

# BARRAGE

The RCA Museum News

THE RCA MUSEUM  
CANADA'S NATIONAL ARTILLERY MUSEUM



LE MUSÉE NATIONAL DE L'ARTILLERIE DU CANADA  
LE MUSÉE DE L'ARC

October 2019

## The Austin Threshermen's Reunion

From July 25<sup>th</sup> to July 28<sup>th</sup>, the RCA Museum participated in the Austin Threshermen's Reunion. This year we brought a number of artifacts, including: 25 Pounder, limber, and FAT; C1 105mm howitzer, with deuce-and-a-half; and, L5 105mm PACK howitzer and M37. We also brought two jeeps, a bren carrier, and a 50 cal with an anti-aircraft mount.



We heard from the organizers that visitation was up this year. They expected 10,000 visitors and they exceeded their expectations. Our display lasted for the duration of the event. We were fortunate this year to partner with 1RCHA. They also included a display. This year, we had Canadian Forces personnel supervising our display. Each day we had four soldiers and at least two museum personnel in attendance.



Our intent for the event was to display Canadian Gunner related artifacts to visitors that may otherwise not have the opportunity to visit our museum. Many visitors sat in one of our jeeps, sat behind the 50 cal with anti-aircraft mount, or spoke to one of our representatives. We successfully reached thousands of visitors during this outreach event.

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## The 9 Pounder Smooth Bore Cannon

In 1865, the British government gifted Canada forty-eight 9 Pounder Smooth Bore cannons. Indeed, a nice gift right before Canada became a fledgling nation in 1867. The RCA Museum has two 9 Pounder SB's cast in 1809 and 1812. Designed in the 1790s, this model of cannon was used notably during the Napoleonic Wars (1803-1815) and Crimean War (1853-1856). This cannon is depicted on the badge of the Royal Regiment of Canadian Artillery.

During the 19<sup>th</sup> century, the artillery played a dangerous role in warfare. Artillery produced mass casualties on enemy lines and triggered psychological havoc. In the case of the 9 Pounder Smooth Bore, it could launch an iron ball almost a mile. It could fire a shrapnel round that exploded on enemy lines killing and disabling soldiers. It could fire a canister round, a can filled with iron balls, on charging soldiers at point blank range, causing devastating results. For the time period, the 9 Pounder SB was an effective and grievous weapon.

The 9 Pounder SB had a 4.2 inch calibre barrel with a length of 6 feet. The barrel weighed approximately fifteen hundred pounds and the carriage thirteen hundred pounds. In terms of manpower, the guns needed 10 Gunners and 4 drivers with 8 horses. The cannon was always used with a wagon and limber. The limber could hold 32 rounds and the wagon 96 rounds. The range was 300 yards at point blank range with 0 elevation, and had an effective range of 1,200 yards at 4 degrees of elevation. At 6 degrees of elevation the gun could fire 1,760 yards, but this was outside of the effective range.



9 Pounder Smooth Bore Cannon at the RCA Museum.

Each round was loaded in one step. A round was made up of three parts. A flannel bag with 2 ½ pounds of black powder, then a wooden disk called a sabot, and finally the projectile, held in place with a metal strap and cord. The round was rammed down the barrel positioned below the vent. The flannel bag was pierced from above with a sharp pick and a primer was used to ignite the gunpowder.

In Canadian service, the 9 Pounder SB fired three common rounds. Round shot or solid shot, a cannonball made from cast iron, was used against opposing armies and fixed placements. A shrapnel or case shot was an anti-personnel round with a thin exterior composed of iron and an interior packed with lead or iron balls. Once fired, the round would burst, showering the enemy with metal balls and frag-

ments. Lastly, Gunners used a shell against the enemy, which was a hollow iron ball packed with explosives.

It was the Gunner (No. 1) who gave the order to load, who aimed the 9 Pounder SB using brass sights and his experience. The Gunner would choose the ammunition, establish the range and elevation, and calculate the effect of the wind. The Gunner would shout the order to fire and the cannon would be made ready again by sponging out the barrel.

In 1872, the Canadian government purchased the 9 Pounder RML and began the process of replacing the obsolete smooth bore guns. By 1878, most of the 9 Pounder SB's were out of service.

## The War Letters of Bert and Don Mackenzie: 1915-1919 Canadian Expeditionary Force

Bob Ferguson, from the RCA Museum Board of Directors, gave me a copy of WW1 letters from brother's Bert and Don Mackenzie to loved ones back home in Canada. Bob thought I might be interested in reading about two Canadian Gunners that fought in WW1 and then came to rural Manitoba to work and raise their families.

On my side, I want to know what it was like to join the Canadian Expeditionary Force and fight in WW1. These men experienced the trenches and had unique stories to tell. They risked their lives and wrote about it.

