

**The 18-pounder
Field Gun
in Canadian Service**



Doug Knight

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By
Doug Knight

Doug Knight
Ottawa, Ontario, Canada

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Cover photo: 18-pounder field guns on modernized carriage in the reserve army in Canada during the Second World War. Credit: Canada. Department of National Defence/Library and Archives Canada/ecopy

About the author

Doug Knight is a retired Canadian Army officer with an ongoing interest in military history. His engineering degree and experience in the Royal Canadian Artillery and later in the Royal Canadian Electrical and Mechanical Engineers provide a solid background for his research into the history of Canadian military equipment. As a gunner, he served in "Z" Battery, 3 RCHA, 2 SSM Battery, and 1 SSM Battery.

To the memory of
Clive M. Law (1954-2017)
Author, Historian, Publisher Extraordinaire



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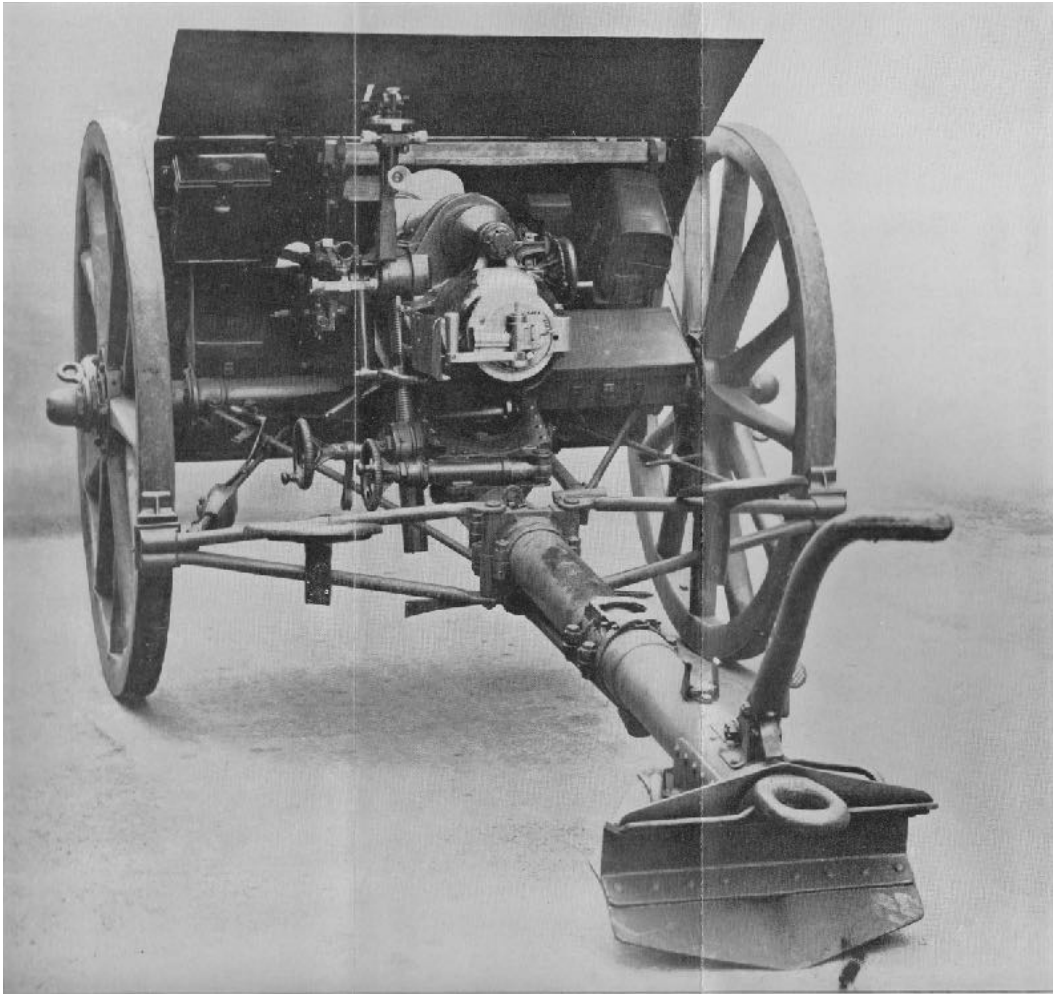
Foreword

This is the story of the 18-pounder field gun during its service in the Royal Regiment of Canadian Artillery from 1907 to 1945. An early version was written to be published as the fiftieth, and last, pamphlet in the Weapons of War series (Service Publications, Ottawa, Canada). The publisher, Clive Law, stated at the last editorial meeting before his untimely death that he intended to end the series at number 50. The text for Numbers 48 and 49 had been approved, but they had not yet been laid out or published. I had been the editor of the series for many years, and he asked if I would complete the 18-pounder in Canadian Service, then in draft, as Number 50. Because of his death, the series stopped at 47 booklets. Since then, I have continued to research and write the story of the gun, although no longer constrained by the 7,000 word limit of the WoW series, but hampered by the lack of photographs that were in Clive's collection. This book is being published in .pdf and .epub format, and is available for distribution without charge. The two versions are not identical. The .pdf version has higher resolution photos and a table showing the locations of the 18-pounders in 1933. Because of limitations in the format, the .epub version has fewer and lower resolution photos, and no table of locations.

A Note on Sources

The objective of the original series was to produce short, readable equipment histories for a general audience, rather than heavily-footnoted reference tomes for historians. The 18-pounder was in service in Canada for more than 30 years, including two world wars. It was the standard field gun in Canada and overseas during this period. Each gun battery, brigade, and divisional artillery during the First World War kept a war diary, which is now available on the internet. The records of each of the Canadian Ordnance Corps workshops that supported the guns during the war fill several bankers boxes. A complete bibliography would be larger than this document. For those who wish to follow up on any aspect of the gun, a selected bibliography and finder's aid is included at the end. Since this is a Canadian story, preference has been given to characteristics noted in Canadian documentation.

Developing the 18-pounder



Rear view of an 18-pounder Mk II gun. Handbook.

During the Second Boer War (1899–1902), the British army quickly realized that their breech-loading 15-pounder 7-cwt field gun was obsolescent (cwt = hundredweight = 112 pounds (50.8 kg)). Other major nations and their colonies were being equipped with modern “quick firing” guns that had a longer range and more effective ammunition. Although both breech-loading and quick firing guns were loaded through the breech (as opposed to muzzleloading guns), according to the contemporary British definitions, in a breech-loading gun, the projectile and the propellant charge were loaded separately. In contrast, the propellant in a quick firing gun was contained in a cartridge case that was crimped to the projectile. The assembly was loaded as a unit, thus simplifying ammunition handling and increasing the rate of fire. The 15-pounder had other serious problems, in that it had no effective recoil mechanism, and the gun tended to roll back on firing, which complicated laying the gun on the target. Also, the gun detachment were completely exposed to fire from the Boer riflemen, and the range of the gun was inadequate.

To remedy the situation, the British Cabinet ordered the Commander-in-Chief in South Africa to send home experienced artillery officers to form an equipment committee. When the committee met in January 1901, they were ordered to examine all aspects of field artillery, including the guns, horse harness, gun tools, ammunition, and even binoculars. After some deliberation, they decided that the most important characteristic for a new gun was the “weight behind the horse team” (mobility), followed by the internal and external ballistics of the gun, the speed of loading, and the weight of the shell (firepower). The memories of Boer riflemen shooting gunners from long range mandated a gun shield (protection), with the last major criterion being the number of rounds to be carried with the gun.

Two types of guns were needed. One would be used by the Royal Horse Artillery. They supported the cavalry and were expected to move at a trot or a gallop, so weight was a critical factor. On the other hand, the Royal Field Artillery supported the infantry, and moved at a slower pace, so weight was slightly less important. The proposed guns would need to balance the conflicting requirements.

The required characteristics were then presented to British industry. Five proposed designs for a horse artillery gun, and three for a heavier field gun were selected, and prototypes were constructed and tested. However, during the testing, none of the contenders were found suitable for service, although the committee agreed that each gun had some good features. After the tests, the manufacturers agreed to collaborate on a composite design based on the Sir W.G. Armstrong & Company’s barrel and breech, Vickers, Sons & Maxim’s (VSM) recoil system, and the Royal Ordnance Factory’s sighting and elevating gear. To save weight, the diameter of the gun wheel was reduced from the standard 60 inches (1.5 m) to 56 inches (1.42 m). Four batteries of guns based on the composite design were manufactured and trials were held in 1903, after which the design for a new 18-pounder field gun was accepted. At the time, British practice designated a field gun by the weight of the projectile of its primary ammunition. In this case, the shrapnel shell weighed approximately 18 pounds (8.2 kg), so the gun was named the 18-pounder Quick-Firing Gun, although this was commonly shortened to the 18-pounder.

The design for a lighter 13-pounder gun for the horse artillery was accepted at the same time, but then politics complicated the issue. A member of the British House of Commons, while recognizing the need to have a lightweight gun for the horse artillery, suggested that the 18-pounder did not have sufficiently better performance to justify the cost of producing two different weapons. The resulting fuss ended only when the British Prime Minister, Arthur Balfour, cast the deciding vote in favour of producing both guns. His decision would be vindicated during the First World War, when the 13-pounder shell proved to be too light to be effective in trench warfare.

The 18-pounder gun was issued to the Royal Artillery starting in 1904, and became the standard British and Commonwealth field gun for the next thirty-five years. By the outbreak of war in 1914, 1,225 guns had been produced. Manufacturers eventually included the Elswick Ordnance Company, Vickers, William Beardmore & Co., the Nottingham Ordnance Factory, and Bethlehem Steel in the United States, all of whom were represented in the 18-pounders used by the Royal Canadian Artillery. Total British wartime production was 9,908 guns and 6,926 carriages.

Re-equipping the Canadian Field Artillery



12-pounder field guns of the 9th Battery, CFA, ready to fire, 21 June 1906. LAC a016719-v8

From Confederation in 1867 until the end of the Second World War, Canada deliberately used British (“Imperial”) military organization, equipment, and doctrine. As noted in *Arms, Men and Governments: The War Policies of Canada, 1939–1945* by C.P. Stacey, this policy had been established long before the First World War, and was reaffirmed at the Imperial Conference in 1926. The Canadian government considered that any Canadian expeditionary force would always be part of a larger British formation, and common doctrine and equipment would allow close integration.

In the late nineteenth century, the government had little interest in spending money on defence in peacetime, so Canadian industry was not organized to produce specialized military hardware. Most equipment was purchased from British Imperial Stores, normally at cost plus a fifteen percent markup. However, common items began to be manufactured in Canada. Supporting tools and equipment were ordered from local manufacturers, and limbers and ammunition wagons were produced at the Ottawa Car Company (later the Ottawa Car Manufacturing Company - OCM). A limber was a two-wheeled cart that supported the trail of the gun while it was being pulled by a team of horses. OCM, who was a major manufacturer of street cars (trams), gradually became the main supplier of heavy equipment for the Canadian Army. Contemporary files frequently note a requisition from Imperial Stores for a single item, such as a gun wheel. A note in the file margin indicates that it was to be used by OCM as a pattern for manufacture. OCM was not necessarily less expensive than British-manufactured items, but the money was being spent in Canada.

However, manufacturing gun barrels required specialized equipment and skills, which would have been completely uneconomical to acquire. Therefore, the guns for the Canadian artillery continued to be procured from Britain, sometimes from the War Office, but also directly from the manufacturer.

The Boer War

At the turn of the century, the Royal Canadian Artillery was equipped with the 12-pounder 6-cwt breechloading gun. Canada had ordered the guns from Britain in 1895, but it was several years before they arrived. The first 12-pounders arrived in Canada in 1897, and thirteen Militia batteries had the opportunity to examine and fire them at Quinte Range near Deseronto, Ontario, in September. By 1898, six batteries (36 guns) had arrived and been issued to "A" and "B" Batteries, and the 2nd (Ottawa), 3rd (Montréal), 9th (Toronto), and 4th (Hamilton) Batteries. The Government Shell Factory at Québec also began producing 12-pounder ammunition that year. In 1899, twelve more guns arrived and, in all, Canada purchased 96 12-pounder 6-cwt guns.

When the Boer War began, the Canadian government offered Britain an expeditionary force. This eventually included three batteries of artillery, "C", "D", and "E" Batteries, each consisting of six guns, five officers, 145 NCOs and men, and 137 horses. The Canadian involvement in the Boer War has been well documented elsewhere, including the famous rear guard action at Leliefontein on 7 November 1900, where a desperate defence by the Royal Canadian Dragoons allowed two 12-pounders to escape capture by the Boers. When the Canadians first arrived in South Africa, the No. 56 fuze and the tangent sights limited the range of the 12-pounders to 4,000 yards (3,660 m). However, when the "blue" No. 57 fuze was issued, the gunners were able to engage targets at 5,800 yards (5,300 m). This was beyond the capability of the tangent sights on the guns, so the gunners had to use clinometers to set the proper elevation beyond 4,000 yards. Although normally towed by six horses, in at least one operation, the "C" Battery guns were hauled by ten-mule teams. At the end of the war, at British request, "C" Battery left their six 12-pounders in South Africa. The 12-pounder continued to be the Regiment's primary field gun until it was replaced by the 13-pounder and 18-pounder field guns, and remained in reserve for many years afterwards.

The experience of the Boer War assisted the Canadian Chief of the General Staff in convincing the government that new equipment was needed. It was obvious that the 12-pounders were obsolete and that any future war would be fought with better artillery. When the British Army began re-equipping with the 13-pounder and 18-pounder guns, Canada placed a series of orders, starting in 1903.

The 1903 Order

In December 1903, Canada ordered 36 of the new 18-pounder guns, complete with carriages, sights, and 36,000 rounds of ammunition, from Vickers, Sons, & Maxim (VSM) at a cost of £147,060 (\$735,300 at the time). By 1 January 1907, the first eight guns had arrived at Québec with 8,000 rounds of shrapnel ammunition. The rest were in Canada by 1909, when eight of the batteries that attended the Militia summer camp were equipped with 18-pounders. This first shipment consisted of Mk I guns (#997 to #1033) on Mk I carriages (these were the official registration numbers as assigned by the British War Office - the Vickers' numbers were #8301 to #8336). The British designated different versions of an equipment using the term Mark (Mk). The Ottawa Car Company manufactured a gun limber, an ammunition limber, and an ammunition wagon for each gun. These were two-wheeled carts. The gun limber had a pole to which the horse team was harnessed and a hook for the trail of the gun. This turned the gun and limber into a very manoeuvrable four-wheeled wagon. The ammunition wagon was hooked to a similar limber as a supporting vehicle. Each of the limbers and

wagons were fitted to carry ammunition, stores, and the men of the gun detachment. Weight distribution in the vehicles was critical, in order to prevent the pole from placing undue weight on the horses closest to the limber.

The 1909 Order

Another twenty guns were ordered directly from VSM in March 1909, and a further 44 guns were ordered through the British War Office in July 1909. All were delivered by 1913. These orders consisted of Mk II guns (#1083 to #1146) on Mk I carriages. The 18-pounder gun barrel had a removable liner that contained the rifling. When the barrel was worn out, it could be returned to the factory and the liner replaced, effectively resulting in a new barrel. The liner of the Mk II barrel that entered production in 1906 simplified the process by having a slight taper on its exterior surface, so that the tube could be removed and a replacement tube inserted into the jacket using hydraulic pressure. By the end of 1913, 100 18-pounders were in Canada, equipping 24 field batteries with four guns each. In addition, one gun was at the Ottawa Car Company as a sample for carriage production, and three were in Kingston - two at the Royal Military College and one in the Royal Canadian Horse Artillery (RCHA) Brigade. (The RCHA were equipped with 13-pounder guns. This gun was for familiarization and training.) This total was still a little short of the authorized peacetime establishment of 284 guns.

The 1912 Order

Another 36 guns were ordered in 1912 on Militia Requisition 1981, and were expected to be issued before the summer training season in 1914. However, unlike the previous orders that had included carriages, gun tools, and stores, this order was only for the ordnance (barrels and breech mechanisms). The Canadian Government had decided that the carriages and accessories would be manufactured by the Ottawa Car Company. Drawings and specifications had been obtained from the British War Office and the carriages were ordered from OCM on Contract Demand (CD) 257 of 1911-12. The Ottawa Car Company officially changed its name to the Ottawa Car Manufacturing Company in 1917, but since 18-pounder carriages exist with "O.C.M. Co." on their 1915 data plates, this account will use the later name. When the war began in August 1914, delivery of the guns was not complete, and the carriage production was barely underway.

The 1913 Order

Yet another 48 guns were ordered in January 1913 at an estimated cost of \$532,800 and were expected to arrive in 1916. This was also a "guns only" contract, with the carriages to be manufactured by OCM at a cost of \$760,000. The contract with OCM was based on CD 447 of 1913-14. As with all previous orders, the limbers, ammunition wagons, and tools were ordered from OCM.

In summary, at the beginning of what became the First World War, the Royal Canadian Artillery owned 136 18-pounders (although twelve from the 1912 (guns only) contract were still in transit). Of these, 36 guns had no carriages, although OCM were preparing to manufacture them. Another 48 guns were on order from the UK, and their carriages had been ordered from OCM.

Ammunition

The small arms cartridge factory at Québec began manufacturing rifle ammunition about 1884, and production of artillery ammunition followed soon after. Production was essentially limited to the annual practice requirements. In 1900, the factory turned out 1,480 9-pounder shrapnel and 1,075 common shells, and 632 12-pounder shrapnel shells. By 1905, the factory was producing the full annual Canadian requirement for 12-pounder shrapnel ammunition. It began manufacturing 18-pounder shells in 1909, but an inspection in 1913 revealed that the many of the shells were defective and the stock produced to that date was destroyed. A new assistant superintendent of the arsenal was appointed, who significantly improved the production process during the next year, just in time for the war.

The story of ammunition production in Canada during the First World War is beyond the scope of this book. However, during the First World War, Canadian industry manufactured more than 20 million rounds of 18-pounder ammunition, 12.6 million rounds of 4.5-inch howitzer ammunition, eleven million rounds of 6-inch ammunition, and millions of other types of shells. More than 30 million fuzes were produced.



General view of 18-pounder ammunition production at Vancouver Engineering Works Limited, Vancouver, BC, 1915. LAC PA-024669.

Canadian Artillery Organization

At the beginning of the twentieth century, the Canadian Army was separated into the Permanent Force (the regulars) and the Militia (the reserves). The artillery were designated the Royal Canadian Field Artillery in the Permanent Force, and the Canadian Field Artillery (CFA) in the Militia. In 1905, the Royal Canadian Field Artillery was renamed the Royal Canadian Horse Artillery (RCHA).

The policy of using British organization and doctrine meant that many of the organizational changes in the Canadian Army were caused by changes in the British Army. Until about 1900, the Canadian Field Artillery was organized into independent field batteries, each normally commanded by a major. Although batteries occasionally trained together, there was no formal higher grouping of units. Part of the problem, of course, was the distance between units in Canada. However, in 1900, matching the British practice, the CFA batteries began to be grouped into brigades, each commanded by a lieutenant colonel. Each brigade consisted of a headquarters, two or three batteries, and a brigade ammunition column. Ten brigades had been formed by the end of 1905, although the distance problem remained.

In 1911, the Canadian Militia was reorganized, and each military district was supposed to field an infantry division. From an artillery perspective, each division theoretically included three field artillery brigades, a howitzer brigade, a heavy battery, and a division ammunition column. Each field artillery brigade had three four-gun batteries of 18-pounders and a brigade ammunition column. The howitzer brigade had three batteries, each with four 5-inch or 4.5-inch howitzers (plus an ammunition column), and the heavy battery had four 60-pounder or 4.7-inch guns.

In 1914, the British increased the strength of each battery from four to six guns. Canada again reorganized the CFA, although the official establishment - the document that specifies the organization of a unit and its entitlement to men, weapons, and equipment - was still showing four-gun batteries in Canada as late as January 1914.

