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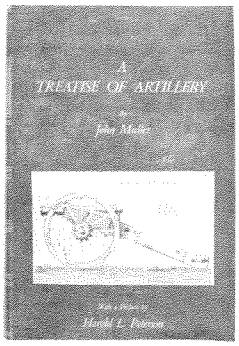

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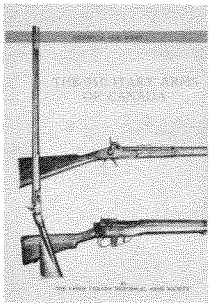

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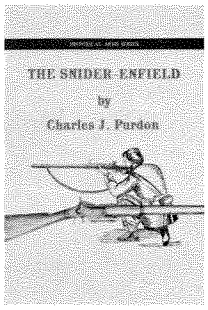

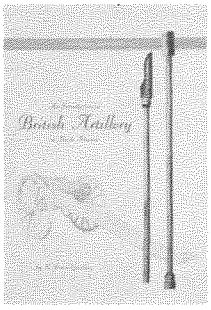

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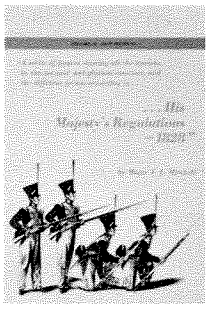

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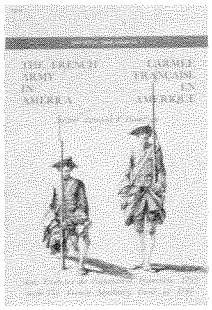

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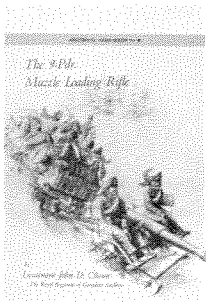

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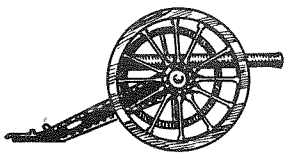

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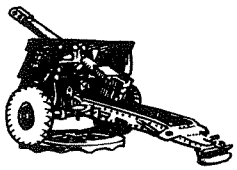

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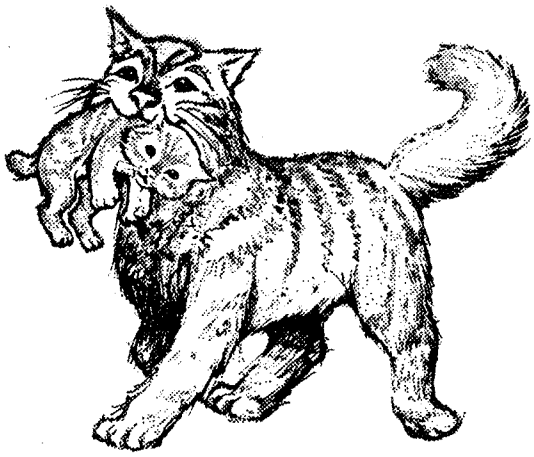

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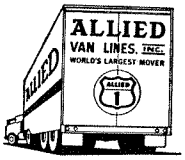

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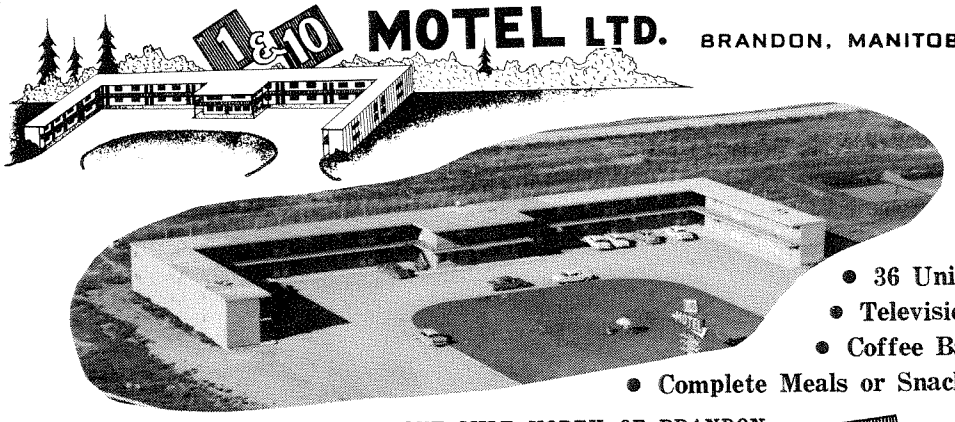

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THE CANADIAN GUNNER

Vol 2 December 1966

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Contents

editorial fallout . . . .

● *This being the first anniversary of this journal, we are confronted with a disquieting thought. Now that we are acquiring age, perhaps we shall be expected to show traces of augustness and sagacity – maybe even ossification. Our first edition was greeted with great kindliness and even enthusiasm. Laudatory letters – we chose not to publish them – infused the editorial staff with the warm satisfaction of a chef who is called from his stove to be congratulated on his labours. The menu seemed just about right, we gathered, so we propose to follow the same general pattern again this year. Whether a communal kitchen, operated by part-time, short-order cooks, will produce the type of fare the customers want will depend to some extent upon the reactions of the customers, as well as on the predilections of the cooks, and doubtless this will continue to be reflected on the bill of fare in subsequent years.*

● *A shrewd observer of the passing scene once stuck his thumbs into his waistcoat and opined that people generally get the sort of government they deserve. We dare say he is right, and that his point applies to various other things as well. Applied to this journal – and the Regiment deserves the best possible – we can only mention with the utmost diffidence the rather obvious fact that we cannot print news or articles which do not come to us, and we don't propose, and in fact haven't the time, to go seeking them. We should add too that we must reserve the right – by gad we have our rights – to be choosey in what we print. So there, we've said it.*

● *Much has happened in the Regiment over the past year and, while we cannot hope to present a precise and all embracing chronicle, the general trend will be indicated, we hope, in the articles which follow. The purchase of forward air defence weapons – the new mod term for Light Anti-Aircraft Artillery – is being contemplated, armoured personnel carriers are in the hands of units, new self-propelled howitzers are inching towards us along the production line, and 4 RCHA has become much more deeply committed to its Special Service Force role. The process of integration has caused the relationship of the School in respect to CFB Shilo to become one not dissimilar to what existed in the late 1940s and early 50s, the offices of School Commandant and Camp Commander being once again vested in one person.*

● *International standardization of a long list of artillery terms, of fire discipline and fire control methods, achieved during the year has thrown us into a new semantic environment. At the regimental level the only immediate effect is that we must once more learn a new vocabulary. When the broader plan is examined the advantages become apparent however, and a welcome fringe benefit is that minor and inconsequential amendments can no longer be introduced without considerable difficulty. In the past many such amendments have found their way into the book with regrettable ease and subsequent grief.*

● *Our Militia units have been cracking around on the artillery ranges across the country, and particularly in Shilo, debouching from the bellies of great transport aircraft on nearby airfields. They come from each seaboard to the Manitoba prairie for a week-end of shooting, a far cry from the long colony car troop train ride to summer camps of other years. The 1966 annual competition, held in the field to determine the most tactically and technically efficient Militia unit, revealed some very high standards of training. Unfortunately we were not in a position at press time to publish the name of the winning unit.*

● *At page 96 will be found a general chronology of activities of 30 Field Regiment RCA (M). We are not normally disposed to print details of routine events of a parochial nature but, as most Militia units face common objectives and obstacles, we wondered whether other units might not be interested in a glance at a neighbour's programme. We do not offer it as the apogee, necessarily, of unit endeavour nor, we feel sure, would the hard-working CO of 30 Fd Regt, Lt Col Ben Shapiro. Perhaps there are better programmes around – we haven't seen any – and undoubtedly there will be poorer ones. It is a good one, reflecting desire and drive.*

● *Again snippets of unit and personal goings-on are included in the journal, insofar as we learn of them, have space for them and consider them to be of general interest. We are grateful to our contributors, whether they be identified or anonymous, and one day, when we have time, we propose to start a movement to have special little gold stars, each worth ten points, appended to the Confidential Reports of all who contribute 200 or more words of printable copy to our publication during the year in question. On the other hand, maybe they would prefer cash. In any event, we do genuinely appreciate their help.*

● *During the year we shared the pride of Lieutenant RJ Lucas' family when it was announced that he had been awarded the Queen's Commendation for Brave Conduct (see page 68). In leaving his house to disarm an axe-wielding lout on the street, at the cost of a broken nose and various bruises and abrasions, he did much to offset the disturbing revelations of violence which has occurred while citizens have looked on from behind draped windows. Junior officers are of course not what they used to be. We older soldiers all know that. Still ..... this Lucas thing ..... food for thought.....*

● *We draw your attention to our advertisers, all of whom are sound, reputable concerns and friends of the Regiment. They deserve our custom and we feel sure they will receive it whenever possible. Only the other day one of them, Mr Ty Smith, who never tires of trying to be helpful, dropped into the office with the advertisement of a colleague of his which we had not solicited (advertising manager please note) but who had heard of our journal and wanted to be reminded to the Regiment. We cheerfully admit that we are prejudiced towards our advertisers. We hope that the money which we remorselessly extract from them in return for a few square inches of print is amply compensated for by regimental preference for their goods and services, and by word of mouth commendation.*

● *And so GUNNER achieves its first anniversary – during the 250th anniversary of the Royal Regiment of Artillery and 111th anniversary of the first Canadian artillery units. A tender wee plant indeed. May it prosper amongst our successors.*

The RCA Memorial in Ottawa

MESSAGE FROM THE CHIEF OF ARTILLERY

On 23 June 1966 CFHQ directed that the Chief of Artillery, HQ Mobile Command, assume the functions of Head of Corps of the Royal Regiment of Canadian Artillery.

These functions include responsibilities for artillery in the fields of tactical and technical doctrine, field force organization, weapons and equipment, and operational training. The Office of the Chief of Artillery carries out these functions as part of the staff of HQ Mobile Command, located at Canadian Forces Base St Hubert, Quebec.

In addition to these functions, the Chief of Artillery is responsible to CFHQ for what might be termed artillery domestic matters. This responsibility comprises, in the main, personnel matters, militia, corps organization and associations, allied corps and affiliations, liaison with the Colonel Commandant, advice on matters relating to the Captain General, dress and customs, non-public corps funds and property, museums, corps publications, charities, memorials and the like.

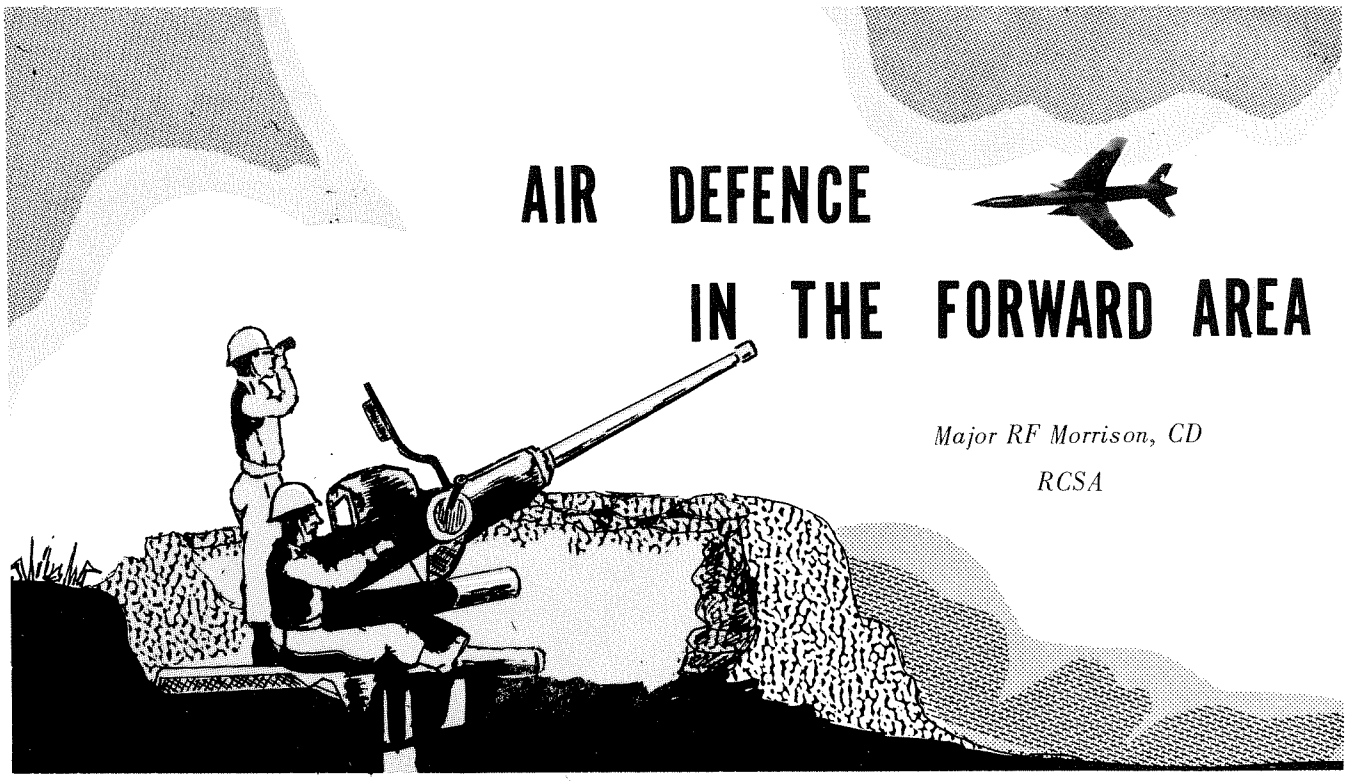
Colonel JP Beer, MBE, CD

As it is very unlikely that one small staff can manage all these matters, I am sure that the Royal Canadian School of Artillery, as the Home of the Royal Regiment, will, as in the past, be allowed to carry out some of the more important regimental functions such as the operation of the Museum, the management of the NPP funds and the publication of the Canadian Gunner.

With the new field force structure now approved, I look forward to great progress for the Royal Regiment. With an artillery of four major units and four independent batteries I believe we can provide a solid foundation for a healthy and dynamic Corps. We have designed a basic artillery which will meet Canada's new military roles to be carried out by Mobile Command. Our Corps will, in the future, provide a satisfying and exciting career for all ranks. New artillery equipment and the increased use of aircraft will allow us to become a small, but professional, artillery of high competence.

The transition will be neither easy nor quick. I would forecast, however, that by the beginning of 1970, the Royal Regiment of Canadian Artillery will, in fact, have consolidated its traditional place at the *"right of the line"*.

Colonel



AIR DEFENCE IN THE FORWARD AREA

Major RF Morrison, CD
RCSA

INTRODUCTION

Early this year we were advised to anticipate the possible formation of a forward air defence regiment, at some as yet undetermined date, within the Royal Regiment of Canadian Artillery. Although a weapon system or systems has not yet been selected, nor indeed, any firm decision made as to forward air defence, it would be prudent for members of the Regiment to review some of the major aspects of the anti-aircraft problem.

The aim of this essay is to examine the specific role of such a unit within the overall framework of the air defence of a field army. Apart from a brief discussion of the other elements of air defence, necessary to meet the aim just stated, the scope of this study will be largely restricted to an examination of the various forward area weapon systems, both guns and missiles, in existence or under development today and from which a choice could be made for an air defence regiment.

BACKGROUND

For the sake of perspective, let us look at the history of anti-aircraft in the Canadian Army (Regular) since World War II. From a total of eight Canadian anti-aircraft regiments in action in Europe during the war, this branch of the artillery declined by 1959 to merely one CA(R) regiment plus the Royal Canadian School of Artillery (Anti-Aircraft) at Picton, Ont. In July 1960, with the Army Headquarters decision to close the School and disband 1 LAA Regt RCA, the curtain came down on a branch of artillery that had served the army proudly and well for a short but active quarter of a century.

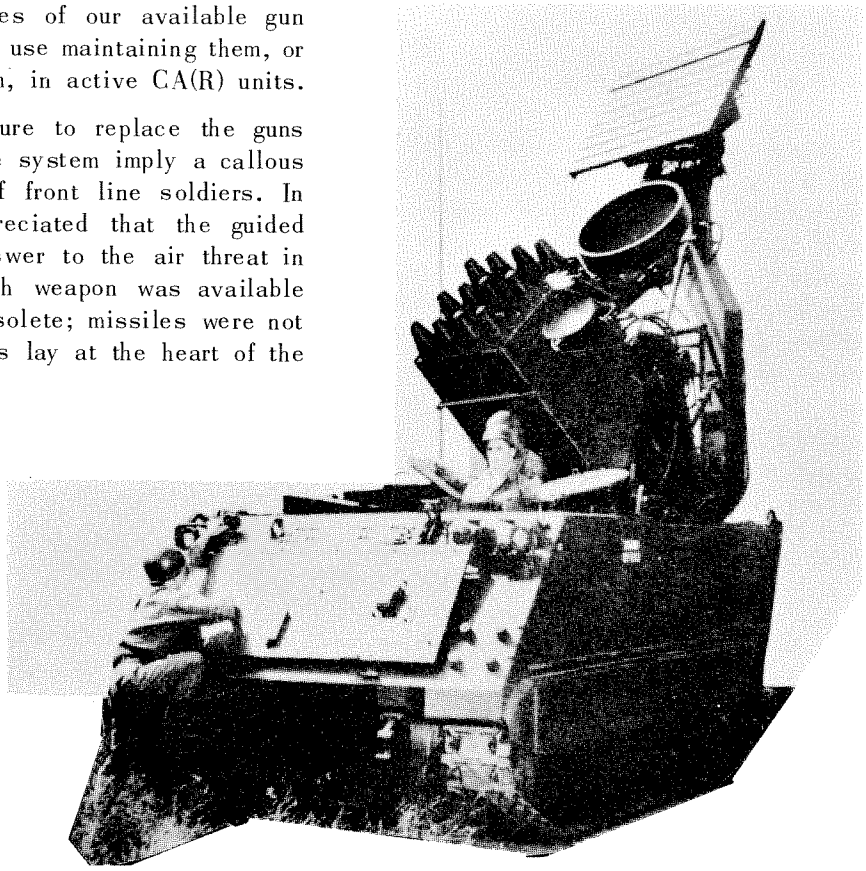
Between the years 1945 and 1960, the obsolescent 40mm Bofors light anti-aircraft gun remained the only forward area weapon in service, while in 1951 the World War II vintage 3.7 inch heavy anti-aircraft gun was replaced by the more effective 90mm gun/M33 radar medium anti-aircraft system. These weapon systems were employed in a number of independent anti-aircraft batteries deployed in Defence of Canada roles on the West Coast and at Goose Bay, Labrador. By 1955, with the greatly improved speed and height performance of military aircraft, it became painfully apparent that the 40mm Bofors gun was completely obsolete in this role, while the 90mm/M33 weapon system was only marginally effective due to a height limitation of 20,000 feet. Thus, in 1957, Air Defence Command at St Hubert, Que., and all independent anti-aircraft batteries deployed for air defence of Canada were disbanded. 1 LAA Regt RCA, which was to remain until 1960 as the divisional air defence unit, was re-equipped with the 90mm/M33

system. In 1960 this one remaining anti-aircraft unit along with RCSA(AA), also disappeared from the scene.

The decision to terminate the anti-aircraft component of the RCA in 1960 was a most complex and difficult one. It came at a time when the potential air threat to field armies had never been greater. Yet the decision did not imply any lack of awareness of this threat either at Army Headquarters or within the Regiment. It stemmed entirely from acceptance of the cold, hard, technological fact that in 1960 the modern high performance jet aircraft had so far outstripped the capabilities of our available gun systems that there was no use maintaining them, or the manpower to use them, in active CA(R) units.

Nor did the failure to replace the guns with an expensive missile system imply a callous disregard for the lives of front line soldiers. In 1960, while it was appreciated that the guided missile was the only answer to the air threat in the forward area, no such weapon was available to Canada. Guns were obsolete; missiles were not available. These two facts lay at the heart of the Canadian decision.

Thus, by 1960, a "*missile gap*" had developed in air defence of the forward area. In an age when modern technology can guide a missile to the moon and to the vicinity of Mars, the reason for such a missile short-coming at the fighting soldier's level is difficult to understand. Perhaps an explanation lies in the optimism that surrounded the US Army's Mauler project. Mauler was to have been an all-weather forward area air defence missile system, highly mobile, with both radar and infra-red guidance. From its inception in 1958, contractors and other development agencies optimistically heralded this weapon system as the answer to the aircraft threat at brigade and divisional level. For several years, Canada closely monitored Mauler's development programme. In 1964, however, it was revealed that there were a number of serious problem areas in Mauler's development programme that would be time consuming and costly to correct. Finally, in June 1965, US authorities decided to discontinue the project.



The Developmental "All Weather" Mauler Forward Area Missile System, now discontinued

The death of the Mauler project left the ABC (America, Britain, Canada) countries without an "*all weather*" forward area anti-aircraft missile system. To fill the void both the US and UK began to hasten the development of a number of "*fair-weather*" gun and missile systems for use on an interim basis. As it may be from among these forward area air defence systems that Canada will make the selection for the new air defence unit, each will be examined in detail later in this study.

THE THREAT

An understanding of the problem of the anti-aircraft defence of a field army requires an appreciation of the enemy air threat.

While there are many varieties of aerial attack available to a potential enemy, the dominant air threat to the field army area today is the high speed delivery of nuclear and conventional weapons by manned aircraft. Four general categories of manned aircraft will be encountered.

1. Medium jet bombers capable of speeds up to 1700 MPH and heights in excess of 70,000 feet. These aircraft will engage in high level bombing of the army area with nuclear weapons from heights of up to 100,000 feet, or with high explosive bombs from somewhat lower altitudes. These bombers are more of a direct threat to major installations in the rear army areas than to front line units, although their indirect effect can seriously effect operations at every level. Because of its high speed and altitude, this type of aircraft can release its weapons at long distances from the target and must therefore be engaged by large, long range guided missiles which can reach out high enough and far enough to make the kill before the aircraft releases its weapons.

2. Fighters or light bombers capable of attacking at speeds approaching mach 2.5 at medium or low altitudes. This type of aircraft uses a variety of weapons ranging from tactical-size nuclear weapons to air-to-ground rockets and guided missiles. In a high speed role, these aircraft pose less of a threat to forward area units than do slower tactical close support aircraft.

3. Reconnaissance aircraft with performance characteristics similar to those of the fighter, but mounting radar, TV, photographic or infra-red sensors.

4. Tactical support aircraft which will operate at low altitudes and at speeds of approximately 500 MPH or less, including:

   (a) Tactical close support fighter aircraft,

   (b) Armed helicopters and troop-carrying assault helicopters,

   (c) Light reconnaissance and liaison aircraft, both rotary and fixed wing,

   (d) Logistical support aircraft, both rotary and fixed wing.

   The majority of these tactical support aircraft will probably not possess a nuclear capability but, because they operate at low speeds and low altitudes, they constitute the element of the enemy air forces which presents the greatest threat to brigades and divisions in the forward area of the battle zone. It is against this type of aircraft that forward area air defence units are employed.

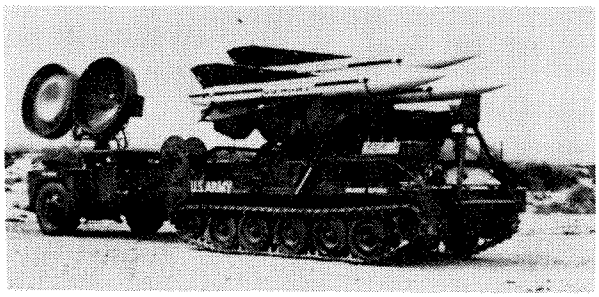
FAMILY OF WEAPONS

From the above brief analysis of enemy air capability, it can be seen that the total air threat to the field army is a composite of many elements ranging from the tree top fighter to the 100,000 ft altitude bomber; from the slow moving armed helicopter to the mach 2.5 intruder. Ideally, it would be desirable to have one air defence weapon system which could defend against the full gamut of the air threat – the high, the low, the fast, the slow – an ultimate air defence weapon which would instantly, at the push of a button, destroy all hostile aircraft while leaving friendly air elements to proceed at will. Regrettably, the state of the art of anti-aircraft gunnery and missilry has not reached this point. In fact, an air defence to meet all elements of the threat cannot be attained today with a family of less than approximately four weapon systems. This family of four roughly corresponds to the major elements of the enemy air threat. They are:

1. *The High Altitude Missile (HAM).* This is the weapon system which must contend with that part of the threat above 40,000 ft and out to a range in excess of 75 miles. These requirements demand that it be a large guided missile, and in the US Army today the high altitude role is filled by the five ton Nike Hercules. This large solid fuel missile has a height ceiling in excess of 100,000 ft and a range out to 100 miles. Control of high altitude missile systems, such as Hercules and the British Army's high altitude missile, Thunderbird, will normally be retained at the corps or army level. Any Canadian brigades or divisions operating within a UK or US formation equipped with a HAM system would presumably come under the protection of the high altitude air defence umbrella thus provided.

2. *The Low Altitude Missile (LAM).* Since the guidance radars of most HAM systems must have line of sight contact with the target, very low altitude target engagement becomes extremely difficult at extended ranges due to earth curvature, irregular terrain features and obstacles. High altitude missiles alone normally cannot meet the total defence require-

ments of the army area. To complement the capabilities of the high altitude missile system, and to improve the capability of destroying super-sonic aircraft in the low level approaches to the army area, a low level missile system is required in the family of weapons. In the US, the Hawk missile system has been designed specifically for use against low flying aircraft. It is effective from 50 feet to approximately 50,000 feet and out to a range of 22 miles. Although its primary task is to engage aircraft attempting to slip in under the Hercules umbrella, in a co-ordinated air defence layout Hawk would have a responsibility for other attackers in its height range thereby relieving Hercules batteries to engage targets at the higher altitudes. Because this type of weapon must be co-ordinated into the air defence plan for the whole army area, its units must be controlled at a higher level than brigade or division. Again, Canadian forces operating within a US or UK formation would come under the protection of the low altitude missile units of that formation.