The letters start with the voyage across the Atlantic. They then headed to a British military hospital in Egypt. In one letter, Bert wrote about a balmy, moonlit dinner with friends on the back of the Sphinx overlooking the three Pyramids of Giza. The letters were definitely full of adventure and interaction with foreign cultures. By June 1916, though, the brothers were in France on the frontlines and in the trenches.



Lt. F.D. "Don" Mackenzie, C.F.A.

There were many interesting letters but one caught my attention. Dated August 18, 1918, from a hospital bed in France, Bert wrote:

*Just a week ago today, Sunday I got hit. Dinner was all ready, and, I can still see the juicy steaks waiting for us, steaks that I never tasted – hard luck! – when an S.O.S. came in and we had to get out on the guns. We hadn't been out long before the shell came right into the position. I don't know how big it was, but it must have been very fast for I didn't have time to dodge at all. I was sort of stunned and felt a blow as tho' someone had hit me on the legs with a baseball bat; then I heard myself give one howl and immediately heard someone else give exactly the same kind of yell, then I found myself crawling away, until Major Sifton grabbed me and dragged me into the dugout. Two others had been slightly hit, but Watson, one of our officers, was killed outright. He was a splendid young fellow – a lawyer from Toronto and who had married just before coming over. I remember thinking how unfair everything was.*

It must have been very difficult for the family to read that Bert was injured resulting in amputation below the left knee. This letter poignantly reveals the human cost of war.

Bert fought in the Allied offensive at Amiens, which was a key moment in WW1. Assisted by the Canadian Corps, the Allies won a series of victories beginning with the Battle of Amiens from August 8 to 11, 1918, and ending with the Armistice agreement on November 11, 1918.

By the end of the war, both Bert and Don were Lieutenants in the Canadian Field Artillery. Both experienced their fair share of action and both came home with war injuries. Both would return to Canada in 1919 and settle down in rural Manitoba. Both would marry and raise families. Both would become teachers and contribute to Canadian society. Of note, Don Mackenzie was an elected member of the House of Commons from 1935-1945, while Bert Mackenzie taught the Apprentice Battery RCA at CFB Shilo from 1953-1958.



Lt. R.J. "Bert" Mackenzie, C.F.A.

At times, these letters are highly vulnerable, containing fascinating details and personal snapshots of the conflict. These letters are a testament to their war experiences and part of the Canadian Gunner experience during WW1.

You can find letters like this across Canada. Maybe you have similar letters from WW1 or WW2 in your family collection. With Remembrance Day drawing near, we should talk about these letters and honour the men that fought for our nation.

### Top 10 Most Viewed Artifacts

The RCA Museum website displays dozens of artillery weapon systems. The website also tracks the number of unique hits per page. This tracking has been active for over three years. Some artifacts receive a higher number of hits, such as the M109 4+ and Javelin Surface to Air Missile. The majority of the top ten most viewed artifacts are Cold War era weaponry. Six of the top ten are outside in the Gun Park and four are in the museum.



35mm Oerlikon Skyguard SWE



L5 105mm PACK Howitzer



ADATS CDN



M109 4+ 155mm Howitzer



105mm Abbott SP Gun



MGR-1 Honest John Rocket



9 Pounder Smooth Bore



ZPU-4 Anti-Aircraft Gun



155mm Howitzer M114 - 39



Javelin Surface to Air Missile

## The Iconic 25 Pounder MKII

One of the main attractions at the RCA Museum is the iconic 25 Pounder MKII. It was the primary field gun used by Canadian Forces during WW2. The gun had a 3.45 inch (87.6mm) calibre barrel and used standardized ammunition matching British and Commonwealth forces. The Canadian artillery received the first batch of 25 Pounder Mark II's in 1940. Canadian Gunners found the gun reliable, mobile, and very effective at generating high concentrations of fire.

Canadian regiments could deploy 24 guns and Canadian divisions could bring 72 guns, with each gun firing multiple rounds per minute. The Forward Observation Officers would radio coordinates to the Command Posts at the guns. The Gunners would direct their fire on enemy coordinates with overpowering and devastating results. In 1944, German prisoners of war regarded the 25 Pounder as a Supergun because Canadian Gunners could generate high concentrations of fire.

In 1919, the British War Office established specifications for future weapon systems. They were looking to build a new weapon with a range of at least 12,000 yards. The gun also needed to fire 8 rounds a minute using a projectile weighing between 20lbs and 25lbs. Vickers-Armstrongs Ltd designed the original 25 Pounder with prototypes tested on the Salisbury Plain in 1931. In 1935, the British military decided to refit WW1, 18 Pounders with barrel jackets that would support 25 Pounder rounds. This configuration became the 25 Pounder MKI. The MKI included pneumatic wheels with a max range of 11,800 yards. Most were lost in Dunkirk, by which time the MKII model was in production.