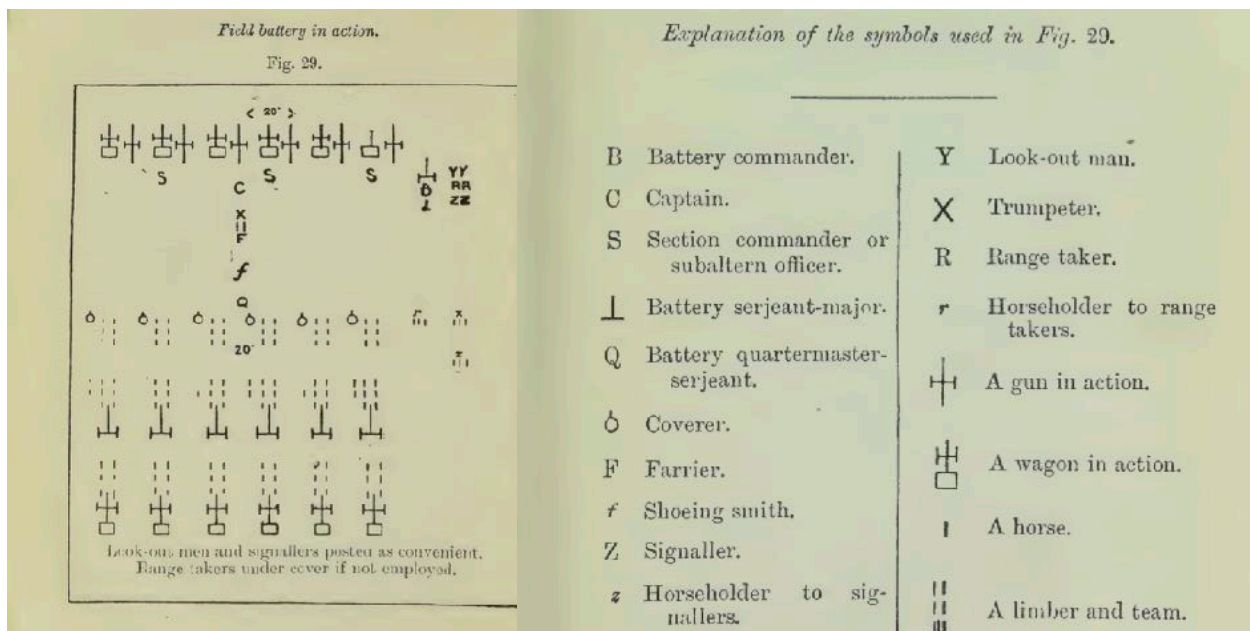
On the eve of the First World War, at full strength, a brigade of eighteen 18-pounders consisted of 23 officers and 772 other ranks (sources vary slightly as to numbers). In addition to the commanding officer, brigade headquarters included an adjutant (a captain or lieutenant in charge of administration), an orderly officer (a captain or lieutenant who was responsible for stores and transport), a doctor, and a veterinarian. The headquarters also included a sergeant major, two corporals, two bombardiers, nine drivers, seven gunners (who were mostly signallers), a clerk, and a trumpeter. A corporal and three privates from the Canadian Army Medical Corps were attached for water duties, and another eight gunners acted as officer's batmen (personal servants), and two as orderlies for the medical officer.

Each battery was commanded by a major, with a captain as second-in-command. Although the battery normally operated as a unit, it could be divided into two (or three) two-gun sections, each with a lieutenant or second-lieutenant in charge. Sections were designated as "A", "B", and "C" (in a six-gun battery). A single gun was called a sub-section. The battery establishment included a battery sergeant major (BSM), a battery quartermaster sergeant (BQMS), two trumpeters, seven sergeants, seven corporals, eleven bombardiers, 75 gunners, 70 drivers, and five gunners acting as batmen. A farrier-sergeant and four [horse]shoeing smiths (of which one was a corporal), two saddlers (leather repair), two wheelers (gun wheel and general woodwork

repair), supported the 165 horses and the battery equipment. Note that these were artillery tradesmen. The practice of using Ordnance Corps tradesmen in the units did not start until after the First World War. In addition to controlling the horses when the gun was moving, the drivers were responsible for the care and feeding of the horses. If the number of drivers seems excessive, consider that each gun was pulled by a six-horse team, and each of the three pairs of horses had a driver riding on the left-hand horse. As well, each of the six spare horses in the battery had a driver, and the ammunition wagons and other carts (signals, travelling forge, etc.) also needed drivers. There was also a spare driver for each gun.

The brigade ammunition column was commanded by a captain, who was assisted by three lieutenants or second-lieutenants. Its job was to bring ammunition and other supplies to the battery positions from the division rear area, and it also held a reserve of ammunition on wagons. It was divided into two sections. The column included a BSM, BQMS, a farrier-sergeant, four shoeing smiths (of which one was a corporal), two saddlers, two wheelers, a trumpeter, four sergeants, five corporals, five bombardiers, 30 gunners, 96 drivers, and four gunners acting as batmen.

This was the official organization of a field artillery brigade on the eve of the war.



A diagram of a six-gun field battery gun position. The battery commander's party in the upper right would be in a suitable location to observe the target and control the fire of the battery. Communications would be by voice, telephone or semaphore flags, depending on his distance from the battery. Field Artillery Training 1914.

The 18-pounder in Canada, 1914-1918



Gun drill on an 18-pounder field gun. LAC a022712.

As noted previously, on the outbreak of war, Canada owned 136 18-pounder field guns. Of these, 100 were complete with carriages and had been issued to the Militia. Twenty-four batteries had been equipped with four guns each, with three at training schools and one at OCM as a sample for carriage production. An additional 36 unmounted guns had been ordered in 1912 and were due for delivery in 1914, but not all had been delivered by August. Their carriages were entering production at OCM. A further 48 guns had been ordered in 1913 for delivery in 1915. Their carriages were also on order from OCM.

On 3 August 1914, as other European countries mobilized for war, Germany declared war on France, and the German armies began their march through Belgium. Britain had a treaty guaranteeing Belgian neutrality, and declared war on Germany. The British declaration of war included the Dominions, and Canada found itself at war with Germany and Austria-Hungary. Mobilization of the First Canadian Division began immediately. On 31 August 1914, the British War Office asked if the Canadian government could supply twelve 13-pounders and 36 18-pounders, complete with limbers and ammunition wagons. Sir Sam Hughes, the Minister of Militia and Defence, replied that twelve 13-pounders and 47 18-pounders were in Canada. Britain asked for all of them and Hughes agreed, as well as sending all the ammunition remaining in the country. This did not include the 54 18-pounders in the First Canadian Division, nor the unmounted guns of the 1912 order.

On 4 September, the number available was refined to 45 18-pounders, because one was at OCM as a sealed sample, and another was unserviceable. A third gun was needed for ammunition proofing. On 20 September, noting that two serviceable guns had to be retained for ammunition testing at Québec, it was decided to send 42 18-pounders to the UK, in addition to the guns of the First Division. Note that the original count implied that there were 101 guns in Canada on the outbreak of war, not 100 guns as previously reported - or one of the 1912 order was already in service. The mathematics in the contemporary reports can be somewhat creative.

The First Canadian Contingent left Québec for Britain on 3 October 1914. The First Canadian Division took 54 18-pounders to England with them (three brigades, each

with three six-gun batteries), as well as the 42 additional 18-pounders for the general use of the British Army. Mathematically, this left 40 guns in Canada for training, although at least 32 of them were not mounted.

Canada had no modern howitzers in 1914 (they were on order, but had not been delivered) and the division's howitzer brigade went overseas without guns. Some histories claim that the howitzer brigade in the First Division took 18-pounders to the UK with them in lieu of the 4.5-inch howitzers which had not been delivered to Canada. This is not supported by the documentation, which clearly indicates that the 42 extra guns were shipped at the request of the War Office for their general use. Howitzers were in very short supply. When the First Division went to France in early 1915, the British 118th Howitzer Brigade, RFA, was assigned to the division, because the division howitzer brigade had not yet been equipped.

The Guns That Stayed Behind

The next section is a bit detailed, but there is no clear, reliable account of the activities of the 18-pounders that remained in Canada during the war, and this is an attempt to clarify the record. As noted previously, the number and location of 18-pounders in the country (as quoted in various reports during the war) is not consistent. So, wherever possible, the numbers quoted in the reports have been cross referenced with known registration numbers of the guns. This provides a slightly more reliable record, but keep in mind that gun barrels were moved frequently between carriages as the barrels wore out, or the carriage itself became non-serviceable. Unfortunately, the files are not complete and no record of the registration numbers of the guns shipped overseas has been found, which would eliminate them from consideration. On the other hand, where registration numbers exist, they can confirm (or challenge) the totals provided in the reports. As a side effect of this approach, tracking the registration numbers has allowed several museums to establish the history of their 18-pounder artefact.

The shipping of 96 guns and carriages to the UK with the First Contingent and for the War Office is well established, and is supported by financial accounts in the postwar period. However, not all of these came from the first 100 guns. Based on the registration numbers of the guns that appear in wartime and postwar reports, four guns from the 1903 order and four from the 1909 order remained in Canada - eight in total. Therefore, four of the unmounted guns of the 1912 order must have immediately been returned to the UK, probably on four of the original carriages. The reasons are not recorded, although it is possible that four of the original guns were unserviceable at the time (or committed, such as the pattern gun at OCM) and the newer, serviceable guns were switched with them.

The OCM Carriages

Theoretically, four of the original 100 carriages should have remained in Canada. However, only two of the carriages from the original 100 guns appear in wartime lists (#6415 and #6431). The missing two carriages of the first 100 guns may have been the two that were sent to the US at British request (see below), or possibly they had been damaged and written off before the war.

There is no evidence that OCM had delivered any carriages from the 1912 order by the time the First Contingent departed, and it is possible that all 96 carriages that went overseas came from the original 100 guns. However, OCM carriage numbering began

at #C101 and #C106 is noted at Québec in January 1915, just two months after the departure of the Contingent, so it is possible that some OCM carriages went overseas with the First Division. Two carriages, #C102 and #C103 never appear in Canadian wartime records and may have gone overseas in October 1914. Of the 36 carriages from the 1912 order (#C101 to #C136), 23 carriages are confirmed to be in Canada during or after the war. That leaves 13 carriages from the first order that are not accounted for. These may have gone overseas with the First Contingent, or may have been some of the sixteen carriages that went overseas with the Second Contingent in May 1915 (see below).

The exact fate of the 1912 36-gun order is also uncertain. The registration numbers of 35 of the guns are known (#1233 to #1267), with the remaining gun probably either #1232 or #1268, depending on where the sequence started or ended. Within the 36-gun sequence, 19 guns do not appear in any lists created during or after the war, and these are probably three or four guns that returned directly to the UK in 1914, as well as the 15 or 16 guns that went over with the Second Contingent (see below). The missing gun remains unexplained and could be part of either group.

In October 1914, to replace the 96 guns that went overseas, and to equip future contingents, the Canadian government ordered 150 18-pounders (complete with carriages, sight carriers, and 150,000 rounds of ammunition) from Vickers. However, before they could be delivered, these and the 48 guns of the undelivered 1913 order were diverted to the British War Office. In exchange, the British Government undertook to provide guns for the Canadian Expeditionary Force (apart from the First Division that had arrived in England fully equipped with 18-pounders) and, after the war, they would replace the guns from the diverted orders.

The 1913 order that was diverted was a “guns only” order, with the carriages being manufactured by OCM. The OCM contract was not cancelled, and the company completed the 1912 order for 36 carriages as well as the 1913 order for 48 carriages. The latter would turn out to be orphans (their gun barrels had been diverted), and 32 carriages were shipped to Britain later in the war for general use by the War Office.

The Guns in Canada

The story of the 18-pounders in Canada during the war is muddled by guns being worn out, switching guns between carriages, the rare provision of new barrels, and barrels being sent to England for relining, usually never to return. In theory, after the departure of the First Contingent and the complete arrival of the 1912 order, there should have been 40 18-pounders in Canada (136 guns minus 96 equals 40). However, according to the Official History, on 20 November 1914, after the departure of the First Contingent and the other 42 guns for the War Office, there were only 38 18-pounders in Canada, although 32 of them did not have carriages. This leaves two guns unaccounted for. This also implies that OCM had produced four carriages by that time.

In late 1914, at British request, two 18-pounders were sent to the United States. One went to the Bethlehem Steel Corporation as a pattern for their contract to manufacture 18-pounder guns for Britain (in total, they manufactured 851 18-pounders), and the other to the Hercules Gunpowder Company (a Dupont subsidiary) to support ammunition testing.

As noted, OCM had received a contract in 1912 to produce 36 18-pounder carriages. These began to appear in late 1914, and the contract was completed in 1915. The requirements of the Second Contingent put considerable pressure on OCM but, by the spring of 1915, sufficient carriages were available to equip the 4th Brigade in the Second Division, which took another sixteen 18-pounders to the UK in May 1915. The guns were probably all from the 1912 order, and the carriages probably from OCM. The only OCM carriage that has been confirmed in France is #C109, which was in the 15th Battery in 4 Brigade, CFA on 4 August 1915 (as noted in a report when its trail eye had fractured). It was damaged again while in 6 Brigade in 1916, and at that time had #1245 from the 1912 order mounted on it.

Based on the 38-gun total noted above, the departure of the Second Contingent should have left 22 18-pounders in the country. This is confirmed by a report on 5 July 1915 that states there were twenty 18-pounders in Canada plus the two in the US. They were distributed as follows: one at the Royal School of Artillery in Kingston; two at the Headquarters Depot; two at the 5th Brigade, CEF; one at 21st Battery, CFA; one at 28th Battery, CEF; one at OCM (as a pattern); eight with the Chief Inspector of Arms and Ammunition in Québec; and four awaiting distribution.

Most of the guns in Canada were used for proof firing ammunition at the Dominion Arsenal. This testing quickly wore out the barrels. It was recognized that there was no hope of getting guns from Europe during the war, but National Defence Headquarters continually attempted to get guns from the Bethlehem Steel contract in order to keep proofing ammunition. In 1915, two shipments of six barrels from the British contract with Bethlehem Steel were sent to Québec to replace those that had been worn out in the proof firing. Other shipments apparently arrived in 1916 and 1917, but no record of their arrival has been found. The two six-gun shipments in 1915 are confirmed by registration number, and a census of artillery in 1933 records at least 36 Bethlehem Steel guns in Canada. Most of these were on OCM-manufactured carriages, so they probably arrived during the war.

All new guns from Bethlehem Steel were sent to the Arsenal for use in the proofing programme. The worn out and condemned guns were then sent to training batteries where, although they could no longer fire live ammunition, they could be used to teach gun drill and tactics. Most of the live firing training during the war was carried out using the old 12-pounder gun. Ammunition was available and could be used to teach observation of fire. However, training batteries needed at least one 18-pounder for familiarization purposes and to teach gun laying and the use of the sights, which was very different to the 12-pounder. A few barrels were shipped to the UK for repair (the liner that contained the rifling in the barrels could be replaced and the gun returned to service), and they never returned.

The Dominion Arsenal at Québec was a major wartime ammunition manufacturer, once the early kinks were worked out. Ammunition was (and is) produced in batches or "lots". Sample rounds from each lot were then tested ("proofed") to ensure that the lot met the specification and was safe to use. If the test firing was successful, the lot was accepted for service. If it failed the initial test, then additional rounds from the lot would be fired in a more advanced test. If the lot failed the second test, it was scrapped. This firing placed a heavy load on the test guns at the Arsenal. The size of the lot varied, probably averaging about 2,000 rounds, but Canada manufactured 20.6 million rounds of 18-pounder ammunition during the war, so the wear on the test guns can be imagined. As an example, one gun, registration number #3820, arrived at

the Arsenal from Bethlehem Steel in August 1915. It was immediately put into service as a proof test gun, and was worn out and condemned in November 1915. The gun continued its service as a non-firing training gun. Records of other guns indicate the same service life at the Arsenal. The war changed many of the peacetime procedures. For example, the prewar standard required that the 18-pounder barrel be examined for wear every 250 equivalent full charges (EFC). Guns at the Arsenal frequently exceeded this number. An EFC was one round of standard service ammunition fired with the full propellant charge. The 18-pounder round had the projectile crimped to the case at the factory and the charge could not be altered, so one round was one EFC. Special ammunition, such as high pressure test rounds used to test barrel integrity (“proof rounds”) could count as two or three EFC per round.

The gun carriages at the Dominion Arsenal had the same problems with broken springs in the recoil mechanism that were encountered in the early days of the war in France (see The 18-pounder Overseas below). However, despite the Arsenal’s continual requests for new springs, or replacement carriages if springs were not available, during the war there was no attempt to replace the springs on the carriages in Canada with the improved hydro-pneumatic recoil mechanisms that were retrofitted to the guns in Europe.

On 20 March 1918, the Master General of the Ordnance reported that 25 18-pounders were in Canada (by registration number, so that list can be considered accurate). Twenty of those could not be fired (except with blank ammunition for saluting purposes), but could be used for training. Fifteen had been issued to the 63rd, 64th, 65th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 76th, 77th, 78th, and 79th Depot Batteries. Four were at the Royal School of Artillery in Kingston, and one was at the Québec Ordnance Depot awaiting shipment to the Royal School of Artillery at Halifax. Of the five serviceable guns, four were at “C” Battery, RCHA, in Kingston, and one was at the 74th Depot Battery. The MGO noted that the depot batteries were also equipped with the older 12-pounder breechloading guns, which could be used for tactical training, and that there was a large quantity of 12-pounder ammunition in Canada that could be used to teach observation of fire.

However, this total conflicts with a 1921 report that stated there were 45 “old” guns in Canada, although this number probably refers to the Mk I carriages, rather than the guns. The 1933 Return on Ordnance (a census of all the guns and associated equipment in Canada) lists 45 Mk I (hydro-spring) carriages by registration number, although in many cases, the guns mounted on the carriages were clearly those that came to Canada after the war.

No matter what set of detailed numbers you choose, the bottom line is that the 18-pounder guns that remained in Canada during the war were heavily used, both in training gunners and in testing ammunition. By the end of the war, essentially none of them were capable of using live ammunition. Also, since the Mk I carriages were never updated to the hydro-pneumatic recoil mechanism, the guns were obsolescent. Nevertheless, most of them would survive the interwar period.

The 18-pounder Overseas, 1914-1918



An 18-pounder gun position in France in September 1917. Note the armoured oil reservoir at the front of the recoil cylinder. This allowed for the expansion of the oil in the recoil buffer during intense firing. LAC PA-001876

Organization

During the First World War, each of the four infantry divisions that eventually formed the Canadian Corps had its own divisional artillery. In addition, although the Fifth Canadian Division was broken up for replacements in the UK and never went to France, the divisional artillery did go to the continent and formed part of the Canadian Corps Artillery. The organization of the division artillery changed frequently, mostly driven by British reorganizations as a result of the formation of new divisions and the lagging production of the number of guns needed to equip them.

As has been noted, when it left Canada in October 1914, the first Canadian Division artillery had 54 18-pounders organized into three field brigades (each with three six-gun batteries and an ammunition column), a howitzer brigade (nominally with 18 4.5-inch howitzers), a heavy battery, and a division ammunition column. However, in January 1915, lack of guns forced the batteries in the field and howitzer brigades to be reduced from six to four guns each. The heavy battery was removed from the division and became a corps or army level weapon.

In 1916, the howitzer brigade was amalgamated into the three field brigades, which then became mixed gun/howitzer organizations, each consisting of three batteries of four 18-pounders and one battery of four 4.5-inch howitzers. The brigade ammunition columns were absorbed into the division ammunition column. About the same time,

three medium batteries and one heavy battery of trench mortars (four mortars each) were added to the division, although they are outside this story. Each division then had an artillery headquarters, three mixed field brigades, four trench mortar batteries, and an ammunition column.