Self-Propelled Version of the US Army's Hawk Low Altitude Missile System

3. *Forward Area Weapons (FAW).* While the high and low altitude missile systems just discussed complement each other to create a protective air defence umbrella over all units and installations in the army area, they are primarily concerned with the defence of vital rear installations against nuclear attack by aircraft. These weapons cannot provide close, intimate and mobile air defence of brigade and divisional units and installations in the forward area. This latter is the role of the forward area air defence weapons (FAWs) which are organic to divisions and to independent brigades.

This third member of the family of air defence weapons, which may be a gun or a missile, is required for the defence of vital areas in that part of the battlefield forward of the divisional rear boundary. During World War II, and for many of the years since, the weapon system which usually performed this role in the armies of Canada, the US and the UK was the 40mm anti-aircraft gun. Today the Bofors 40mm L70 is still used by British light anti-aircraft regiments although the 40mm gun has been retired for some years from Canadian and US Army air defence units.

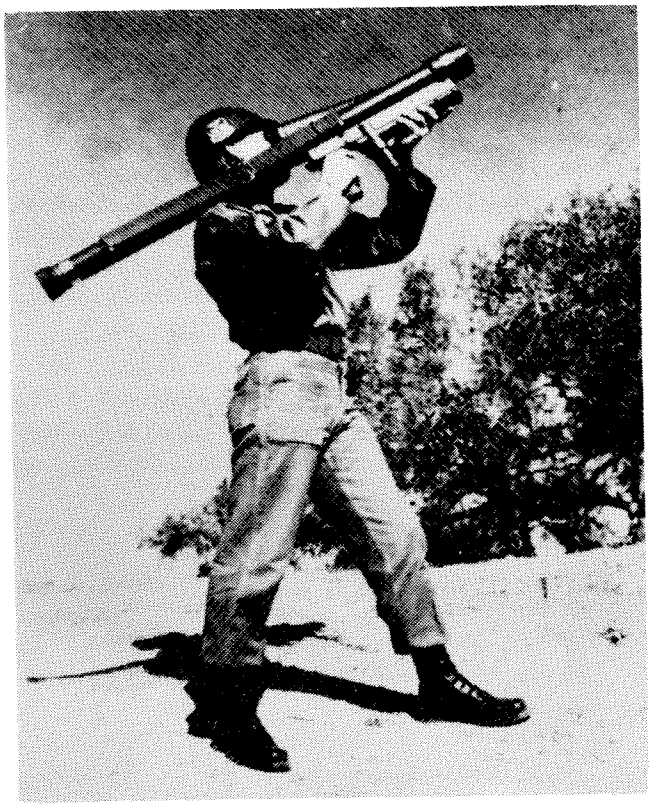
By the very nature of its task, the forward area weapon must be highly mobile, capable of quickly re-deploying, and capable of defending columns on the move. The element of the enemy air threat against which the FAW must mainly contend is the tactical support aircraft, which operates at low altitudes and at speeds below 500 MPH – the fighter, the armed helicopter, the light reconnaissance plane and the logistic support aircraft.

4. *Man-Portable Weapons.* The fourth member of the family is the lowest and smallest in the scale of air defence weapons in the field army. It is intended for the close, intimate air defence of sub-units and individual installations in the forward area. In past wars the man-portable air defence weapon has been the light machine gun (LMG) or the .50 calibre machine gun. Today it could be either an automatic weapon of the .50 inch to 20mm calibre variety or a small guided missile.

The man-portable weapon defends against the same element of the threat as the FAW i.e., the tactical close support fighter, armed helicopter or light reconnaissance aircraft, but whereas the limited number of weapons in the FAW unit may be committed to the defence of the whole brigade or divisional area, or to specific vital points within the area, the man-portable weapon insures that each company or small sub-unit has its own organic air defence capability.

In the US Army today, the Redeye missile is being introduced into field units as the man-portable system at company level. Redeye is a "*bazooka*" type, shoulder launched, guided missile weighing approximately 20 pounds and using an infra-red homing principle. It has been designed as a high density, short range weapon to be placed in the hands of many more troops than the larger members of the family of air defence weapons; Redeye is referred to descriptively as a "*proliferation*" air defence weapon. Among Redeye's attractive features are its small size and weight,

simplicity of operation, and relatively low cost.



The US Army's Man-Portable Redeye Missile

FORWARD AREAS WEAPON SYSTEMS

As it is the FAW member of the family of air defence weapons which Canada requires for the air defence of its brigades, let us examine a number of more promising FAW systems, both guns and missiles, now in service or under advanced development in the NATO armies today.

As long as a decade ago, the view was held in many western armies that the gun was finished as an anti-aircraft weapon. The modern aircraft was considered to be capable of flying too fast and too high for any available or conceivable gun system. It is now known, however, that in the field of FAWs particularly, this view is not valid. Operations in Viet Nam have clearly demonstrated that automatic gunfire from the ground can still be very effective against low flying aircraft, and that tactical aircraft have a limited capability to locate and engage ground targets while travelling at their maximum speeds. In other words, aircraft attacking ground targets at low altitudes must slow down to approximately 400 to 500 MPH – a speed well within the capability of modern forward area gun type weapons.

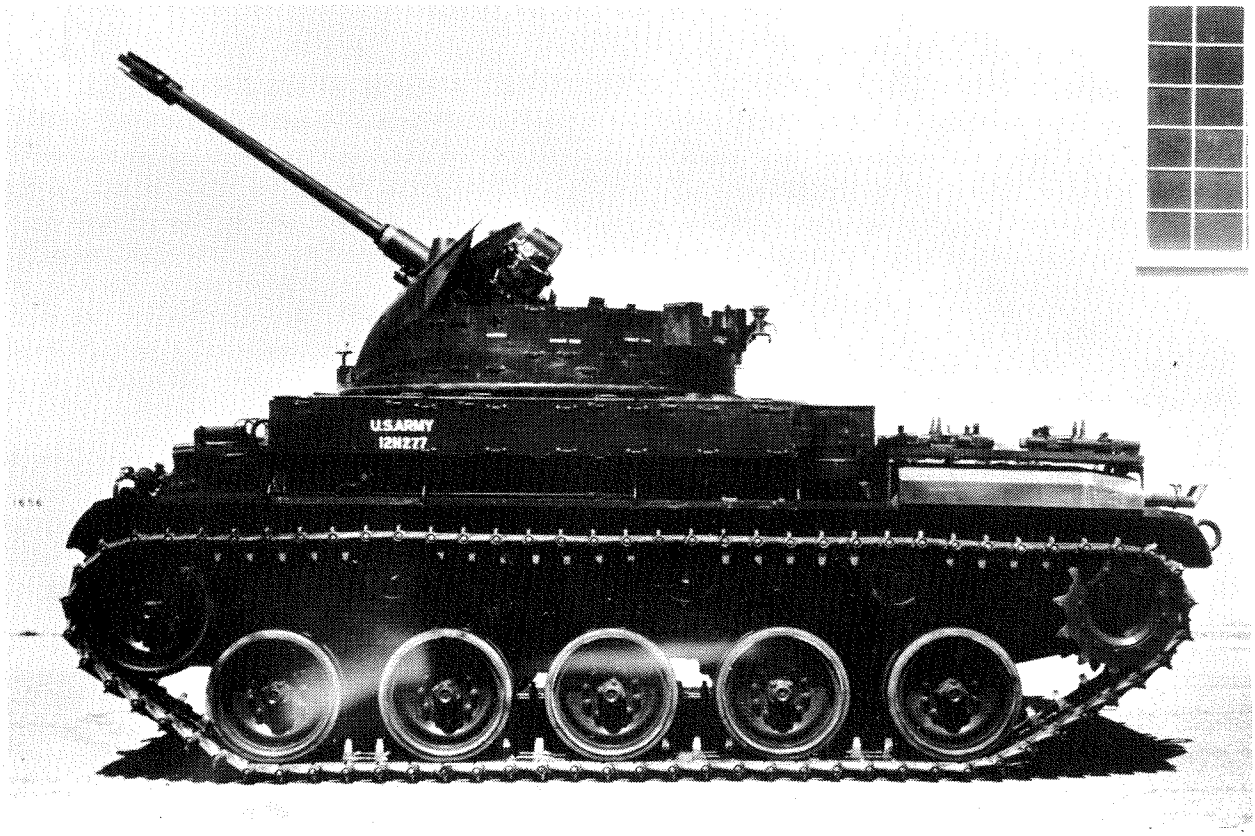
This re-evaluation of the gun as an air defence weapon does not mean that the guided missile is not, in many respects, superior to the tube type weapon. In accuracy and range the missile is supreme, but factors such as cost and complexity still favour the gun. In 1966 a reappraisal of the arts of missilry, anti-aircraft gunnery and aircraft design indicates that air defence gun systems may be useful for another ten to fifteen years. Thus, any complete examination of present day forward area weapon systems must include a mixture of guns and missiles. Let us look briefly at some of the guns.

1. *The US M42 Duster.* This is a twin-barrelled 40mm self-propelled gun of World War II and Korean vintage. The anomaly in Duster's career is that battalions of these weapons are now, in 1966, being rushed back into active service in Europe after some ten years of having been relegated to US Army National Guard units only. Duster's sudden transformation from reserve to active status after this long period speaks eloquently for the recent revision in thinking in respect to the role of the automatic gun in forward area air defence.

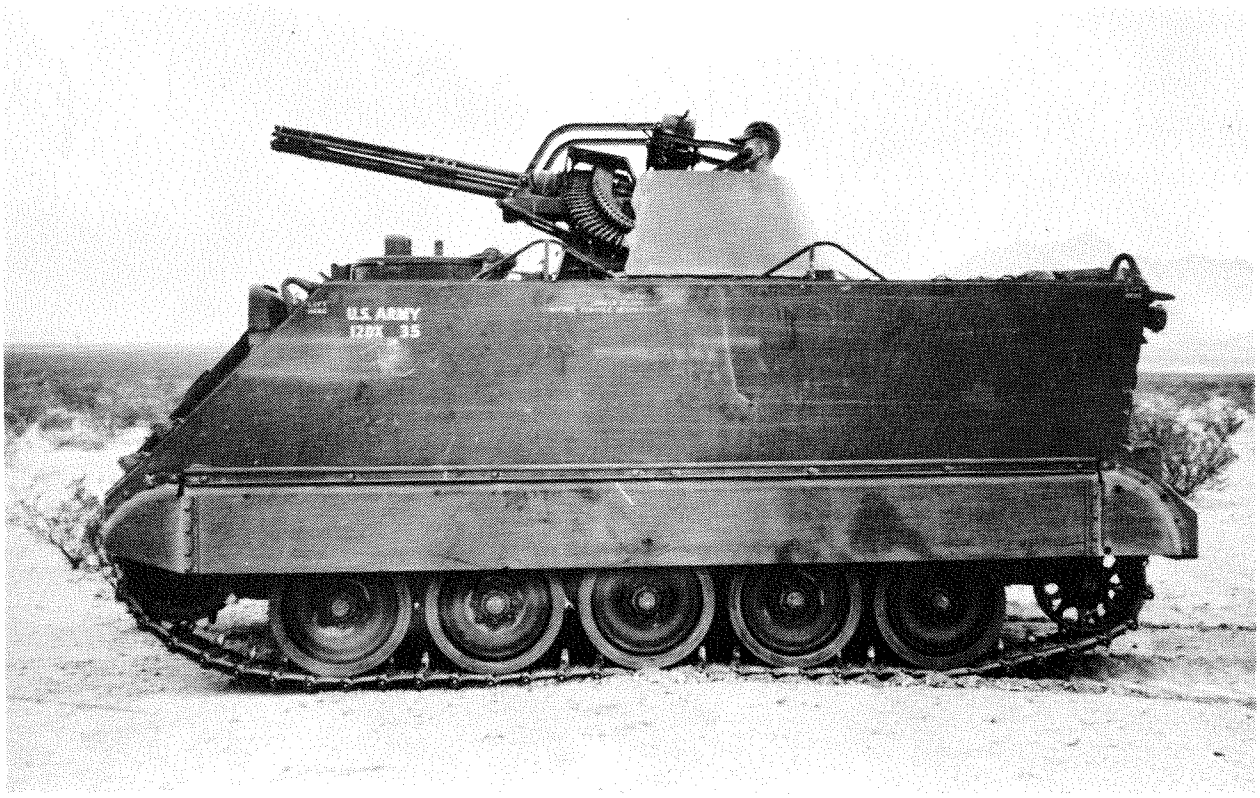
   The M42s available from National Guard armouries around the US are mounted on a heavy, now obsolete, World War II self-propelled chassis. In order to reduce weight and simplify maintenance, proposals have been made to mount refurbished M42 gun mounts on a lighter more modern chassis of the M113 APC family.

2. *The US Quad .50 Machine Gun.* The M55 four-barrelled .50 calibre heavy machine gun is a companion weapon to Duster in the new US air defence battalions. This weapon is trailer-mounted and can be towed by jeep or truck. With its limited range but high volume of fire, the M55 is intended to complement the capabilities of Duster in defence of vital points in the forward area.

3. *US M61 Vulcan.* Probably the most exciting and revolutionary of the new generation of anti-aircraft guns is the General Electric 20mm six-barrelled M61 Vulcan. Originally developed for air-to-air use aboard high speed US interceptors, the Vulcan's six rotating barrels have had to be slowed down in rate of fire from 6000 rounds per minute in the air role to a maximum of 3000 rounds per minute in the new anti-aircraft role. A linkless feed system has been developed to maintain this very high rate of fire.



The M42 Twin-Barrelled Duster



The Six-Barrelled M61 Vulcan 20 mm Forward Area Weapon in the M113 configuration

Among Vulcan's desirable features are a one-man-controlled, electrically-driven turret which can be mounted on the M113 APC chassis, and a lead-computing gun sight. These features, along with its devastating rate of fire, mobility, and a controlled dispersion pattern, make this weapon a most effective anti-aircraft gun.

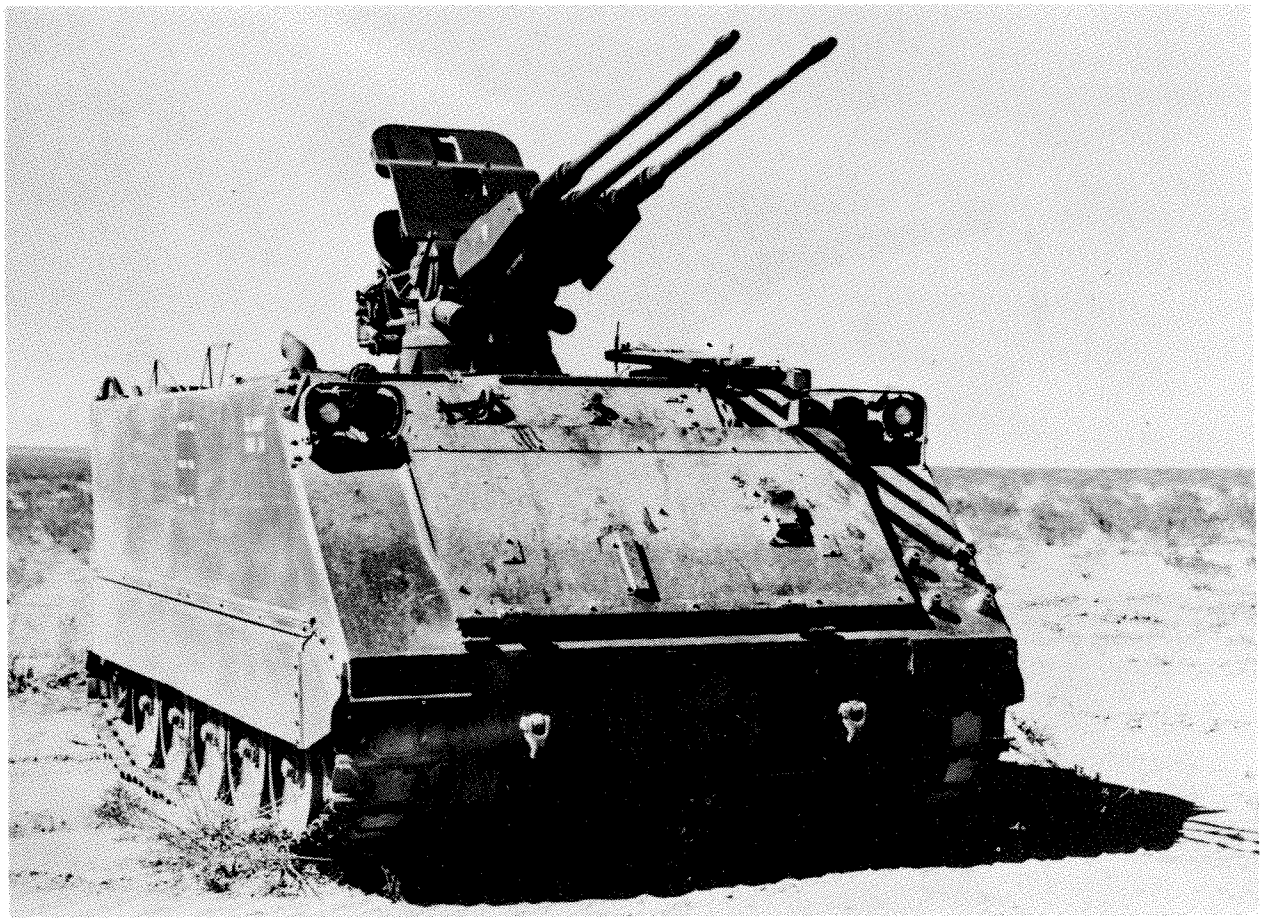
4. *The Swiss Hispano-Suiza.* This Swiss designed but German-manufactured anti-aircraft gun is the principal competitor of the Vulcan among the newer 20mm air defence systems. It is a triple-barrelled weapon which matches Vulcan's ground role rate of fire with a 1000 round per minute capability from each of its three barrels. Unlike the rotating *"Gatling gun"* type barrels of the Vulcan, a stoppage in one barrel of the Hispano-Suiza does not restrict the continued action of the other two. The gun can be mounted on the M113 APC type chassis or towed on wheels by jeep or other vehicle.

5. *The UK 40 MM L 70.* This is the forward area weapon with which the British Army now equips its Light Anti-Aircraft Regiments. It closely resembles in external appearance the World War II 40 MM Bofors gun but it has a vastly improved effectiveness in matters of rate of fire, ceiling, range and rate of traverse. What gives the L 70 much of its increased capability is its use by the British in combination with Fire Control Equipment No 7. The latter consists of an acquisition radar, a tracking radar and a computor, all mounted on a mobile carriage similar to that used for the gun. Thus, a fire unit consists of one gun, one FCE No 7 and one generator.

The combination of L 70 and FCE No 7 not only increases the range and ceiling to which the gun can engage targets but, in addition, gives the weapon an *"all weather"* capability enabling engagements to be carried out in all conditions of visibility and at night.

The L 70 with FCE No 7 is an excellent anti-aircraft weapon system and represents a major advance over the 40 MM Bofors gun retired from service by Canada in 1957.

Now let us examine a few FAW missile systems:

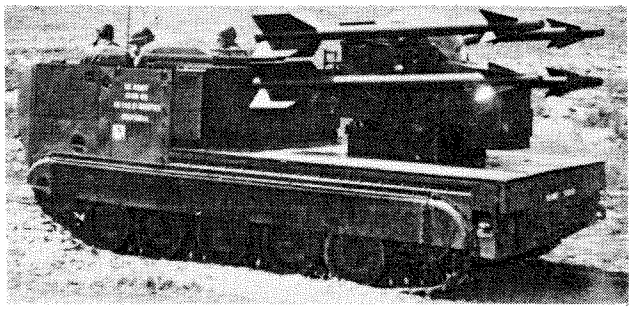


The Triple-Barrelled Hispano-Suiza 20 mm Air Defence Gun mounted on an M113 chassis

1. *The US Chaparral.* A leading contender in the forward area "*fair-weather*" air defence guided missile field is the US Chaparral. The development of this weapon appears to represent an urgent US effort to fill as quickly as possible the missile void created by the termination of the "*all-weather*" Mauler project. To this end, the US reached into its missile arsenal and selected the Navy's aircraft-borne Sidewinder missile, a well tested ten year veteran of air-to-air operations. From its armoury of self-propelled vehicles, the Army called into service the M548 vehicle to carry a modified gun mount with four Sidewinders. The marriage of these two major "*in-production*" components produced the Chaparral.

   Sidewinder is a veteran of many air battles over Formosa and more recently over North Viet Nam. It is recognized however that its infra-red heat seeking guidance system, so effective in air-to-air operations, is not ideally suited to its new forward area surface-to-air role. Because the heat source from jet aircraft is mainly in the tail cone area, the Sidewinder missile is more effective against receding than approaching aircraft.

   Like most of the FAW systems discussed in this paper, Chaparral is intended for "*fair-weather*" operations with a defence capability in clear daylight weather only. Thus the Chaparral/Vulcan team is recognized to be only an interim answer to the problem of air defence in the forward area, to be replaced or supplemented, in time, by a blind-fire, all-weather FAW of the Mauler type.



Chaparral Forward Area Air Defence Weapon

2. *The British ET 316.* This weapon system is a highly regarded British development in the forward area missile field.

   ET 316 has been designed to be operated as virtually a one-man anti-aircraft defence weapon, capable of completely independent action. Its fire unit can be transported on a two wheeled trailer towed by a long wheel base Landrover while spare missiles and tracking components are carried in the towing vehicle or another light vehicle.

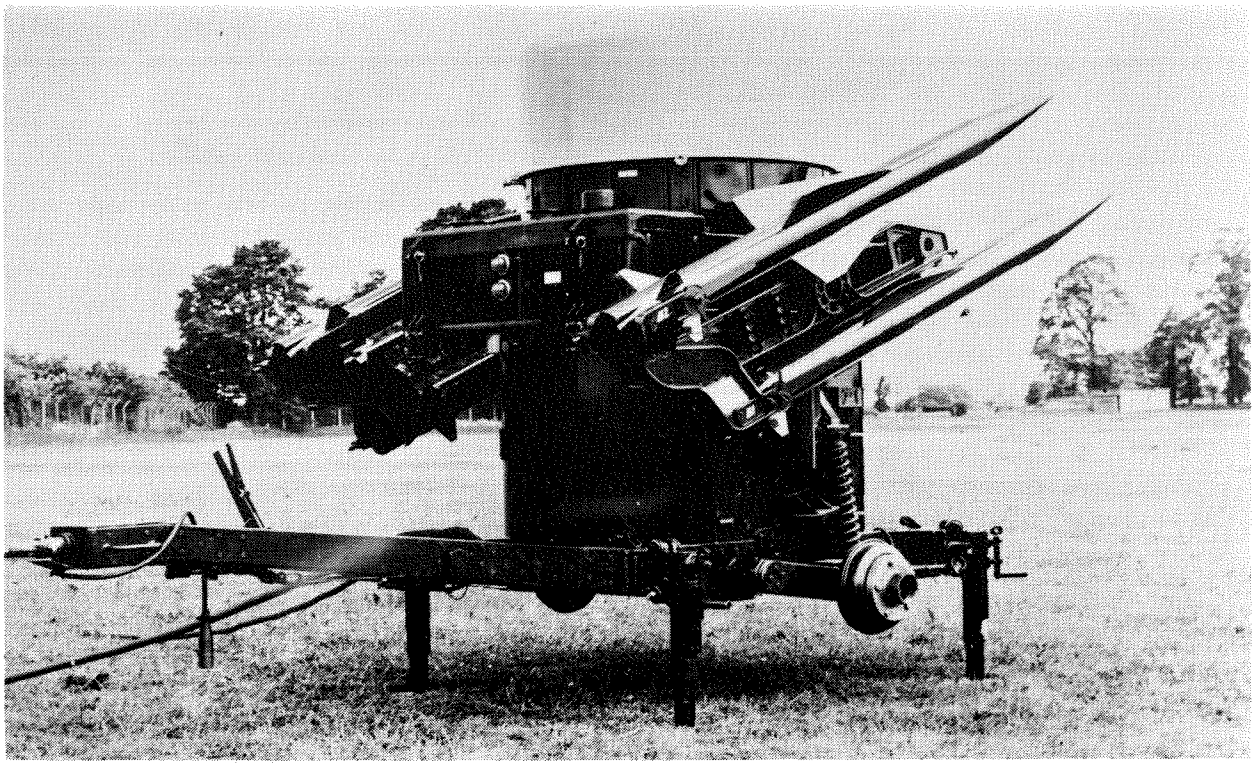
   In action the system is operated and controlled by one man. A second man is required to act as a relief operator and when necessary to assist in reloading missiles. Rapid deployment of the weapon into action, however, requires a crew of five. Despite its one-man operation and apparent simplicity, ET 316 employs, in addition to the missile, the following components: a search radar which detects and challenges all targets, an optical system by which the operator tracks the target, a TV camera which tracks the missile in flight, a computor which calculates corrections, and a command link transmitter which passes the flight corrections to the missile. All these components are compactly packaged allowing ET 316 to be fully mobile on land and air-portable by Chinook helicopter and by Caribou and Hercules aircraft.

   Although ET 316 has not yet advanced beyond the development stage, its advertised military characteristics in terms of mobility, effectiveness, reliability and cost seem very well suited to the requirements of forward area air defence.

3. *The Franco-German Roland.* France and Germany for the past few years have been collaborating on the development of a "*fair-weather*" forward area weapon called "*Roland*". The concept of operations is very similar to ET 316 except that, for added mobility, the entire system is mounted on a 15 ton tracked vehicle. This single vehicle can be regarded as an autonomous fighting unit for the defence of mobile forces.

   The box-like chassis of the Roland tracked vehicle houses the engine, the power generator, a command computor, radio, a magazine of eight missiles and a crew of three. A rotatable turret mounted on top of the vehicle carries a dual missile launcher, a target acquisition pulse-Doppler radar and a directional antenna to pass guidance commands to the missile in flight.