The 25 Pounder MKII had a 360 degree firing platform that enabled the gun to quickly rotate in any direction. The MKII had a max elevation of 40 degrees, with 5 degrees of depression and up to 4 degrees of traverse left and right. The gun used a hydro-pneumatic recoil mechanism. It incorporated the high muzzle velocity of the 18 Pounder and the high trajectory of the 4.5 inch howitzer. The gun used four common types of ammunition: high explosive, smoke, armour-piercing and carrier rounds.



Gunners firing a 25 Pounder in Camp Shilo, 1940s.

The MKII used a vertical sliding breech block and simple box trail design. Gunners loaded the ammunition and charge bags separately. The gun employed a variable charge system consisting of up to four charges.

Charge 1 resulted in a range of up to 3,566 meters. Charge 2 up to 7,132 meters and Charge 3 up to 10,790 meters. The fourth charge, called a Supercharge, provided ranges up to 12,253 meters. The max rate of fire was up to 8 rounds a minute. Gunners towed the gun with a limber behind a 4x4 Field Artillery Tractor (FAT).

Canadian Gunners used the 25 Pounder during the Italian Campaign and in Europe after the D-Day Landing. 20% of the Canadian army was artillery and the 25 Pounder was their main artillery system. From 1944 onward, the Canadian military deployed the gun with a towed and a self-propelled version, the Sexton. After WW2, Canadians used the gun with great effect during the Korean War (1950-1953). The 25 Pounder remained in Canadian service until their replacement, the C1 105mm howitzer, arrived in the late 1950s.

## The Final Regimental Shoot of the M109

Canadian artillery systems normally have a lifespan of twenty years. The M109, self-propelled, 155mm howitzer was in Canadian service for a record 37 years - from 1968 to 2005.

On 25 February 2005, 1RCHA hosted the Final Regimental Shoot of the M109 on the CFB Shilo ranges. The Final Regimental Shoot marked a significant moment in Canadian history with the retiring of the M109. In attendance that day were 1RCHA Commanding Officer, LCol Mieiztis and 1RCHA RSM, CWO McKinnon.

VIPs included Commander of 1CMBG HQ, Col Grant, and Comd LFWA, BGen Beare. During the ceremony, 1RCHA fired the last round after 37 years of service and many upgrades. Two batteries of twelve M109's (A Battery and B Battery) took part in the mission, as well as M113's, M577's, HLVW's and LAV III's. The two batteries fired 20 HE, 10 proximity and 15 smoke rounds per gun, with Sergeant Dolomont of A Battery firing the last round. Approximately 540 rounds were fired that day – a substantial amount.

The M109, self-propelled, 155-mm howitzer was a highly mobile, tracked, armoured weapon with speeds up to 55 km/hr, weighing 27.5 tons. The gun provided combat support with excellent mobility. The M109 originated out of the US and was the primary, self-propelled, 155-mm gun in NATO, with at least 7,000 units produced worldwide. Back in 1968, the M109 was equipped with a short barrel (23 calibre) and had a maximum range of 14,600 meters. Upgraded Canadian versions, A2/A3/A4/A4+, used the M185 cannon (39 calibre) with a maximum range of 18,200 meters.

The 155-mm cannon could fire in a 360 degree circle. The secondary armament was a 50 cal. M2 heavy barrel machine gun. The M109 could employ both direct and indirect fire using a 98 pound projectile. The engine was located front-right and the driver sat front-left. The turret was to the rear. The M109 had six crew members, including the commander, two gunners, two loaders, and the driver. The range was 350 km with 135 gallons of fuel capacity, powered by an eight cylinder diesel engine. The M109 proudly served Canada in Germany, Shilo, Petawawa, Valcartier and Gagetown.