In early 1917, each battery was increased from four to six guns or howitzers, and later in the year, each division was reduced from three to two mixed brigades of artillery. This was the final reorganization of the war, although many Canadian units did not change until late 1917 or early 1918. At the end of the war, the Canadian Corps had five divisional artillery groups, each with two brigades of three batteries of six 18-pounders and a battery of six 4.5-inch howitzers, for a total of 180 18-pounders in the CEF.

Operations

The operations of the individual batteries and brigades are well recorded in *The Gunners of Canada* (McClelland and Stewart Ltd., Toronto, Canada, 1967), and will not be repeated here. Also, their war diaries are available on the Library and Archives web site. Because of damage and wear, many 18-pounders passed through the Corps during the war. It is almost impossible to trace the history of an individual gun, but some isolated events have been recorded. For example, 18-pounder #1011, part of the 1909 order, was still in service with the 6th Brigade, CFA in December 1917, although it was designated for replacement.

Guns were damaged and destroyed on a regular basis. For example, at the battle for Vimy Ridge in April 1917, the Corps had 156 18-pounders in action. During and after the battle, as the Corps struggled to retain the ridge, artillery casualties were severe. The 39th Battery, CFA, lost eighteen guns to direct hits in the 100 days after the battle, with some guns being replaced several times. During the battle for Fresnoy on 3 May, the 4th Brigade, CFA had ten of its 18 guns put out of action.

Wear on the guns was intense. During the battle for Hill 70 on 15 August 1917, the 18-pounders of the First Division fired an average of 713 rounds per gun during the day, with the 39th Field Battery firing more than 9,000 rounds in 24 hours. During the battle, eighteen German counter-attacks were driven back with heavy losses, mostly by artillery fire. When criticized about the ammunition expenditure at the end of the day, Major-General E.W.B. Morrison, General Officer Commanding, Royal Artillery, Canadian Corps (the senior gunner in the Canadian Corps) noted that “not a single German soldier had reached our lines alive.”

Moving the Guns by Light Railway

Moving the guns and supplying ammunition in the trench areas was no simple matter. When batteries were relieved in the line, it was not unusual to leave the guns in place and just exchange the gunners. Ammunition usually had to be brought up by night, which was labour intensive and exhausting. Special smocks allowed a man to carry four rounds and mules could carry eight rounds. However, whenever possible, a light railway was built from a central area into the battery position. Over heavily shelled terrain, the engineers used 16-pound rails, which could be laid on sleepers (wooden ties) spaced seven sleepers for every five and a half yards of track. The sleepers were then ballasted (infilled with gravel) to lock them down. Construction was very time consuming and needed skilled labour.

The Canadian Corps pioneered the technique of moving the guns into the battery position using a light railway. Ramps were constructed, the gun was pushed up the ramp. A low rail car was slid underneath and the gun then backed down onto the car with the gun wheels overlapping on each side. The rail car would then be pushed by hand as close as possible to the gun position, the gun was removed from the car by a similar method, and hauled into position. Ammunition could be brought up using the same track, and boards were laid on top of the sleepers to provide a walking path. The railways were regularly damaged by enemy fire and needed continual maintenance, but were easier than trying to use horses over the muddy ground.



Loading an 18-pounder on a tramway car. LAC a003661-v8.

The End of the War and Siberia

The gun that fired the last shot of the war is reputedly 18-pounder #3106 on carriage C42073 used by the 39th Battery, 10th Brigade, CFA, in the 3rd Division. The gun was presented to the city of Mons, Belgium, in 1919, and is currently on loan to the Canadian War Museum.

After the war, in September 1918, the 16th Brigade, CFA, was formed from gunners in the CEF to assist the Russians against the Bolsheviks in Siberia. It had two batteries (the 67th and 68th) each with six 18-pounders. The brigade also manned an 18-pounder on an armoured train. The brigade saw considerable action, but their guns were frequently outranged and always outnumbered. Throughout the winter, the guns performed well in temperatures as low as -35°F (-37°C). The two batteries were separated on different rivers, and both were eventually forced to withdraw from the towns they were defending. The entire Canadian force was withdrawn in May 1919, and their surviving 18-pounders were turned over to the Russians.



33rd Field Battery, CFA, bringing up the guns at Vimy, 1917. LAC

Maintenance and Repair



Repairing a gun in a mobile workshop in France. RCME Archives

In general, the 18-pounder proved to be a very reliable gun, with most of its problems occurring in the recoil mechanism. Early in the First World War, a serious defect emerged in that the recuperator springs (that returned the gun into firing position after recoil) would break when subjected to either a high rate of fire or prolonged normal firing. The gun could still be used, but the detachment had to manually push the barrel back into firing position, which had a disastrous effect on the rate of fire. This defect had not been discovered earlier because nobody fired large quantities of ammunition in peacetime. In Canada, the guns involved in proofing ammunition at the Dominion Arsenal also had the same problem.

A high rate of fire also created a lot of heat in the hydraulic buffer in the recoil mechanism. The oil expanded with the heat and leaked out through the seals, reducing the efficiency of the buffer and putting additional pressure on the recuperator springs. A box-shaped oil reservoir was added to the front end of the buffer to allow the oil in the buffer to expand, thus maintaining the oil supply and extending the spring life. Since the reservoir was outside the gun shield, the box was armoured to provide some protection from enemy fire.

The interim solution to the recoil problems was to manufacture large quantities of springs, and to install the buffer expansion tank. However, by 1916, the British had designed a new recoil mechanism. This still used a hydraulic buffer to absorb the recoil energy (and retained the expansion tank), but replaced the springs with a nitrogen-filled cylinder. The recoil compressed the gas, which then provided the energy to return the gun into battery. The entire new hydro-pneumatic recoil system fitted

inside the existing buffer casing, and replacement of the old hydro-spring mechanism was an easy field workshop job.

As much maintenance as possible was carried out in the battery location. In 1914, each battery included seven gunners who were also tradesmen: a farrier sergeant, two [horse]shoe smiths, two saddlers, and two fitters or [gun]wheelers. The fitter was the contemporary equivalent of a mechanic; the other trades are self explanatory. These were artillerymen with a secondary trade. Their job was to carry out minor repairs to the battery equipment, especially the horse tack. However, most of the battle damage to the gun itself was beyond the capability of the battery tradesmen, and for more complex repairs, the equipment had to be repaired by the Canadian Ordnance Corps (COC). During the war, a COC armament artificer was attached to each field brigade to supervise and coordinate gun maintenance and repair in the unit. An armament artificer was a highly trained senior NCO, usually at least a staff sergeant, who was trained to carry out any repair on the gun, although he would be somewhat limited by the tools available in his tool box.

Guns that had been damaged beyond the capability of the brigade artificer were withdrawn to the supporting COC workshop, and, if not immediately repairable, the unit was issued a replacement gun from the supply depot - if a replacement was available. If the gun was eventually repaired, it would be returned from the workshop into the supply system and issued to someone else. Guns were also withdrawn to the workshop on a regular basis for inspection and overhaul, although the peacetime standard of a thorough inspection every 250 rounds was generally ignored.

During the war, the Canadian Ordnance Corps fielded two light mobile workshops and one medium workshop. Each light workshop supported two divisions, and the medium workshop supported the Canadian Corps Artillery. Any work beyond the capability of these units was backloaded to the British heavy workshop at army level. Each of the workshops was commanded by an Inspector of Ordnance Machinery (normally a mechanical engineer) and had about 20 craftsmen in various trades. Initially, it was equipped with one machinery lorry (a workshop van with heavy machine tools), one stores (spare parts) lorry, a 3-ton truck, and a Studebaker car. Whenever possible, the workshop would be set up in a garage or small factory in the rear of the division area.

As an example of the workload, No. 8 Canadian Light Mobile Workshop repaired 25 18-pounders in the last two weeks in June 1917, and another 49 in July. The main causes were wear in the cradle holding the recoil mechanism, and damage to the casing of the recoil mechanism by enemy fire. The workshop was one of two supporting the Canadian Corps, and repaired more than half of the field guns in the Corps during this six week period. The workshop war diary indicates this was a typical workload.

Batteries sometimes exchanged guns when they were relieved in the line. It was easier to leave the guns in situ and replace the personnel than it was to withdraw the guns and then emplace the guns of the new battery. This caused a certain amount of dissatisfaction, depending on the condition of the guns that were taken over.

Gun Wear

In 1915, in exchange for transferring to the War Office all the artillery that was on order for Canada in British factories, the British agreed to supply the Canadian

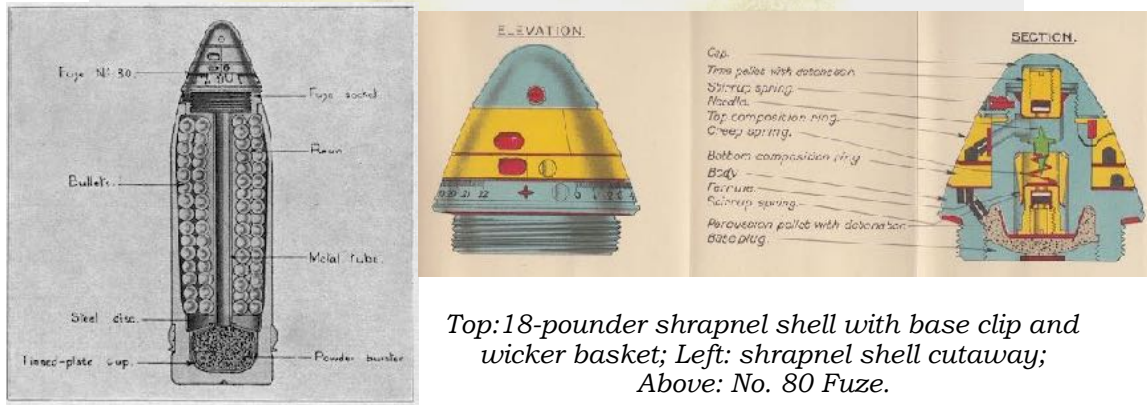
artillery in France with field guns for the duration of the war. However, the guns taken to the UK with the First Division in 1914 probably remained with the division until they were destroyed or worn out.

An 18-pounder barrel had an expected life of about 12,000 rounds. The gun would be inspected regularly, and would be condemned when the rifling had worn down 0.045 inches, as measured about one inch from the commencement of rifling near the breech. However, a 1917 report stated that the guns were never condemned for wear, and that scoring in the barrel (physical damage) was the main cause for removal from service and return to the manufacturer. There, the inner liner containing the rifling would be removed and replaced by a new liner, the gun would be completely overhauled and returned to service. Scoring normally started about 10,000 rounds, when the expected wear was only 0.035 inches. After that, the life of the gun was largely determined by the rate of fire, although another 2,000 rounds could be expected. At high rates of fire, regulations required the barrel to be flushed with water every 50 rounds, which noticeably improved barrel life. Even if the wear and scoring were still acceptable, guns were sometimes condemned because of loss of accuracy, although that seems to have required a lot more paperwork. In May 1917, just after the Vimy operation, it was noted that a 2nd Division battery (four guns) had fired 4,000 rounds in one day, or about 1,000 rounds per gun on a single day. An extended operation could easily wear out a gun in a few weeks. A few guns lasted much longer than the norm. One gun from the 1903 order (#1113), belonging to the 2nd Brigade, CFA, from the First Contingent, was condemned in 1916 after firing 21,000 rounds.



Measuring the muzzle velocity of an 18-pounder on a calibration range in France. LAC a008285

Ammunition



Top: 18-pounder shrapnel shell with base clip and wicker basket; Left: shrapnel shell cutaway; Above: No. 80 Fuze.

Until the First World War, British doctrine stated that field guns supported the infantry. Since the targets were considered to be mostly men in the open, shrapnel was the only type of ammunition that would be required. If an explosive round was needed to deal with fortifications, the 4.5-inch howitzer would be used. Indeed, the 18-pounder handbooks in 1909 and 1913 listed only shrapnel, star shell (which was a special order item), and blank ammunition for the gun.

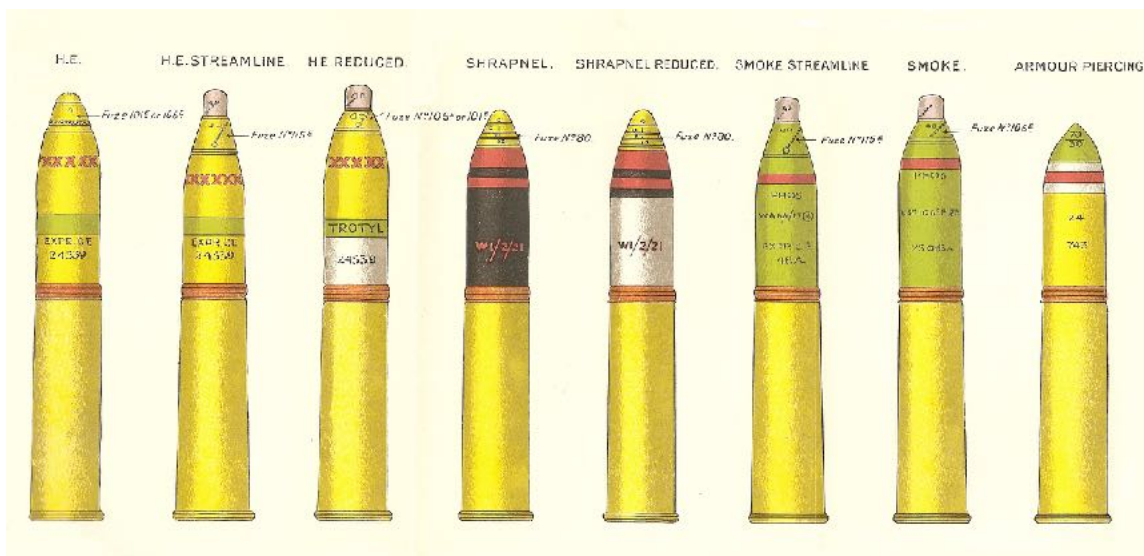
Although the term “shrapnel” in the modern era has been generalized to mean any type of fragments distributed by an explosion, before the Second World War, a shrapnel shell was a specific type of ammunition. Invented by Captain Henry Shrapnel in the late 1700s, the original shell had a thin spherical iron structure filled with lead-antimony balls and containing a small charge of gunpowder and a fuze. The fuze was set to the desired range, where it set off the charge, rupturing the casing and scattering the balls. Originally named “spherical case shot”, it was officially named after its inventor in 1852. As ammunition technology progressed, the design of the shell changed, and the 18-pounder projectile was a cylinder joined to a conical nose. A small explosive charge in the base of the shell was sufficient to break open the projectile and scatter the balls. However, the explosion did not add any significant velocity to the balls and, as the range increased and the shell slowed down as it passed through the air, the terminal velocity of the balls was eventually reduced to the point that they would not cause significant casualties.

The 18-pounder fired a fixed round of ammunition, where the shell was crimped to the cartridge casing at the factory. The Mk I shrapnel projectile contained 300-350 balls, and weighed 18.5 lb (8.4 kg) including the No. 80 Time and Percussion fuze. The brass cartridge case contained a 1.43 lb (0.65 kg) charge of cordite, a No. 2 percussion primer and weighed 2.94 lb (1.33 kg). The complete shrapnel round weighed 22.87 lb (10.37 kg). The weight of the complete star shell round was 13.64 lb (6.19 kg) - the illuminating compound weighed less than the shrapnel balls. For transporting the ammunition, a brass clip was placed over the base of the cartridge case to protect the primer. The entire round was frequently placed in a fitted wicker basket for additional protection. A trained detachment could fire 20 rounds per minute for short periods, although four rounds per minute could be sustained.

The No. 80 Time and Percussion fuze had an aluminum body. The lower part of the fuze was a time ring with 22 major graduations, each with ten divisions. The major graduations roughly coincided with a one-second time of flight, so the fuze could be set in one tenth of a second increments. The exact setting for each range was calculated on a fuze indicator. The nose of the fuze contained a detonator pellet that set off the fuze on impact, if the time action had not already activated. The fuze weighed 10.25 ounces (290.1 grams). The star shell used the No. 25 time fuze.

Trench warfare quickly changed the doctrine and new natures of ammunition were developed. By the middle of the war, high explosive, gas, and smoke rounds had been added to the 18-pounder inventory, with armour piercing, incendiary, and bursting smoke shells being added later. Within each type of ammunition, there were a large number of variants (Marks).

The pole trail design of the carriage limited the maximum elevation of the gun to 16 degrees. With the loss of effectiveness of the shrapnel shell as the range increased, this elevation had been adequate before the war. However, with the wartime demand for increased range, this design limitation was difficult to overcome. Therefore, a streamlined high explosive projectile was developed, which reduced drag, and increased the range of the gun. The maximum range of a standard high explosive shell was 6,500 yd (5,945 m). A streamlined projectile increased this to 7,200 yd (6,585 m).



18-pounder ammunition in 1939. Handbook

Ammunition Supply



Refilling the ammunition wagons at a Canadian ammunition dump on the Western Front. May, 1917. LAC a001350-v8.

According to the British standard, at the beginning of the First World War, each 18-pounder at the front theoretically had 1,000 rounds of ammunition available. The gun battery held 176 rounds per gun. Twenty-four rounds were in the gun limber, and each gun was directly assigned an ammunition limber/ammunition wagon combination with 76 rounds (called the “firing battery” supply). The battery also had a second ammunition limber/ammunition wagon combination with another 76 rounds for each gun, which was held as a battery ammunition reserve (called the “first line supply”). Including the gun teams, this needed 18 horses to support one gun. In Canada in peacetime, each gun only had one ammunition limber/wagon combination.

In 1914, each field artillery brigade included a supporting “ammunition column”. The brigade ammunition column carried 76 rounds per gun in a limber/wagon combination, and another 126 rounds per gun in general service four-wheeled wagons (a GS wagon could carry 108 rounds of 18-pounder ammunition). The division ammunition column carried another 120 rounds per gun, also in GS wagons. This was a total of 498 rounds per gun held on wheels in the division. The advanced ammunition depot supporting the division was supposed to hold another 502 rounds per gun, for a total of 1,000 rounds per gun in the forward area. Ammunition at the depot was not stored on wheels.

Even in the Boer war, this would have been a substantial amount of ammunition immediately available to the gun, but the quick-firing gun of the early twentieth century changed all the mathematics. The specified quantity of ammunition probably reflected both financial considerations (ammunition in peacetime is expensive), and

the lack of a proper operational study of modern weapons. The 18-pounder could easily maintain a rate of fire of four rounds per minute for a prolonged time (up to twenty rpm for short periods), so a battery held about 44 minutes of firing at the sustained rate. The brigade ammunition column held another 50 minutes - about enough ammunition for a one and half hour engagement. This does not allow for an intense rate of fire in defending against a major attack by a European enemy. The First World War brought a harsh reality to the supply of ammunition, and caused severe production problems and shortages in 1914-15.

Under mobile conditions, doctrine stated that ammunition was first supplied to the gun from its ammunition wagon, and then from its ammunition limber. The ammunition stored in the gun limber was considered to be an emergency supply, which would only be used when absolutely necessary. Ammunition was resupplied to the gun ammunition wagons from the battery first line wagons and from the brigade ammunition column wagons as necessary. The ammunition column wagons were not supposed to be in the line of enemy fire, but this depended on the tactical situation. Regulations clearly stated that an ammunition column could and would supply ammunition to any unit on demand, not just to its supported brigade.

Ammunition resupply was a major problem during the First World War. During static trench warfare, large quantities of ammunition were normally stored in prepared positions next to the gun pits, but getting the ammunition there was difficult and exhausting. Hauling ammunition from the rear area to the guns was a nightly occurrence for the battery [horse] drivers, and with the mud and enemy fire, it was a dangerous activity. When the wagons could not get forward because of the mud, a canvas carrier holding two or four rounds could be carried on a man's shoulders, and canvas packs carrying eight rounds were available for horse or mule transport. Later in the war, light rail lines were frequently laid to or near the gun positions, but they needed continual maintenance and repair.