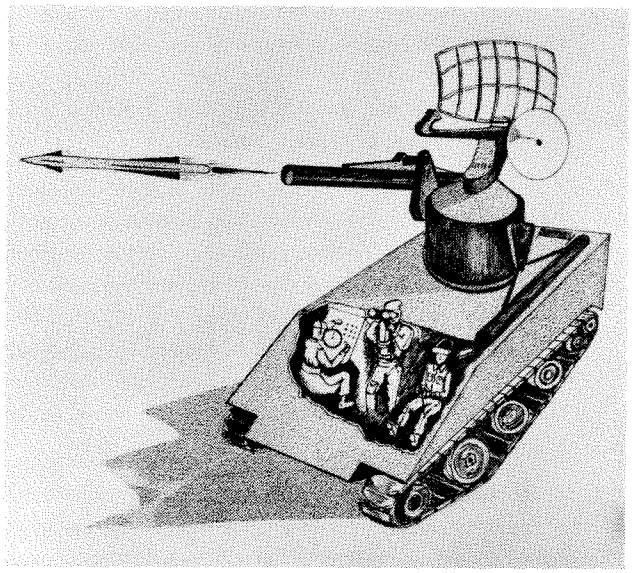
   Roland requires a crew of three: a driver, a radar observer who operates the search radar, and a missile aimer who keeps his optical sight aligned on the target during missile flight. Whereas missile tracking in



The Fire Unit of the British ET316 Missile System

the ET 316 system is done with a TV camera, Roland accomplished this by means of an infra-red source in the missile and an infra-red receiver in the vehicle.

The Roland missile, which is slightly larger than ET 316, can intercept targets at speeds up to Mach 1.3 and out to a range of 3.5 nautical miles, with a single shot hit rate of approximately 50 percent.



Artist's sketch of the Franco-German Roland Air Defence Missile System

This essay will not attempt to assess the relative merits of Chaparral, ET 316 and Roland, nor any of the gun systems previously described in this study. Many complex factors combine to dictate which air defense weapon, or combination of weapons, is preferable for any army. All that can be stated now is that the forward area gun and missile systems discussed here represent a group of weapons from which the eventual choice for Canada's air defence regiment could be made.

CONCLUSION

This paper has attempted to show the importance of the third dimension in the defence of the army area. Properly equipped and employed, the forward air defence unit will permit commanders to concentrate on the achievement of the aim with less concern than in the past about possible air attack.

Even when the air defence regiment is in the field, however, armed with a forward area weapon of the type described above, there could never be sufficient weapons to protect adequately all of our units all of the time. Both unit and individual active and passive air defence measures must continue to be used. The capability of organic automatic weapons to bring down tactical helicopters and fighters, and the value of camouflage from the air threat must be stressed as much as ever.

Exercise Voyageur I — Team Number One starting out. Left to right — Gnr Hicks, Gnr Wood, Gnr Thibodeau, Gnr Strang

GUERILLAS, AMBUSCADES AND WOLVES IN MANIGOGO

Capt WB Cheadle, CD, 3 RCHA

Throughout military history there has been ample illustration of the need for leadership and physical hardiness among junior leaders. With the present trend in the world towards guerilla and counter-guerilla warfare and internal security operations, the need for leadership qualities in junior leaders has become more evident than ever. In view of this, the 3rd Regiment, Royal Canadian Horse Artillery conducted Voyageur Exercises in November 1965 and January 1966 in the Whiteshell Provincial Park of Manitoba. The aim of these 24 hour exercises was to develop ingenuity, resourcefulness, and physical hardiness among the junior leaders of the Regiment.

The general idea of the exercise was that each of two independent states, Manigogo and Ontarasia, had been disputing the sovereignty of the other over the "*province*" of Whiteshell. Ontarasia, having taken the initiative, had infiltrated numerous small groups of guerillas into the province with the intention of seizing control of the area through terror, sabotage and eventually armed rebellion.

The special idea for the exercise had the Manigogan Defence Minister ordering 3 RCHA to keep him informed of the situation through active patrolling. Subject to the dictates of international politics, Manigogo would eventually carry out large scale search and sweep operations, and would subsequently gain full control over the province and its rich oil fields. Following a thorough ground and air reconnaissance, the Commanding Officer of 3 RCHA ordered a number of patrols to carry out specific tasks in the Whiteshell area.

The exercises involved a number of patrols, each consisting of a Junior Officer, an NCO, and five men. The dress for the exercise consisted of combat clothing in the fall and arctic clothing in the winter. Each participant had to carry his personal weapon, a water bottle, his mess tins, a bayonet and a small pack.

In addition, each patrol was required to carry miscellaneous items of equipment including a 510 radio, sleeping bags, first aid kit and the like.

Their task involved a long-range patrol over a pre-arranged, cross-country route. The route was to be covered within 24 hours and consisted of several rendezvous with partisan underground forces. Each patrol had to carry out specific tasks along the route. The contact at each rendezvous provided the patrol leader with a situation report, the map reference of of the next contact, and details of any specific task to be completed during the next leg of the patrol.

The first task occurred between the first and second rendezvous. Each patrol suffered an exercise casualty in a minefield towards the end of the first leg. The wounded men had to be carried on a litter to an underground doctor at Rendezvous 2.

The leg from that point to Rendezvous 3 was completed in darkness over very rough terrain. Further progress was prevented until 0600 hrs the next morning by the water level to the north of Rendezvous 3. This was due to the enemy closing a dam at the end of each day. Progress was further impeded in the morning by the addition of 50 pounds of explosives to the loads already carried by the patrols. These explosives, represented by a sealed sandbag, were to be delivered to saboteurs at a railway tunnel to the north.

The underground at Rendezvous 4 directed the patrols to an abandoned airfield, where they were to be picked up by helicopters and returned home. At the airfield, another contact informed them that enemy aircraft had destroyed the helicopters. He gave them the location of the headquarters of the 1st Para Battalion which had landed during the night, and a verbal message to be delivered to the battalion commander. An agent located mid-way to the headquarters provided them with further directions. The headquarters represented the finish line.

The route over which the exercise took place embraced a series of rocky ledges, lakes, swamps, muskeg and forests. Bad weather in addition to the ruggedness of the route made the task appear more herculean than ever to the participants. Temperatures dropped well below freezing and snow blanketed the countryside. Some of the water obstacles were impossible to avoid. These would leave the patrols soaked to the waist initially and ice-coated later. It was obvious at the outset that each patrol leader would have to employ his own strategy to get the most from his men.

A small controlled enemy guerilla force, including two light aircraft, was included in the exercise. The role of the civilian-clad guerillas was to force the patrols away from roads and power lines which could be used as navigational aids. This

Exercise Voyageur I – CO inspects preparations of Team Number Six prior to their march

was accomplished by ambushes at pre-selected key positions, and by strafing runs in the open areas by the light aircraft. The aircraft also provided invaluable assistance to the directing and control staff in maintaining control of the exercise in general, and of individual patrols on the ground.

In most cases the patrols were carried out effectively. During the briefings and the checking of equipment at the start-line, spirits were high and competition was keen. This attitude persisted throughout the exercise. Nevertheless many mistakes were made, and consequently many lessons learned. The need for a high standard of physical fitness became very apparent to all. The necessity for teamwork between the patrol leader and his NCO was another lesson emphasized. Unfortunately the realization of this need came too late for some. The extra miles covered by a weary patrol to get back on track after having made a wrong turn drove this point home very well. Other patrols learned too late of the necessity for food and water discipline on the march. The principle lesson however, which this exercise pointed out, was that a junior leader must be tough to lead troops. Those who discovered it early enough kept their patrols intact, while others who realized it too late suffered losses. As a result of such factors, the condition of the patrols as they arrived at the finish line varied. Some were at full strength while the ranks of others had been depleted. Some shuffled in obviously fatigued, while the singing of others could be heard long before they appeared from the woods.

As is the case in most exercises, Exercise Voyageur I was not without its humourous and unscheduled events. One patrol demonstrated its initiative and resourcefulness very well, when it commandeered the Commanding Officer's staff car to transport its exercise casualty. However the patrol felt that the directing staff's sense of humour was sadly lacking when it was forced to retrace its steps, and cover the leg a second time. Some unscheduled excitement occurred when a pilot reported a large pack of timber wolves near the isolated underground agent at Rendezvous 5. Being an experienced woodsman, he quickly gathered pine boughs and built a large fire. After several anxious minutes the wolves fortunately lost interest and moved on.

Versatility, although akin to flexibility, is not considered a principle of war. However it is certainly a major characteristic of the employment of military forces in the operations of today. If we are to be a versatile army, the need for strong leadership among junior leaders is greater than ever. Exercise Voyageur I was a relatively successful exercise with regard to the development of this quality.

The aim of the exercise was to develop physical hardiness, resourcefulness and ingenuity among junior leaders. The duration of the exercise was not long enough, of course, to develop physical hardiness, but the resulting fatigue, aches and stiffness at least made all participants aware of the need for this quality. On the other hand, the exercise did fulfill that portion of the aim concerned with the development of resourcefulness. The manner in which the patrol leaders dealt more promptly and more effectively with each new problem or task as it arose illustrated this point. A resulting weakness of the exercise was that it did not provide the junior leaders with an opportunity to exercise inventiveness. Consequently it did not fulfill the aid with regard to the development of ingenuity. These weaknesses have been recognized and will be corrected in future exercises. □

Exercise Voyageur 1 – Some of the guerillas. Left to right – Sgt Cummings, Gnr Walker, WO 2 Clements, Bdr Delaquis, Gnr Marchessault, Lt OL Greenizan

SANDBAGGING

The Red River Valley

1966

Maj EJ Berris, CD, 3 RCHA

When the usually placid Red River decided to go on the rampage early in March 1966, it caused 3 RCHA and several hundred thousand people, to make drastic changes to well laid plans. The Regiment was warned for flood duties on 18 March which was the start of an operation that was to occupy the unit for the next 36 days.

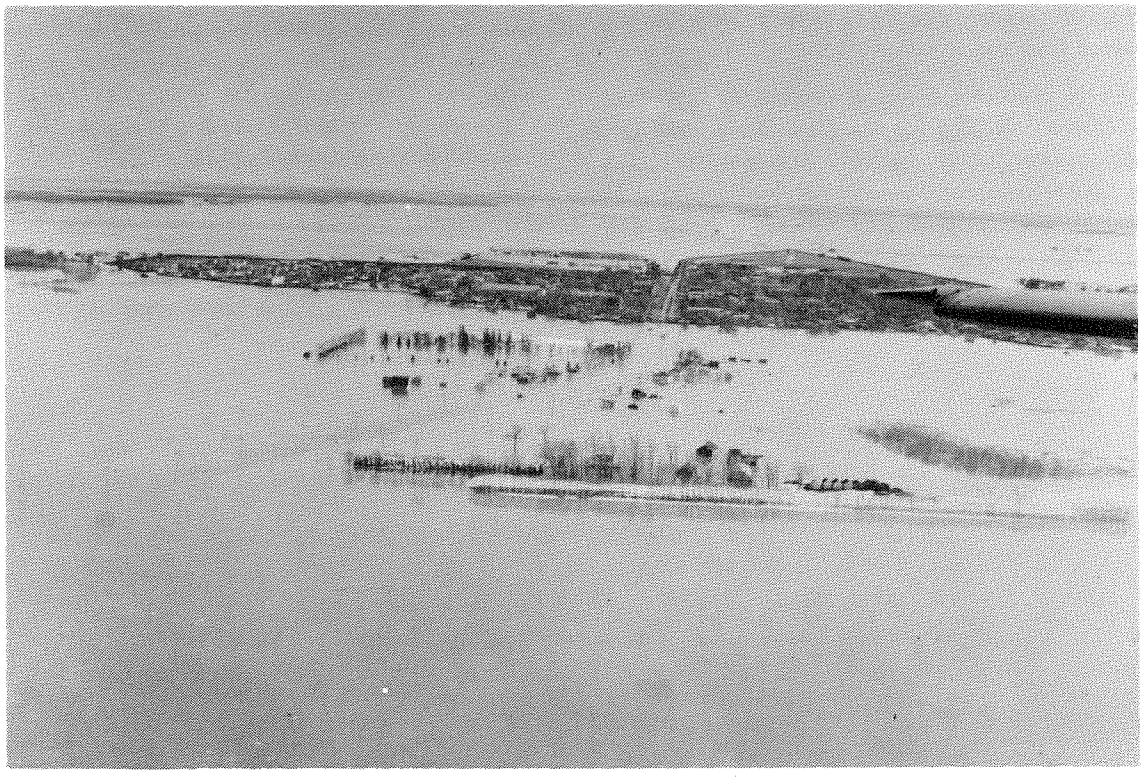
As in 1950, Canadian communities along the Red River from Emerson, on the US border, to Winnipeg were threatened by the flood waters. Before the river was to recede, a total of 1,286 soldiers, sailors, and airmen from 21 other units or establishments within Manitoba were to come under command of the Regiment for varying periods of time.

Initially, the unit's efforts were confined to the construction of a secondary, sandbag dyke in the St Vital area of Metro Winnipeg. The construction and maintenance of this dyke system took a total of 5,780 regimental man days. In addition to the 3 RCHA contribution, the RCAF Station, Winnipeg, provided men for dyke duties in that district.

On 5 April, J Battery was dispatched to the towns of Morris and St Jean Baptiste to assist in the construction, maintenance and patrolling of dyking systems designed to protect those towns. This phase of the operation lasted until 23 April. The battery commander had as many as 588 servicemen, from the three services, under his command at one time. In addition to the troops involved, the battery commander had task vehicles, DUKW's and a landing craft infantry (LCI) working under his direct control. The LCI was commanded by a naval officer provided from the staff of Training Command Headquarters.

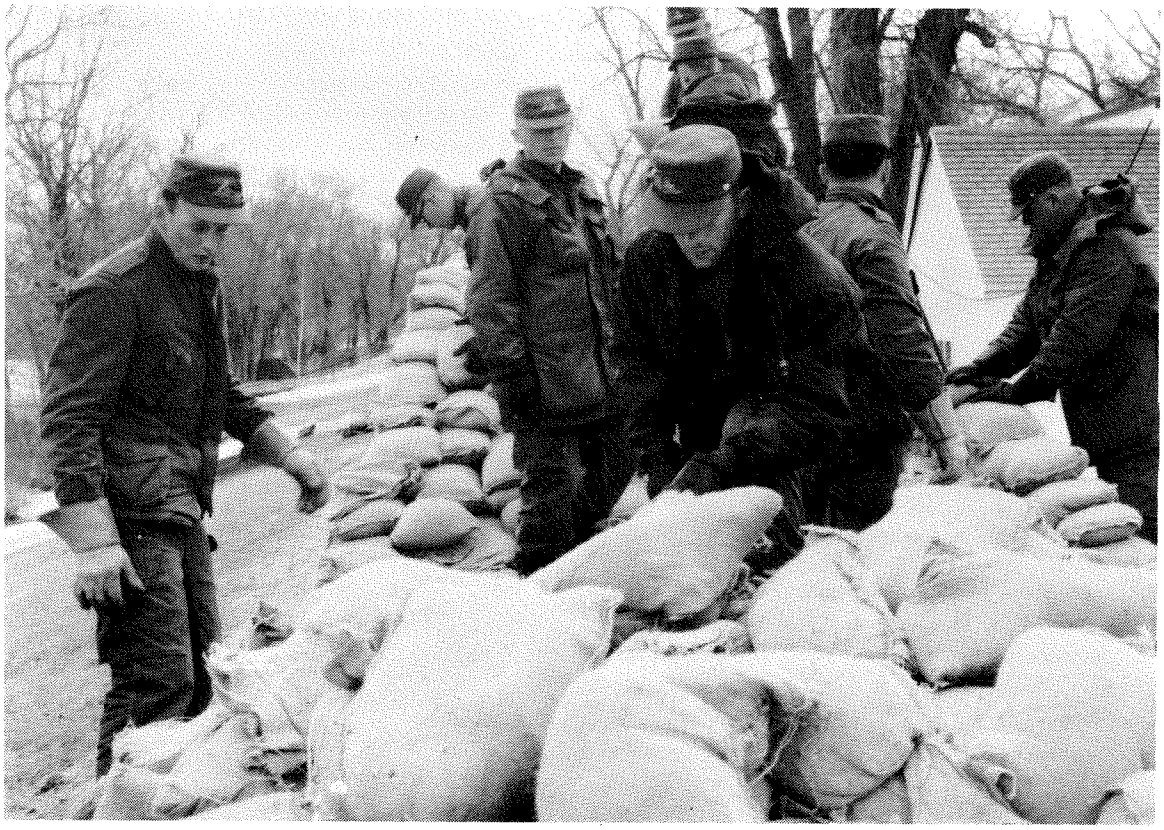
As the town's people evacuated Morris and as business enterprises closed down, there was a requirement to feed essential civilian personnel left behind. The Regiment operated a mobile kitchen that fed up to 375 civilians per day.

A Flood Control Operations Centre was established by the Regiment and manned on a full

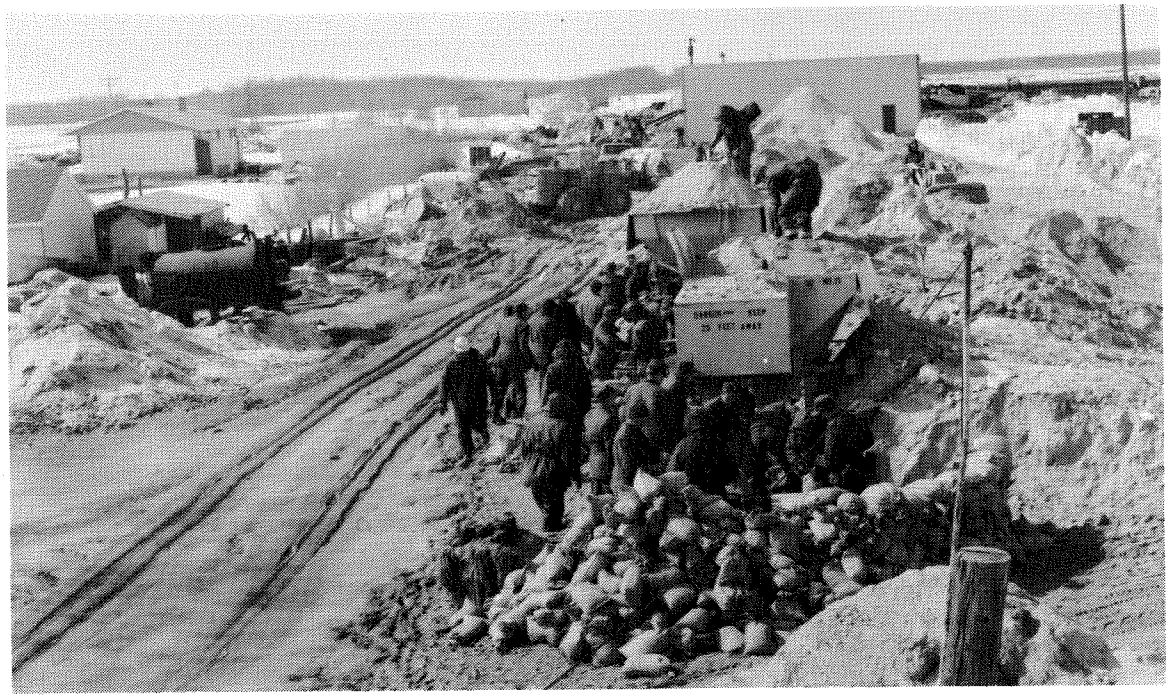


Morris, Man; view looking south along Highway 75 near the peak of the flood

Mechanized sandbag operations at Elm Park dyke



Here Sig GL Prout and Sig GW Easton assist other members on the dyke at St Vital



Sandbag filling operation at the Department of Highways in St Vital

time basis. This Operation Centre maintained communications to the forces working in the Metro Winnipeg area and to Morris and St Jean Baptiste. The Operations Centre's tasks included co-ordination of the allocation of troops, arranging for airlifting by cargo helicopter, movement of personnel to and out of Winnipeg centres, the provision of POL, rations, spare parts, recovery, and the supply of additional clothing.

The Regimental Quartermaster was required to keep his stores open on a 24 hours basis. As a result of this, and the fact that 16 Regional Ordnance Depot also remained open 24 hours per day, it was possible to meet requests for equipment and stores almost immediately.

In anticipation that this flood might reach the proportions of the 1950 disaster, the decision was taken to convert the barrack blocks to wartime style accommodation. Double-deck bunks were installed to accommodate up to 840 transients.

3 RCHA Air OP Troop, located at Shilo, was brought to Winnipeg and formed the nucleus of a stand-by force. This force was divided into groups of 25 men and was kept on varying degrees of notice to move, ranging from 5 minutes to 30 minutes. Radio vehicles and dump trucks, loaded with filled sandbags, were included in this force. "*Ace Force*", named after the OC of the Air OP Troop, was able to get mounted and out of the barracks within 2½ minutes of receiving notice to move, and was a mobile reserve immediately available to the District Representatives of the Provincial Engineering Department. These District Representatives could call by radio telephone, and troops would be immediately dispatched to any trouble spot.

"*Ace Force*" was committed when an ice jam on the Assiniboine River caused the water to back up and the river to rise two feet in a few hours. By quick reaction and hard labour, the force was able to raise the dyke level and was credited with saving a portion of the City of St James.

An advance effect of this flood was felt in respect to the Regiment's training plans. All training ceased for a six-week period and a new Regimental Training Plan had to be issued.

Congratulations on the Regiment's efforts were received from the Minister and Associate Minister of National Defence, the Commander of Mobile Command, the Member of Parliament for Provencher, Manitoba and from the Mayor and residents of St Vital. The latter, during the special Artillery Birthday parade ceremonies, presented a silver engraved plaque to the Regiment in appreciation of the job performed by the unit in protecting St Vital.

Another of the ubiquitous tasks imposed on the Regiment has been completed. Perhaps by 1968, the estimated completion date of the Greater Winnipeg Floodway, the unit will be out of the flood-fighting business, but undoubtedly other, and equally challenging, tasks will arise. □

"THANK YOU, SOLDIER..."

This is deserted Elm Park as it looked
Tuesday, April 12th, 1966.

Presented to the Third Regiment... Royal Canadian Horse
Artillery in appreciation of a job well done.

Elm Park Residents, St. Vital, Manitoba

Silver Plaque Presented by Appreciative Civilians

PARA TRAINING FOR YOUNG OFFICERS

Lt RB Rogers, 3 RCHA

It's your first jump. You're at 1500 feet hooked up, anxiously waiting to step out the exit door. All the training and practice never quite prepared you for the way you feel at this moment. Your pack never felt heavier, nor you stronger.

You are ready.

There are seven jumpers ahead of you. Now six..... five. No one hesitates. You hope you won't either. You're sure of your training and sure of yourself.

In the 21 days of ground training something happened to you. You did things you never thought you could. It was tough. But you did them because you wanted to, and because the others were doing them.

"Okay, You're next."

"Go!"

During the long four seconds before you feel the welcome tug of your chute developing, you experience a feeling of exhilaration through the knowledge that you had the fortitude to step out of that door. If that is all you learn at the Airborne School of the Canadian Joint Air Training Centre you will still be miles ahead.

There are other reasons for para training in the Canadian Army, in particular for young officers. A glimpse of the training plan for parachutists should illustrate some of the advantages of *"winning your wings"*.

The first two weeks are spent in Rivers, Manitoba. They include flight training in the famous *"torture racks,"* landing swings, aircraft drills in the C130 Hercules mock-ups, and of course everyone's favourite pastime, physical training (designed not to get you in shape but to keep you there).

Next comes the Mock Tower, where, if you haven't sustained a fractured bone so far, your mental outlook on the business of jumping is strained to the utmost. It is on the Mock Tower where the largest percentage of failures occur. The final phase of ground training sees the candidates at the High Tower in Shilo, Manitoba, for the flight and landing qualifying tests. All that remains now is *"J"* Stage and good weather so that the five necessary qualifying jumps, including one night jump, may be carried out.

One must be in good physical condition to pass the course. If you are not in good condition when you report, you suffer for the duration of ground training, but you will be in good shape by the time you reach *"J"* Stage. The necessity for top physical condition is the main reason why candidates should be young. It is apparent on many courses that those nearing the maximum age limit of 32 have a more difficult time than the younger jumpers.

It is generally agreed by those officers who have qualified as parachutists that more young officers should attend this course. It is good training physically and mentally; indeed, the candidate who is not mentally alert at all times will do more push-ups and sit-ups than he ever thought possible. It also instills a sense of leadership which, although not assessed under the terms of the course, is nonetheless present. Officers are made Number One and Number Two in each serial for the first two or three jumps. This gives confidence to those who may have second thoughts when standing hooked into the static line cable awaiting the green light.

Just under 14,000 soldiers have become parachutists since the Canadian Army began training jumpers in 1943, but there is only a small percentage of those serving in the forces today. It is, then, a group set apart with a common bind of achievement.

Although it is true that few units are actual paratroop units at the present time, it is conceivable that the paratrooper will be a practical asset in Canada's role in peacekeeping operations or any other functions in which Canadian Forces may participate in the future. Officers will be required to lead such air dropable detachments or sections as FOO parties, patrols, OPs, etc, and more young officers of all arms should be trained as parachutists now so that they may become paratroopers in the future.

A CITY HONOURS ITS GUNNERS

Lethbridge Herald Photo

Mayor Frank Sherring of Lethbridge presents illuminated scroll to Lt-Col AO Aspeslet, CD, CO of 18 Field Artillery Regiment, during granting of freedom of the City to the Regiment

On 4 June of this year, the city of Lethbridge, Alberta, granted the freedom of the city to its Gunner unit, the 18th Field Regiment.

