammunition in standard service arms. This resulted in modified or specially made versions of service rifles using the .22 rimfire cartridge.

ROLLING BLOCK GALLERY PRACTICE RIFLES

The New York National Guard adopted the Remington Rolling Block rifle chambered for the .50-70 cartridge in 1871, while the U.S. Army was incrementally working its way through a series of breechloading rifles before settling on the .45-70 caliber "trapdoors" in 1873.

Around 1874 New York adopted a .22 caliber insert to fit into the barrel of their .50-70 rifles for indoor gallery practice using .22 rimfire ammunition, a cheaper and more convenient alternative than even locally prepared light loads.

This was the first example found of U.S. military use of .22 rimfire sub-caliber versions of service arms for gallery practice. No details have been found to tell if the chamber at the breech of the insert was offset for use with the center fire firing pin, or if a breechblock altered for rimfire was provided. Wingate stated:

The sub-caliber rifle used in the National Guard of the State of New York consists of a small rifle barrel, 20 inches in length, inserted into the barrel of the regular Remington .50 caliber (or any other rifle where the breech mechanism will permit its entry from the rear), and for the No. 1 or .22 caliber rimfire cartridge. This cartridge is ejected by the extractor of the rifle. A brass tube, passed down the muzzle and secured by a bayonet clasp over the sight, receives the fouling, which would otherwise accumulate in front of the short barrel. Whenever this accumulates so as to affect the shooting, the tube should be removed, wiped, and replaced.

This rifle makes but little noise or smoke, and is perfectly accurate up to 200 feet. It requires no special cartridge, and the cost of those for which it is adopted is very slight.²²

In 1889 the U.S. Navy contracted with Winchester to perform a similar .22 barrel insert conversion on 100 of its Model 1870 .50-70 caliber rolling block rifles at a cost of \$7.00 each. Subsequently these were issued two per ship for the seagoing equivalent of gallery practice aboard warships. These required breech block modifications to strike the rimfire, and a modified extractor, and a slight bend upward on the front part of the barrel to get the sight aligned for shorter distances. No brass fouling tube was used. Among the Navy Model 1870 rifles converted were both the later "improved" type and the earlier version with the "defective sight location."²³



Fig. 31 - U.S. Navy Model 1870 .50-70 rifle converted to .22 rimfire in 1889 by Winchester.

The U.S. Navy reportedly also used some Quackenbush Model Number 1 Improved Air Guns which fired .21 caliber darts or slugs. Introduced in 1877, the company's 1889 advertising claimed these "... were adopted on practice ships of the U.S. Navy." although the author has not found other verification of this claim.²⁴

U.S. Navy interest in gallery practice faded and by 1915 the Navy Landing Force and Small Arms instructions stated:

Gallery practice with reduced charges and practice with sub-target machine-guns or other mechanical devices are not required under these regulations. ...The interest of the men under instruction soon diminishes with no other stimulant than simulated fire or snapping....

No report of gallery firing with reduced charges is required. The course and methods to be use are left to the discretion of the commanding officer or officer charged with the preparation of men for the range.²⁵

The manual goes on to lay out a comprehensive marksmanship program for outdoor ranges. However, the author sees this as an early indication of the U.S. Navy's antipathy towards small arms training later in the 20th century.

KRAG GALLERY PRACTICE RIFLES

Krag rifles used in gallery practice first appeared circa 1901-1904 as commercially made barrels from Stevens using famed barrel maker Harry Pope's rifling style, which could be installed locally in lieu of the .30 caliber barrel. Although not a military made weapon, these were used by the National Guards of New Jersey, Ohio, Pennsylvania and Washington. In 1904 Pennsylvania announced it had ordered 110 of the Stevens-Pope barrels and that they were authorized for us in qualification firing.²⁶ These barrel were made so that the regular extractor would work, unlike the Springfield version discussed next.



Fig. 32 - Breech of Stevens-Pope .22 caliber Krag showing use of standard extractor.

Springfield Armory experimented with different approaches to .22 caliber versions of the Krag and new Model 1903 rifles, and in 1905 announced that .22 caliber version of the Krag would be produced for the organized militia. Only 841 of the Model 1898 Gallery Practice rifles in .22 caliber were made in 1906-1907.²⁷ These used an extractor plate set in the breech which the regular extractor would pull back about a half inch. While it may seem odd that they would still be working on Krags after adoption of the M1903 Springfield, it is important to remember that most militia units had only recently received Krags and would continue to use them for many years until sufficient M1903 rifles were produced.



Fig. 33 - Springfield Armory Model 1898 Gallery Practice rifle in .22 caliber showing the extractor plate arrangement.

SPRINGFIELD MODEL 1903 .22 CALIBER GALLERY PRACTICE RIFLES ("Hoffer-Thompson")

Simultaneously with the .22 Krag announcement, the "Gallery Practice Rifle, caliber .22 Model of 1903" (better known to collectors as the "Hoffer-Thomp-

son") was announced. The goal was to issue two per active Army unit. Production continued sporadically from 1906 through 1918 with a total of 15,525 made.²⁸ The Hoffer-Thompson used "cartridge holders" shaped like a .30-06 cartridge to hold a .22 short cartridge and an internal firing pin. These cartridge holders could be loaded from a stripper clip for rapid fire (see figure 34), unlike previous gallery practice rifles which were all single shot. The .22 caliber bullet left the cartridge holder and passed through the .22 caliber barrel. After firing, the cartridge holder had to have the fired case poked out with a short rod, and a new .22 short cartridge loaded, making the use somewhat inconvenient.