*Pack horses taking up ammunition to guns of 20th Battery, CFA, Neuville St. Vaast, April 1917.
LAC PA-001229.*

After the First World War



The beginnings of mechanization. 1 RCHA in Petawawa in 1936. Although trucks have replaced horses, the guns are still on their wooden wheels, but with solid rubber tires on the steel rims. This still limited the towing speed of the guns to about that of a horse. Courtesy Jack Holt

At the end of the war, Canada chose the 18-pounder as its standard field gun for both the horse and field artillery, effectively eliminating the horse artillery's 13-pounder. As had been agreed in 1915, the British government supplied 208 replacement 18-pounders and 64 4.5-inch howitzers for the orders that had been diverted to the War Office. Apparently, the guns taken overseas from Canada were just a contribution to the war effort, although some mortars, heavy guns, and howitzers also came to Canada after the war. Sorting out the financial side of the affair kept the accountants happy for years. By November 1921, there were 208 "new" 18-pounder Mk II guns on Mk II carriages, and 45 "old" Mk II guns on Mk I carriages in Canada (a report in 1930 noted only 25 Mk I carriages). The old guns were those with the hydro-spring recoil mechanisms that never left Canada or had come from Bethlehem Steel during the war. Most of them were unserviceable or suitable only for drill, saluting, or use as a time gun.

In Canada, after the war, because of the distances involved, the field artillery essentially reverted to semi-independent batteries, although they were officially associated with brigades and sometimes trained together during summer concentrations. The batteries were equipped with two or four guns each, depending on the location, the actual personnel strength of the battery, and the availability of the guns. Until the late 1930s, the guns remained horse-drawn.

As usual, the government largely neglected the armed forces after the war. A report to the Chief of the General Staff in 1927 noted that 74 batteries of 18-pounders had been authorized in 1920, which required 302 guns. Only 208 Mk II guns were available (the Mk I guns were noted as being obsolete since early in the First World War), leaving a deficiency of 94 guns. On the other hand, only three 6-gun RCHA batteries and 63

Militia 4-gun field batteries had been organized, so the immediate shortfall was considerably less, about twelve guns. This included eight guns that were kept at Camp Petawawa for training purposes. More seriously, a report to the Minister of National Defence in 1930 noted that the Mk II carriage had been considered obsolescent since the war because of its limited range. No action was taken.

Also, the quantity of ammunition available for training steadily eroded. In 1930, to meet the basic war reserve requirement of 1,000 rounds per gun, 231,000 rounds of 18-pounder ammunition (of all natures) were required, but only 105,874 rounds were available, and some of those needed to be refurbished before they could be used. This did not include the ammunition that was required for annual training, which would further eat into the reserve. The funds allocated to the Dominion Arsenal at Québec for the annual production of gun ammunition (for calibres less than the 4.5-inch howitzer) was \$38,312, whereas the cost of the ammunition used annually for training was \$257,982. Furthermore, the Arsenal was unable to manufacture all the parts needed to build an 18-pounder round, and had to procure the missing components overseas. As usual, the politicians ignored the problem.

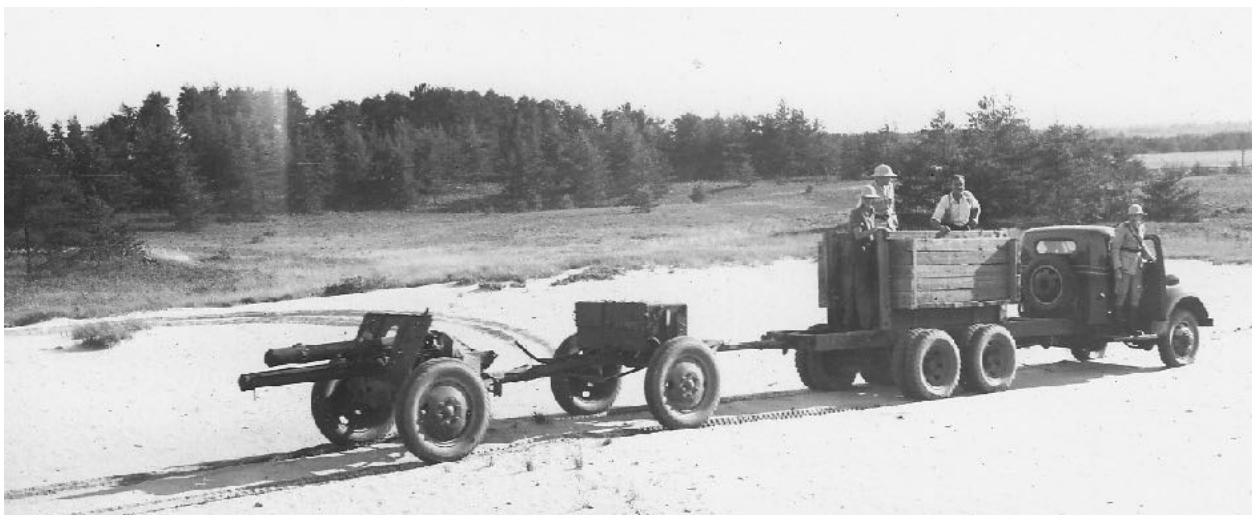
In 1933, National Defence Headquarters carried out a census in which every unit had to report their holdings of artillery and vehicles, by registration number. The microfilm copy of the report at the Library and Archives Canada (microfilm reel number C-8252, file number 46-1-14) is poor quality, but the report is an outstanding reference to the artillery in the Canadian Army at the time. Note however, that the list does contain some errors and omissions (for example, the 18-pounder that lives at the Canadian War Museum today is not on the list) and the poor quality of the microfilm is a problem.

The 18-pounders in Canada had few technical changes or updates during the interwar period although, as recounted below, about 200 carriages were modified for pneumatic tires in the late 1930s, and most of the rest were converted to wooden wheels with solid rubber tires about 1941, so they could be towed by a truck, albeit slowly.

In 1936, the Chief of the General Staff (CGS) advised the Minister that the 18-pounders in the Canadian Army were definitely obsolete. They had been designed only for towing by horses. The old Mk II carriage with the pole trail limited its maximum elevation to 16°, which in turn restricted its range to 3,000 yards (2,740 m) less than the contemporary British 18-pounders on more modern carriages. Also, the Canadian guns could not be modified to the current British design. With these limitations, the guns would be unable to effectively support troops in battle and would be useless for counter-battery work.

There was no question of using non-British equipment. Canadian Army policy was to use British doctrine and equipment, tempered with the proviso that the equipment should be manufactured in Canada whenever possible. The CGS noted that the British had developed a new gun (the 25-pounder), which had completely tied up their production to the extent that purchasing 25-pounders from Britain would be unlikely for about six years. He recommended that a gun factory be built in Canada to manufacture the 25-pounder and other artillery. This was followed up and eventually became Sorel Industries, Limited, during the Second World War.

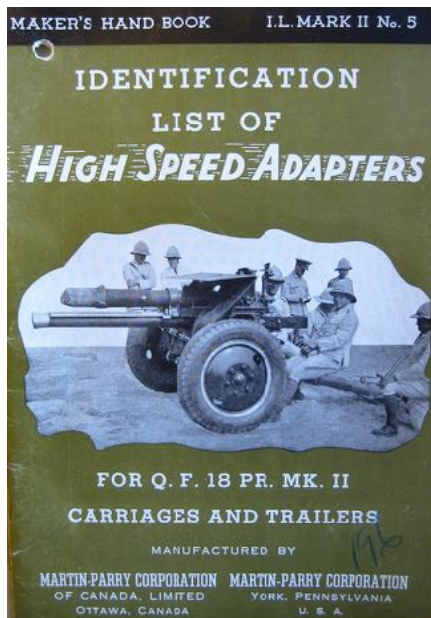
Mechanizing the 18-pounder



Mechanization trials, 1938. The guns and limbers have been fitted with pneumatic tires, but trials continue with a variety of towing vehicles and fittings. Courtesy George Beecroft

In March 1937, nothing could be done about the lack of range, but the mobility of the 18-pounder could be improved. Although the artillery was beginning to convert from horses to trucks, the towing speed was still limited by the wooden wheels of the gun and limber. In the early 1930s, some of the wooden wheels on the guns had been modified by adding solid rubber tires to their steel rims, but these provided no significant cushioning, and road shocks were still directly transmitted to the carriage. The severity of the shocks increased at higher speeds and, to prevent damage to the gun when it was being towed by a truck, the maximum speed was restricted to that of a moving horse. However, if the wheels and hubs on the 18-pounder were replaced with pneumatic tires on modern steel rims, this would allow the gun to be towed at the normal speed of the truck. Since the British Army no longer used the Mk II carriage, the loss of standardization between the armies would not be a factor.

In the United States, the Martin-Perry Company had successfully installed pneumatic tires on the American 75-mm M1917 field gun, and the company was approached to see if they could do the same for the 18-pounder. DND provided drawings of the gun carriage and limber, and the company produced a design for a conversion kit based on standard commercial 7.50 x 24 truck tires. The height of the carriage above the ground remained the same, and the design minimized changes to existing brackets and attachments on the carriage. For a production run of 50 guns and limbers, the estimated cost was \$550 per gun and \$500 per limber.



DND was reluctant to proceed with a contract for the full quantity of 208 carriages without testing a prototype, but steel and rubber prices were steadily rising, and the estimated cost to produce a prototype, test it, follow up with a small production run for design confirmation, and then produce the entire batch was much higher than a single contract to modify all the guns. Martin-Perry were very cooperative and agreed to carry out as much manufacturing as possible in Canada. To the extent that it was feasible, they agreed to have the parts machined in Canada, and to have the brakes manufactured by Ford of Canada. They would purchase the tires and rims in Canada, and would investigate having the final assembly and painting carried out in Canada. They did insist on manufacturing twelve complete sets in their American factory, in order to confirm production procedures and establish the necessary quality control standards. On 17 May 1937, the Canadian government let a contract

to Martin-Perry to produce adapter sets for 200 gun carriages at a cost of \$463 each, and 200 limbers at \$441 each. A contract was signed with the Ottawa Car Manufacturing Company on 6 May 1937 to carry out the assembly and final painting of the adapters.

A steel-tired 18-pounder gun carriage (#871) from the Royal Military College and a No. 6 Ammunition Wagon (#23199) from Ordnance stock in Kingston were shipped to Martin-Perry as design samples on 18 May 1937. The company then ordered the wheel rims, casings, tubes, and tires from Canada, and manufactured ten sets of adapter kits. When one gun was modified at Petawawa in late August, tests revealed that, when using a gun with pneumatic tires that was connected to a limber with rubber-rimmed wooden wheels (No. 104R wheel), the combination swayed badly from side to side, and could not be safely towed at speeds of more than 25 mph (40 kph). However, by hooking the gun directly to the truck, it could be towed at 45 mph (65 kph). It was anticipated that the problem would be significantly less if both gun and limber had pneumatic tires.

The first field installation of the pneumatic tire kits was carried out by RCOC artificers in Kingston in early November 1937. Two carriages and two No. 6 Trailers were converted, and then driven through a road and cross-country test course. A report in early December noted that both the conversion process and live firing trials had been successful. The mechanization project was expected to be completed within the month. The upgraded carriage was designated as the Mk IIP.

The Second World War and Retirement



An 18-pounder being used in training in Canada during the Second World War. The gun tractor is a Canadian Military Pattern Field Artillery Tractor, which became the standard towing vehicle for all field guns, starting about 1941. Both the limber and gun have commercial pattern pneumatic tires based on the mechanization standard. LAC 2282983

By 1939, the British 25-pounder was in production and the 18-pounder was considered obsolete. Nevertheless, it would be two years before the first Canadian 25-pounder would roll off the line at Sorel, Québec, and the 18-pounder would have to soldier on. In May 1939, there were 218 serviceable 18-pounders (of all Marks) in Canada. In addition to being used for training during the Second World War, the gun was used operationally to support the port examination service at Québec, Saint John, NB, and Point Atkinson at Vancouver. All ships entering a port in wartime were required to anchor outside the harbour. They were then boarded and examined to ensure that the ship was no threat to the port, and did not contain contraband. Small guns - 6-pounder Hotchkiss, 75-mm field guns, and 18-pounders - were installed at the ports to give a gentle reminder to ship's captains who might be uncertain about the procedures. If the ship persisted in ignoring the regulations, the 6-inch coast defence guns at the port were more than willing to drop a 100-pound shell "as close as necessary". Ten 18-pounders were installed in this role during the war.

The older Mk I carriages were never fitted with pneumatic tires. In 1941, 40 of these carriages remained (note the fluctuating numbers), four at the officer training centre in eastern Canada, nineteen at the artillery training centres, four in reserve, two at Valcartier for proofing ammunition, ten in operational roles at coast defence batteries, and the Kingston time gun. Of the guns mounted on the carriages, fifteen were condemned for various reasons, but could be used for gun drill, and the remaining 25 "had some life left". The army had kept the wooden spoked wheels with the steel rims and solid rubber pads (No. 104R wheels) that had been removed during the installation of the pneumatic tires. Early in the war, all the Mk I carriages, except those in the coast defence installations, were refitted with the old No. 104R wheels and were redesignated as 18-pounder Mk IR guns.

The 18-pounder was officially removed from active service in 1941, but remained in use in the reserves and a few coast defence positions for most of the rest of the war. On 4 June 1943, the Reserve Army still included 28 18-pounders on Mk IR carriages, and another 121 guns on Mk IIP carriages, although by then, the Sorel-manufactured 25-pounder gun had replaced the 18-pounder as the standard field gun in Canada.

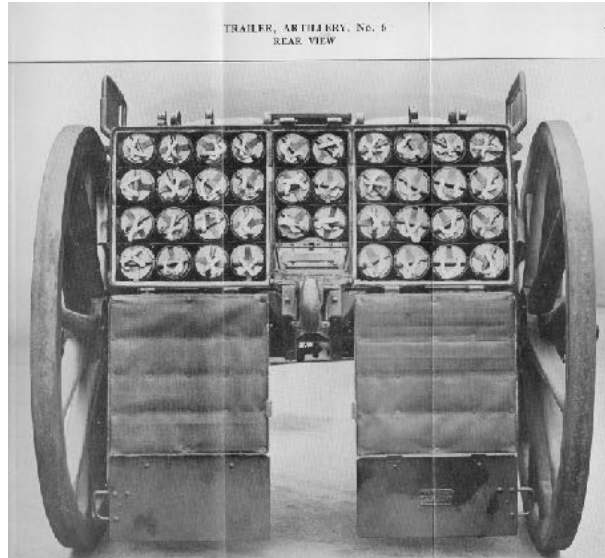
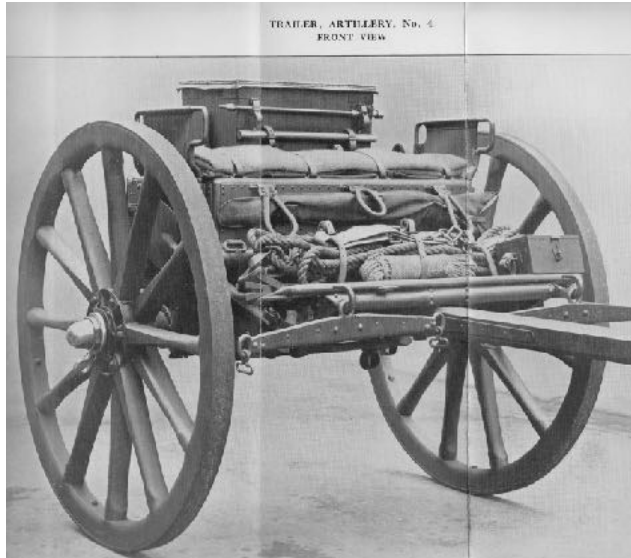


18-pounder in the coast defence role at Dufferin Battery, Saint John, NB during the Second World War. Ten 18-pounders were mounted for this purpose at various ports. LAC



18-pounder in training during the Second World War. The detachments are manually moving the limber and gun using drag ropes. From the layout and the spectators, it appears to be a competition. Milart Archives

18-pounder Limbers and Trailers



18-pounder Artillery Trailers no. 4 and No. 6. Note the detailed loading plan to ensure that the proper weight was placed on the shoulders of the wheel horse. Handbook.

The gun limber was an essential part of the 18-pounder system. The weight of the trail could not be carried directly by the horses, and needed to be supported on wheels while it was being towed. The limber was a two-wheeled cart, which had a pole at the front for harnessing the two horses closest to the vehicle, and a hook at the rear for supporting the gun trail. Together, the gun and limber formed an extremely manoeuvrable four-wheeled cart. In addition, each gun in the battery was supported by two “ammunition limbers”, each of which towed a two-wheeled “ammunition wagon” to carry extra ammunition and tools. The principle was the same - the ammunition wagon hooked into the ammunition limber to form a four-wheeled wagon. In Canada, in peacetime, each gun was supported by only one ammunition limber/wagon combination. The six vehicles had common names that described their operational role:

- The “gun limber” towed the gun.
- The “gun ammunition limber” and “gun ammunition wagon” was closely associated with an individual gun, and manned by members of the gun detachment.
- The “first line ammunition limber” and “first line ammunition wagon” was identical to the gun ammunition limber and ammunition wagon and was manned by members of the gun detachment. However, it was considered a battery resource and was normally kept in the wagon lines that were located to the rear of the battery under the command of the battery captain (battery second-in-command). Although the battery had one first line limber/wagon for each gun, the first line wagons could resupply any gun in the battery.

Before mechanization, the 18-pounder and its limber were pulled by a team of six “light draught” horses, harnessed as lead, centre, and wheel pairs. The British army separated its horses into categories, and a light draught horse was 62 - 64 inches high (1.57 - 1.63 metres) and weighed up to 1,200 pounds (544 kg). A driver rode on the left horse of each pair. With a loaded limber, the weight behind the team was 4,529 lb

(2,054 kg). For horse-drawn guns, weight and balance were extremely important. All the ammunition, tools, and stores were weighed, and assigned a specific location in the limber. Any weights that could not be controlled, such as the gunners riding on the limber, were placed directly over the axle. The entire ensemble was balanced so that the weight on the pole to which the horses were harnessed exerted only a few pounds load on the horse's shoulder. The ammunition limber/wagon combination was also pulled by six horses. When the gun and limber were mechanized, the weight increased to 5,972 lb (2,709 kg) with a fully-loaded limber, although this was then much less critical.

During its long life, the 18-pounder was associated with several versions of two-wheeled limbers, which were renamed "artillery trailers" after the First World War. The original horse-drawn gun limber (later No. 4 Trailer) had wooden wheels with steel tires (rims). It could carry 24 rounds of ammunition, and weighed 1,708 lb (775 kg) fully loaded. (None of the weights noted here include the gunners and their personal equipment, which were not controllable and were excluded from the official weights. On the other hand, the gunners could dismount and walk, lightening the load.) Properly loaded, this placed about 24 to 28 pounds (10 to 12 kg) weight on the end of the pole. A variant, the No. 4A Trailer could be used only as the limber for the 18-pounder Mk I gun carriage. It had wooden wheels with steel rims, was towed by a truck (had a towing eye in place of the pole), and weighed 1,725 lb (782 kg).

In Canada, the original 18-pounder ammunition limber (later No. 6 Trailer) was horse-drawn, had wooden wheels with steel rims, and could carry 38 rounds of ammunition and other small tools and stores. The fully loaded trailer weighed 2,128 lb (965 kg). Its companion, the original 18-pounder ammunition wagon (later No. 9 Trailer) had wooden wheels with steel rims, was horse-drawn, carried 38 rounds of ammunition, and weighed 2,229 lb (1,011 kg). After mechanization, it was replaced by the No. 7 Mk IP Trailer (see below).

The No. 7 Trailer was a No. 6 Trailer that had been modified by adding solid rubber tires to the steel rims on the wooden wheels, and replacing the pole with a post ending in a towing eye for a truck. It could be used as either the gun limber or ammunition limber. It weighed 2,275 lb (1,033 kg). When the 18-pounder was converted to pneumatic tires, 200 No. 7 Trailers were also converted and renamed the No. 7 Mk IP Trailers.