The unit, formed in 1908 as the 25th Independent Battery, was the first artillery unit to be formed west of Winnipeg, and its first Commanding Officer, Major (now Brig Gen) JS Stewart, was on hand 58 years later to see his unit receive the highest recognition which the city can bestow.

Granting the freedom of a city is a very ancient tradition originating in medieval times when cities were walled and locked for security. Military units wishing to enter or pass through a city had to be inspected and approved of by the chief citizen before being granted the key and the freedom of the streets.

In keeping with the tradition, the Regiment was stopped in front of the city hall by the Chief of Police who escorted the Commanding Officer, Lt Col AO Aspeslet, to the office of the Mayor.

During the ceremonies, held in conjunction with the city's sixtieth anniversary, the Lieutenant Governor of Alberta, Grant MacEwan, received a Royal Salute from the Regiment, after which Mayor Frank Sherring received a General Salute when he came out of city hall to inspect the troops. Following the reading of the proclamation granting the freedom of the City of Lethbridge to the Regiment, and an exchange of plaques between the Mayor and the Commanding Officer, the Regiment marched past the reviewing stand, first on foot and then, after circling the block, mounted with guns. Among the dignitaries on the reviewing stand were Brigadier AJB Bailey, representing the Minister of National Defence, and Mrs Bailey. □

CYPRUS TOUR

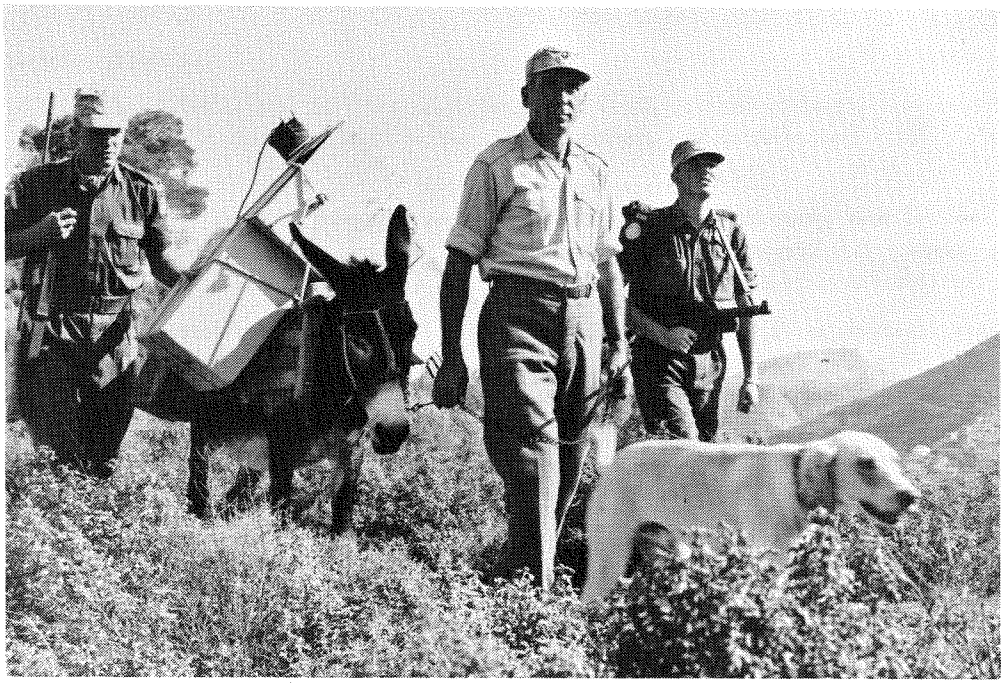
Major WD Creighton, CD

Early in July 1965, W Bty 4 RCHA was warned for a tour of duty with the United Nations Force in Cyprus (UNFICYP). Notwithstanding regimental pride in the motto *"Ubique"*, this had not been foreseen in the preparation of our training programme, and internal security in large doses was rapidly inserted into the July/August timetable. Also, greater emphasis was placed on training in PT, signals, driving and drill. The battery was fortunate in having a high proportion of qualified drivers, and in this department training was devoted largely to learning to drive on the left side of the road – a matter of no small import, as the battery was soon to learn in the Cypriot mountains. All ranks went through the Battle Efficiency tests, and by mid September all were in excellent physical shape and anxious to be off to the Mediterranean.

In September, the battery was redesignated W Bty 2 RCHA and placed under operational command of 2nd Canadian Guards, which unit had only three companies operative at the time. On 25 September, the battery advance party and the company advance parties departed from Ottawa via RCAF Yukon aircraft.

On arrival at Nicosia on 26 September, the battery and company advance parties moved immediately to their new areas. D Coy, 1 QOR of C, which the battery was to replace, was located in the Limnitis area, having temporarily replaced the Irish contingent which had returned to Ireland in August. All ranks of D Coy were most helpful in briefing battery personnel in their new duties and especially in imparting an understanding of the Middle Eastern outlook.

The battery arrived in Cyprus on 8 October and, after spending the night at *"Lizard Flats"*, (the battalion administrative area) moved by bus, driven by Greek Cypriot drivers, to the Limnitis area. As the narrow roads to this area wind through very high hills, many arrived in the base camp in a somewhat shaken state. Previously designated individuals were immediately despatched to the various outposts and the handover was completed by noon on 9 October. Some of the younger members of the battery were slightly bewildered for a few days.



A resupply run to "Juliet" outpost in Limnitis area, Oct 1965. Left to right – Gnr Smith, native donkeyman Sam, and Gnr Vachon

Never having flown before, within 48 hours they had been transported halfway around the world by air, suffered a hazardous mountain drive in Cypriot busses, and moved to their outposts by helicopter.

During the next three weeks, the battery spent many sleepless nights as tension between the two sides greatly increased. During this time, the BC and some of his officers consumed enough Turkish coffee during negotiations to last a lifetime. One outpost had to be temporarily abandoned when Greek Cypriots moved forward and surrounded it. 2 Lt Jack Mortlock successfully withdrew the outpost under fire, during the hours of darkness, bringing all his men with him, including an injured man, Gnr Rodgerson.

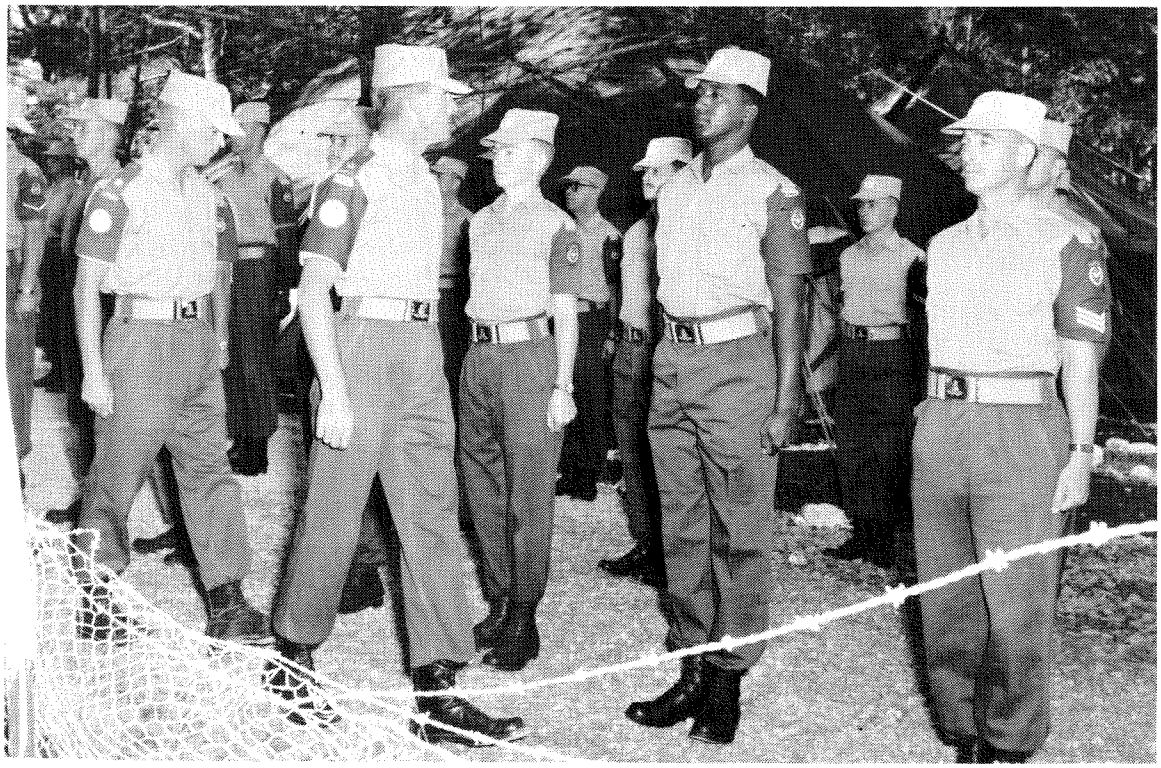
In addition to the "sharp-end" duties, the battery provided daily road patrols in the Limnitis (Turkish) bridgehead, escorts for olive and carib pickers, and repaired water pipes. The unit also successfully evacuated three expectant mothers to the nearest hospital, beating the stork in all cases by only a few moments. Sgt J. Currie demonstrated great versatility in the role of honorary midwife.

In mid October, when the Irish contingent returned to Cyprus, the battery, after handing over the position to the Irish – in a brief ceremony in which the Irish gave their drill orders in Gaelic – moved into reserve.

After a week in reserve, during which time the battery was engaged in such chores as hauling gravel, unloading aircraft and providing gate guards, a move was made to the Myrtou area on 8 November. On take over, there was a total of eight outposts in this area. As the prime purpose of the UN was to restore the situation to its original condition, on approximately 20 November, six outposts were disbanded and the areas maintained by patrols from the battery, the Recce Platoon of 2 Cdn Gds, and the Recce Squadron, RCD.

The base camp area was extremely small in this location and, as only a small percentage of the battery was directly involved in operational duties, a programme of training and sports was instituted. Courses were run in .30 and .50 cal and other battalion support weapons. Extensive helicopter training for all ranks was carried out in the infantry role. A soccer team was formed which played local village teams. This provided excellent training for the soccer squad as the Greek Cypriots are experts in this sport.

W Bty celebrated St Barbara's Day in traditional style. Following a battery parade, with



The BC, Maj WD Creighton, inspects H Troop on St. Barbara's Day in Myrtou. On the left, accompanying him is 2 Lt M MacDonald. Soldiers in the front rank are, from right to left, L Sgt Power, Gnr Smithers, and Gnr Wallis

the Pipes and Drums of 2 Cdn Gds in attendance, a short Church service was held. After the service, a sports programme was started, which included a forced march competition, (with a team from each troop,) basketball, volleyball, etc. Trophies were presented to the winning teams by the Canadian High Commissioner to Cyprus, His Excellency Mr Wainman-Wood. Guests for the festivities included the High Commissioner, Col J Drewry, Canadian Contingent Commander, the CO and company commanders of 2 Cdn Gds, and Gunners from the British, Swedish, Irish and Finnish Contingents and from UNFICYP headquarters.

A reception for the guests was held by the battery officers and senior NCOs. A delicious buffet lunch was prepared by the unit cooks for the men, and toasts to the Queen and the Royal Regiment of Canadian Artillery were drunk prior to the lunch.

Stationed in the village of Myrtou was a 25 pounder battalion of Greek Cypriot Artillery. As they also considered St Barbara to be their patron saint, visits by both commanding officers were exchanged during the day. In the afternoon, the battery soccer team, preceded by the Pipes and Drums, paraded through the village of Myrtou to the unit soccer field to play the Cypriot battalion. The battery did very well in this game, despite the 6 to 1 score in favour of the Cypriots. A trophy, donated by the Artillery battalion, was presented to the winning team by the Canadian High Commissioner.

The UN Commander, General Thimayya, died suddenly in December 1965. A guard was provided by 2 Cdn Gds when the body was taken to the aircraft for transportation to India, and battery personnel provided the pallbearers, under the direction of Sgt N MacLean.

The battery again went into reserve during the period 19 December 1965 to 3 January 1966. At this time many took advantage of short leaves to Famagusta and seven day leaves to Lebanon and Israel.

The New Year was ushered in at Camp Troodos with a buffet and sing-song, by the light of a large bonfire that could be seen for miles.

On 3 January, W Bty again relieved 9 Coy in the Kyrenian area of the battalion district of responsibility. Seven outposts were deployed until 20 January, when, due to a battalion re-organization, two were handed over to another company. The base camp overlooked the scenic town of Kyrenia, with the blue Mediterranean waters as a background. The famous Crusader castle of St Hilerion, occupied by the Turkish Cypriots, is in this area, while the town of Kyrenia is occupied by the Greek Cypriot forces. This location was the most enjoyable one occupied by the battery during its Cyprus stay. All ranks were comfortably billeted, and the town was close by, enabling the troops to take advantage of the shops during their short periods free of duties. The battery was extremely busy from an operational viewpoint, and it was with great reluctance that the area was handed over to a company of 2 Cdn Gds on 14 February.

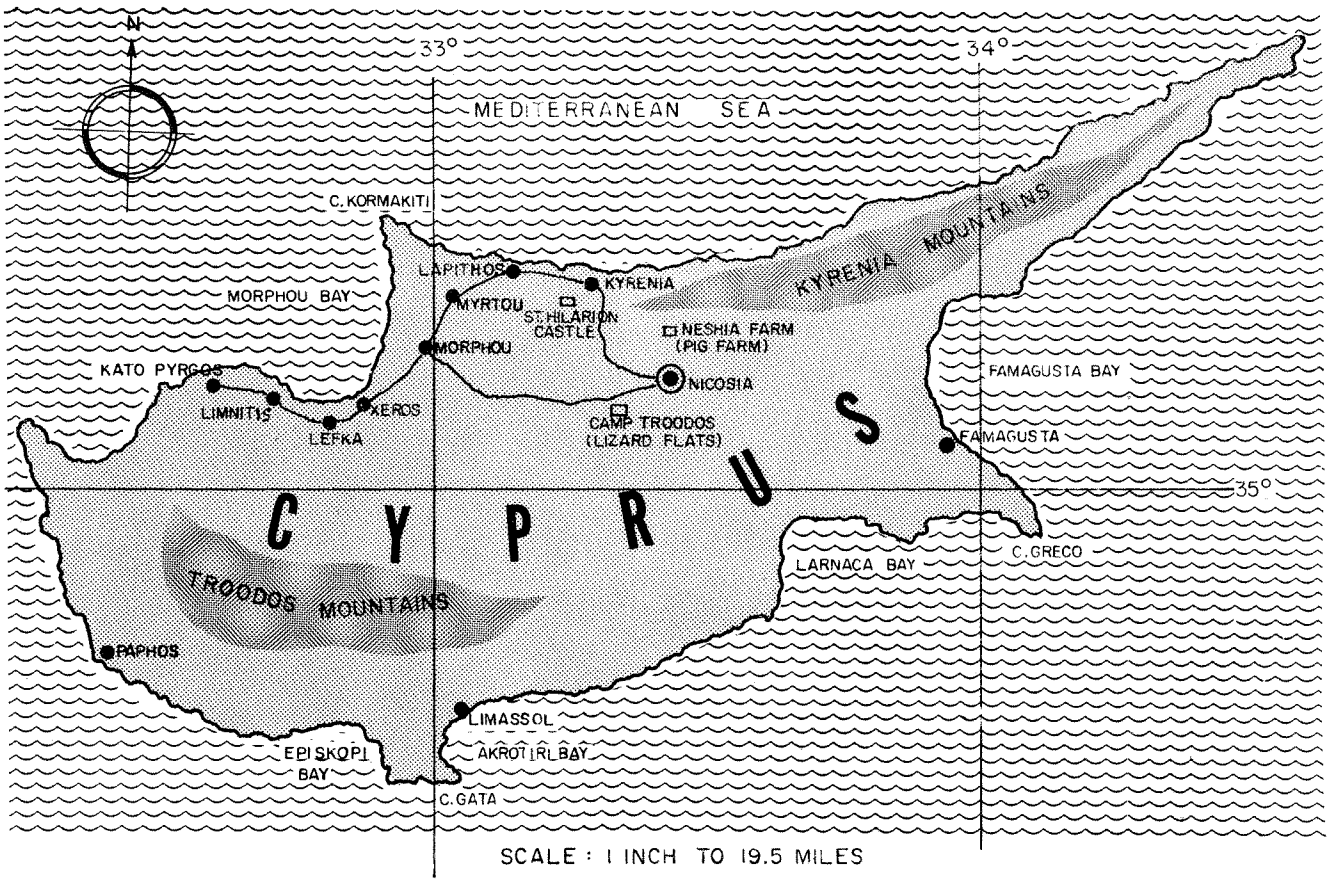
After the normal two weeks in reserve and the inherent menial tasks, the battery happily moved to the Oneshia Farm area, knowing that the next time we came into contact with "*Lizard Flats*", it would be to board the plane for home. Oneshia Farm is appropriately referred to as the "*Pig Farm*", approximately 150 pigs of all sizes being housed in the Base Camp area.

Outposts were well spread out in this location, the two furthermost being about 12 miles apart. Two outposts were supplied by helicopter, being inaccessible by road.

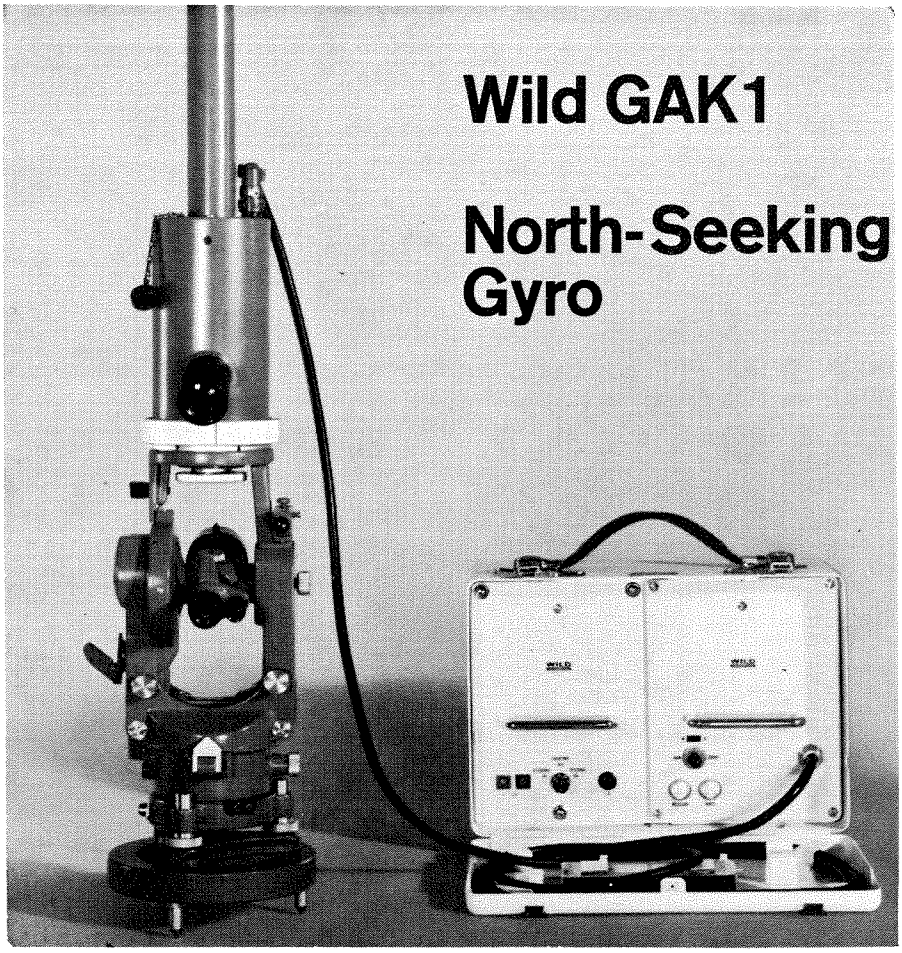
During this period, the UN helicopter flight was replaced by 4 Air OP Troop, RA, flying Sioux helicopters and commanded by Major Ewart Pavey. The battery exchanged visits with the flight and many lasting friendships were established. The relationship was marred by tragedy in early April when a helicopter flown by Major Pavey caught fire and crashed. The battery provided vehicles and personnel for the funeral at the British Military Cemetery.

The advance party of A Coy, 2 RHC, arrived in Cyprus on 4 April, and the next nine days were spent in briefing the incoming officers and NCOs on operations, communications, transport, catering and liaison with local commanders. Prior to leaving, the battery held a pork barbeque, the viands being donated by the local pig farmer. Two days later the main body of A Coy took over from W Bty, and that afternoon all ranks were airborne, arriving in Trenton in the small hours of 14 April.

In retrospect, the Cyprus tour was one well suited to an artillery unit. With its high percentage of tradesmen, especially drivers and signallers, the battery adjusted very easily, with a minimum of initial training, to its peacekeeping role. Although the tour was at times dull, frustrating and uncomfortable, the mere mention of such names as Liminitis, Piliari, the Mukhtar of Temblos, OMEB, Hill Top, and Lizard Flats brings back memories of experiences one would not want to have missed. □



L Bdr Morrison scanning the countryside from "India" Outpost in Limnitis Area



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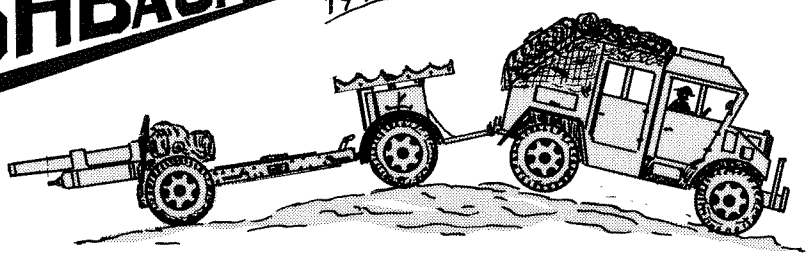
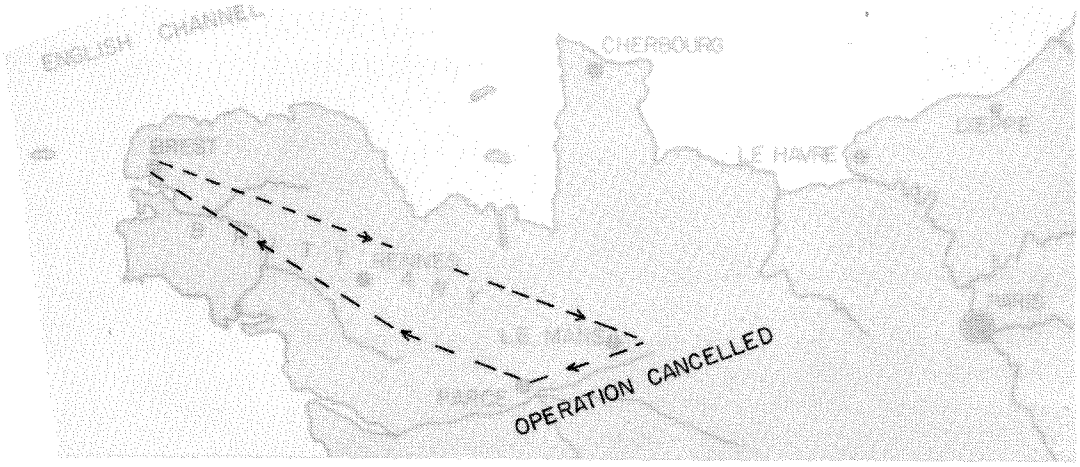
FLASHBACK 1940





There is a common misconception that the evacuation at Dunkirk marked the end of the Allied presence on continental Europe in 1940. Also, it is sometimes supposed that the Dieppe raid in 1942 was the occasion of the first landing of a Canadian formation on that continent during World War 2. Neither supposition is correct, although the small incident described below will in no way detract from the lustre of those memorable occasions.

In June 1940, immediately following the evacuation through Dunkirk, 1st Field Regiment, RCHA, was despatched to France with 1st Canadian Infantry Brigade on an ill-fated operation the story of which may be found in other publications.

Briefly, the expedition stemmed from a plan which originated in the War Office and which envisaged the establishment of a "redoubt" in the Brittany peninsula. All of the 1st Canadian Infantry Division was to be included in this operation. In the midst of the movement of troops, however, the scheme was cancelled. Only the 1st Brigade got to France and, instead of being sent to a staging area in the peninsula as expected, was sent deep into the interior by Lines of Communication authorities who apparently were not conversant with the operation, and were simply acting upon the same arrangements which were used when the British Expeditionary Force went to France during the previous autumn.

The novelty of the situation might be gleaned to some extent from a realization that on 14 June, as the rampaging German Army poured westward through an undefended Paris and a disintegrating France, the green but optimistic Canadian Brigade poured eastward toward Paris from the port of Brest. Belgium had surrendered, the bulk of the British Army had returned to England via Dunkirk, France was reeling in defeat and its army had ceased to offer effective resistance. The following laconic account appears in the regimental history of 1st Field Regiment, RCHA (subsequently re-designated 1 RCHA).

The regiment was split in two for the journey to France, the road party under Maj Nash, the 2IC, proceeding two days ahead of the train party under Lt Col JH Roberts.

The road party left Leipzic Barracks (Ewshot, England) on Sunday, 9 June 1940. It consisted of 7 Officers and 292 ORs and all the guns and vehicles. The night was spent at Exeter Staging Camp and loading commenced next day at Plymouth. The two boats, City of Mobile and the Glinafric, were loaded with vehicles and equipment without regard to units which caused confusion in unloading later on.

The personnel of the road party made the passage to Brest on the Ville de Algiers where they arrived on the 12th. The next day unloading commenced. Each vehicle, as it was unloaded, was sent off independently to the Citroen Garage and then to Landernau 13 miles east of Brest, where petrol was picked up. Ten miles further on, at Landivisiau, they were sorted out into units, loaded with rations and sent forward to Sable (over halfway to Paris) in groups of ten. At 2100 hours all vehicles bivouacked along the road.