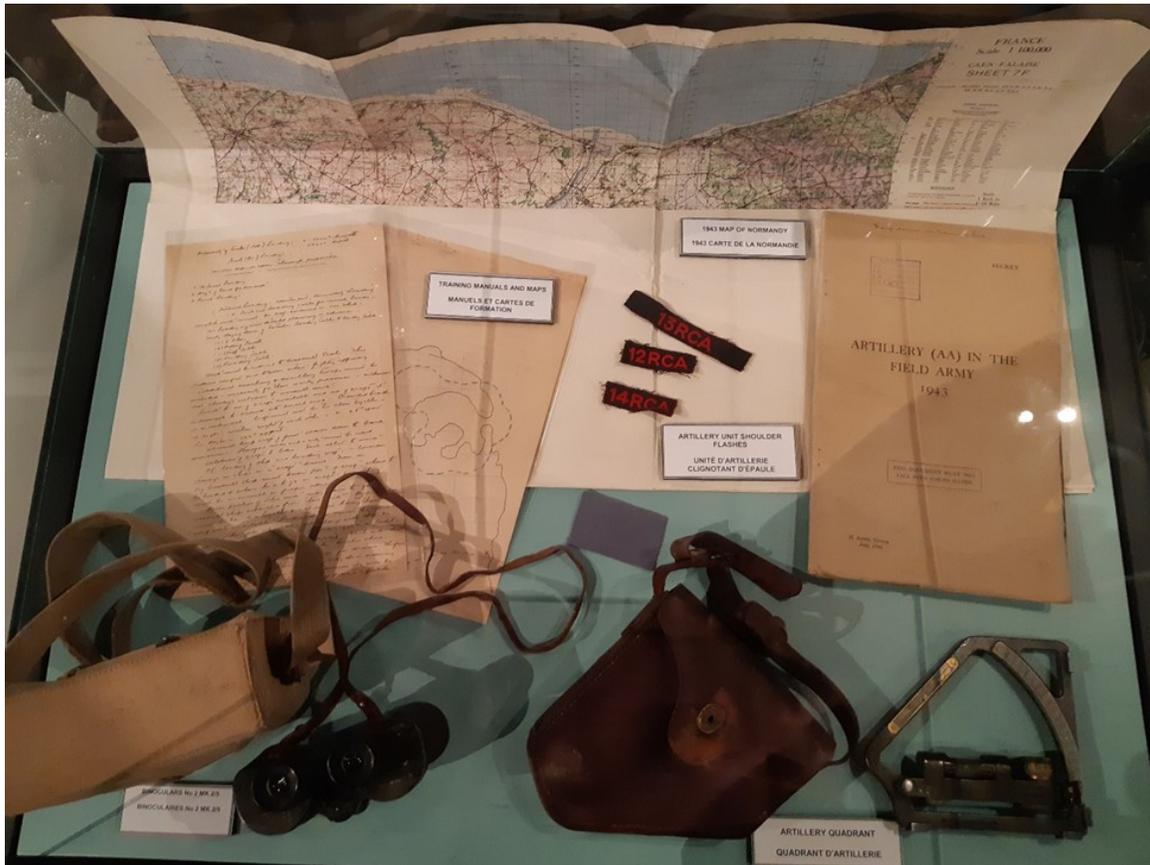
“J” Battery, 3RCHA April 1990.

The first deliveries of M109 occurred in Shilo to the Royal Canadian School of Artillery in the spring of 1968. 1RCHA fired the first round on 16 September 1968 in Soltau, West Germany. 2RCHA fired their first round on 10 October 1968. A fleet of 74 M109's served the regular field regiments and the Royal Canadian School of

Artillery in Shilo. By 2005, only 1RCHA retained M109's, with the remainder already retired from service. These last 12 guns were retired from service on 25 February 2005. The Final Regimental Shoot marked the full life-cycle of the M109, an end to an era with A Battery, 1RCHA firing the last round.

As the current Director of the RCA Museum, I can note the importance of the Final Regimental Shoot over 14 years ago. In 2005, Major Marc George was the Regimental Major and Rick Sanderson was the RCA Museum Director. Remarkably, our M109 on display at the museum fired the first round in 1968 and fired its last round on 25 February 2005 – 37 years apart mirroring the longstanding lifecycle of M109's in Canadian service. The Final Regimental Shoot was a dignified and fitting tribute to the M109 which should be remembered and celebrated.

## One Small Artifact Display



At the museum, small artifacts do not always receive a lot of attention. However, all artifacts have stories to tell.

The photo above shows a number of small artifacts used by Canadian Gunners during WW2. The selection of artifacts include, in part, binoculars, an artillery quadrant, unit shoulder flashes, and artillery maps. Each artifact had a distinct purpose and role to play in WW2.

The map at the top of the photo depicts the Normandy coastline. Original military invasion maps reflect part of the strategic and operational record connected to D-Day.

Note the unit shoulder flashes of the 12<sup>th</sup>, 13<sup>th</sup> and 19<sup>th</sup> Field Regiments. These represent three of the four regiments, minus the 14<sup>th</sup>, that landed on Juno Beach with 96 M7 Self-Propelled 105mm Howitzers. Each regiment supported the beach barrage on 6 June 1944.

Observe the military binoculars with case used by Canadian forces during WW2. Canadians used binoculars notably to locate the enemy.

Also on display is an artillery quadrant with leather case. Canadian Gunners used them as an essential instrument to measure elevation or depression angles.

We hope that small artifact displays, such as this one, help tell the story of the Canadian Gunner.

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All monetary donations are appreciated and will be recognized in The RCA Annual budget.

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Yes  No, I wish to remain anonymous.

2. I consent to be on The RCA Museum mailing list and receive the Quarterly Newsletter (Barrage).

Yes  No, I do not consent.

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