As noted above, each horse-drawn 18-pounder theoretically had a gun limber, two ammunition limbers, and two ammunition wagons. In Canada, the reality was a gun limber (No. 4 Trailer with a pole), ammunition limber (No. 6 Trailer with a pole), and ammunition wagon (No. 9 Trailer with a towing eye to connect to the limber). When the guns were fitted with pneumatic tires and trucks replaced the horses, the harness pole was no longer needed. Then, there was no reason to differentiate between the limbers and ammunition wagons, since all of them were fitted with a towing eye for connecting to either the truck or the ammunition limber. Each gun was then theoretically accompanied by three No. 7 Mk IP Trailers. However, for financial reasons, only the gun limbers were converted to pneumatic tires. The ammunition limber/trailer combination remained horse-drawn.

The Gun Detachment



A posed photo of an 18-pounder detachment in the 1930s. From the left: No.1 (sergeant), No. 5 (ammunition supply), No 4 (loader), No 3 (gun layer - the sight can be seen to the right of his head), and No. 2 (close to the gun shield). The man kneeling at the right rear of the trail is probably another ammunition number). The other ammunition numbers would not have been needed during peacetime training. Private collection

An 18-pounder battery consisted of two or three two-gun sections, depending if the battery had four or six guns. Each section was commanded by a lieutenant or sub-lieutenant. A single 18-pounder gun was known as a sub-section, and was manned by a gun detachment (artillery gun crews are called “detachments”). The detachment consisted of ten men (not including the drivers). There were six “working” gunners, three “reserve” gunners, and a “coverer”. Each man was assigned a number that defined his duties, although the members of the detachment were normally cross-trained to be able to carry out the duties of any gun number (except No. 1, who was a senior non-commissioned officer).

No. 1, normally a sergeant, was the detachment commander. He was responsible for all operations of the gun and the men in the detachment. He was also responsible for the basic maintenance and servicing of the gun. When moving, No. 1 was mounted on a horse.

No. 2 opened and closed the breech and set the range by elevating and depressing the barrel. When limbering and unlimbering the gun, he was responsible for the lower shield, gun brake, cradle clamp, elevating gears, muzzle and breech covers, and the right gun wheel. He rode on the gun limber.

No. 3 laid the gun for line (bearing) and fired the gun. When limbering and unlimbering, he assisted No. 2 and was responsible for the upper gun shield and the left gun wheel. He rode on the gun limber.

No. 4 loaded the gun, and planted the aiming posts (for sighting) as directed by No. 3. When limbering and unlimbering, and on the march, he operated the wagon brake. No. 4 rode on the gun ammunition wagon.

Nos. 5 and 6 prepared ammunition (unpacked the round or removed it from the wagon, removed the cartridge clip, removed the fuze cap, set the fuze, and passed the prepared round to No. 4). When limbering and unlimbering, they hooked and unhooked the ammunition wagon. No. 6 also operated the fuze indicator. No. 5 and No. 6 rode on the gun ammunition wagon limber.

Nos. 7, 8, and 9 remained in the wagon lines and assisted in supplying the ammunition. They were also available to replace casualties. No. 7 and No. 8 rode on the first line (battery reserve) ammunition limber, while No. 9 rode on the first line ammunition wagon.

No. 10, called the "Coverer", was normally a bombardier (equivalent to a corporal in other Corps) and was the detachment second-in-command. He was in charge of the gun ammunition wagon, and in action remained in the wagon lines in charge of the teams and wagons of the subsection. The Coverer was mounted on a horse.

When the 18-pounder was converted to pneumatic tires and truck-towed, most of the detachment rode in the truck.



18-pounder participating in trials of the small box girder bridge in Petawawa in late 1930s. The gun and limber have been converted to pneumatic tires. Milart Archives

Battery Operations

Before the First World War, artillery doctrine was promulgated in the Field Artillery Training handbook, which was updated approximately every two years (a copy of the 1914 edition is available on the Internet). About 400 pages long, it detailed every procedure that the artillery carried out. The following is a very brief summary of battery operations.

The battery (four or six guns) was considered a “fire unit” and normally operated together. It was commanded by a major, who was responsible for all aspects of the battery’s training and operations. He also served as the battery observation post. The battery captain was the second-in-command, and commanded the wagon lines and was responsible for the supply of ammunition to and within the battery. Each two-gun section was commanded by a lieutenant or second lieutenant. Sections could operate independently, but this was not a normal procedure.

The battery could engage a target using direct fire or indirect fire. In direct fire, the target could be seen from the guns and the section commanders pointed out the target to the detachment commanders, who then laid their guns independently on the target using the open sights or telescope on the gun. If the target was large, the guns could have different aiming points, resulting in dispersion of fire.

Direct fire was the normal procedure up to the Boer War, when Boer riflemen demonstrated that operating artillery in the open was no longer feasible. In 1906, the Field Artillery Training handbook stated that indirect fire would henceforth be the normal method of engaging targets in the field. When using indirect fire, the gun is normally behind some form of cover and the target cannot be seen from the gun. In its simplest form, to lay the gun, two aiming posts would be placed in front of the gun in line with the target, and the gunner would then lay his telescope on the aiming posts. However, since each gun sergeant planted his posts independently, this did not necessarily result in all the guns in the battery pointing in the same direction. This procedure changed with the introduction of the dial sight, which was capable of using an aiming point in any direction, and no longer depended on the direction that the barrel was pointing.

In order to allow the battery to operate as a unit, the gun barrels had to all be pointing in the same direction. To achieve this, an optical instrument called a “director” was used. This was a simple telescope, mounted on a tripod, capable of being rotated in a 360° circle. When the battery arrived in a new gun position, the director was set up and oriented such that the scale on the director read zero in the direction of the “zero line”. The zero line, also known as the “centre of arc”, was the basic direction in which the guns would be aimed, and represented the centre line of the assigned arc of fire. The director could be oriented by using a compass, or more rarely, by laying the director on an object whose exact bearing and location had been established by surveying.

When the guns arrived, they would be pulled onto the gun position with their barrels pointing roughly on the zero line. The director (being set to zero on the zero line) would then measure the angle from the director to the individual gun sight, and pass a “back angle” (the observed angle plus or minus 180°) to the gun. The back angle was calculated at the director, so the gun layer did not have to do any calculations at the gun. At the gun, the sights were calibrated so that zero represented being parallel with

the barrel. The gunner set the back angle on his sight and then traversed the gun until he could lay on the director as an aiming point. The gun was then pointed on the zero line. The director operator would repeat the procedure with the other guns in the battery, until they were all aligned with the zero line and therefore parallel. Without moving the barrel, the guns would then set out their aiming posts or lay the sight on a distant object. Henceforth, ordering the same bearing of fire to all guns in the battery would theoretically result in a pattern of shells on the ground that was the exact pattern of the battery layout, although in reality, other ballistic factors conspired against this distribution. Deliberate minor corrections could be applied to the individual guns to concentrate the fire of the battery on a point, or to align the impacts into a straight line for a barrage.

The battery commander was normally the observation officer. He would be located in a suitable location to see the target, and would pass fire orders to the guns by voice, semaphore, or telephone. He had one or two range takers or assistants with him, as well as an optical rangefinder, although with experience, the observer rarely needed the rangefinder. The battery location was known and the observer could estimate the location of the target from a map. Using trigonometry, the bearing and distance of the target from the guns could be calculated, and translated into direction and range data that could be set on the guns.

Range was the simpler of the two. The range to the target was calculated using trigonometry and this could be translated into a barrel elevation by using a firing table. The elevation was applied to the gun using a clinometer, which was a simple device that used a spirit level to measure the angle between the horizontal and the angle of the barrel. Each gun barrel had a machined surface exactly aligned with the bore on which the clinometer could be placed. Later, "range dials" were attached to the gun, so the range (in yards) could be directly set on the dial, and the gun elevated or depressed until a bubble settled between two lines on the dial, which was the correct elevation for the range.

Laying for bearing (direction) was more complicated. Once the gun had been aligned with its barrel pointed on the centre of arc, or zero line, and the gun layer had set out his aiming posts, then the gun could be laid on any required bearing by ordering a right or left correction relative to the zero line. The correction would be applied to the sight, which moved the sight away from the aiming point, and the gun was then traversed until the sight was realigned with the aiming posts. The barrel was then aimed on the new bearing.

One gun in the battery would then fire a ranging shot. The observer would estimate the distance between the shot impact and the target and calculate a correction which would be passed to the guns. Depending on the skill of the observer, this would be repeated until the ranging gun hit the target, whereupon all guns in the battery would engage the target using the data from the ranging gun.

Detailed procedures for all aspects of gunnery were laid down in the Field Artillery Training handbook. Although equipment has changed in the last century, the general procedures for engaging a target in 1914 remain valid today.

Moving the 18-pounder



1 RCHA gun detachment in Camp Petawawa during the early 1930s. Unlike the field artillery, the complete horse artillery detachment was mounted and did not ride on the limbers or ammunition wagons. The detachment is missing two ammunition numbers.

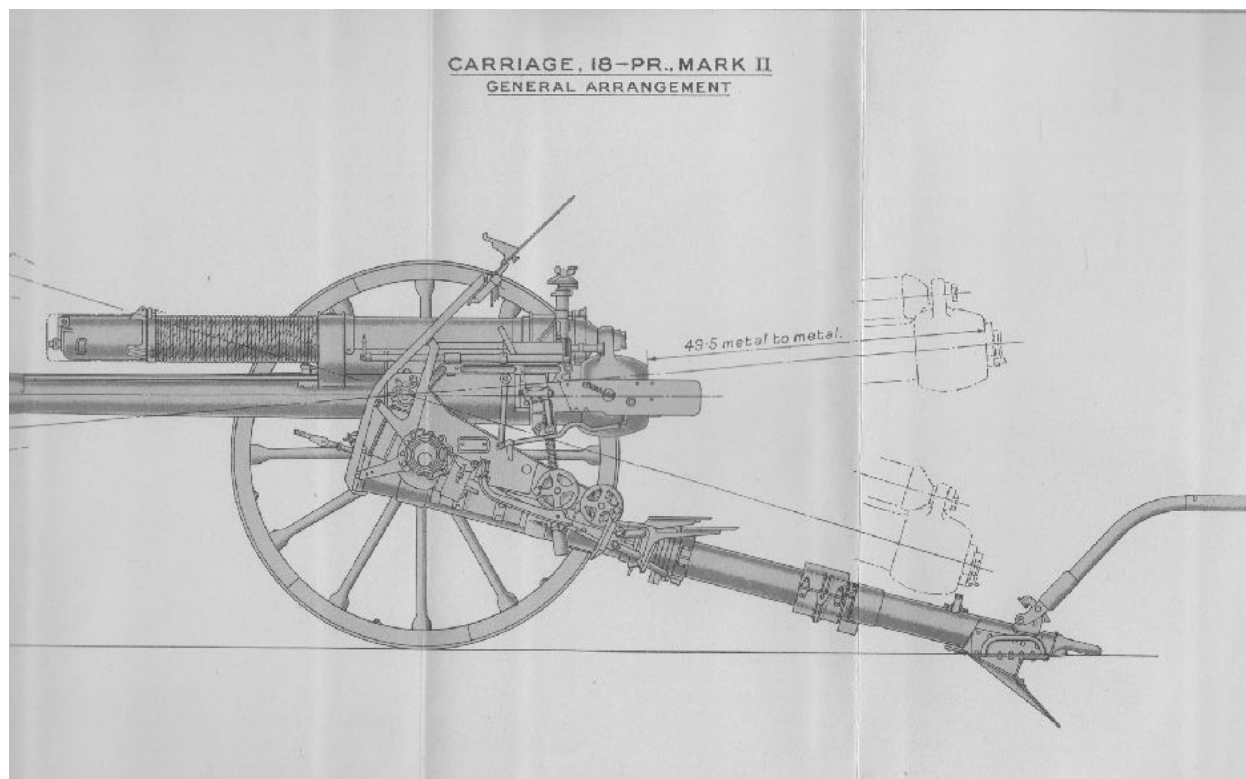
For most of its service life, the 18-pounder was pulled by a team of six horses. Horses were harnessed in three pairs, lead, centre, and wheel, with a driver mounted on the left horse of each pair. This gave better control of the team than if a single driver sat on the limber and tried to control the team from there (stagecoach style). The lead driver was responsible for the direction of travel and the speed. The other two drivers had to keep the traces tight and follow his lead. The traces were the straps connecting the breast collar on each horse to the limber. If they were not kept tight, then the work would not be evenly distributed between the horses. The position of a horse in the team was changed frequently, to keep the team fit. For example, the back muscles of the horses without riders would tend to weaken if the horses were never ridden. The drivers used the stock (the rigid part) of their whip to guide the right hand horse. It was used as an extension of the drivers hand on the horse's neck to keep it pulling and to give direction in a turn. It was seldom used as a punishment or goad.

To bring a harnessed gun into action, the team would move in front and to the side of the gun position, and then circle 180 degrees and stop on the gun platform with the gun aligned as closely as possible with the zero line. The gunners would then unhook the gun from the limber. As soon as the gun was free, the drivers would move the limber to the wagon lines at the rear of the battery, close enough to provide support, but far enough that the horse teams would not be startled by the firing, and sheltered from enemy fire if possible.

The gun ammunition wagon would then be moved into position on the left side and slightly to the rear of the gun. The wagon would be unhooked, and the ammunition limber and team moved off to the wagon lines. The initial supply of ammunition came from the ammunition wagon, not the gun limber.

The detachment commander had his own horse, and generally rode to the left of the lead driver. When the gun arrived on the gun position, detachment commander dismounted and gave the reins to the driver of the centre horse pair, who led it back to the wagon lines. The coverer also had his own horse, and remained mounted and led the gun and ammunition limbers to the wagon lines.

Technical Description



In the contemporary British terminology for a gun, the “ordnance” consisted of the barrel and breech mechanism. Ordnance could be quick-firing (QF) where the propellant was contained in a cartridge case, or breech loading (BL) where the propellant was contained in a cloth bag. Officially, guns with a bore diameter greater than four inches were listed by the size of the bore (e.g. 4.5-inch howitzer), although there were exceptions, such as the 60-pounder gun. If the bore diameter was less than four inches, the gun was described by the nominal weight of its primary projectile (e.g. 18-pounder). The official abbreviation for pounder was “pr”, not “pdr” and, as late as the Second World War, the files contain reminders to staff officers to use the proper terminology.

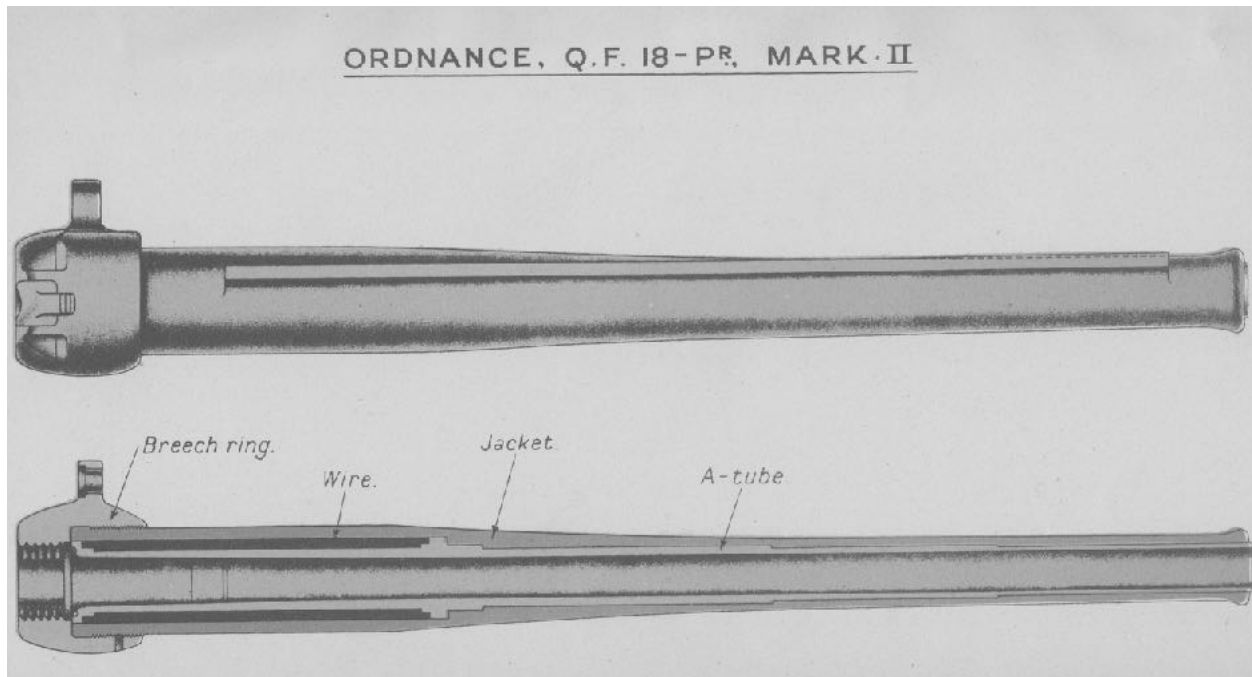
Some ordnance could be placed on several different carriages, so the carriage or mounting was described separately. So the full designation of the Mark I 18-pounder gun was the Ordnance, QF, 18-pr, Mark I on Carriage, Field, QF, 18-pr, Mk I.

The Ordnance

The original 18-pounder Mk I barrel consisted of a steel tube (the “A” tube) with parallel exterior surfaces, reinforced by wire that was tightly wound around the tube near the breech. This was covered by a full-length steel jacket. When the barrel was worn out or damaged, it could be returned to the factory. The jacket would be heated so that it expanded slightly, and the “A” tube was then removed and replaced by a new tube. Mk I guns that had their tubes replaced were redesignated as Mk I*. The 36 guns of the 1903 Order (#997 to #1032) were Mk I guns. The barrel had a calibre of 3.3 inches (83.8 mm), and a length of 97 inches (2.46 m). The chamber had a slight

taper to allow easy extraction of the spent cartridge case. The rifling had 18 grooves, with a modified plain section pattern, and a uniform twist of 1 turn in 30 calibres.

The Mk II barrel that entered production in 1906 was of similar construction, but the "A" tube had a slight taper on its exterior surface, so that the tube could be removed and a replacement tube inserted into the jacket using hydraulic pressure. All Canadian 18-pounders after the 1903 Order had Mk II barrels.



The breech mechanism had a single-motion mechanism that included a cartridge case extractor. A single pull on the breech locking lever unlocked the breech and swung the breech screw and carrier into the open loading position. After loading, a single push on the lever inserted the breech screw into the breech, and rotated it one quarter turn to the locked position. On firing, a percussion striker in the breech block ignited the primer and the cartridge case expanded and sealed the breech. The barrel and breech nominally weighed nine hundredweight (1,008 lb (457.2 kg)). This is based on the handbook average weight. Some references are slightly different.

The Carriage

As would be expected for a gun that was in service for more than 30 years, including a major war, there were several types of 18-pounder carriages. For each version, there were several manufacturers and, although theoretically the carriages were completely interchangeable, this was proven incorrect during the mechanization project in the late 1930s, when minor differences in manufacture came to light. None were insurmountable.

The Mark I Carriage was a two-wheeled structure with a single pole trail that allowed the gun to be elevated to sixteen degrees and depressed to minus five degrees when on level ground. The gun recoiled in a bronze cradle, which was fitted with a hydraulic buffer to absorb the recoil, and a set of springs to return the gun into firing position.

Seats were provided for the two gun layers and a shield protected the detachment from the front. Fittings allowed stores and equipment to be carried on the shield and trail.

The axletree provided the lateral support. It was connected to the trail by three brackets, and had hubs on either side to support the No. 45 wheels. The 56-inch (1.42 m) diameter wooden spoked wheels had steel rims and were fitted with parking brakes.