Meanwhile, the train party had left England on 12 June. Embarking at Plymouth aboard the El Kantara were 311 all ranks. At Brest, on 13 June, the two parties were re-united briefly but Movement Control would not allow them to join. The train party, therefore, entrained at noon (in box cars labelled "*Quarante hommes ou huit chevaux*") and at 0700 hours next morning reached Le Mans. Here the station was packed with refugees. Arriving at Sable at 1030 hours, where Maj Nash was waiting, the party was moved to Parce by the RASC. Shortly after, the vehicles started to arrive and the regiment was billeted and getting organized by the morning of 15 June 1940. (Maj Nash had organized an advance party and arrived at Sable about 2300 hours 13 June. Here he could find no one in authority and the town and roads were full of refugees. Finally Maj Nash was given a billeting area just as the train arrived).

In the early morning hours of 15 June confusing orders about returning to Brest were received. After checking, it became obvious that this was the case, as other units were pulling out as fast as they could.

The RCHA started off for Brest at 0900 hours on 15 June. Luckily, enough petrol for the return trip was available in an RAF dump which was being abandoned. Between 0300 and 0500 hours on the 16th the column was halted as the drivers were so tired it was considered dangerous to go on.

In the meantime Maj Nash had again gone ahead. There was great confusion near Brest as every unit was converging on this port. Finally it was arranged to let the RCHA pass through Landernau with a view to taking up a position in the defence of Brest.

However, when the convoy arrived, the guns were ordered to the docks while the remainder of the vehicles were assembled near Landernau. Both groups waited there until 17 June as no ships would come into the harbour which was supposed to have been sown with magnetic mines the night before.

On 17 June the personnel were moved to the Citroen Garage in Brest and the vehicles were destroyed in a field nearby. The personnel got thoroughly mixed up and there were some aboard the Stathaird, the Guineau and the Bellorophon, all of which were crowded.

Lt Col JH Roberts, with the guns, received many conflicting orders. There was no senior Canadian officer in the area. First he was ordered to destroy them, later to load them, etc. Finally, at 1400 hours, he guaranteed to have the guns loaded in one hour, (See Editorial Note) and before any further minds could be changed, loading started on the Bellorophon. The tractors were destroyed.

That evening all three ships sailed for England where they arrived at various ports.

The 2nd Field Regiment met the returning personnel at Farnborough on 19 June and did everything possible to make things comfortable and to facilitate settling in Leipzic Barracks. This was really appreciated as everyone was "*dog-tired*" and most of them hadn't had their boots or clothes off for a week.

By 26 June the regiment had been accounted

The regiment spent the night 14/15 June 1940 in and around this chateau at Parce. Photo was taken on the morning 15 June, just after the evacuation order was received. Soldier in foreground walking away from camera is RSM John Gilpin. Walking toward camera, with vehicle camouflage net over his left arm, is Gnr Bill Gommer

Waiting for orders on the Brest quay. Sgt Lawrence Pugh waits it out on the roof of his quad

Waiting

for except Gnr GR Cooper (a motor-cyclist DR) who was wounded by a German reconnaissance element, nursed by civilians, and finally escaped through Gibraltar to Great Britain where he arrived on 17 March 1941; and Gnr Daggit who was poisoned by food and sent to hospital in Rennes. The latter turned up later in Scotland.

The regiment acquired some claim to fame by being the only one to bring its guns back from France in 1940.

Editorial Note –

In the book *The Canadian Army, 1939-1945,* (The Queen's Printer) Col CP Stacey states that Lt Col Roberts *"was given two hours to put aboard ship as many guns as he could"*.

Footnote –

Actually the regiment had lost one of its guns in a road accident in the withdrawal to Brest but nevertheless took 24 guns back with it to England. The bereft limber gunner couldn't bear the thought of his detachment being the only one to return without a gun, particularly when he noticed that perfectly good ones were being abandoned at Brest by a non-Canadian unit. To hook one of these onto his quad was the work of a moment. On return to England, the story of the liberated gun somehow found its way into *"official quarters"* and attempts were made, through Ordnance and staff channels, to recover the gun for its original custodians who apparently had been resigned at one stage to leaving it for the enemy. Unfortunately, the only identification which the original custodians could offer was the fact that *"Tony the Wop"* had been painted on the shield. (Records of serial numbers had been lost). A thorough examination of the 24 guns of the regiment failed to disclose one bearing that name.

GOOD ROAD MOVEMENT REQUIRES PLANNING AND PRACTICE

Lt DA Elrick
1 RCHA

The training plan for 1 RCHA this year included two long road movement exercises, Springhorse I and Springhorse II, following the four week May/June practice camp in the Base Gagetown training area.

Springhorse I was to be a short 370 mile warmup for the 1200 mile long Springhorse II. It would take the Regiment, complete with guns, to Tracadie, New Brunswick, while the second exercise called for a trip to beautiful Cape Breton Island, Nova Scotia, without guns.

Springhorse I was designed to practise drivers in proper adherence to the rules of the road and safe driving habits. This required a not inconsiderable effort due to the many narrow highways and bridges and the congested towns and cities found in the Maritimes. For similar reasons, the necessity for effective traffic control at critical points and during regular halts was emphasized. Initially, many of the younger men were eager to drive continuously without using a relief system but they soon learned the merits of good march discipline and the advantages of the well proven *"two hours on and two off"* policy. Having to maintain a low speed and 100 yard interval with military pattern vehicles on unfamiliar roads in civilian traffic soon induced these men to take full advantage of the shift system between driver and co-driver.

Another aim of the exercise was to illustrate the importance of proper maintenance of equipment and vehicles. A long range object of Springhorse I was to familiarize the Regiment with long road moves of the nature to be faced when the unit moves to North-west Europe in January 1967.

The general execution of Springhorse I employed the packet system of movement with a one minute interval between packets and 100 yards between vehicles. Speed was 50 miles in two hours with a 20 minute halt in the same time frame. Density called for a maximum of four packets per battery, each with at most eight vehicles.

Tracadie is on that part of the Atlantic coast known by New Brunswickers as the *"North Shore"*. Our route from Base Gagetown took us along three major river valleys – the St John, the Nashwaak and the Miramichi. The St John River valley is one of the areas settled by the United Empire Loyalists and is rich in early Canadian history. The route along the Nashwaak ran Northwest towards the French speaking area of New Brunswick that was settled by the Acadians. The Miramichi River, world famous as a salmon fishing paradise, marks the most obvious transition that we encountered from English-speaking to French-speaking New Brunswick. This province advertises itself as the *"Picture Province"*, and these three river valleys are good examples of the picturesque terrain behind the boast. North of Miramichi Bay the effects of prevailing winds and harsh weather off the Atlantic were evident in the sudden change from lush woodlands with quaint farms and cottages in the sheltered river valleys to dwarfed, bent trees and weather beaten buildings along the coast.

The changing landscape also signalled a drastic change in the industry of the region. Where our route followed the coast, active cutting of pulp wood and farming took second place to the fishing industry. As the sea has effected the landscape so also it effects the people who reap its bounty. They are a hardy independent folk who take the good and the harsh aspects of the ocean in their stride.

About nine miles south of Tracadie there is a Second World War military camp and training area which is now used in part by the RCAF as a bombing range. Here the Regiment bivouaced after the day long drive, each battery comfortably ensconced on open ground along the Tracadie River.

Very soon after canvas was up and maintenance completed, boats were hauled to the river and swimmers and fishermen alike were off for sport and relaxation. The next day was devoted to maintenance, sports and discussions regarding improvements to our system of road movement. Perhaps the happiest people in Tracadie were the Legionnaires who did several months worth of business in two days! During the second evening many of the men demonstrated their prowess at dismembering lobsters while others participated in fish fries and clam bakes. Some remarkably dubious fish stories were exchanged over the growing piles of shells and lobster carcasses.

Since radio communications will often not be used on long military road moves in Germany, the Regiment returned to Gagetown without the use of report lines or radio. We moved at a faster speed than previously, and with a longer interval between packets, thus making control much simpler. Consequently the return trip was executed faster and with fewer problems than the outward move.

Springhorse I was completed without any vehicle accidents or major breakdowns. This said a lot for the standard of vehicle maintenance during the practice camp. Morale was high after this opportunity to see new areas of the province and to enjoy the good comradeship and relaxed recreational activities shared at Tracadie Camp.

The longer exercise, Springhorse II, got underway on 20 June and was completed on 24 June. The first leg took us to Camp Debert, NS, where we bivouaced in empty ammunition magazines. Many recalled previous tours of duty in that location, it once having been the home station of 3 RCHA. During our stay at Debert a local CBC television reporter spent considerable time covering the exercise on film and through taped interviews.

Throughout this exercise the sub-unit kitchens, under control of the Second-in-Command, moved one bound ahead of the Regiment as part of an advance party to prepare hot meals for the main body's arrival in the new bivouac areas at the end of each day.

On 21 June the unit crossed the Canso Causeway and halted at Margaree Forks for the night. This was the beginning of two very pleasant days in Cape Breton Island with its natural beauty and its very friendly inhabitants. Here we were joined by Army photographers who filmed the Regiment moving along the Cabot Trail. After negotiating the Cabot Trail portion of the Trans-Canada Highway, which is famous for the breath-taking ocean scenery that one views from its steep twisting route traversing the mountainous Cape Breton Highland National Park, we found Baddeck where we spent the night. Baddeck has a niche in history as the summer home of Alexander Graham Bell, and it was here that the famous inventor conducted some of the world's earliest flying experiments. Again we found the local people very hospitable.

From Baddeck the Regiment rolled along a portion of the South Coast of the island then cut through the rolling green countryside for the Canso Causeway and on to Debert again. Although many members of the unit are native sons of the Maritimes, and accustomed to the scenery, all thoroughly enjoyed the experience of touring Cape Breton.

An early start from Debert on 24 June began the last leg of the homeward trip which completed Springhorse II. After reluctant acceptance during the early stages of Springhorse I, *"two hours on and two off"* had become a way of life.□

DURING THE PAST YEAR WE LOST TWO MOST DISTINGUISHED GUNNER OFFICERS: GENERAL AGL McNAUGHTON AND LIEUTENANT-GENERAL JC MURCHIE .

GENERAL THE HONOURABLE AGL McNAUGHTON, PC, CH, CB, CMG, DSO, CD

The career of General McNaughton was so wide ranging in both the military and civilian spheres that it is difficult to do it justice in anything less than a full biography; regrettably only the highlights can be given here.

General McNaughton was born in Moosomin, Saskatchewan on 25 February 1887. He graduated as a Bachelor of Science from McGill University in 1910 and received his Master of Science two years later.

On 4 May 1909 he was commissioned in the Canadian Militia and on the outbreak of World War I organized the 4th Battery, Canadian Field Artillery. During the war, he was wounded three times and awarded the CMG and the DSO; he was also responsible for innovating many techniques that improved the efficiency of the Allied artillery. At the end of the war he held the rank of brigadier-general, which he relinquished on electing to remain in the Permanent Force.

He was promoted lieutenant-colonel (brevet colonel) in the Permanent Force on 1 January 1920; and, progressing through various staff appointments, attained the rank of major-general and the appointment of Chief of the General Staff on 1 January 1929; he held this appointment until 1933.

In 1935 General McNaughton was appointed President of the National Research Council during his secondment to that organization.

When World War II was declared, he was recalled by the Service almost immediately and appointed General Officer Commanding 1 Canadian Infantry Division, taking that formation to the United Kingdom. As the Canadian Army overseas expanded, he became the first to command the Canadian Corps and subsequently 1 Canadian Army in the rank of lieutenant-general. He returned to Canada in February 1944 and was promoted to the rank of general the following September.

On 1 November 1944 he retired from the Service and was appointed Minister of National Defence, a post he held until the end of the war. Although General McNaughton had severed his official connections with the Army, he was to remain a vigorous servant to his country for many years as Co-chairman of the Permanent Joint Board on Defence, representative to the United Nations Atomic Energy Commission, President of the Atomic Energy Control Board of Canada, Canadian Chairman of the International Joint Commission, and delegate to the United Nations and representative on the Security Council.

General McNaughton died on 11 July 1966 and was buried at Beechwood Cemetery in Ottawa following the funeral service at Christ Church Cathedral.

LIEUTENANT-GENERAL JC MURCHIE,
CB, CBE, CD

Lieutenant General Murchie was born in Edmunston, New Brunswick on 7 July 1895; he attended the Royal Military College of Canada from 1913 to 1915 and on completion of his training there was commissioned as a lieutenant in the Royal Canadian Artillery (Permanent Force).

During World War I General Murchie served with the Royal Canadian Horse Artillery in France where he was seriously wounded; after convalescence in England, however, he returned there, and was promoted to the rank of captain on 22 September 1918.

Remaining in the Permanent Force, he was promoted to brevet major in 1930 and to major in 1938. He passed the Artillery Staff Course with special mention in 1922, and the Staff College at Camberly in 1931.

On 1 September 1939 he was promoted to lieutenant-colonel, to colonel on 1 December 1939, to brigadier on 23 February 1941 and to major-general on 2 February 1942. During this time he held many staff appointments including Director of Military Training and Staff Duties, Director of Organization and Intelligence, Brigadier General Staff at Canadian Military Headquarters in England and Vice Chief of the General Staff.

He was promoted to the rank of lieutenant-general and appointed Chief of the General Staff on 3 May 1944, and was subsequently Chief of Staff at Canadian Military Headquarters in England. He retired from the Service on 28 September 1947.

General Murchie died in Ottawa on 5 March 1966. Following the funeral service at the church of St Alban the Martyr there, he was buried at Cataraqui Cemetery in Kingston, Ontario.

RCSA WINS NATIONAL FIRST AID TROPHY

To encourage First Aid training in the Regular and Reserve elements of the Canadian Armed Forces, the Priory in Canada of the Most Venerable Order of the Hospital of St. John of Jerusalem offer, for annual competition, provincial trophies and a national trophy.

This year the team entered by RCSA won the Manitoba Trophy and then went on to win the National Trophy.

The National Trophy, a magnificent shield, was presented in 1924 by General Sir William Dillon Otter, KCB, CVO, LLD who requested that it be named after his wife Mary Otter. General Otter had a distinguished career in Canada. He commanded the Queen's Own Rifles of Canada during the Fenian Raids as a lieutenant-colonel and later commanded the Royal Canadian Regiment as a colonel. In 1906 he commanded in the West as a brigadier-general, was made Chief of the General Staff in 1908 and in 1910 was appointed Inspector General. He retired as a general in 1920.

The RCSA team was composed of Sgt RM Johnson of the RCSA, and L Sgt F Kuhar, Bdr J Prokop, Bdr PJ MacDonald and Bdr RA Chesterton, all of the RCA Depot. It was trained by Sgt LA Amey, who, being posted from Shilo prior to the national competition, wasn't able to be on hand for the victory.

The tests given were most realistic, particularly for the national competition, which was judged by Col M Fritch, CD, Deputy Commanding Officer of the National Defence Medical Centre in Ottawa.

Mr Forbes Murray, St John Ambulance representative, presents the Mary Otter Trophy to the RCSA team: left to right, Bdr J Prokop, Sgt RM Johnson (Team Captain), LSgt F Kuhar, Bdr PJ MacDonald, Bdr RA Chesterton

LET'S SEE NOW

"THE APC HAS GIVEN THE INFANTRYMAN EXTRA SPEED – IS THE GUNNER KEEPING UP?"

Major JA Collingwood, CD, QOR of C
Infantry Adviser, RCSA

Widespread distribution of the armoured personnel carrier has created a great flurry of activity among pamphlet and precis writers. The pamphlets and precis have been discussed at great length, endless arguments have been generated, and two main schools of thought have emerged; that which feels that an almost complete reappraisal of all our tactical thinking is required, and that which considers that little if any change will be necessary. Probably the best answer falls somewhere between these two views. Here at the School of Artillery the question most often asked is, "*What must the artillery do to keep up with this development?*"

The first thing we must do is look closely at the vehicle and see just what it is and what it is designed to do. It's very name tells us that it is a "*personnel carrier*", designed primarily to carry infantry. With this vehicle, the infantry have lost none of their ability to fight on foot, but have gained additional speed, protection, communications and cross country capability. It is not my intention to go into the employment of APCs in any detail; this has been excellently covered in the new publication "*The Mechanized Infantry Battalion*" which will soon be on general distribution. However, it might not be out of place to suggest a few ideas as to what can be expected of the artillery now that the infantry have these additional capabilities.

The most significant change is the increased speed into action of the infantry. We can now visualize a Battalion Group attack being mounted in forty minutes, thus considerably reducing the time now available for preparation, in particular the time available for adjustment of fire by artillery and mortars. From what I have seen, it is not normally possible to prepare an eight to ten serial fire plan in forty minutes using the two OP parties from the direct support battery, if all fire is to be guaranteed. There are two possible solutions to this problem. One is to persuade the infantry commander to accept less accuracy from the opening rounds of the fire plan. If he will accept this degradation of precision, some or all of the targets

"HOW QUICK IS THAT QUICK FIRE PLAN?"

Major JJA Doucet, CD
RCSA

The perennial problem of providing quick artillery support is never more highlighted then when the infantry is poised in the FUP, ready to go, and the minutes flash away towards H hour. What CPO, still receiving at this time belated "*tiddler*" serials from his battery commander, has not wished he were a computer?

We must admit that the preparation of a quick fire plan takes much longer than any Gunner would wish, let alone the supported arm. So, as a note of encouragement, let me suggest what could be considered possible in a not too distant future. Assuming that the supported commander has completed his plan and agreed with the artillery adviser on the artillery support plan, the fire plan would evolve like this:

a. OPs have already been located by NAVAID with confirmation as required by aircraft and/or radar fixation.

b. All targets are located by bearing and distance from a directional laser range-finder located at the OP.

c. One OP conducts a registration on a selected target in the objective area, using three guns converged.

d. At the same time, a second OP passes all target locations to the battery(ies) by means of his computer entry device. The computer(s) stores all data and will display the firing data to the guns when each target is recalled.

The total time required for the preparation of a fire plan, from the time the BC completes his briefing to the OPs, will be five minutes for the registration plus 30 seconds for each target in the fire plan, regardless of the number of batteries involved. For example, a nine serial fire plan using two batteries would require about nine or ten minutes for preparation.

Such a reaction is not as far-fetched as it may seem, and is technically feasible at the moment. I venture to suggest that we will work to those

of the fire plan could be engaged by pure prediction, in other words, no registration by firing beforehand, and consequently faster preparation by the Gunners. However, there may be very good reasons for requiring the fire to be guaranteed and if so, this solution is not good enough. Perhaps the answer is to look at the possibility of speeding up the whole registration procedure. What most infantrymen want is that the fire be on time and accurate. With practice and experience it may be possible to do the job in the time allotted with current procedures, but would it not be better to consider streamlining the system so that less experienced officers can adequately perform the task? From my observations, the length of time required for the preparation of fire plans varies according to the experience of the OP officers. As a result it is often too slow.

The protection, or lack of it, afforded by this vehicle brings forth possibilities of a greater use of smoke and airburst high explosive ammunition. The problems here seem to be minor and could be worked out as drills between the infantry and the supporting artillery. Again speed may be the key, the ability of both arms to make quick changes in plan with the artillery being ready to switch natures of ammunition quickly and to stop and start firing with no delay.

In conclusion, I realize that all of us tend to resist change but I have discovered in discussions with instructors of this School that perhaps there are areas where changes could be effected that should speed up that first round on the ground and therefore provide the supported arm with the fire they want when they want it. I have no quarrel with the accuracy once fire is adjusted – it is always excellent – but the procedures used in adjusting fire, and the communications involved, either are not understood or are faulty. In any event, the whole affair is definitely too slow. So Gunners, where do we go from here?

timings within ten years.

The reality of today is something else, however. I am afraid that most BCs faced with a similar tactical plan and given minimum time would attempt to adjust on all targets, and might even accept one gun in adjustment. Two well trained OPs, each using simultaneous procedure to a separate battery, could possibly adjust all nine targets in 25 minutes. The BC would want to give the CPOs a further 20 minutes for computation of data, passage of target records and preparation for the first serials. So, at best, we might get it off in 45 minutes. Many would consider this too optimistic and would ask for a full hour.

The difference between 45 minutes and one hour is not really as critical as that between 15 minutes and the 45 to 60 minutes that we now require. This naturally explains the supported arm commander's insistent demand for faster and faster response. So what can we do? Without the immediate benefit of the ultimate capability that I discussed earlier, what can we do now to quicken the fire plan? I suggest we consider the following:

a. Improve our accuracy in target location by demanding a higher standard of map reading from our OPs.

b. Streamline our technique of adjustment for future engagement (registration), clarify the principles involved, and teach our observers to avoid a stereotyped approach.

c. Discourage the insistence of seeing rounds on every target before the fire plan commences. Observers should be taught to:

   (1) Adjust on as few key targets as possible and use the deduced shooting corrections for the remainder. Recent improvements in graphical firing tables, and new techniques eliminating transfer limits make this a definite possibility for tomorrow. The application of this technique depends largely on the observer's ability to determine the relative position of targets that are close together, such as in a company objective area.

   (2) Accept initial rounds at fire for effect on a target located to a marginal accuracy, and adjust at fire for effect. In many cases this can be achieved by advancing the opening time of a serial by one or two minutes, thus allowing for a round or two of adjustment before the time by which the fire must be effective.

d. Finally, by practice and more practice, achieve a high degree of smoothness in the whole process of coordinating, preparing and delivering fire in support of the quick attack.

Let it not be said that we are standing still in the midst of improved mobility and flexibility on the modern battlefield. While improvements of the next decade will enable us to close the gap, it behooves us to make the most of present day capabili-

ties. Even in training camp, in spite of the agonizing but necessary delays imposed by the Safety Officer, we must be prepared to produce a quick fire plan that is worthy of the name.

Alors, a nine serial fire plan with two batteries in nine minutes, or even in eighteen minutes, *est-ce impossible?*

3 RCHA AIR PORTABILITY

Capt ER Barnes, CD

The training year 1965-66 saw the first practical, albeit modest, attempts at air portability in 3 RCHA.

Three personnel movement exercises were held, which allowed sub-unit commanders considerable variety and flexibility in annual winter training. On each flight, Arctic tent group stores and personal gear were loaded, with full assistance being provided by RCAF air and ground crews. From 13 to 17 December 1965, 90 members of Z Battery under the command of Major EJ Berris took part in *"Eskimo Pegasus"*, a four day area security exercise. Two Hercules aircraft deposited and later picked up the battery from thr Wainwright Camp grass airstrip. Exercise *"Broken Slat"* from 23 January to 2 February 1966, saw 56 members of G Battery, under the command of Major NM Pettis, transported by one Yukon aircraft to Calgary to conduct basic cross country skiing exercises in the Sheep Creek area west of Turner Valley, Alberta. Finally, 90 members of J Battery, under the command of Major LL Charest, were flown by Hercules to Camp Wainwright to provide friendly and enemy forces for 1 CIBG exercise *"White Elk"*.

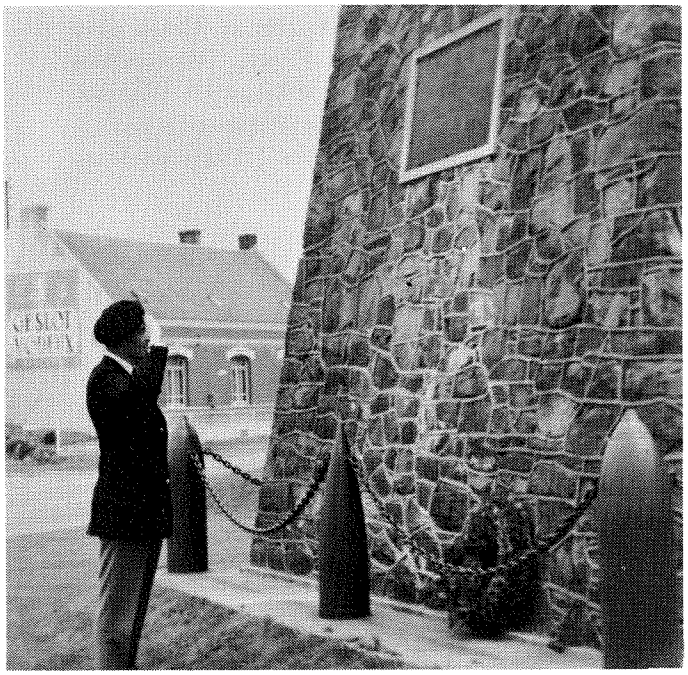
Loading of tent group stores for Exercise Eskimo Pegasus, Gnr F Flamand in foreground

We look forward during the coming training year to further co-operation with, and extensive use of, RCAF resources to transport artillery sub-units by air.

Z Battery prepares for Exercise Eskimo Pegasus

VISITORS TO A MONUMENT

1919 – The Canadian Artillery monument at Vimy Ridge is unveiled by Lt Gen Sir Arthur Currie, Canadian Corps Commander. Others are, left to right, Maj Gen Sir HE Burstall, GOC 2 Cdn Div, Gen Lord Byng of Vimy; Maj Gen Sir A Macdonnel, GOC 1 Cdn Div; Lt Col the Ven Canon FG Scott, Senior Chaplain 1 Cdn Div.



47 years later – A one man ceremony of remembrance. Lt AD Camp, representing 7 Toronto Regt, RCA, on 26 May 66 placed a wreath on the same monument as a tribute to Gunners of the 9th and 15th Batteries who fell in World War 1.

THE MASTER GUNNER JOINS 7 TORONTO REGIMENT RCA IN CELEBRATING A CENTURY OF SERVICE

"People will not look forward to posterity who never look back to their ancestors."

Edmund Burke

The Toronto Gunners certainly looked back to their ancestors of the Regiment when, on 26 and 27 May of this year, with the Master Gunner of St James's Park as their guest of honour, they celebrated one hundred years of continuous service with the Militia.