Fig. 34 - Model 1903 .22 Gallery Practice Rifle ("Hoffer-Thompson") showing the cartridge holders with .22 short cartridges being loaded into the magazine, the same as if it were the .30 caliber rifle.



Fig. 35 - Detail from figure 1, showing one of the ROTC cadets busy poking out the fired case from the cartridge holders being used with the Hoffer-Thompson rifles at the University of Connecticut range circa 1921. (Courtesy UConn Library Archives)

Although many Hoffer-Thompson rifles were made, they were withdrawn from use and scrapped or sold after Model 1922 .22 caliber rifles were issued. Since simply replacing the .22 barrel with a .30 caliber barrel was all that was needed to turn one of these into a

target or hunting rifle, few survived in original .22 configuration.

COMMERCIAL GALLERY PRACTICE RIFLES 1917-1919

The massive expansion of the Army during World War I created a huge demand for arms of all kinds, including rifles for basic marksmanship training and gallery practice use. This demand was met by purchasing commercially available arms from Winchester with most delivered in 1918-1919. These were basically commercial standard rifles, with the only distinguishing feature being a hand stamped U.S. and ordnance bomb (Figures 36, 37). Purchases included:

11,249 Winder muskets (Model 1885) in .22 Short

4,428 Model 1890 rifles in .22 Short

600 Model 1903 rifles in .22 Winchester Automatic

Along with 200 million .22 short cartridges.

After adoption of the Model 1922 .22 caliber Springfield, most of these Winchester rifles were sold as surplus, many through the Director of Civilian Marksmanship program.²⁹



Fig. 36 - Winchester commercial rifles purchased for gallery practice use during World War I included the single shot "Winder musket" version of the Model 1885 single shot rifle (top), the Model 1890 pump action rifle, and the Model 1903 semi-automatic rifle.



Fig. 37 - The Winchester gallery practice rifles purchased for military use were marked with hand stamped U.S. and ordnance bomb, however they are easily faked.

CONCLUSION

Following World War One, the focus shifted from gallery practice as basic marksmanship training to more emphasis on formal competitive shooting programs. This led to new generations of specialized target/training rifles such as the highly accurate commercial Winchester Model 52 and the military Springfield Model 1922 rifles which essentially replaced all the old U.S. military gallery practice arms.

From 1858 to 1921 the U.S. military made steady improvements in marksmanship skills, thanks to effective training methods for both outdoor shooting and also taking advantage of the lower cost and more accessible indoor gallery practice opportunities. While the goal was proficiency with the service weapons with full charge ammunition, gallery practice had an important role in achieving that success, using various innovative arms and ammunition. This has provided a diverse array of items for collectors to pursue, and helps understand the doctrine and methods used to prepare troops for combat.

Gallery practice continued in varying forms after 1921, expanding greatly in World War Two, and then returning to mostly competitive focus until near the end of the 20th century when it was largely eliminated due to purported concerns about safety, and declining emphasis on marksmanship and military skills. The subject of post-1921 gallery practice arms is a worthy topic for further research.

END NOTES

- 1 U.S. War Department, *Firing Regulations for Small Arms 1904 for the United States Army and the Organized Militia of the United States*, Washington, 1904, p. 10
- 2 For an extensive discussion of the capabilities of smooth-bores versus rifles see Raymond Cusick, *Wellington's Rifles: The Origins, Development and Battles of the Rifle Regiments in the Peninsular War and at Waterloo from 1758 to 1815*, Pen & Sword Books Ltd., South Yorkshire, UK, 2013.
- 3 Berkeley R. Lewis, *Small Arms and Ammunition in the United States Service 1776-1865*, Washington, 1960, p. 90.
- 4 William H. Emerson, *Marksmanship in the U.S. Army: A History of Medals, Shooting Programs and Training*, Norman, OK, 2004, p. 6.
- 5 Ibid.
- 6 The shooting performance of Civil War longarms is well documented in Jac Weller, "Shooting Confederate Infantry Arms," in *American Rifleman*, (April, May, June 1954).
- 7 Henry Heth, *A System of Target Practice for the Use of Troops When Armed With the Musket, Rifle-Musket, Rifle or Carbine, Prepared Principally From the French*, Washington, 1858, p. 31.
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- 9 Colonel Theodore T.S. Laidley, *Ordnance Corps Hall of Fame Inductee 2008, U.S. Army Ordnance Corps*, www.goordnance.army.mil/hof/2000/2008/laidley.html.
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- 15 Illinois, *Reports to the General Assembly of Illinois at its 31st Regular Session Convened January 8, 1879*, Report of the Adjutant General. Appendix E page 82
- 16 William S. Brophy, *The Springfield 1903 Rifles*, Harrisburg, PA, 1985, pp. 410-412.
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Brophy, *Springfield 1903 Rifles*, pp. 523-525.
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- 22 Brophy, *Springfield 1903 Rifles*, p.254 quoting from Wingate's 1875 edition of the *Manual for Rifle Practice*.
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- 29 Thomas D. Batha, Thomas D., *U.S. Martial .22 RF Rifles*, Tucson, AZ, 2000, pp. 9-19. Batha's book is the best single reference on the overall topic of U.S. military .22 training rifles, including WW2 and post-WW2 era arms.

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