The trail was a hollow steel pole attached to the centre of the axletree. However, being on the centre line, as the gun was elevated, the breech eventually hit the trail. This prevented the barrel from being elevated higher than 16°, restricting the maximum range to 6,525 yd (5,970 m), although this could be increased by digging in the trail and tilting the entire gun upwards. The front of the trail could move laterally along the axletree to give 4° left and right on-carriage traverse. If more traverse was needed, the end of the trail was lifted with the handspike and the entire carriage turned.

The elevating mass (cradle, barrel, and recoil mechanism) was mounted in a saddle on the trail. A bronze cradle with steel trunnions supported the barrel and recoil mechanism. The cradle had an opening on the top for the hydraulic buffer and recuperator spring case, and on the bottom for the barrel and breech mechanism. The barrel jacket had two longitudinal rails, one on either side, which slid in two grooves in the cradle. A steel guard on the left side of the saddle protected the gun layer from the recoiling mass. The rear of the cradle could be clamped to the trail for travelling, easing the strain on the elevating gear. The traversing hand wheel was on the left and the elevating hand wheel on the right of the saddle.

The recoil energy was absorbed by a hydraulic buffer forcing oil through a narrow hole, and at the same time compressing two sets of concentric springs. There were four outer springs separated by packing rings and four inner springs, also separated by packing rings. When the recoil had stopped, the springs provided the energy to return the barrel into the firing position. This was known as a hydro-spring system. Each spring could be replaced individually, but correspondence from the Dominion Arsenal indicates that if one spring failed, most of the others also had to be replaced. The nominal length of recoil was 41 inches (104 cm). In addition, a spade on the end of the trail and brakes on the wheels helped prevent rearward motion of the carriage on firing. This lack of movement of the carriage allowed a greater consistency of laying, better accuracy, and faster firing than previous British guns. The weakness of the hydro-spring system and its replacement by a hydro-pneumatic system are discussed in the maintenance and repair section above. Both the Mk I and Mk II carriages had several variants, most of which were used by the Canadian Field Artillery (CFA) at one time or another.

The Mk I carriage had No. 45 wooden wheels with steel tires (rims), and a hydro-spring recoil system. The 100 18-pounders purchased by Canada before the First World War had the Mk I carriage, and the Ottawa Car Manufacturing Company also produced Mk I carriages during the war.

The Mk I* carriage was a Mk I carriage with the hydro-spring mechanism replaced by the hydro-pneumatic recoil system of the Mk II carriage. The Mk I** was a Mk I* modified with the Mk II carriage cradle as well as the hydro-pneumatic recoil system. The CFA probably used some Mk I* and Mk I** carriages in France.

The Mk IR carriage was a Mk I carriage with No. 104 Wheels. The No. 104 Wheel was effectively a No. 45 Wheel with a solid rubber tire bonded to the steel rim. As noted above, it was not really effective in converting the gun for vehicle towing. However, when the Mk II carriages were converted to pneumatic tires in the late 1930s, the No. 104 Wheels were placed in reserve and, during the Second World War, the remaining 40 Mk I carriages in Canada (except those in static coast defence positions) were converted to the Mk IR standard.

The Mk II carriage entered service in November 1916. It was similar to the Mk I, but had a longer cradle and incorporated a new recoil mechanism in which the spring recuperator was replaced by a compressed air buffer. The new “hydro-pneumatic” recoil system fitted into the existing spring housing, and the old hydro-spring system could be replaced with the new system in a field workshop. It still had the wooden wheels with steel tires (No. 45 Wheels). The 208 18-pounders that came to Canada after the First World War had Mk II carriages.

The Mk IIR carriage was a Mk II carriage with wooden wheels that had solid rubber tires bonded to the steel rims (No. 104 Wheels). Approximately 94 18-pounder carriages and limbers were modified with these wheels in the 1930s.

The Mk IIP carriage was a Mk II carriage modified with Martin-Perry steel rims and pneumatic tires starting in 1937 (see above).

The gun shield was bullet-proof steel, and was attached to the axletree. A port with a hinged shutter was provided for the direct fire sights. Brackets and fittings on the shield held the clinometer, sight boxes, tools, and drag ropes. Including the accessories, the weight in action was nominally 2,832 lb (1,285 kg). Different editions of the handbook give slightly different weights.

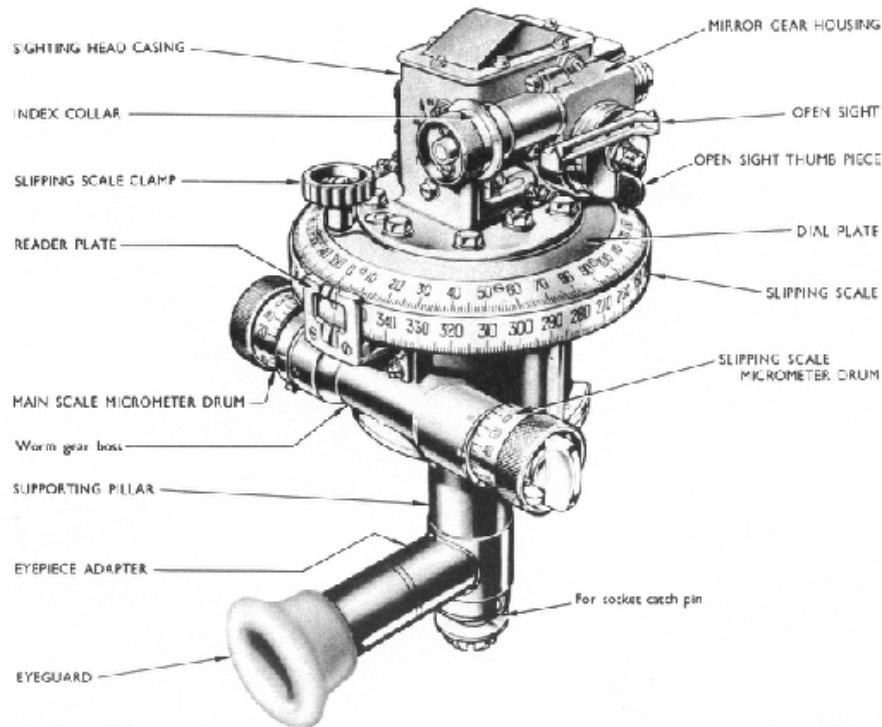
Sights

Unlike most 20th century British guns, the 18-pounder used a two-man laying system. The gun layer had a seat on the left of the cradle and laid for line (bearing). Initially, the gun used a rocking bar sight - essentially open sights with the option of using a No. 4 Telescope. The gun was laid directly on the target, or on aiming posts set out in a line with the target. The Royal Artillery adopted indirect fire as the normal method of laying in 1906, and the No. 3 Dial Sight, which incorporated a clinometer, was adopted for use, although the rocking bar and telescope were retained for direct fire. Indirect fire meant that the target could not be seen from the gun and the gun was laid using a separate aiming point. By 1914, the No. 7 Dial Sight, based on the German Goerz panoramic sight, had replaced the No. 3 Dial Sight. Its sight mount included a sight clinometer to correct for the angle of sight (the difference in height between the gun and the target). The No. 7 Dial Sight remained in service until the late 1950s.

The range setter sat on the right of the cradle and set the elevation (in yards) on a range scale connected to the elevation hand wheel. A Mk III Field Clinometer could also be used to set the elevation. In 1917, the 18-pounder was fitted with a new calibrating range scale. The measured muzzle velocity of the individual gun could be set on this scale, which then automatically corrected the elevation for the difference from the standard muzzle velocity, improving the accuracy of the gun. The maximum

range using the Mk II carriage was 6,500 yd (5,945 m), which was later increased to 7,200 yd (6,585 m) by using a streamlined shell.

THE DIAL SIGHT



Since the primary ammunition of the 18-pounder was shrapnel - at least until the First World War - the standard fuze was a time fuze, which had to be set to the required range before firing. A fuze indicator was issued to convert the ordered range into the corresponding setting for the No. 80 time and percussion fuze. The Mk I Fuze Indicator was a circular instrument with the range on the outer scale and the fuze setting on the inner scale. A small “corrector” scale allowed an offset to correct the fuze for the angle of sight (the small angle caused by the target being on higher or lower ground than the the gun). The Mk II Fuze Indicator was a linear sliding scale that could be attached to the gun shield during firing. It was removed while travelling.

Characteristics

Detachment: one NCO and nine gunners. Rate of fire: 20 rounds/minute for short periods; 4 rounds/minute sustained.

Calibre: 3.3 inches (83.8 mm).

Barrel length: 97 inches (2.46 m).

Rifling: 18 grooves, polygroove, with a modified plain section pattern, and a uniform twist of 1/30 calibres.

Breech mechanism: Welin screw with single-motion mechanism that included a cartridge case extractor. Obturation: cartridge case. Ignition: percussion striker.

Weight of gun and breech: 1,019 lb (462.2 kg).

Carriage: steel, two wheeled, hollow pole trailer.

Recoil mechanism: (Mk I) hydro-spring; (Mk II) hydro-pneumatic, with a nominal recoil of 41 inches (104 cm).

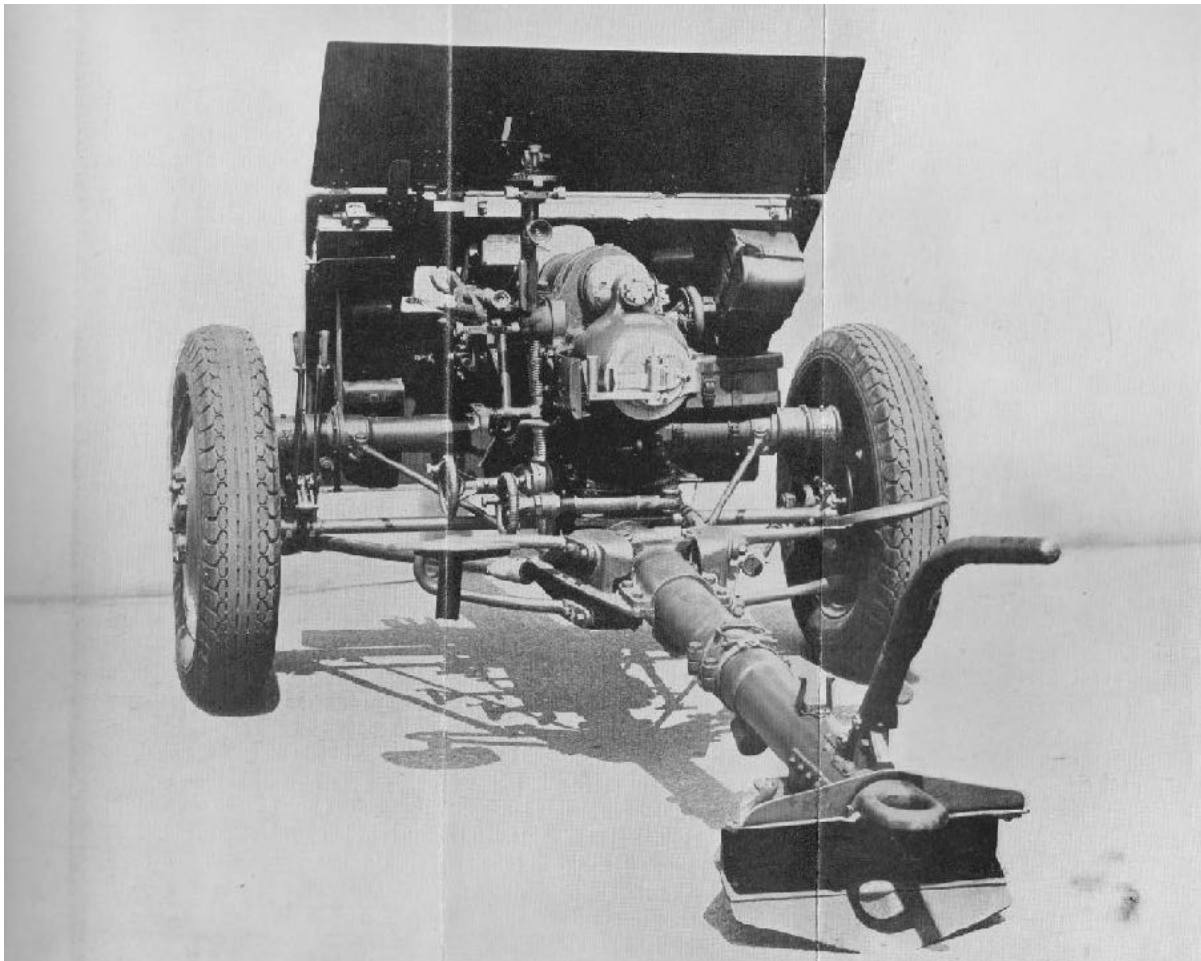
Elevation: -5° to $+16^{\circ}$. On-board Traverse: 4° left and right.

Sights: (direct fire): rocking bar sight with No. 4 telescope. (Indirect fire): No. 3 Dial Sight, later No. 7 or No. 7A Dial Sight. Elevation was set using a range scale.

Weight in action: (Mk II) 2,832 lb (1285 kg).

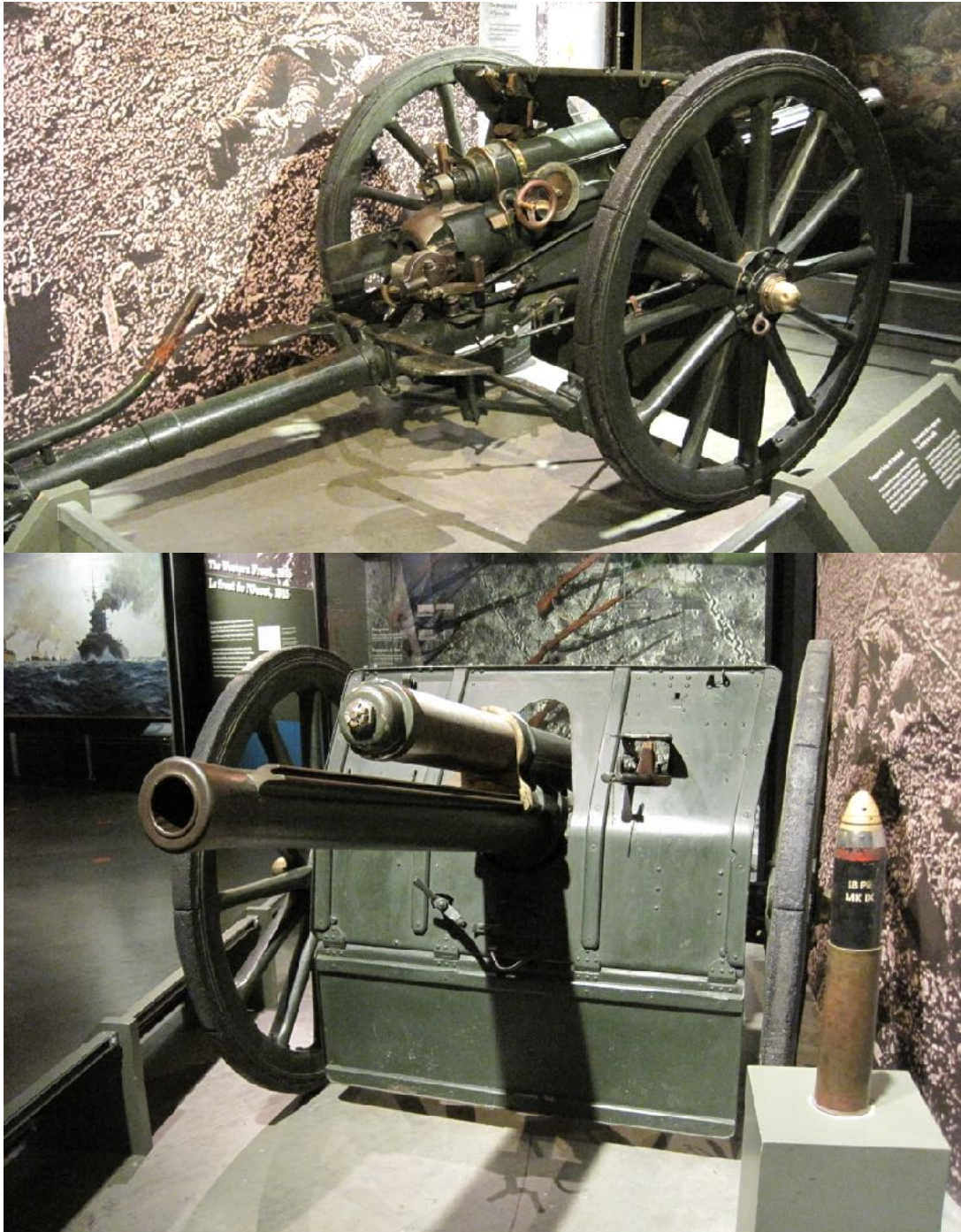
Maximum range: (Mk II carriage) 6,500 yd (5,945 m); 7,200 yd (6,585 m) with a streamlined shell.

Ammunition: fixed round. Brass cartridge case containing about 1.84 lb (838 gm) cordite (depending on the Mk). Projectiles: 18.5 lb (8.4 kg) shrapnel (300-350 balls), HE shell (flat base and streamlined), gas, star shell, and incendiary. After the First World War, armour piercing and bursting smoke (flat base and streamlined) were added. The Canadian War Museum has an experimental Yeates Chain Shot that was developed in the 1920s, probably to clear barbed wire. During handling, a metal clip was placed over the base of the casing to protect the primer, and the entire round was frequently placed in a fitted wicker basket.



Rear view of an 18-pounder Mk IIP gun. Handbook

History of the Canadian War Museum's 18-pounder



Front and side views of the 18-pounder in the Canadian War Museum. Author photograph

The Canadian War Museum has one of the few surviving 18-pounders in Canada. There is no official record of its arrival at the museum, nor does its Gun History Book (aka Memorandum of Examination) exist. However, research at the Library and Archives Canada, has allowed some of its history to be established.