The historic occasion got away to a flying start on 26 May with a special guest night attended by some 160 serving and former officers. The highlight of the evening, apart from the formal recognition of the centennial of the Toronto unit, was the presentation by the Master Gunner, General Sir Robert Mansergh, GCB, KBE, MC, of a Spode Royal Artillery Plate to the Royal Regiment of Canadian Artillery, to commemorate the 250th anniversary of the Royal Artillery which also falls in 1966. The plate, Number Six, was accepted on behalf of Canadian Gunners by the Colonel Commandant, Maj Gen A Bruce Matthews, CBE, DSO, ED, CD. On the same day plate Number One was presented to Her Majesty The Queen as Captain General. The Commanding Officer, Lt Col LF Atkins, CD, announced that a unit officer, Lt AD Camp had, at 0900 hours (Toronto time), placed a wreath on the Artillery Memorial at Vimy Ridge in memory of the men of the 9th Battery who gave their lives in World War I.

On the evening of 27 May, the historic ramparts of Old Fort York resounded once again to martial music and familiar commands as the Regiment mustered for the Centennial Parade. Before a large crowd of friends and the general public, the Master Gunner inspected the Regiment and took the salute at the march-past. The Mayor of the City of Toronto, Philip Givens, QC, read a proclamation extending to the Regiment the Freedom of the City.

The parade also provided a moment of nostalgia for the Commanding Officer, who, after serving with the Militia for 22 years, had completed his tenure of command and handed the Regiment over to his successor, Lt Col DA Reed, CD.

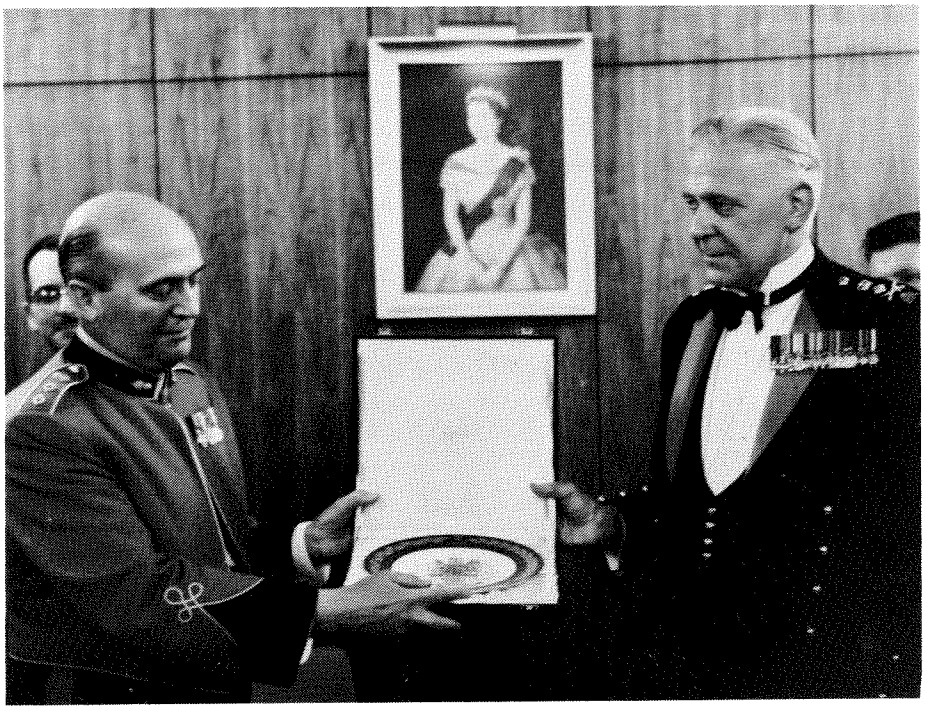
Another change of significance to the Regiment, was the retirement of Lt Gen Guy G Simonds, CB, CBE, DSO, CD as Honorary Colonel. General Simonds was succeeded in this appointment by Lt Col EA Royce, ED, who has been Honorary Lieutenant Colonel of 7 Toronto Regiment since it was re-constituted in March 1965.

The parade was punctuated by the firing of one hundred guns, and it was generally agreed that the Toronto Gunners had celebrated their centennial in befitting style.

Although a number of batteries have been formed in Toronto over the years, various reorganizations have seen the number reduced to the three which exist today, and which now constitute 7 Toronto Regiment. 9th Battery, to which most of the subsequently formed batteries trace their origins, came into being on 9 March 1866, when, as a result of the Fenian Raids, several new batteries were organized. Since its formation, the 9th has been in continuous existence and has established for itself a proud record. Men of the battery volunteered for active service with the Canadian contingent which took part in the Boer War. In 1914 the battery was mobilized for active service as the 9th Battery CFA, and also provided the nucleus of the 15th Battery which was formed in Toronto the same year.

After a period of training, the battery moved to Camp Valcartier as a component of the 3rd Brigade CFA and sailed for France with 1st Canadian Division. A few months later the 15th Battery left for the Western Front, with 4th Brigade CFA, as part of the 2nd Canadian Division. Both batteries fought over ground which was destined to become familiar to the Canadian Corps: The Somme, Vimy Ridge, Ypres, Passchendaele and many other battle fields well known to readers of World War I history.

With the cessation of hostilities, the 9th and 15th Batteries were demobilized at the Canadian



The Colonel Commandant receives the Spode plate designed to commemorate the 250th anniversary of the Royal Regiment of Artillery from the Master Gunner

Lt Col EA Royce looks on as Mayor Philip Givens reads the proclamation granting the Freedom of the City to the Regiment

Special Guest Night, 26 May 1966
Left to right: Lt Col DH Jupp, Lt Col EA Royce, Lt Gen GG Simonds, The Master Gunner, Lt Gen WAB Anderson, The Colonel Commandant, Lt Col LF Atkins, Lt Col DA Reed

National Exhibition grounds in Toronto, continuing as Militia units in the years between the wars; with the 30th and 53rd Batteries, they formed 3rd Field Brigade CA.

On 15 March 1931, as a result of re-organization, 7th Toronto Regiment RCA came into being, 3rd Brigade becoming part of the Regiment. The 1930's saw the completion of mechanization and the end of the era of horse-drawn guns – a moment of sadness for those who felt that the jingle of harness and the rumble of iron-shod wheels could never be replaced by the roar of the internal combustion engine.

On 1 September 1939, the 9th and 15th Batteries were again mobilized for active service, and after a period of recruiting and documentation at the old University Avenue Armoury, moved to the CNE grounds for training. In November 1939 the Toronto batteries were brigaded with the 29th from Guelph and the 40th from Hamilton under the designation 3rd Army Field Brigade, and in January 1940 sailed for England.

Soon after its arrival in England, the designation "Brigade", as it had been used by Gunners, disappeared, and 3rd Brigade was renamed 11th Army Field Regiment. The 11th was a two-battery regiment, the 9th being merged with the 15th to become 9/15 Battery and the 29th merged with the 40th to become 29/40 Battery. The Commander of the 9/15th was Maj KN Lander, who had commanded the former 9th Battery, while Maj A Bruce Matthews, who had commanded the 15th, left to pursue the career which was to see him become a major-general and Commander of 2nd Canadian Division.

Another re-organization in 1941 saw the batteries of 11th Army Field Regiment regain their original identities; 9th Battery remained with the Regiment, but the 15th was transferred to the newly formed 7th Anti-Tank Regiment.

After three years spent in training and as part of the anti-invasion forces of Great Britain, 9th and 15th Batteries, with their respective regiments, embarked for Italy in 1944. In Italy both batteries played their role in such well known actions as the attack on Monastery Hill near Cassino, the battles which saw the break-through on the Gustav and Gothic Lines, and the long fighting trek up to the Plains of Lombardy. A year later, as the war in Northwest Europe entered its final phase, both batteries were moved to France. On

their way to Belgium and Holland, they passed through countryside which, thirty years before, had become familiar to their forebears who fought in World War I. Then came the armistice, and these Toronto batteries finished the war "trails down" on enemy soil.

In 1946 demobilization was virtually completed and plans went ahead to re-establish the Canadian Militia. 7th Toronto Regiment, which had played a vital role as a reserve training unit, disappeared, and two field regiments, the 29th and 32nd, and one medium regiment, the 42nd, came into being in the City of Toronto. The 9th and 15th Batteries, together with 130th Battery which had been formed as a training battery during the war, became 29th Field Regiment. Completing the Toronto Garrison Artillery was the 1st Locating Regiment, formerly the 69th Survey Regiment located in Sudbury.

As a result of re-organization in 1954, the 32nd was "dormantized", the remaining units continuing until 1965 when they were amalgamated under the revised designation, 7 Toronto Regiment, RCA.

During the years that have passed since the end of World War II, the Toronto Gunners have been witness to many changes: re-organizations have come round with unfailing regularity; there have been changes from the equipment of the war years to more modern guns; the Lee-Enfield rifle has been replaced by the "C1"; from 1957 until 1965 national survival training took precedence over the traditional training in gunnery; in more recent times the old armoury on University Avenue was demolished, and this year the Moss Park Armoury was opened. Throughout these changes the Toronto Gunners have continued in traditions established over the past hundred years; whatever the future may bring, there is little doubt that they will meet all challenges with the same devotion to Country and Regiment so often displayed in the past.

MASTERS OF THEIR TRADE

** Capt R Malcolm, CD*

RCSA

There are few, if any, military appointments that can trace such an unbroken lineage throughout the military history of the United Kingdom and the Commonwealth countries as that of the Master Gunner. The earliest mention of a Master Gunner appears to be an account of the taking of two French ships off Sandwich, Kent, in 1386, when the Master Gunner who had led the English troops at Calais was discovered on board one of the captured ships with other prisoners of war. Subsequently in the fifteenth and sixteenth centuries many references to the appearance of Master Gunners in the field are on record. He was also found afloat serving in the larger ships-of-war during the sixteenth, seventeenth and eighteenth centuries. One of the last known was a Master Gunner MacDonald in HMS Vanguard in 1762.

When Canada became responsible for her own defences the appointment of Master Gunner continued in the Royal Canadian Garrison Artillery and later the Royal Canadian Artillery. In the years following, Master Gunners were employed at the coast forts and at the various armament offices throughout Canada. Their main responsibility at the forts was to ensure that all equipment was correct in quantity and in serviceable condition at all times. Master Gunners assigned to the armament offices were responsible for the checking and keeping up to date of the stores, clothing and equipment used by the non-permanent (Militia) Artillery units across Canada. Their ability to handle the many technical problems was well proven at such establishments as the Inspection Board, the Department of Munitions and Army Headquarters.

The role of the Master Gunner in the present day forces is no less important than in the centuries past. With the introduction and application of new and complex equipment to the artillery problem, it is increasingly important that an appointment be continued whereby full advantage will be taken of the services of a man with a wide practical knowledge of artillery matters. At present there are establishment positions for twenty-five Master Gunners: three

* *The author is the instructor in charge of the Master Gunner Course.*

at RCSA, six at CARDE, and sixteen at CFHQ.

The Master Gunner course currently being conducted at RCSA started in September 1965 with thirty candidates representing all Regular RCA units. The first phase of the course, which terminated in June 1966, consisted of a home study correspondence course. After completion of the first phase the final selection of twelve candidates to attend phase two of the course was made. This phase began in September 1966. The aim of the course is to train Master Gunner candidates in all aspects of artillery equipment, ammunition, and procedures, and provide a working knowledge of the equipment and procedures of other corps.

After completion of the artillery portion of the course in April 1967, the candidates will visit various military establishments in Eastern Canada. The itinerary will include the Canadian Armament Design and Experimental Establishment, the Army Equipment Engineering Establishment, and the RCAC, RC Sigs, RCOC, and RCEME Schools.

The course will end in August 1967, after which successful candidates will be posted to Master Gunner vacancies as they become available; they will be employed mainly as assistant trials and technical officers. □

The Master Gunner Course (1965-67)

Standing, left to right: WO2s T Holodiwsky, RL Patrick, WE Grover, FJ Forsyth, EM Evoy, Mr Gnr W Sonnenberg (Instructor), DD Bittle, RG Pyke, DJ Crawford
Seated: WO2s VW Zaharychuk (closest to camera), CK Jenkins, RMI Rhyno
Missing: WO2 AD Derbyshire

SURVEYORS MUST BE FLEXIBLE

Lt DM Robb
1 RCHA

The regimental surveyor is an individual who manages to successfully evade work throughout the garrison year, and who attempts to justify his existence by practising his black art only during the short periods of summer concentration. So goes the popular conception. This image might be true if artillery surveyors confined themselves to gunner survey. Because they are considered to be habitually unemployed, however, the surveyors are usually assigned a variety of non-artillery tasks to ensure that they are kept busy. A few of the activities of the 1 RCHA Survey Section during 1966 might illustrate the resultant flexibility developed by the regimental surveyor as an armour to help him accept his lot.

Mount Douglas, a high feature at the South end of the Base Gagetown ranges, came under the close scrutiny of the Atlantic and Regional Development Association of NB in late 1965. One side of this feature possesses the rare quality of being almost geometrically perfect for a ski slope, and this fact, combined with the lack of good skiing facilities in the region, resulted in a joint civil-military decision to develop Mt Douglas into a site for winter recreation.

Major Leclerc, DAA& QMG of 3 CIBG at the time, soon had the project underway. Technical direction and labour was supplied by 2 Field Squadron RCE, except for the requirement to survey the slope and ski run. The latter was needed to clarify the specifications of the ski lifts and necessary alterations to the slope. Because this type of survey was not within the scope of approved artillery methods, the necessary equipment had to be borrowed from outside sources. Bdrs PH Campbell, BE Davis and WFG Wilson and Gnr RJ Wilson attacked the project with enthusiasm. Despite their lack of formal training in this aspect of survey, they demonstrated their ability by producing the required data with a rapidity that surprised the professional engineers. Latest reports indicate that Mount Douglas should be ready for the 1967-68 skiing season.

In keeping with long range plans for the development of Base Gagetown as a military training area, 3 CIBG in February initiated preliminary survey for a major area to be cleared of forest. This area, measuring roughly three miles by five miles, links the Lawfield Target area in the North to the General Manoeuvre area in the South, and is intended as a live firing battle run for tanks. Before the contract for tree clearance could be allotted, the boundaries had to be surveyed and marked with cut lines through the bush. This task was jointly allotted to the 1 RCHA Survey Section, and "C" Squadron RCD.

As is traditional in inter-arm co-operation when each faction is unfamiliar with the working procedures of the other, there was a dearth of harmony between the two groups at first. However, the Canadian soldier has long since proved his capacity for flexibility and this trait soon had the two groups working harmoniously together.

The Gagetown bush proved a tougher obstacle to the axes and machetes of the RCD than had been anticipated, and chain saws were brought into action to speed the work. Weather and deep snow proved to be serious obstacles for everyone engaged in the job, especially the surveyors. As a result, such unorthodox procedures had to be instituted as the setting up of survey instruments on platforms of snowshoes. This solution was introduced by Bdr RR Williamson to defeat the waist deep snow, and soon the drill was adopted by all the survey pairs: Although these methods were contrary to established practice, they produced results to an acceptable accuracy.

The whole task took two weeks and was finished in time for the final data to be approved by HQ 3 CIBG prior to the clearance contract being allotted. Actual clearance was started by civilian contractors at the beginning of spring and it is expected that this battle run will be ready by next spring.

Shortly after the tree clearance survey had been completed, brigade headquarters gave 1 RCHA responsibilities in respect to the maintenance of buildings located in the Gagetown training area. As those who have travelled the Gagetown ranges realize, map reading is made comparatively easy by the number of deserted houses which serve as landmarks throughout the area. When Base Gagetown was taken over by the military, RCE made a reconnaissance of these buildings, deciding which ones were good enough for retention. Since that time, wear and tear and lack of proper maintenance has caused many of these structures to deteriorate and collapse. To prevent this loss from continuing, 3 CIBG undertook a project of building maintenance,

each unit being assigned responsibility for preserving a number of dwellings as landmarks. 1 RCHA was given charge over 19 buildings centered about Jerusalem in the General Manoeuvre Area.

The 2IC, Major LC Baumgart, gave the Survey Section the task of determining which of these 19 buildings were still suitable for preservation. Survey pairs were despatched to the area in question to estimate the amount of materials and labour required to maintain these houses. Although travel to the area was impaired by deep snow on some of the range roads, the stalwart pairs winched their way through to their targets.

A month was allotted for this job, but the composite report was returned to the 2IC within two weeks. Restoration of these buildings should begin this year, ensuring easier map reading for future generations of GPOs.

Towards the end of March, the Oromocto town planners approached brigade headquarters proposing the development of the French Lake area, five miles Southwest of camp, as a public park. This 32 acre playground was to tie in with plans of ARDA, in hopes that the added recreational facilities would develop the tourist industry into a year round effort. It was also to be one of the centennial projects undertaken by the Army.

The first task was a five-foot contour interval survey of the park area, needed to determine the drainage plan. Under the command of Sgt PF Gulovics, the Artillery Survey Section again cheerfully took to the bush although its members had not been trained for this type of job. Borrowing the necessary levels and elevation rods from civilian sources, they pressed on with the task, completing the draft plans in little more than a week.

Finally free of extra-curricular commitments by mid-April, the surveyors were only too eager to get back to familiar artillery survey. During the summer of 1965, preliminary investigation had revealed that there was a possibility of several independent grids existing in the range area. The surveyors decided that it would be a worthwhile project to check out this discrepancy. In the two weeks preceding the artillery spring practice, a tellurometer traverse was run a distance of 25 miles from Lyons Ford in the South to Babbitt in the North. This scheme was definitely on a corps, not regimental scale, but this only presented a more interesting challenge.

A control was finally established from North to South which proved the existence of three grids, differing by as much as 14 metres. One grid

Gnr J Pietersma and Bdr PH Campbell preparing to lay out a cut line for the tree-clearance project

was accepted as standard, and under the supervision of SSgt BR McMillan, a change of grid was carried out to make all previously surveyed points sympathetic with one another. Although the difference had not been enough to throw regimental shooting out of sympathy, the new grid will give future survey sections a common base from which to carry further work.

In the few months from January to April 1966, the surveyors of 1 RCHA were engaged in a wide variety of tasks, sometimes outside their scope of training. Every job was done with enthusiasm, and speedy, accurate results were produced. Like all Gunners, the regimental surveyor considers that his job is to serve the guns, but when not engaged in artillery survey, you will find him ubiquitously plying his trade in the swamps and on the ski slopes, wherever the designing minds of brigade and regimental headquarters consider that his flexibility can be best exploited. □

THE FAMOUS FRENCH '75'

Lt RS Usher

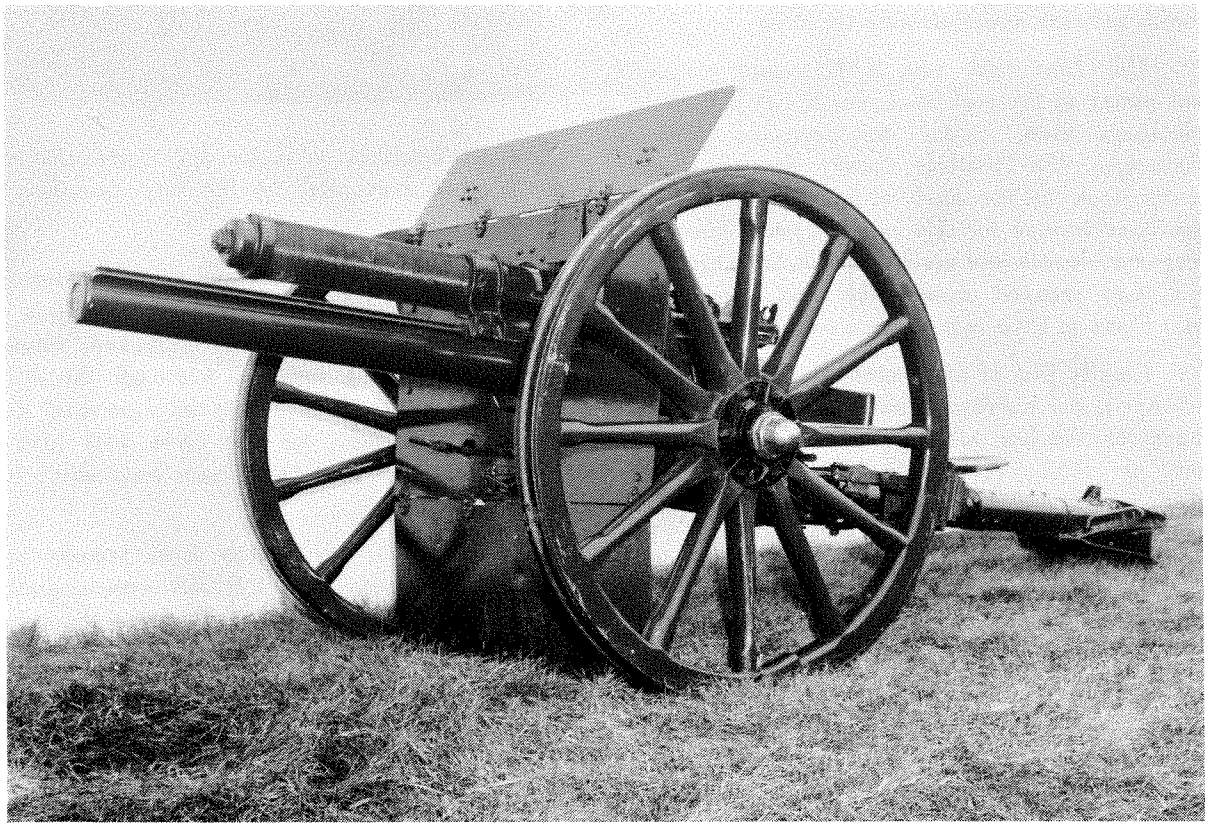
The conception of the French 75 millimetre field gun must certainly be considered the greatest single advancement in gun and carriage design before or since its time. This fine weapon, on various carriages and mountings, served in many armies from 1897 to 1945. Its outstanding characteristics were a surprisingly light, sturdy and simple carriage, a tremendously high rate of fire and the first successful on-carriage recoil system.

Its range and rate of fire made the '75' far superior to the field guns of the other European armies of the day. Maximum range of the first model was 7,000 yards, which was increased by improved propellents to 11,000 yards during World War 1. Although the breech mechanism was manually operated, simplicity of design and ease of operation permitted a rate of fire of up to 30 rounds per minute.

The recoil system was the first successful hydro-pneumatic system to be produced and the same system, with a few minor changes, is found today on the 105 M2A2 carriage. The principles of the system were considered so revolutionary that details of its construction were jealously guarded for many years. So well were these weapons constructed that guns bought for the British service and stored between the wars required no major maintenance to the recoil systems when taken out of storage in 1939.

Ease of handling and rate of fire prompted the conception of what are now known as "sweep and search" drills for dealing with area targets, an astounding capability in the eyes of rival European Gunners whose guns as yet had no traversing gears.

In competition, both Germany and Great Britain began a feverish programme to produce comparable field guns. The results were the Erhardt 3 inch, 14-pounder and, in 1904, the first of the famous 18-pounders. Although both of these guns were capable of roughly the same range as the '75', their rate of fire and stability in the firing position were

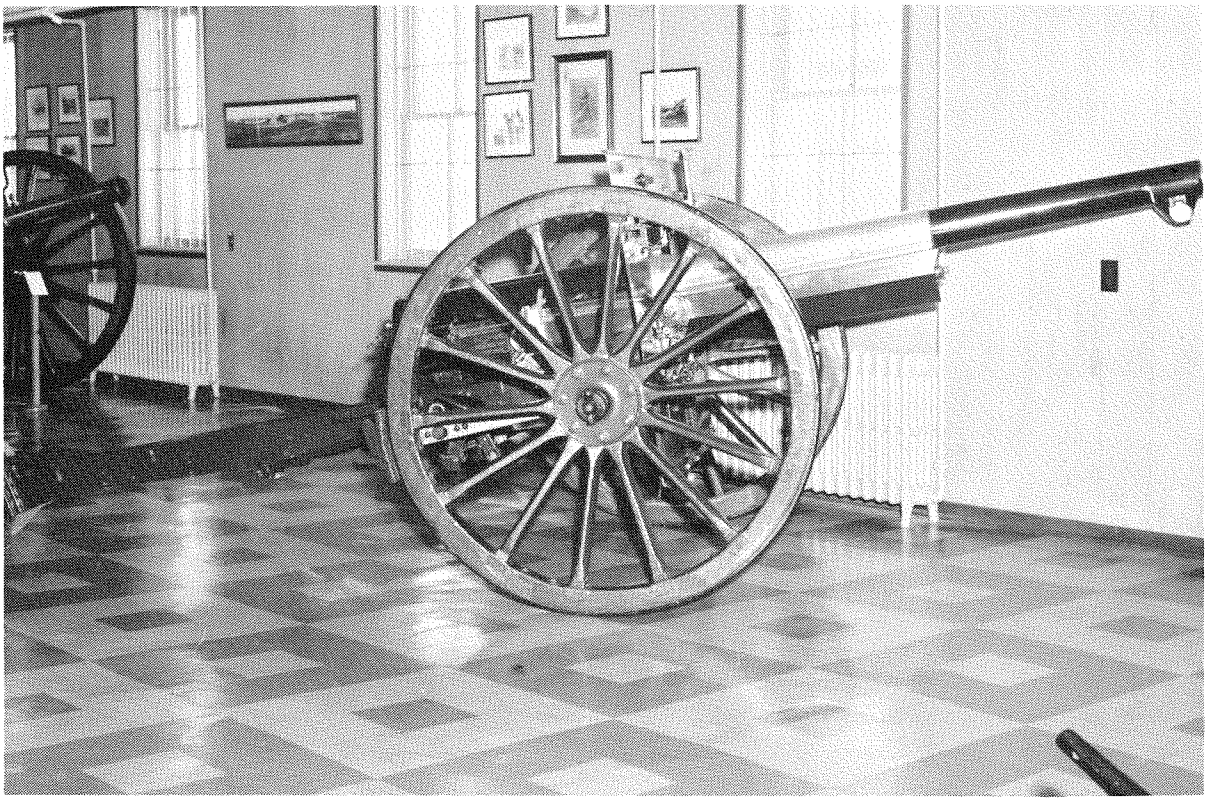


The French 75mm gun at RCA Museum

A CORRECTION

At page 44 is a photo of a "French 75mm gun". It is not a French 75mm gun; it is a British/American 75mm gun. It is an adaptation of the British 18-pounder MK1 carriage mounting a 75mm barrel. The particular gun shown was manufactured in the USA in 1918 by the Bethlehem Steel Company and is now held by RCSA. Perhaps some reader knows why the mutation was produced and to what extent it was used.

Below is a picture of the 75mm French model of 1897, which is also held by RCSA and which is correctly described in the article. The mix-up in photographs occurred in our office. – Ed.



not comparable.

The French '75' proved to be the most outstanding field gun of World War 1. In 1917 the US government purchased it as their prime field gun where it remained in service, in some cases, well into the "40's". Many of those purchased by Great Britain for service in World War 1 were taken out of storage and used for training and coast defence in the early part of World War II.

Between the wars, the US Army added a series of modifications to the carriage. First came wheel adapters and pneumatic tires, followed by split trails and a firing jack. The firing jack was replaced by an equalizer and the carriage was then very similar to that of the 105 M2A2. The only changes to the ordnance were in the types of metal and the methods of hardening. The ordnance served on the first American anti-aircraft mountings and on some of the early American tanks.

The French did little to improve the carriage and 1939 found most of their artillery still horse drawn on wooden spoke wheels. A great number of these guns were captured and the Germans were able to employ the ordnance on second line anti-tank guns and in static coast defences. Many, on the original carriages, were pressed into service as field guns in the latter days of the war.

Certainly no other artillery piece has fired so many rounds or seen service in so many different armies over such a long period of time. One of these guns is still fired daily at retreat in Fort Sill USA and one is on display at the RCA Museum in Shilo.

This article was written earlier this year when the author was a WO2 serving with 1 RCHA. – Ed.

RCA HISTORY

Volume I of *The Gunners of Canada* will be published by McClelland and Stewart, Ltd., early in the summer of 1967. This official history of the Royal Regiment of Canadian Artillery, written by Colonel GWL Nicholson, former Director of the Army Historical Section, has been commissioned by the Royal Canadian Artillery Association.

Volume I covers the history of artillery in Canada from the early colonial period to the end of the first World War. It is the story of the antecedents, the organization, and the growth of a proud and spirited military body which has contributed so much to the growth of Canada and the success of the Canadian Army in battle. Volume II, scheduled for publication in two years' time, will bring the story up to the present day.

The history will be profusely illustrated with photographs, many of them hitherto unpublished, and will include a large number of maps, black and white, and in colour. Handsomely produced, it will be a book that Gunners will be proud to own.

The retail price of the first volume of *The Gunners of Canada* will not be less than $8.50 a copy. Details will be circulated through Regular and Militia artillery units and through battery and regimental Old Comrades Associations. Enquiries and orders may be sent to the Secretary-Treasurer, Royal Canadian Artillery Association, 615 Tillbury Avenue, Ottawa 13, Ontario.

THIS PROBLEM OF DEFEATING ARMOUR

Lt BTN McGrath

1 RCHA

There is no doubt that the target of today is the hard target. We have all heard the foregoing stated, in a variety of ways, so often that it might now be considered a cliché. Cliché or not, the possibility of armoured targets in great numbers must certainly interest all Gunners.

The aim of this article is to consider an aspect of anti-armour that was once a major preoccupation of the artillery but which in recent years has been disregarded: the engagement of armour with direct fire, or, to be old-fashioned, anti-tank gunnery. We shall consider the various methods of defeating armour, the means of delivering these missiles, briefly look at the influences of various types of equipment on tactics, and finally try to reach some conclusions regarding our needs as far as anti-tank weapons are concerned.

It must be added parenthetically that there is no intention of discussing self-defence anti-tank weapons, nor of considering tank versus tank engagements. The former are of too limited a scope for this study, and the latter must be regarded as but another aspect of the overall defence picture. The concept of using tanks as our principal anti-tank weapon must be dismissed as being uneconomical, unsound tactically, and of dubious psychological value as far as tank crews are concerned.

The tank was originally developed as a method of overcoming enemy machine gun fire. As such it was tracked for cross-country mobility, sufficiently armoured to protect the crew from small arms fire, and armed with an assortment of machine guns and sometimes an HE gun (usually a 6-pounder although some French models did carry a version of the famous 75mm.)

During the period 1920-1939 tank armour thickened, the number of machine guns was reduced slightly, and also, paradoxically, the size of tank guns decreased. This was due to preoccupation with the killing power of the machine gun, which weapon became regarded as the prime weapon, the gun being relegated to the "secondary" task of anti-tank self-defence.

World War 2 proved that the small high velocity anti-tank gun did not have sufficient shell capacity against dug in positions. For a brief spell tank designers included both a large calibre HE gun and a small calibre high velocity anti-tank gun (the Grant typified this approach) but eventually it was discovered that a large calibre all purpose gun was satisfactory. Post-war developments have followed this trend, most tanks being armed with guns in the 100mm to 120mm calibre range.

Throughout its development the tank progressively thickened its armour until the mid 1950's, at which point it became apparent that anti-tank weapons then extant or under development could defeat any practical amount of armour. The trend reversed itself and emphasis is now on relatively light tanks, possessing great fire power and high mobility.

Thus our enemy. A mobile, dangerous target that CAN BE KILLED, but which will appear quickly, probably in mass, and will possess tremendous killing power of its own.

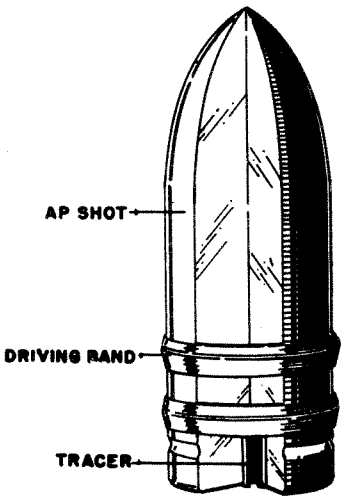
The other "hard" target, the APC, does not present as difficult a problem, being neither so well-armed nor -armoured as a tank. The challenge of the APC lies in its speed, and the large numbers

we will encounter. However, effective anti-APC fire will be of great value as the enemy seldom otherwise presents us with "packaged" groups of men as targets.

Having looked briefly at our targets, and assured ourselves that they are vulnerable to the proper anti-armour weapons, let us look at weapons.

There are primarily three methods of defeating armour.

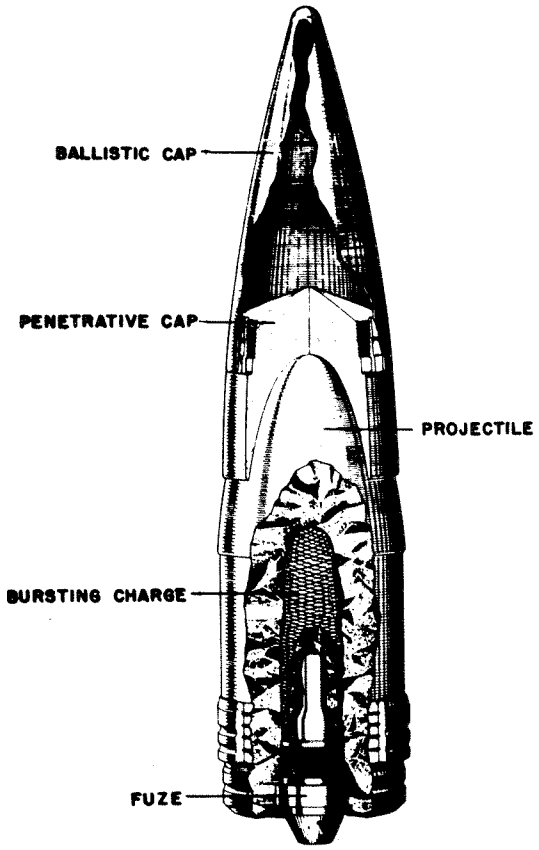
The earliest, and at first glance simplest, of these methods, is the **hypervelocity** round. This is simply a solid shot travelling at very high velocity which strikes with sufficient energy to penetrate armour. Since the formula for striking energy is



A.P. SHOT

$E = MV^2$, the greatest improvements are obviously obtained by increasing muzzle velocity, but at about 3000 fps, a practical limitation on barrel-life is reached, while barrel lengths, chamber pressures, and weight of propellent become as large as are practicable. The next obvious step is to increase the calibre of the projectile, thus increasing its mass. This approach brings limited returns as the increased size of shot not only gives greater mass, but also means a larger hole requiring more work to penetrate a given piece of armour. One method of solving this problem is to place a heavy tungsten-carbide core in a light metal jacket. Since the round is lighter than the conventional design, it achieves higher muzzle velocity while at the same time penetration is easier, being confined to the sub-calibre core. The disadvantages of this design (called composition-ridge or APCR) are its high cost and poor ballistic coefficient.

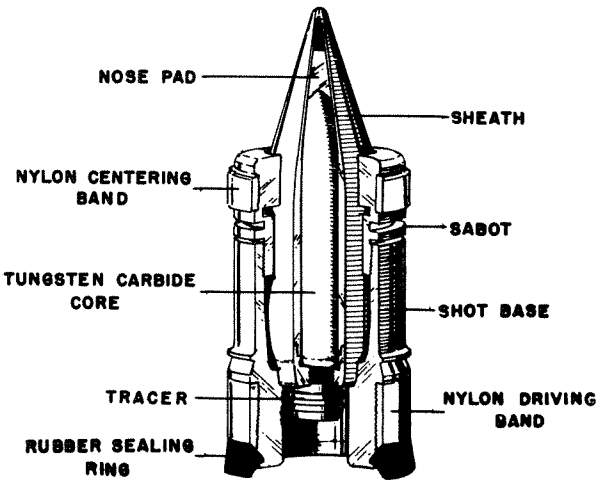
Another variety of hypervelocity shot (APCBC), has a specially shaped armour-piercing cap to assist penetration, topped by a ballistic cap to reduce air resistance.



A.P. PROJECTILE

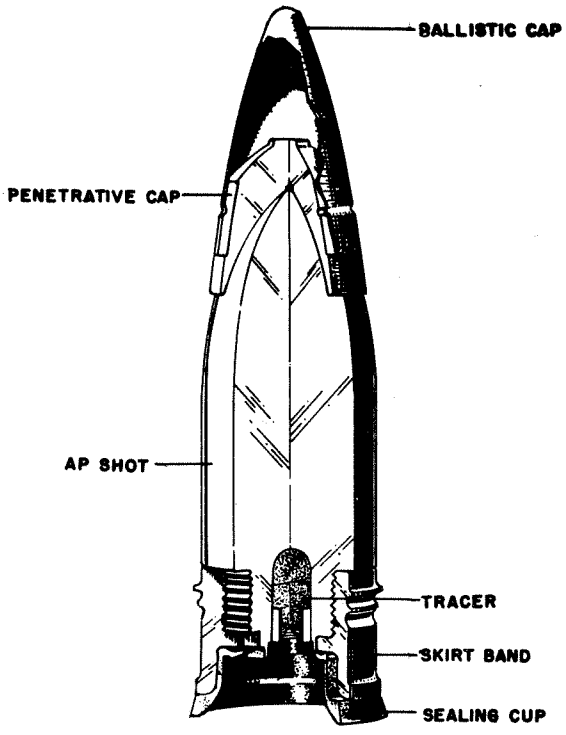
The foregoing designs aim at easing penetration and attaining maximum remaining velocity from a given muzzle velocity. In addition, two different methods of increasing muzzle velocity beyond the 3000 fps practical limit have been tried. The first and least successful attempt was to produce guns with tapered or conical bores. These originated in Germany in 1941 with a weapon that was 28mm at the start of rifling and 20mm at the muzzle, firing a tungsten core shot with a MV of 4600 fps. Germany and other countries continued development, producing several guns of larger calibre, but little use was made of these because of high production costs, very short barrel life, and the fact that these guns fired no other effective type of round.

A more practical solution to the search for higher velocities is the armour-piercing discarding sabot round (APDS). This is a development of the tungsten-core ammunition, which discards a jacket after leaving the muzzle, thus achieving a better ballistic coefficient for the sub-calibre core. In consequence the velocity and penetration of APDS fall off less rapidly with range than do APCR rounds.



A.P.D.S. SHOT

A second armour defeating device is the **kinetic energy** round. With this type of ammunition, no attempt is made to penetrate the tank's armour. Instead, the round simply transfers its energy to the tank hull, with the aim of blowing a "scab" off the inside wall which will ricochet about causing various unpleasantnesses. In its simplest versions, this design is merely a solid shot with a flat head (under a ballistic cap) which smacks into the side of the tank. Modern versions of this weapon use explosives, in addition to the remaining velocity of the shell, as a source of energy, and are typified by the high explosive, squash head (HESH) and high explosive, plastic (HEP) designs.



A.P.C.B.C. SHOT

One large advantage of the kinetic energy round over the hypervelocity round is that the former's penetration does not vary with range. Obviously a solid shot will be less likely to penetrate a target at 1800m range than at 100m, but conversely, if it does penetrate at 1800m, then at 100m it may very well pass right through the tank – a most undesirable situation which is generally corrected by designing the round to discard its armour-piercing cap on initial penetration. With kinetic energy rounds this problem does not arise.

The third method of overcoming armour is by use of the familiar **shaped charge** or HEAT round. This design is based on the fact that explosives release energy at right-angles to their surfaces. Therefore it is possible to focus the energy of an explosive by hollowing out the charge so that it has a conical cavity in the nose. This cavity contains a thin metal liner which, on detonation, forms a long thin jet travelling at a velocity of up to 30,000 fps. It is this jet which penetrates the armour. Because the shaped charge must be set back sufficiently from the armour it is to penetrate to allow it to focus on a small area, these rounds must be of a low velocity design. Even so, it is seldom possible to achieve the optimum focal length, as ballistic considerations limit the length of the false ogive on the round. Therefore, although shaped charges give good results from a small weapon, they must be delivered at low velocities, requiring accurate range estimation. Other limitations are that although shaped charges do penetrate armour, they do not have as high a kill/penetration ratio as other weapons, and if fired from a rifled gun the spin reduces penetration.

Before leaving the methods of armour penetration to consider means of delivery, it must be emphasized that despite the faults attributed to them, each method is workable and complementary to the others. Tank armour can be designed to be highly effective against two types of round, but will then be very vulnerable to the third. For example, armour may be hardened to defeat hypervelocity or shaped charge attack, but this makes it brittle and vulnerable to a kinetic energy round. Therefore, it is essential to maintain a balanced mix of all three types of round on the battlefield.

Let us now turn to the various means of delivering anti-armour warheads. These are the gun, the recoilless rifle, the rocket and the guided missile.

The gun was at one time the most common anti-tank weapon, but recently, except for use on

tanks themselves, it has fallen into disfavour. As mentioned earlier, shaped charges fired from a gun are relatively ineffective because of the effect of the rotation imparted by the rifling; a solution to this problem in the form of fin-stabilized smooth-bore projectiles has been tried, but these were not particularly successful. The low velocity required for effective HEAT rounds make accurate range estimation vital and although work is now in progress on laser range finders, the most satisfactory solution to date has been the spotting rifle. The gun does fire both hypervelocity and kinetic energy rounds quite efficiently, and when these are delivered at high velocity, the flatness of the trajectory precludes the requirement for highly accurate range estimation.

The main disadvantages of the gun are its size and weight and, in the towed versions, its immobility. On the other hand, a gun is simple and robust, is relatively easily concealed, has a high rate of fire, and can be used for a wide variety of tasks, particularly if of reasonable calibre and capable of firing HE rounds. It is also – in comparison with other systems – quite economical.

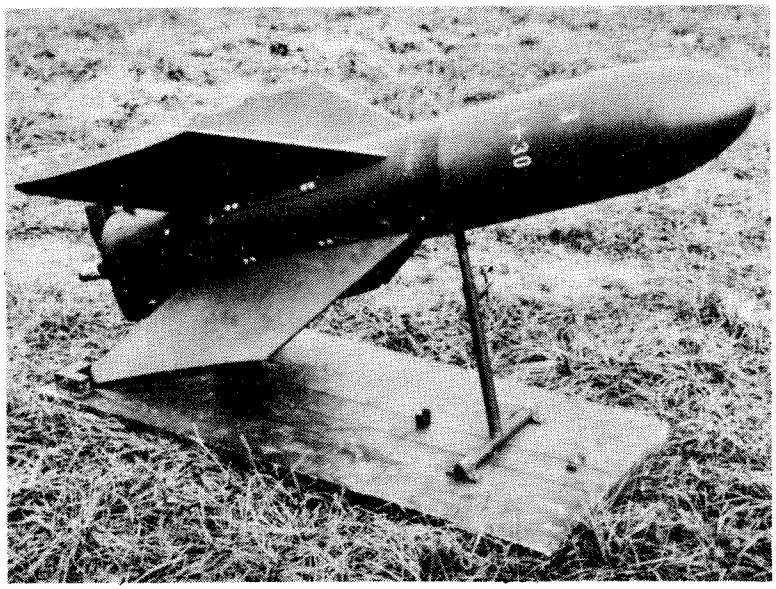
The recoilless rifle is simply a gun with no recoil. As such, the same general remarks about types of shell apply to it as to the conventional gun. The obvious advantage of the recoilless rifle is its lightness; it can be mounted on a variety of vehicles easily because its firing creates little stress on the carrier. Recoilless ammunition, however, is much more expensive and much heavier and bulkier than the conventional type. (Although the gun itself is light, a recoilless rifle and 100 rounds of ammunition weigh approximately as much as a conventional gun of similar calibre with 100 rounds of its ammunition.) The major drawback to the recoilless rifle lies in its backblast. The great rooster-tail of dust and debris associated with firing a round makes it essential to move the gun after almost every shot, which means keeping the weapon mounted upon either a light vulnerable vehicle or a heavier armoured one, in which case much of the advantage of the weapon is lost. In either case, the rate of fire and effectiveness of the weapon are reduced.

The rocket as a delivery system for anti-tank weapons can handle any type of round except hypervelocity. If fin-stabilized, it is an excellent vehicle for a shaped charge and if large enough, can carry HEP or HESH warhead. The inherent inaccuracy of the rocket make it unsuitable for any but close range weapons, such as the 3.5 in rocket launcher, unless used in massed fire such as from the World War 2 land mattress, or unless guided.

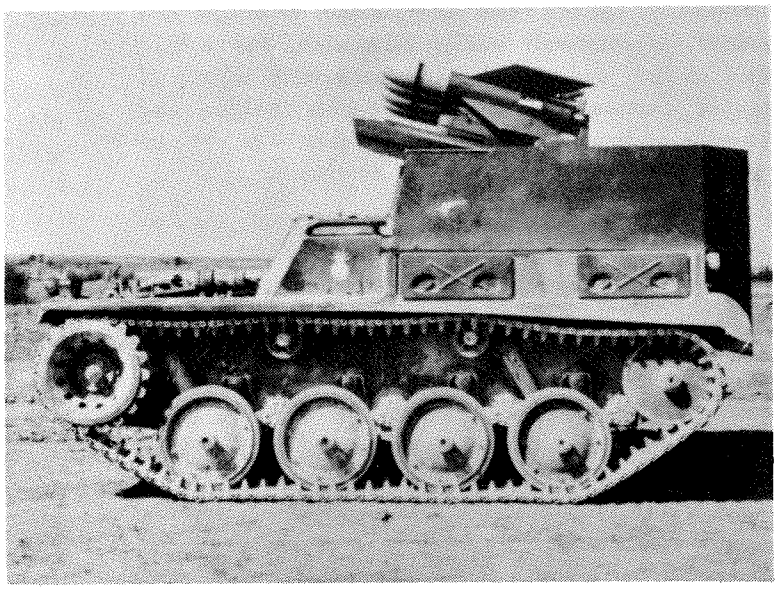
We arrive naturally at the last type of delivery – the guided missile. Although it is possible to build anti-tank guided missiles (ATGMs) with active or passive homing, the complexity and cost of such systems have thus far confined them to the realms of the scientist. We have, however, now got wire-guided missiles, typified by the ENTAC and SS-11, which are controlled by a man using a stick much like that found in an aircraft. These missiles have shaped charges with excellent penetrating power, and in the hands of good operators have scored hits at very long ranges. They do have a number of drawbacks. Operators are difficult to train. The long time of flight during which a missile must be controlled reduces the rate of fire of a given operator, and puts great strain on the man who must remain still and calm for up to 30 seconds during which he may very well be under heavy fire. The missiles themselves are very expensive. This fact, combined with the numbers of missiles required to train a crew and maintain its proficiency, leads one to believe that one ENTAC in action must cost considerably more than an anti-tank gun of comparable performance. Lastly and most important is the minimum range problem. Wire-guided missiles currently in use require a distance (generally about 500m) for the operators to gain control. They are almost totally ineffective within this distance.

Several approaches to this problem are now being examined. One is TOW (tube-launched, optically-tracked, wire-guided anti-tank missile) which fires the missile over a ballistic trajectory for the first few hundred metres of flight so that it can be aimed like a gun at close targets. The main problem is that this American development project uses a small computer to calculate corrections of the flight, the operator being required only to track the target. Apart from the obvious expense of such a system, one distrusts such complicated machinery in the rough environment of the front line, preferring the simple weapon for the simple task of "brewing-up" tanks. A similar development is the Shillelagh missile which substitutes laser beams for wires.

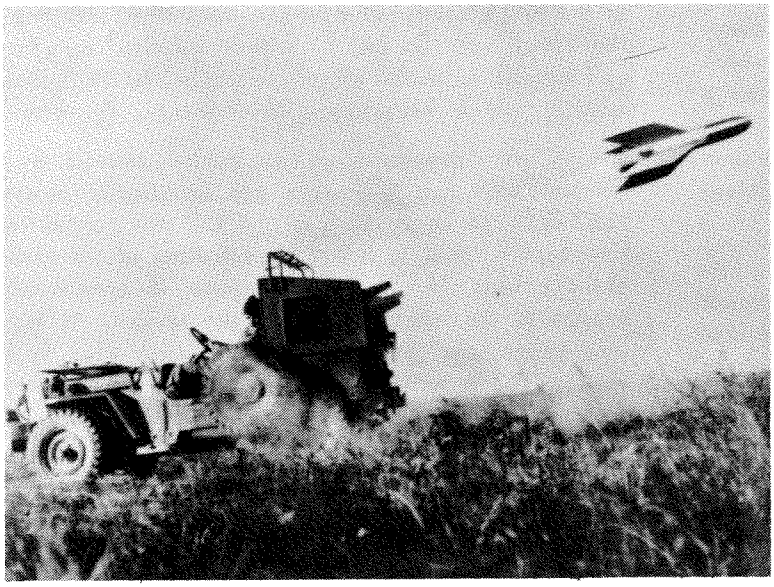
A comparison of the guided missile with the anti-tank gun will show the superiority of the gun. Both, if large enough, can kill any current or foreseeable tank. It becomes a matter of hit probability, which for similar weapons is comparable except at the extreme ends of the ranges. At very long range, the guided missile, if controlled by a skilled, undistracted controller, is more accurate than a gun. At very close range, a guided missile is virtually useless, while a gun, given a good shot, is almost 100 per cent effective. Considering the gun's higher rate of fire and economy, to say nothing of the far greater frequency of engageable sightings at close range, the gun must be considered superior. A further consideration is that only the gun can



SS-11
Missile on launching support



SS-11
Missiles on a
tracked vehicle



SS-11
The "jeep" used
as a firing platform

The MAW: An ATGM light enough to be carried and fired by one man, yet with a warhead large enough to knock out most "hard" targets encountered by the infantry

deliver the hypervelocity round, and as mentioned earlier, it is desirable to keep all three types on the battlefield.

The probable form of enemy attack is pictured as a vast stream of armour, tanks and APCs concentrated on specific points following a nuclear and conventional bombardment. To defeat this attack it will be necessary to have many anti-tank weapons situated in depth in our defence. Since we will require numerous anti-tank weapons, we should seek the most economical effective variety available. It should be economical both in initial procurement and maintenance costs (the gun is superior to the guided missile in these), and in its survivability in the field (the gun is superior to the recoilless rifle in this). In order to achieve maximum flexibility, the majority of these anti-tank guns should be self-propelled, although admittedly an undesirable feature of the SP gun is its relatively high silhouette and difficulty of concealment. Unless these guns are swimmable, however, some should be of the towed variety so that they may be quickly taken forward to stiffen up bridge-heads following assault water crossing operations.

The question of armour for SP anti-tank guns now arises. To be effective, the gun must have sufficient armour to protect the crew from machine gun fire; it should be of a low silhouette to assist in concealment (top traverse should be as great as possible although a turret is not essential); the frontal armour should be sufficient to stop light anti-tank fire, so that the gun can be used as direct fire support for infantry. The use of unarmoured SP anti-tank guns, particularly of the recoilless variety, should be discouraged.

Finally a few thoughts on anti-APC fire.

Any APC in existence can be killed by a 20mm round and at a reasonable range. The nuclear threat has forced us to adopt the hide/battle position system of defence with emphasis on reverse slope positions. Considering the speed with which an APC attack develops, it is necessary to supplement the self-defence anti-tank weapons of the infantry battle group with a small, flexible, preferably self-propelled, anti-APC weapon which can deploy forward of the position and engage enemy APCs on the approach. What better solution than to mount 20mm cannon on our APCs and use them in this role in defence? Several countries (Sweden and Germany being two) have 20mm cannon on their APCs; so, although it may reduce the personnel carrying capacity slightly, it would appear feasible. Also, although pundits suggest that we will not fight from our APCs, and no one has yet mentioned the APC versus APC battle, we will be better able to face the chance encounter between APCs (particularly if the enemy have a more aggressive approach than we) if we are so equipped. It is well to remember that at one time the possibility of tank versus tank battles was dismissed as unlikely.