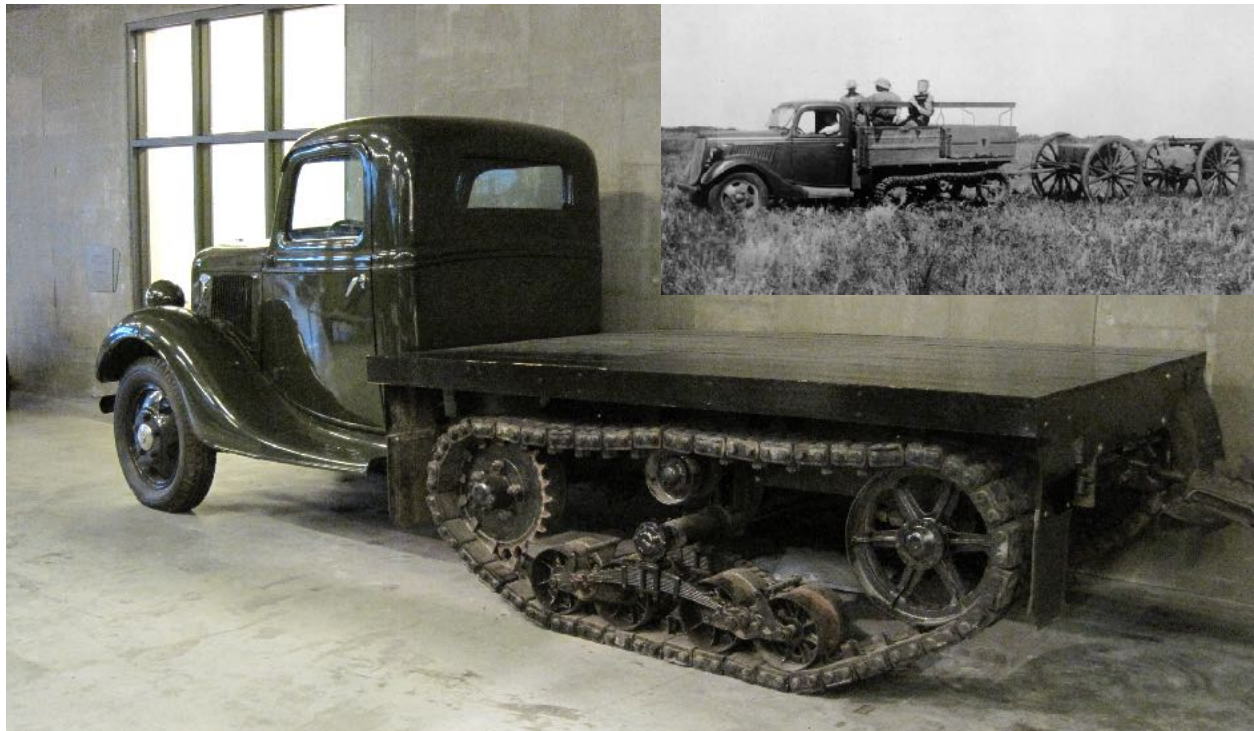
The barrel (registration number 3820) was sent to Canada in 1915 from Bethlehem Steel in the United States as a replacement for guns that had been worn out during ammunition testing at the Dominion Arsenal. Bethlehem Steel was manufacturing 18-pounders for the British Government, eventually producing 841 guns. There were two shipments to Canada in 1915, each consisting of six barrels, and at least one, and possibly two, other shipments later in the war. The CWM artefact was part of the first shipment. It arrived at Québec in August 1915, was immediately put into service, and was provisionally condemned (worn out) by November 1915. During this time, it was probably not mounted on the present carriage - the CWM carriage is not recorded as being at the Dominion Arsenal, although the Arsenal records are incomplete. Following the standard practice, the worn-out barrels at the Arsenal were then exchanged with serviceable barrels and the condemned barrels were sent to training batteries where they could still be used to teach gun drill and tactics, although they could not fire live ammunition. At some time after 1915, #3820 was transferred to the 67th (University of Toronto) Battery where, on 9 January 1918, it was recorded as being unserviceable, but available for training. The 67th Battery was formed on 29 March 1916 as the 67th Depot Battery and, on 17 October 1918, was merged with the 69th Depot Battery to form No. 2 Artillery Depot (Military District No. 2). On 16 October 1918, No. 67 Battery signed over their four 18-pounders (presumably including #3820) to No. 2 Artillery Depot, located at Exhibition Camp, Toronto. No. 2 Artillery Depot (Military District No. 2), was disbanded on 23 October 1920. There is no further record of the gun after the war and before its appearance at the museum. It does not appear in the Return of Ordnance in 1933. However, because its carriage has been fitted with rubber-tired wheels (see below), it probably did not come to the museum before the end of the Second World War.

The registration number of the breech screw on the museum 18-pounder is #281, and was manufactured in 1910 by Vickers, Sons, & Maxim, Ltd. The breech screw could be used interchangeably on both the 13-pounder and the 18-pounder guns. Registration number #281 is not associated with the 18-pounders delivered to Canada before the First World War. However, the 13-pounders delivered to Canada at that time were #258 to #281. All but three (#279, #281, and probably #276) were sent overseas in 1914 and none returned after the war. The remaining three were at RMC, Kingston, in 1933. One was sent to Aberdeen Proving Grounds in the US during the Second World War (probably #276) and 13-pounder #279, complete with its breech screw, is in the CWM today. The third gun - probably #281 - was in "poor condition" during the selection of a gun for Aberdeen, has no known location today, and may have been stripped and scrapped. It is probable that the breech screw on the museum 18-pounder is actually from the last of the original 13-pounders. It is unknown when the switch could have taken place. It could have been as early as 1915 at the arsenal, or as late as 1944 when 13-pounder #281 was probably scrapped. If the latter, this suggests that #3820 was in the Kingston area in the later years of the Second World War.

According to the data plate on the carriage, the CWM Mk I carriage (registration number C136) was manufactured in 1915 at the Ottawa Car Manufacturing Company. As noted above, OCM received a contract in 1912 to produce 36 18-pounder carriages. These began to appear in late 1914, and the contract was completed in 1915. OCM manufactured two groups of 18-pounder carriages, and C136 was probably the last of the 1912 order.

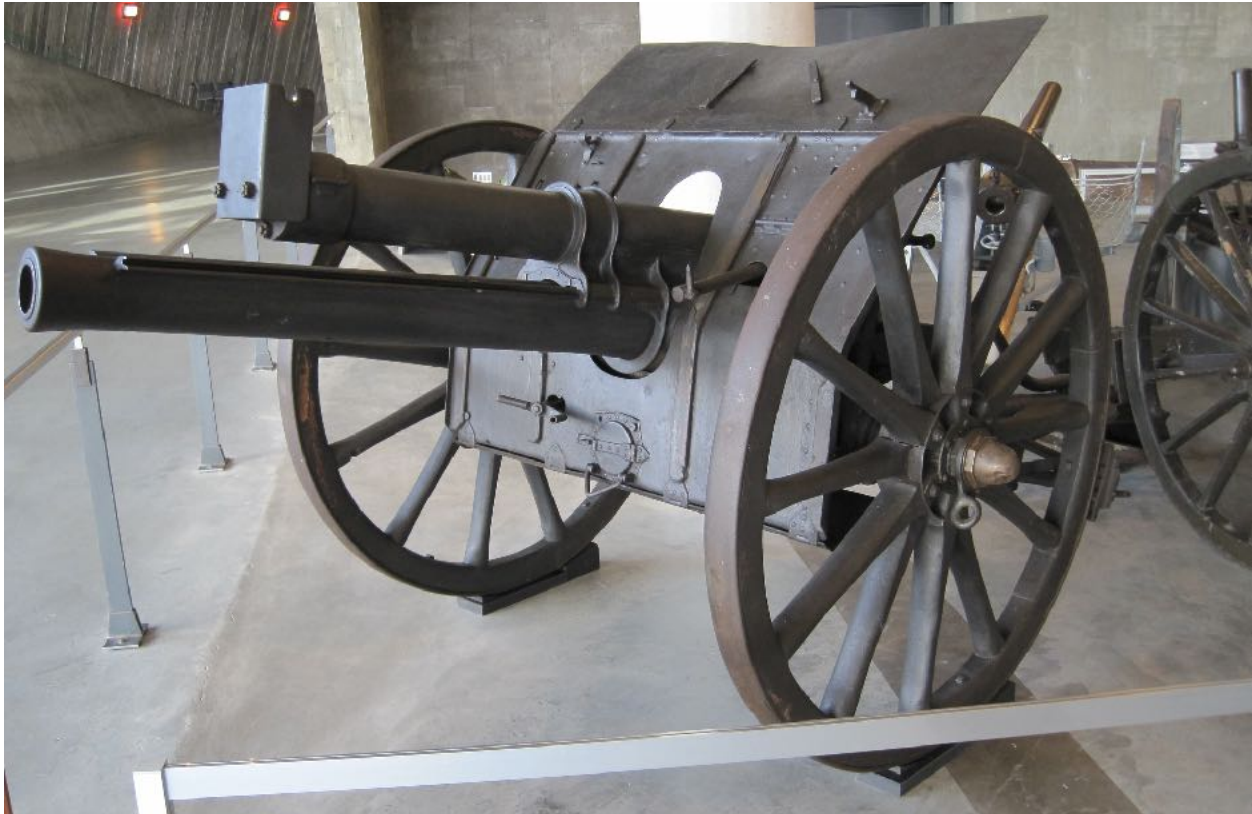
The retaining nut on the recoil mechanism, which is part of the carriage, has a later date (1916) than the carriage (1915). This suggests that the springs in the mechanism were changed/repaired at some time and a new nut was used. The Dominion Arsenal was always requesting new springs for their carriages, and although there is no evidence that C136 was at the Arsenal, its original springs may have been switched with broken ones when the worn-out barrel was installed.

The carriage has No. 104 wheels with wooden spokes and solid rubber tires on the steel rims. The conversion to solid rubber tires - used so that the gun could be towed by a truck rather than be horse-drawn - was applied to the old Mk I carriages only at the beginning of the Second World War. The Mk I carriages were not converted to pneumatic tires with the Mk II guns in 1938/39, but the conversion project freed up some solid rubber tired wheels that had previously been on the Mk II guns. These were then retrofitted to the Mk I carriages. This suggests that #3820 was still in service early in the Second World War, and therefore came to the museum after the war. Also, since the operational 18-pounders used in coast defence installations were not converted to rubber tires, the gun was not used in the coast defence role during the war.



A restored 2-ton Ford with a Cunningham halftrack conversion at the Canadian War Museum today. Four of the vehicles were used at Shilo, Manitoba, for mechanization trials in the late 1930s (inset - courtesy 15 Field Regiment Museum). Author photo.

Epilogue



*The gun that fired the last Canadian round of the First World War, #3106 on carriage #C42073, operated by 39th Battery, 10th Brigade, CFA, is on loan to the Canadian War Museum from Mons, Belgium. The box on the front of the recoil mechanism is the oil reservoir for the buffer.
Author photograph.*

After the Second World War, most of the 18-pounders were scrapped, and there are few survivors in Canada today. As noted above, gun is #3820 on OCM carriage #C136 is at the Canadian War Museum in Ottawa and is in reasonable condition. Also, the gun that fired the last Canadian round in the First World War is on temporary loan to the museum from Mons, Belgium.

The 18-pounder that was at CFB Wainwright, Alberta for many years (#9121 on carriage #C6544) is now in 15th Field Regiment in Vancouver, B.C, where restoration began in 2018. In 1933, gun #9121 was in the artillery department in the Royal Military College in Kingston on the carriage that was sent to Martin Perry as the prototype for the mechanization kits in 1937. However the gun was removed before the carriage was shipped to Martin Perry, and must have been placed on #C6544 (which was also at RMC in 1933) some time after that date.

An 18-pounder (#11449 on carriage #C6553) is in the 20th Independent Field Battery, RCA (Lethbridge), Lethbridge Military Museum. The museum acquired it from a private owner and it is not in good condition. In 1933, this gun was with the 66th Field Battery in Montreal, Québec, and is one of the guns that came to Canada after the First World War. It is still on its wooden spoked wheels. Another restored gun is reported to be in St. Catherines, Ontario, as part of a private collection.

Two guns are at the RCA Museum in Shilo, Manitoba. One is a Mk II gun with pneumatic tires, (VSM 1918, #8864 on carriage C16040). It arrived in Canada after the First World War and was in the ammunition proofing butts at Little River in 1933. The other (#7059 on carriage C14186) still has its spoked wheels with steel rims. It was in Brandon in the 59th Battery in 1933. Both are in excellent condition.



The 18-pr Mk IIP in the RCA Museum in Shilo, Manitoba, in 2019. Courtesy Clive Prothero-Brooks.

The gun in RA Park in Halifax, Nova Scotia (barrel #5452) is on carriage #6431, which was part of the original 1903 order, and is the oldest carriage in Canada. The trail is marked "No. 35, 1, VS&M 1906, Reg. No. 6431, DOC". The order was placed directly with Vickers, Sons & Maxim (VSM), and the carriage numbers assigned by VSM were probably 1-36. The British War Office then assigned official registration numbers to the carriages - in this case #6397 to #6432 inclusive. The "No. 35" is the 35th carriage (VSM) and corresponds to #6431 in the War Office sequence. The 1 indicates a Mk 1 carriage, which was manufactured in 1906. The gun also has a data plate that identifies the original gun, but the serial number has been painted out. It probably reflects the original gun barrel that was on the carriage. The contract records in the LAC state that the barrel numbers assigned by VSM were #8301 to #8336, or their War Office equivalents #997 to #1032. Assuming that the 35th barrel was on the 35th carriage, the gun number should have been VSM #8335 (WO #1031). The carriage was at the Dominion Arsenal during the First World War, and mounted many different guns, which were changed as they wore out in testing, but the original data plate was probably never updated. Barrel #1031 was condemned as worn out in August 1915 at

the Dominion Arsenal, and sent to Woolwich, England, for relining in October 1915. It is included in the Canadian Corps gun list in France in 1917, so presumably the barrel went to the Corps after relining. Its new carriage number is not recorded. Barrel #5452 was manufactured at Bethlehem Steel as part of the British order. It was sent to the Arsenal to help with the ammunition testing during the war - there were several shipments of guns from the American production line. In 1933, gun #5452 was on carriage #C182 at RA park, in Halifax. The carriage was produced by the Ottawa Car Manufacturing Company in late 1915 or early 1916. The gun must have been switched between carriages sometime during the Second World War.



18-pounder gun in RA Park in Halifax, Nova Scotia. This is the oldest carriage in Canada, being part of the 1903 Order. Courtesy Hal Skaarup.

The Royal Canadian Artillery used the 18-pounder gun for 36 years, from 1907 to 1943. It served as a field gun in Canada and overseas in the First World War, as a coast defence gun, and as a test platform for ammunition production. It straddled the horse-drawn and mechanized eras, and performed well in both. Apart from the early recoil mechanism problems, which were unforeseen and quickly solved, the gun was reliable. It was the second-longest serving field gun used by the Royal Canadian Artillery, exceeded only by the current 105-mm C1/C3 Howitzer. The 18-pounder Field Gun was well regarded by its gunners, and had a long and honourable career in Canadian Service.

Sources

The aim of this booklet was to produce a readable account of the career of the 18-pounder field gun, not a footnoted-to-death historical treatise. Large numbers of primary sources have survived, especially in the Library and Archives, Canada (LAC), and in the Canadian War Museum (CWM). The RCA Museum in Shilo also contains some references. Both the LAC and CWM indices are available on the Internet and are searchable. All the war diaries of the First World War artillery batteries are also on line and readily available. On the other hand, researchers at the LAC should search under all possible combinations, such as, 18-pdr, 18-pounder, 18-powder, 18-ponder, etc. In fairness to the LAC, the naming of the underlying files is not consistent, but the typos in the database are somewhat creative. Both the CWM and the LAC have copies of the handbooks for the 18-pounder in the different versions, as well as the ammunition handbooks. For highly technical details, including blueprints and drawings, the files from the Ordnance Workshops in the First World War are excellent.

Some of the relevant files at the LAC are (file names have been exactly copied from the LAC search engine):

- *Conversion in Canada of 18 Pr for Mechanized Units, 1937-1944.* RG24-C-1-a. Volume/box numbers: 6410 to 6411. File number: HQ-130-10-67.
- *18 Pdr QF Guns for 2nd Contingent, 1914-1915.* RG24-C-1-a. Volume/box number: 2523. File number: HQS-1615.
- *Guns - Strikers for 4.5" and 18-pdr's [pounders], 1915/11/10 - 1916/02/18.* RG 9 III-C-1. Volume/box number: 3879. File number: Folder 14, File 17.
- *Guns - Daily Reports on, 1916/03/15.* RG 9 III-C-4. Volume/box number: 4290. File number: Folder 3, file 3.
- *Guns and Howitzers - Range tables for, 1912/08/12.* RG 9 III-C-4. Volume/box number: 4313. File number: Folder 1, file 16.
- *Guns and Howitzers - Notes on care of and reports on, 1916/05/14-1916/07/21.* RG 9 III-C-4. Volume/box number: 4311. File number: Folder 3, file 3.
- *General - Field Howitzer Battery, 1916.* RG24-C-8. Volume/box number: 4484. File number: MD4-46-14-1.
- *Artillery, CEF, General, 1917-1920.* RG24-C-8. Volume/box number: 4483. File number: MD4-46-1-1.
- *Equipment, Lost, Division Artillery, 1914-1920.* File. RG 9 III-B-1. Volume/box number: 416. File number: E-32-1.
- *QF carriages fitted with Air Recuperators, 1914-1919.* RG24-C-6-k. Volume/box number: 21997. This box contains several handbooks
- *Workshop records from No. 81, No. 82, and No 83 Workshops Canadian Ordnance Corps, 1916-1918.* RG9 Series III C2. Volume/box numbers: 4587 to 4589. Many details of repairs to guns in the workshops, drawings, regulations and orders of procedures. Very detailed.

- *Guns and Howitzers, Lists of numbers of 18-Pr. Guns, 4.5" Howitzers and Gun and Howitzers carriages, Particulars of Guns Condemned, etc. 1917/06/25-1918/06/23.* RG 9 III-C-4. Volume/box number: 4276. File number: Folder 9.
- *Distribution of 18 Pr Guns and Equipment, 1940-1945.* RG24-C-1-a. Volume/box number: 5900. File number: HQ-46-27-4.
- *Sale of OCM Carriages.* RG2, Privy Council Office, Series A-1-a, Order in Council number: 1918-0924.
- *Guns and howitzers, replacement of, care and preservation of, demands for spare parts, sight clinometers fitted with bubbles treated with radium compound for 13 and 18 pdrs, 1915/10/01-1918/11/07.* RG 9 III-C-4. Volume/box number: 4245. File number: Folder 6, file 1.
- *Chief Inspector of Arms and Ammunition (Quebec) - Ref. 18 and 60 pounders with Bethlehem Steel Company. 1914/12/14-1915/12/31.* File. RG9-II-I-1. Volume/box number: 7. File number: 4-15-43.

Annex - Location of Royal Canadian Artillery 18-pounder Field Guns in 1933

This table is a snapshot of 18-pounder locations in 1933. It does not include the original guns purchased before the First World War, unless they were still in service in 1933. The list is known to have missing guns. The original microfilm is in poor condition, and the list may contain errors due to unintelligible text. Source: LAC Microfilm reel number C-8252; file number 46-1-14; *Description and distribution of guns and howitzers throughout Canada, 1908-1933*.

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
I	1010	VSM 06	I	C104	OCM 14	R22R	Québec
II	1090	VSM 11	I	C139	OCM 15	Ordnance	Kingston
II	1112	VSM 11	I	C114	OCM 14	1 Fd Bty	Ottawa
II	1121	VSM 11	II	C15853		51 Fd Bty	Ottawa
II	1124	VSM 11	I	C140	OCM 15	Ordnance	Toronto
II	1234	VSM 13	II	C868	WBC 18	Ordnance	Sarcee
II	1236	VSM 13	I	C156	OCM 15	HQ 1 Med Bde	Charlottetown
II	1237	VSM 13	I	C132	OCM 15	R22R	Québec
II	1238	VSM 14	I	C133	OCM 15	Ordnance	London
II	1240	VSM 14	I	C122	OCM 14	Ordnance	Toronto
II	1251	VSM 14	II	C875	WBC 18	Ordnance	Sarcee
II	1254	VSM 14	I	C127	OCM 15	Ordnance	London
II	1266	VSM 14	I	C181	OCM 15	Ordnance	Montreal
II	1333	VSM 17	II	C6570	VSM 17	12 Fd Bty	London
II	1631	EOC 18	II	C14193	VSM 17	28 Fd Bty	Newcastle
II	2146	VSM 16	II	C16935	WBC 17	11 Fd Bty	Hamilton
II	2434	VSM 15	II	C15876	WBC 17	83 Fd Bty	Stellarton NS
II	2999	EOC 15	II	C15656	EOC 18	17 Fd Bty	Winnipeg
II	3157	EOC 15	II	C15639	EOC 18	31 Fd Bty	Vancouver
II	3302	BSC 17	I	C64672	BSC 15	HQ 3 Med Bde	St. John
II	3385	EOC 18	II	C15749	EOC 18	10 Fd Bty	St Catherines

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	3501	BSC 17	I	C64665	BSC 15	HQ 3 Med Bde	St. John
II	3530	EOC 18	IIR	C16932	WBC 17	B Bty RCHA	Kingston
II	3572	WBC 15	II	C6551	VSM 17	17 Fd Bty	Winnipeg
II	3577	WBC 18	II	C15830	EOC 18	89 Fd Bty	Woodstock
II	3603	WBC 15	II	C15705	EOC 18	24 Fd Bty	Granby
II	3644	WBC 15	II	C16925	WBC 18	17 Fd Bty	Winnipeg
II	3755	BSC 15	II	C16924	WBC 18	15 Fd Bty	Toronto
II	3765	BSC 15	II	C15746	EOC 18	22 Fd Bty	Gleichen Alta
II	3817	BSC 15	I	C141	OCM 15	U of T COTC	Toronto
II	3819	BSC 15	I	C105	OCM 14	R22R	Québec
II	3820	BSC 15	I	C136	OCM 15		
II	3821	BSC 15	I	C130	OCM 15	Ordnance	Toronto
II	3824	BSC 15		Not mounted		Ordnance	Kingston
II	3881	BSC 15	I	C6415	VSM 03	HQ 3 Med Bde	St. John
II	3894	BSC 15	I	C126	OCM 15	Ordnance	Ottawa
II	3895	BSC 15	1	C124	OCM 15	Proof Butts	Little River
II	3896	BSC 15	I	C59531	WBC 16	HQ 3 Med Bde	St. John
II	3899	BSC 15	I	C137	OCM 15	R22R	Québec
II	3903	BSC 15		Not mounted		Ordnance	Kingston
II	3907	BSC 15		Not mounted		Military Camp	Petawawa
II	3909	BSC 15	I	C32517		Proof Butts	Little River
II	3911	BSC 15		Not mounted		Ordnance	Kingston
II	3945	VSM 18	IIR	C6544	VSM 17	A Bty RCHA	Kingston
II	3981	VSM 17	II	C15774	EOC 18	17 Fd Bty	Winnipeg

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	5304	BSC 16	I	C151	OCM 15	Ordnance	Ottawa
II	5312	BSC 16	I	C121	OCM 14	Ordnance	London
II	5344	BSC 16	I	C134	OCM 15	Ordnance	London
II	5347	BSC 16	I	C6431	VSM 06	Ordnance	Ottawa
II	5352	BSC 16	I	C128	OCM 15	Ordnance	Montreal
II	5380	EOC 16	II	C15729	EOC 18	40 Fd Bty	Hamilton
II	5452	BSC 16	I	C182	OCM 16	RA Park	Halifax
II	5454	BSC 16	I	C152	OCM 15	HQ 1 Med Bde	Charlottetown
II	5456	BSC 16	I	C161	OCM 15	Ordnance	Montreal
II	5548	BSC 16	II	C16033	EOC 18	34 Fd Bty	Belleville
II	5598	BSC 16	II	C15803	EOC 18	34 Fd Bty	Belleville
II	5612	BSC 16	I	C120	OCM 15	Ordnance	Montreal
II	5629	EOC 16	II	C16869	WBC 17	77 Fd Bty	Moose Jaw
II	5640	BSC 17	I	C131	OCM 15	Ordnance	Ottawa
II	5646	BSC 17	I	C149	OCM 15	RA Park	Halifax
II	5669	BSC 17	I	C54661	BSC 1?	RA Park	Halifax
II	5674	BSC 17	I	C160	OCM 15	88 Fd Bty	Dartmouth
II	5676	BSC 17	I	C165	OCM 15	88 Fd Bty	Dartmouth
II	5679	BSC 17	I	C153	OCM 15	HQ 1 Med Bde	Charlottetown
II	5682	BSC 17	I	C173	OCM 15	HQ 1 Med Bde	Charlottetown
II	5801	EOC 16	II	C6836	VSM 17	6 Fd Bty	Sydney
II	5833	VSM 18	II	C16042	EOC 18	57 Fd Bty	Québec
II	5878	BSC 17	I	C59539	WBC 16	RA Park	Halifax
II	5911	WBC 16	II	C16730	EOC 18	77 Fd Bty	Moose Jaw
II	6478	VSM 17	II	C14164	VSM 17	11 Fd Bty	Hamilton
II	6575		II	C877	WBC 18	4 Fd Bty	Peterborough
II	6616	VSM 17	IIR	C15779	EOC 18	Military Camp	Petawawa
II	6747	EOC 17	II	C14184	VSM 17	13 Fd Bty	Winnipeg

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	6772	VSM 18	II	C845	WBC 18	91 Fd Bty	Calgary
II	6856	VSM 18	II	C15336	EOC 18	82 Fd Bty	Gaspe
II	6868	EOC 18	II	C15666	EOC 18	86 Fd Bty	Antigonish NS
II	6920		II	C865	WBC 18	34 Fd Bty	Belleville
II	6967	EOC 18	II	C16813	WBC 17	19 Fd Bty	Winnipeg
II	7012	WBC 18	II	C14158	VSM 17	C Bty RCHA	Winnipeg
II	7013	WBC 18	II	C16814	WBC 17	5 Fd Bty	Montreal
II	7017	EOC 18	II	C15763	EOC 18	12 Fd Bty	London
II	7018	EOC 18	II	C14189	VSM 17	52 Fd Bty	Weymouth NS
II	7020	EOC 18	II	C15579	EOC 18	16 Fd Bty	Guelph
II	7024	EOC 18	II	C15651	EOC 18	91 Fd Bty	Calgary
II	7030	EOC 18	II	C14172	VSM 17	Military Camp	Petawawa
II	7034	EOC 18	II	C14188	VSM 17	44 Fd Bty	Prince Albert Sask
II	7049		II	C14187	VSM 17	14 Fd Bty	Cobourg
II	7059	EOC 18	II	C14186	VSM 17	59 Bty	Brandon
II	7068		II	C16873		14 Fd Bty	Cobourg
II	7716		II	C16017	EOC 18	25 Fd Bty	Ottawa
II	7768	VSM 18	II	C16016	EOC 18	Ordnance	Sarcee
II	7963	EOC 18	II	C15789	EOC 18	44 Fd Bty	Prince Albert Sask
II	7968	EOC 18	II	C16031	EOC 18	60 Fd Bty	Aneroid Sask
II	7976	EOC 18	II	C16976	WBC 18	18 Fd Bty	Regina
II	7996	EOC 18	II	C15667	EOC 18	61 Fd Bty	Edmonton
II	8556	EOC 18	II	C15661	EOC 18	16 Fd Bty	Guelph
II	8558	EOC 18	II	C16846	WBC 17	13 Fd Bty	Winnipeg
II	8584	EOC 18	II	C16035	EOC 18	Military Camp	Petawawa
II	8588	EOC 16	II	C857	WBC 18	82 Fd Bty	Gaspe

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	8604	EOC 18	II	C15603	EOC 18	16 Fd Bty	Guelph
II	8605	EOC 18	II	C16959	WBC 17	24 Fd Bty	Granby
II	8609	EOC 18	II	C15648	EOC 18	10 Fd Bty	St Catherines
II	8612	EOC 18	IIR	C16704	EOC 18	B Bty RCHA	Kingston
II	8613	EOC 18	IIR	C14161	VSM 17	B Bty RCHA	Kingston
II	8614	EOC 18	II	C15738	EOC 18	8 Fd Bty	Moncton
II	8615	EOC 18	II	C16874	WBC 18	30 Fd Bty	Toronto
II	8616	EOC 18	II	C16865	WBC 18	83 Fd Bty	Stellarton NS
II	8618	EOC 18	II	C16863	WBC 18	28 Fd Bty	Newcastle
II	8619	EOC 18	IIR	C6525	VSM 17	B Bty RCHA	Kingston
II	8622	EOC 18	II	C15735	EOC 18	52 Fd Bty	Weymouth NS
II	8623	EOC 18	II	C14176	VSM 17	Ordnance	Regina
II	8624	EOC 18	II	C15561	EOC 18	10 Fd Bty	St Catherines
II	8626	EOC 18	II	C16848	WBC 17	Military Camp	Petawawa
II	8628	EOC 18	II	C14245	VSM 17	Military Camp	Petawawa
II	8629	EOC 18	IIR	C16636	EOC 18	B Bty RCHA	Kingston
II	8631	EOC 18	II	C15750	EOC 18	55 Fd Bty	London
II	8641	EOC 18	II	C14185	EOC 18	20 Fd Bty	Lethbridge
II	8647		II	C16032		1 Fd Bty	Ottawa
II	8730	VSM 18	II	C16024	EOC 18	78 Fd Bty	Red Deer
II	8735	VSM 18	II	C851	WBC 18	RMC Arty Dept	Kingston
II	8825	VSM 18	II	C847	WBC 18	C Bty RCHA	Winnipeg
II	8861	VSM 18	II	C16038	EOC 18	3 Fd Bty	Gananoque

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	8863	VSM 18	II	C849	WBC 18	Military Camp	Petawawa
II	8864	VSM 18	II	C16040	EOC 18	Proof Butts	Little River
II	8878	VSM 18	IIR	C848	WBC 18	Military Camp	Petawawa
II	8884	VSM 18	II	C16039	EOC 18	3 Fd Bty	Gananoque
II	8886	VSM 18	II	C15748	EOC 18	68 Fd Bty	Vancouver
II	8908	VSM 18	II	C16772	VSM 17	Military Camp	Petawawa
II	8916	VSM 18	II	C16006	EOC 18	57 Fd Bty	Québec
II	9072	WBC 18	II	C878	WBC 18	RMC Arty Dept	Kingston
II	9103	WBC 18	I	C129	OCM 15	87 Fd Bty	Dartmouth
II	9116	WBC 18	II	C13933	VSM 18	60 Fd Bty	Aneroid Sask
II	9120	WBC 18	II	C16030	EOC 18	Military Camp	Petawawa
II	9121	WBC 18	II	C871	WBC 18	RMC Arty Dept	Kingston
II	9131	WBC 18	II	C16026	EOC 18	RMC Arty Dept	Kingston
II	9132	WBC 18	I	C110	OCM 14	87 Fd Bty	Dartmouth
II	9137		II	C16034	EOC 18	32 Fd Bty	Kingston
II	9140	WBC 18	II	C852	WBC 18	78 Fd Bty	Red Deer
II	9611	EOC 18	II	C16970	WBC 18	16 Fd Bty	Guelph
II	9709	EOC 18	IIR	C870	WBC 18	Military Camp	Petawawa
II	9710	EOC 18	II	C867	WBC 18	Military Camp	Petawawa
II	9720		II	C16043	EOC 18	3 Fd Bty	Gananoque
II	9742		II	C16037	EOC 18	32 Fd Bty	Kingston
II	9745	EOC 18	II	C15658	EOC 18	52 Fd Bty	Weymouth NS
II	9750	EOC 18	II	C15669	EOC 18	68 Fd Bty	Vancouver
II	9754	EOC 18	II	C874	WBC 18	53 Fd Bty	Toronto

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	9786	EOC 18	IIR	C6558	VSM 17	B Bty RCHA	Kingston
II	9809	EOC 18	II	C856	WBC 18	53 Fd Bty	Toronto
II	9880	RGF 18	II	C15774	EOC 18	15 Fd Bty	Toronto
II	10094	NOF 18	II	C15838	EOC 18	61 Fd Bty	Edmonton
II	10353	VSM 18	II	C855	WBC 18	Military Camp	Petawawa
II	10357	VSM 18		Not mounted		Ordnance	Winnipeg
II	10364		II	C15698	EOC 18	4 Fd Bty	Peterborough
II	10366	VSM 18	II	C876	WBC 18	57 Fd Bty	Québec
II	10367	VSM 18	II	C16028	EOC 18	Ordnance	Sarcee
II	10370	VSM 18	II	C859	WBC 18	53 Fd Bty	Toronto
II	10374	VSM 18	II	C854	WBC 18	Ordnance	Sarcee
II	10661	NOF 18	II	C16879	WBC 18	19 Fd Bty	Winnipeg
II	10677	NOF 18	II	C15644	EOC 18	11 Fd Bty	Hamilton
II	10787	NOF 18	II	C15745	EOC 18	31 Fd Bty	Vancouver
II	10796		II	C16977		34 Fd Bty	Belleville
II	10852	NOF 18	II	C869	WBC 18	Military Camp	Petawawa
II	10853		II	C16929		51 Fd Bty	Ottawa
II	10906		II	C15655	EOC 18	4 Fd Bty	Peterborough
II	11013	ROF Leeds 18	I	C16872	WBC 17	86 Fd Bty	Antigonish NS
II	11061	NOF 18	II	C15845	EOC 18	8 Fd Bty	Moncton
II	11171	NOF 18	II	C15740	EOC 18	68 Fd Bty	Vancouver
II	11195	NOF 18	II	C15784	EOC 18	C Bty RCHA	Winnipeg
II	11196	NOF 18	II	C15580	EOC 18	66 Fd Bty	Montreal
II	11216	WBC 18	II	C15790	EOC 18	C Bty RCHA	Winnipeg
II	11219	WBC 18	II	C16965	WBC 18	24 Fd Bty	Granby

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	11278	WBC 18	II	C16816	WBC 17	5 Fd Bty	Montreal
II	11283	WBC 18	II	C16870	WBC 18	40 Fd Bty	Hamilton
II	11303	WBC 18	II	C14192	VSM 17	77 Fd Bty	Moose Jaw
II	11304	WBC 18	II	C14178	VSM 17	28 Fd Bty	Newcastle
II	11305	WBC 18	II	C15725	EOC 18	40 Fd Bty	Hamilton
II	11306	WBC 18	IIR	C16867	WBC 18	A Bty RCHA	Kingston
II	11308	WBC 18	II	C15675	EOC 18	89 Fd Bty	Woodstock
II	11309	WBC 18	II	C16866	WBC 17	77 Fd Bty	Moose Jaw
II	11312	WBC 18	II	C16957	WBC 18	24 Fd Bty	Granby
II	11313	WBC 18	IIR	C15634	EOC 18	Military Camp	Petawawa
II	11314	WBC 18	II	C15742	EOC 18	40 Fd Bty	Hamilton
II	11318	WBC 18	II	C16926	WBC 18	83 Fd Bty	Stellarton NS
II	11320	WBC 18	II	C16960	WBC 18	44 Fd Bty	Prince Albert Sask
II	11321	WBC 18	II	C16961	WBC 17	28 Fd Bty	Newcastle
II	11322	WBC 18	II	C14171	VSM 17	11 Fd Bty	Hamilton
II	11323	WBC 18	II	C15928	EOC 18	89 Fd Bty	Woodstock
II	11324	WBC 18	II	C14196	VSM 17	59 Bty	Brandon
II	11326	WBC 18	II	C16934	WBC 18	Ordnance	Regina
II	11326	WBC 18	II	C16936	WBC 18	Ordnance	Regina
II	11327	WBC 18	II	C15732	EOC 18	44 Fd Bty	Prince Albert Sask
II	11329	WBC 18	II	C15733	EOC 18	89 Fd Bty	Woodstock
II	11332	WBC 18	II	C14160	VSM 17	66 Fd Bty	Montreal
II	11334	WBC 18	II	C14177	VSM 17	83 Fd Bty	Stellarton NS
II	11343	WBC 18	II	C14195	VSM 18	91 Fd Bty	Calgary
II	11348	WBC 18	II	C15739	EOC 18	58 Fd Bty	Victoria
II	11350	WBC 18	II	C6564	VSM 17	Ordnance	Regina

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	11353	WBC 18	IIR	C14321	VSM 17	A Bty RCHA	Kingston
II	11354	WBC 18	II	C14250	VSM 17	15 Fd Bty	Toronto
II	11357	WBC 18	II	C16938	WBC 18	91 Fd Bty	Calgary
II	11359	WBC 18	II	C15627	EOC 18	10 Fd Bty	St Catherines
II	11360	WBC 18	IIR	C15718	EOC 18	A Bty RCHA	Kingston
II	11363	WBC 18	II	C15731	EOC 18	68 Fd Bty	Vancouver
II	11364	WBC 18	II	C14168	VSM 18	52 Fd Bty	Weymouth NS
II	11365	WBC 18	II	C14182	VSM 17	22 Fd Bty	Gleichen Alta
II	11366	WBC 18	II	C15697	EOC 18	30 Fd Bty	Toronto
II	11367	WBC 18	II	C15796	EOC 18	Military Camp	Petawawa
II	11397	NOF 18	II	C17083	WBC 18	30 Fd Bty	Toronto
II	11407	NOF 18	II	C16806	EOC 18	20 Fd Bty	Lethbridge
II	11449	NOF 18	II	C6553	VSM 17	66 Fd Bty	Montreal
II	11475	NOF 18	II	C16818	WBC 17	6 Fd Bty	Sydney
II	11477	NOF 18	II	C14201	VSM 17	86 Fd Bty	Antigonish NS
II	11485	NOF 18	II	C6359	VSM 17	7 Fd Bty	Montreal
II	11488	NOF 18	II	C15963	WBC 18	55 Fd Bty	London
II	11507	WBC 18	II	C15632	EOC 18	86 Fd Bty	Antigonish NS
II	11692	WBC 18	II	C15642	EOC 18	18 Fd Bty	Regina
II	11801	NOF 18	II	C16956	WBC 18	31 Fd Bty	Vancouver
II	12070		II	C16968		3 Fd Bty	Gananoque
II	12116	NOF 18	II	C14232	VSM 17	C Bty RCHA	Winnipeg
II	12241	WBC 18	II	C14174	VSM 18	58 Fd Bty	Victoria
II	12242	WBC 18	II	C14157	VSM 17	5 Fd Bty	Montreal
II	12243	WBC 18	II	C15744	EOC 18	C Bty RCHA	Winnipeg

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	12244	WBC 18	II	C16974	WBC 17	13 Fd Bty	Winnipeg
II	12245	WBC 18	II	C16810	WBC 17	5 Fd Bty	Montreal
II	12249	WBC 18	II	C15741	EOC 18	18 Fd Bty	Regina
II	12254	WBC 18	II	C14242	VSM 17	18 Fd Bty	Regina
II	12255	WBC 18	II	C16973	WBC 17	7 Fd Bty	Montreal
II	12259	WBC 18	II	C16972	WBC 18	7 Fd Bty	Montreal
II	12260	WBC 18	IIR	C16958	WBC 17	A Bty RCHA	Kingston
II	12261	WBC 18	II	C15585	EOC 18	31 Fd Bty	Vancouver
II	12262	WBC 18	II	C15560	EOC 18	58 Fd Bty	Victoria
II	12263	WBC 18	II	C15570	EOC 18	Ordnance	St. John
II	12264	EOC 18	II	C16802	EOC 18	20 Fd Bty	Lethbridge
II	12270	WBC 18	II	C17055	WBC 18	53 Fd Bty	Toronto
II	12271	WBC 18	IIR	C16850	WBC 18	A Bty RCHA	Kingston
II	12272	WBC 18	II	C15588	EOC 18	6 Fd Bty	Sydney
II	12274	WBC 18	II	C16809	WBC 17	13 Fd Bty	Winnipeg
II	12275	WBC 18	II	C16854	WBC 17	6 Fd Bty	Sydney
II	12276	WBC 18	II	C16980	WBC 17	7 Fd Bty	Montreal
II	12277	WBC 18	II	C15637	EOC 18	Military Camp	Petawawa
II	12278	WBC 18	II	C15647	EOC 18	15 Fd Bty	Toronto
II	12281	WBC 18	II	C15635	WBC 18	30 Fd Bty	Toronto
II	12282	WBC 18	II	C15641	EOC 18	66 Fd Bty	Montreal
II	12286	WBC 18	II	C15590	EOC 18	20 Fd Bty	Lethbridge
II	12287	WBC 18	II	C879	WBC 18	Military Camp	Petawawa
II	12288	WBC 18	II	C16815	WBC 17	Ordnance	St. John
II	12295	WBC 18	II	C15825	EOC 18	58 Fd Bty	Victoria
II	12297	WBC 18	II	C872	WBC 18	Military Camp	Petawawa
II	12307		II	C653	WBC 18	25 Fd Bty	Ottawa
II	12308	WBC 18	II	C16004	EOC 18	Ordnance	Sarcee

18-pounder gun			Carriage			Unit and Location in 1933	
Gun Mk	Regn No	Manufacturer & Date	Mk	Regn No	Manufacturer & Date	Unit	Location
II	12309	WBC 18	II	C15509	WBC 18	57 Fd Bty	Québec
II	12310		II	C866	WBC 18	4 Fd Bty	Peterborough
II	13058	VSM 18	II	C16027	EOC 18	Proof Butts	Little River
II			I	C64570	BSC 15	Citadel	Québec