In conclusion, therefore, the author suggests an extensive anti-armour organization based upon:

a. Self-propelled, moderately armoured, large calibre, anti-tank guns capable of firing APDS, HEP, HESH, HE and smoke rounds, manned by specially trained anti-tank troops.

b. Armoured personnel carriers equipped with 20mm cannon, with crews trained to perform anti-APC tasks in addition to their standard roles.

c. The continued use of short-range, shaped-charge, self-defence anti-tank weapons of the Carl Gustav catagory.

d. The return of the armoured corps to its customary tasks of attack, counter attack and direct fire support. □

A QUEBEC CITY MONUMENT TO GUNNERS

During the night 15/16 May 1889, fire destroyed a major portion of St Sauveur (a section of Quebec City) from Langelier Blvd, then called St Ours St, to the west. 400 houses were destroyed and many persons lost their lives. Among those killed were Maj CD Short and SSgt G Wallick, both members of B Bty, RCHA, which was called out to assist the municipal firemen.

Two years later a monument was erected in memory of these two soldiers. It can be seen today in front of the Armoury in George V Square, in the heart of Quebec City.

THE APC COMMAND POST

Those readers who have served with field regiments will be familiar with the business of converting a military pattern vehicle into a command post, a role that the manufacturer had obviously never contemplated for his product. The end result of these conversions, while admittedly effective to a greater or lesser degree, is invariably a military eyesore, and all too often a cause of apoplexy to commanders of other arms who are inclined to look askance at these unwieldy behemoths in their area.

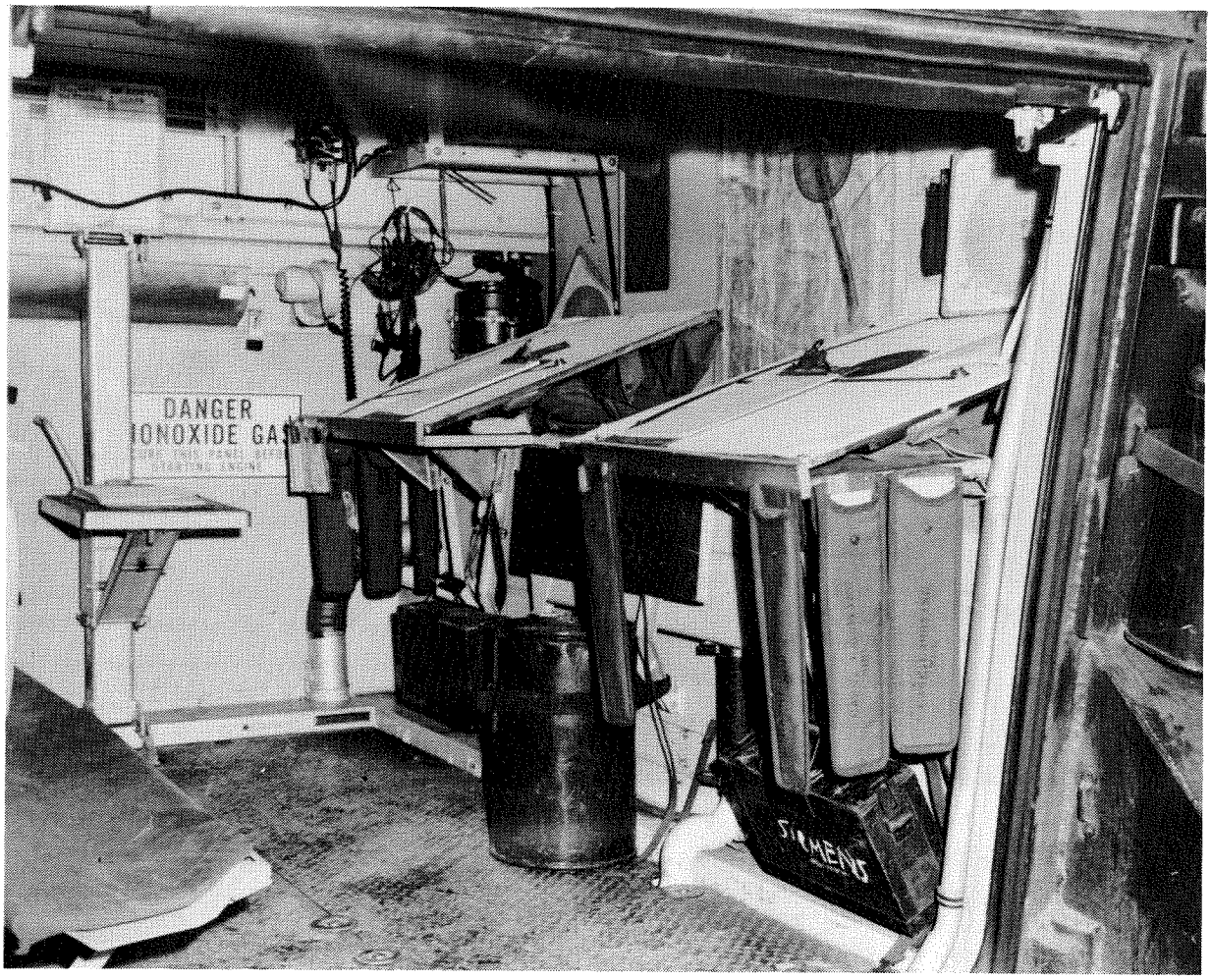
The days of the bloated gypsy caravan cobbled together from dismembered ammunition boxes or other choice pieces of scrap lumber are happily passing. In the case of those units who have their M577A1 APCs, they have passed.

Being an armoured vehicle, and one designed to float, it does not lend itself to having holes drilled in its flanks for the attachment of various internal and external excrescences to suit the whimsical fancies of individual command post officers.

To spike any tendency towards the exercising of imagination on the part of these gentlemen, 2 RCHA, in Germany, when they were issued with the command post vehicle, adopted a standard layout which can be seen in the accompanying photograph.

There are one or two drawbacks at the moment, such as the need to run the main engine to charge batteries at frequent intervals; no built-in tannoy system; and a tendency to leak in wet weather, an unusual proclivity in an amphibious vehicle although it must be admitted that the leakage comes from above the waterline.

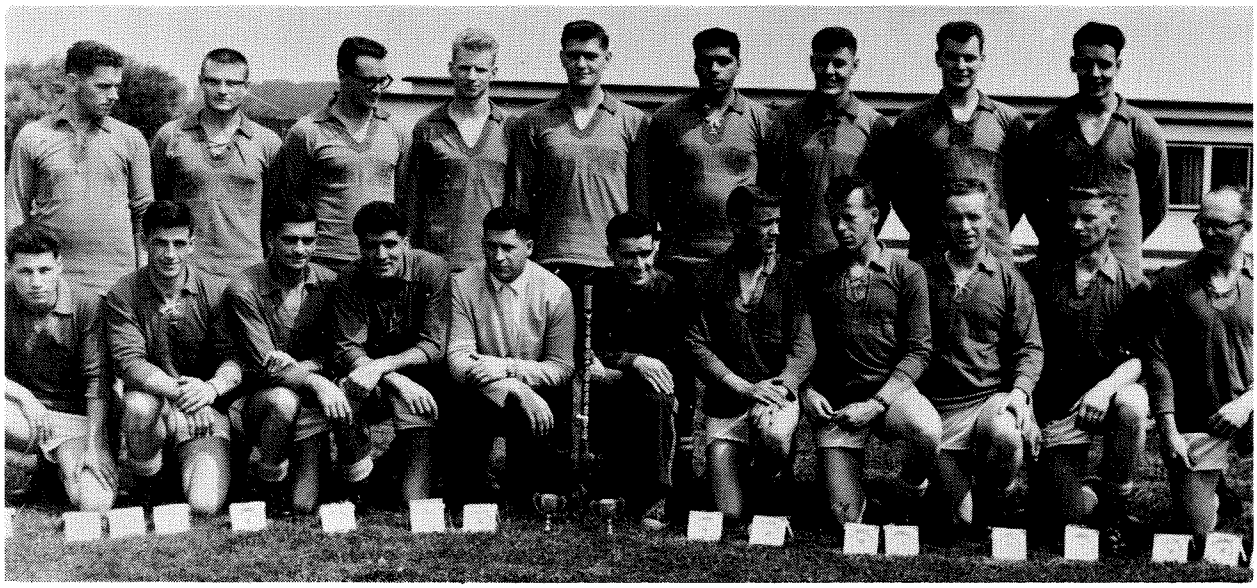
2 RCHA are hopeful of overcoming these disadvantages, but in any event, are most enthusiastic about their tracked command posts and find them a vast improvement over the ad hoc monstrosities that preceded them. □



Interior of the M577A1 APC

2 RCHA TEAMS DO WELL IN GERMANY

British Army Basketball Champions – 1966
Left to right, kneeling: Bdr GD Owens, Lt RG Thomason, Sgt JN Clifton (Manager), Gnr WA Mayfield, Lt G Plummer, Lt TJ Guiler; standing: Lt L Drummond, Capt HC Masson, Maj JA Cotter, Lt WL McMullen, Gnr NR Kelcey



Brigade and Division Light and Heavy Tug of War Champions for Three Successive Years
Left to right, kneeling: Bdr Stebner, Bdr JA Beaulieu, Bdr A Desbiens, Bdr JM Desroches, Bdr EL Ferguson (Manager), Bdr DB Russell (Coach), Gnr CR Skinner, Bdr CE MacLean, Bdr AJ Marsh, Bdr JJR Paradis, Bdr WC Morrison; standing: Gnr LH Leblanc, Gnr JB Staab, Sig JGP Bedard, Gnr PJ Bodentisel, Gnr J Tufford, Gnr R States, Bdr P Chaisson, Gnr K Walker, Gnr JP Vaillencourt

FAIR WEATHER AND FOUL

Drum-Major WPC Clattenburg leads 2 RCHA Trumpet Band during Army Day activities in Germany. The front rank drummers are, from left to right: LBdr R Martins, Bdr CL Lariviere, Gnr A Monette

Deutche Sunshine

COLONEL GEOFFREY BROOKS MEMORIAL

PRIZE ESSAY COMPETITION

1967

RULES OF THE COMPETITION

The name of the competition is *"The Colonel Geoffrey Brooks Memorial Prize Essay Competition"*. Two prizes will be awarded; first $100.00, second $50.00. The right to compete is extended to:

> Canadian Army Regular and Militia officers of the Royal Canadian Artillery.
>
> Officer Cadets of the Tri-Service Colleges, The Officer Candidate Programme and the Canadian Officers' Training Corps who have completed their first phase of training and who have selected the Royal Canadian Artillery as their corps.

Entries should be between 3500 and 5000 words in length. They must be typewritten and submitted in quadruplicate.

Authorship of entries will be strictly anonymous. Each competitor must adopt a motto or nom de plume, which will be quoted at the top of the entry. With the entry there will be enclosed a sealed envelope with the appropriate motto or nom de plume typewritten on the outside, and the service number, rank, name and address of the competitor inside.

The title and page of any published or unpublished work to which reference has been made, or from which extracts have been taken, must be quoted.

Entries are to be addressed to the Editor of the Canadian Gunner, CFB Shilo, Manitoba, and marked *"The Colonel Geoffrey Brooks Memorial Prize Essay Competition"* on the envelope. They must reach the office of the Canadian Gunner not later than 31 July 1967.

The Commandant, RCSA, CFB Shilo, Manitoba, will arrange for a committee to judge the entries. The decision of the Committee will be final.

Results will be made known in the next issue of the Canadian Gunner, and the winning essay will be published in that issue.

If, in the opinion of the judges, no entry is of the required standard, prizes will not be awarded.

The Editor and staff of the Canadian Gunner cannot be held responsible for the loss or return of any essay submitted; nor shall they incur any liability whatsoever in connection with the receipt of essays, any dealings therewith, the judging thereof, or the reports thereon.

The copyright of any essay which is published in the RCA Annual will belong to the RCA NPP.

The subject for 1967 will be:

> The military problems of counter-insurgency operations, particularly of those that verge on limited wars of the type that have prevailed in various areas of South East Asia over the past several years, should concern every officer of the Armed Forces. Describe how artillery resources might best be employed in this type of operation, and discuss particularly the problems of command and control and the types of artillery equipment best suited to such operations.

The author of the Colonel Geoffrey Brooks Memorial Prize Essay of 1966 is Major CE Beattie. Major Beattie has recently been posted to CFB Gagetown to take up an appointment with 2 RCHA on the return of that unit from Germany.

Captain DE Stothers, at present on course in the United Kingdom, is the winner of the second prize.

The subject for 1966 was:

> *Discuss present conventional artillery tactics, techniques and equipment from the point of view of characteristics which limit fire support capabilities, and suggest possible ways by which these limitations might be overcome.*

Major Beattie's prize winning essay appears below.

A CHALLENGE TO GUNNERS

INTRODUCTION

> "It is well known – but often forgotten – that the weapon with which the gunner fights is the shell. Gunnery, reduced to its simplest terms, is the art of delivering shell at the right place, at the right time, in the quantity, and of the right quality to achieve the desired object. The problem of artillery tactics is to resolve the conflict that is inherent, in the first two of these processes, between speed and accuracy, and in the last two between mobility of manoeuvre and range on the one hand and weight of shell on the other."[1]

The inherent conflict between the basic elements of artillery tactics is a continuing process which is never completely resolved. However, this characteristic discord need not be viewed with alarm, for it serves as the mainspring of progressive development. In this continuing cycle each element may enjoy a brief period in the ascendant, but soon relinquishes its advantage as the pressures of progress and change dictate. Since it is the tactical function of conventional artillery to support the other arms, the spectrum of both internal and external pressures is correspondingly greater. Although the sources of pressure for change are wide-spread, the primary factors which continue to determine the desired characteristics and employment of artillery are:

Major Beattie

1. The roles and characteristics of the supported arms;
2. The enemy threat;
3. Technological progress; and
4. The probable operational environment.

It is within this framework that the essential requirements of artillery tactics must be examined and against which those current characteristics which "limit fire support capabilities" may be more clearly defined and overcome. The solutions to problems in artillery tactics do not lie in resolving the inherent conflict between elements, but rather in assessing their current status with a view to exploiting any advantage which advances in tactical thought or technology may have accorded them. It is toward this constructive purpose that this paper is directed.

THE FRAMEWORK FOR ARTILLERY SUPPORT

> "The organization of military units resembles the structure of complicated machinery. Not only

[1] Brig. A.L. Pemberton, M.C., **The Development of Artillery Tactics and Equipment,** (The War Office; 1950), p. 1.

must the various parts be adapted to each other, but they should also stand in mutual equilibrium".[2]

The Roles of Supported Forces

For Canada, the roles of field formations, or special units within the Canadian Forces, are defined in defence policy and translated into form and substance through the "forces structure". The most recent policy statement which provides guidance for the required characteristics of artillery support, is that presented by the Honorable Paul T. Hellyer, Minister of National Defence on 12 May 1966.[3] This statement confirmed the continuing commitment of 4 C.I.B.G. to a "pivotal position on the central front in Europe", and the intention to provide this brigade with improved artillery support in the form of the 155 m.m. self-propelled (S.P.) howitzer, "the last remaining major equipment deficiency in the brigade at this time." A rotational brigade, with similar organization and equipment will be located in Canada.

In addition, Mobile Command will train two other brigades in Canada to be air-transportable under an expanded concept of mobility. Also included will be an air-portable/air-dropable battalion alert group for even quicker response to special situations.[4] It is from such highly mobile forces which can be air and/or sea lifted to trouble spots anywhere in the world, at any time of year, that the requirements of A.C.E. Mobile Force, the United Nations (U.N.), or North American Defence, might easily be provided.

From the foregoing, one can determine two general requirements for artillery support: firstly, the desirability of two regiments equipped with 155 m.m. (S.P.) weapons; and secondly, for two lightly equipped units of field artillery or mortars, to support elements of the air-transportable brigades; and with at least one battery capable of accompanying the air-dropable battalion alert group.

The Threat

Canada's contributions to the land forces elements of the N.A.T.O. deterrent in Europe are currently committed in the Central Front, in the case of 4 C.I.B.G., and to flank protection in the case of A.C.E. Mobile Force. In either situation the troops face a potential enemy who possesses a nuclear capability roughly equivalent to that of N.A.T.O. It must further be assumed that he will have a preponderance of other armaments such as armoured fighting vehicles and artillery, and a great numerical superiority in personnel.[5] The figures below represent an estimate of the strength of Soviet ground forces, available in open literature; they are undoubtedly subject to some error in detail, however they highlight the seriousness of the problem for allied forces in general and the artillery in particular:

"Army

140 divisions, including:

70 tank and mechanized
70 Infantry

130 cadre divisions, including units both designated "divisions" and "independent brigades."

40 "artillery divisions"

25,000 tanks (plus reserves stockpiles)

Air Forces

19,000 aircraft....of which 10,000 form part of tactical air armies."[6]

Elements of the air portable brigades located in Canada must stand ready to move on short notice to serve the cause of peace and security whether it be with N.A.T.O., the U.N., or North American defence. Although the operations of these forces are more likely to be conventional, they must be prepared to operate effectively under nuclear conditions, or against subversive and irregular guerrilla forces whose activities are directed to overthrow free governments. This means that artillery units supporting such forces must be thoroughly practiced in such operations and highly skilled in the techniques of fire support under such conditions.

Conventional operations, whether they be conducted on a limited or general scale, henceforth will present the possibility of leading to nuclear war. For this reason, forces required to take part

[2] Lt-Col F.O. Miksche, **Atomic Weapons and Armies,** (London: Faber and Faber Ltd., 1955), p. 174.

[3] The Honourable Paul T. Hellyer, Minister of National Defence, **Statement In Presenting The 1966-67 Estimates Before The Standing Committee On National Defence,** 12 May, 1966.

[4] Hellyer, **op. cit.,** p. 16.

[5] CAMT 1-8, **The Infantry Brigade Group In Battle, — Part 1 — Tactics,** 1960, p. 4.

[6] Raymond L. Carthoff, **Soviet Strategy In The Nuclear Age,** (Frederick A. Praeger, Publishers, New York, N.Y., 1958), p. 57.

in such conflicts will require the capability of converting to nuclear operations without time consuming reorganization or re-grouping. Conversely, conventional strength in manpower and firepower must not be sacrificed because of new found nuclear weapons, since a serious deficiency in the former might well determine the inevitable necessity for the use of the latter. In view of this threat, it is essential that the weight of conventional fire support be increased, and that techniques for the defeat of enemy armour be developed to their maximum capability.

Technological Progress

> "Technology can only ensure success if it is made to serve a realistic strategy and a tactical system which provides for the maximum exploitation of the modern engines of war."[7]

Once a realistic assessment has been made of the enemy threat, and the roles of forces defined to meet that threat, it is essential that the best available weapons be provided for the field forces. It is in the final production of individual artillery weapons that the conflicting elements of tactics come close to resolution, yet, even at this stage the resultant weapon invariably requires a degree of specialization in organization and training; and its tactical employment is often a compromise between the most desirable technical and tactical requirements. The inevitable result is the acceptance of a family of weapons, each designed to fulfil primary technical requirements and yet whose physical characteristics complement and promote the role of the supported unit or formation.

Exigencies of Environment

From the foregoing review of the roles of Canada's field forces, one must conclude that the possible areas of operation are world-wide. They range from potential nuclear operations to the rapid deployment of individual units, in support of the U.N., into any area of international unrest or instability.

While we have had considerable practice in our primary role in N.A.T.O., the assumption of a new air-mobile role, presents a field in which a great deal of study and practice are essential. Here, the gunners who will support such operations, must be trained and equipped in such a manner as to fit them for all possibilities of unfamiliar location or circumstance – be it in a mountainous, desert, or jungle environment.

THE ELEMENTS OF ARTILLERY TACTICS

Having reviewed the primary factors which form the framework of the artillery requirement, it is logical to proceed by examining the elements of tactics which are essential for effective fire support; and to seek corrective measures for any current limitations in their application. Since tactics is recognized as "the art of disposing military forces in actual contact with the enemy" and technique as the "mechanical skill, or mode of artistic execution",[8] it is advisable that they be considered together. Where necessary, their combined requirements can be related to a particular supporting role or to the employment of specific equipments, and recommendations made to overcome their limitations.

Speed and Accuracy

The penultimate challenge for the artillery is the production of a support fire plan in which the criteria for success are "timely and effective fire." This requirement presumes solutions to the following basic problems:

1. Target acquisition capability which permits time to detect, assess and effectively neutralize or destroy the enemy;
2. Survey systems which assure optimum accuracy of locating devices and weapons in the shortest possible time; and
3. Communications which permit the timely passage of data and orders for effective engagement of targets.

Current artillery resources for target acquisition, at divisional level, are concentrated in a Divisional Locating Battery. This unit provides a Sound Ranging Troop, capable of deploying a base for long range location of hostile guns; a Radar Troop for mortar location and general surveillance; and a Drone Troop for which a surveillance drone is currently being developed. A Survey Troop provides the survey support requirements of the brigades and the battery's own locating resources.

The centralization of tactical control for planning and deployment of these resources at divisional level has been sound in the past, since it provided for their most economical employment at a level which counter bombardment (C.B.) policy and allocation of retaliatory resources are best controlled.

[7] Miksche, **op. cit.**, p. 41.

[8] **The Concise Oxford Dictionary**, (Oxford: Clarendon Press, 1959), pp. 1295, 1308.

However, the reorganization of the forces, described earlier, suggests that the radar, survey and drone resources should be reorganized on a composite troop basis in order to facilitate their allocation to the artillery support of 4 C.I.B.G. and the rotational brigade. The remaining resources could then be retained under battery control for training and for allocation to the air-mobile brigades, when required.

The allocation of these essential resources, along with a small C.B. staff to brigade level, would enhance target acquisition capabilities in the brigades and accelerate the application of more accurate fire against targets in the brigade's zone of operation. This composite troop organization would meet the requirements of peace time deployment and yet be easily adapted to a more centralized system of control whenever required.

It is in the field of technology that the most promising advances are being made to achieve increased speed and accuracy in the application of fire. In the past, reliance upon the manual operation of locating and computing devices usually meant that speed and accuracy were primarily conditioned by human capabilities. Beyond certain limits, the two were incompatible, since an extreme effort for speed would often result in inaccuracies. However, this situation need not continue, for the introduction of automatic sensing and computing devices shows promise of meeting this dual requirement. Automated techniques, as are being applied to radio-link transmission and electronic computers in sound ranging, must be extended to include every possible aspect of finding, fixing and firing on the enemy.

An associated field in which computerization can next be accelerated is that of survey. It must be appreciated that artillery fire is most effective when a heavy concentration can be delivered accurately and without warning. Accurate and timely survey is a most important factor in the achievement of surprise. It is therefore advisable that the provision of accurate survey be accelerated by the use of helicopters to deploy survey pairs into difficult areas or over long distances. Once all observations are completed, much time could be saved by electronic computation of the final survey data rather than by the manually operated Brunsviga calculator.

In 1964 the United States Army completed tests to develop the survey applications of the Gun Director Computer M 18 (F.A.D.A.C.), for eventual production of a single programme tape containing all routine survey operations.[9] Incorporation of such a system into the Canadian Artillery would mean a substantial reduction in the time required to deliver effective fire; also assuring more accurate target acquisition data by providing accurate fixation to locating devices in the shortest possible time.

Another technique which should be evaluated is the use of the "Navaid" as a means of providing battery survey. A Battery Reconnaissance Officer (B.R.O.), carrying Navaid and a suitable Gyro Azimuth Orienter, could provide fixation, in eight figure co-ordinates, and orientation within a few minutes. In difficult or poorly mapped country, the Navaid would also assist by reducing the time spent in reconnaissance of allotted areas.

Recent developments in new equipment also promise improvements in speed and accuracy of fire at unit level. The first of these will be invaluable to the artillery forward observer. The capability of an O.P. officer to achieve first round hits can be greatly enhanced by the introduction of the L.A.S.E.R. (Light Amplification by Stimulated Emission of Radiation) – forward observer's range finder.[10] This instrument is man-portable and provides polar plot data accurate enough to enable the artillery O.P. to achieve surprise by accurate "fire for effect" without prior adjustment. A second instrument which will serve to increase speed and accuracy in the production of firing data is the Gun Director Computer M 18 (F.A.D.A.C.). This computer, as the first of its kind, proves the feasibility and effectiveness of automatic computer systems for use in field artillery. A third instrument, increasing speed and consistency in producing firing data, is the Royal Artillery Plotter, (F.C.F.B.A. Light No. 1 Mk 1). This plotter can serve as a suitable back up for a gun director computer. Its compact size, ease of preparation and expanded plotting window will simplify "setting-up" procedures and improve speed and consistency with its expanded scale plotting surface.

Finally, the effectiveness of artillery fire will depend on the immediate reaction of all target acquisition resources whenever enemy elements are detected. This requires reliable communications for automatic data transmission and prompt reporting by ground and air observers. In a battlefield environment which is characterized by dis-

[9] Lt. George S. Reeves, "Survey Applications of F.A.D.A.C.", **Artillery Trends**, October 1964, p. 36.

[10] "L.A.S.E.R. – The Forward Observer's Rangefinder", **Artillery Trends**, October 1964, p. 39.

persion and a high degree of mobility, the passage of information must be efficient, if fleeting targets are to be effectively assessed and engaged. If this challenge is to be met, all resources of ground and air surveillance must be exploited, including drones and manned aircraft; mounting photo, infra-red, or side-looking radar sensors. The full requirement for target intelligence and highly responsive engagement procedures can only be met if we are prepared to pursue every opportunity to automate the detection, assessment and retaliatory processes. Advances in technology now offer such possibilities and are gradually assuring the compatibility of speed and accuracy.

Mobility of Manoeuvre

> "If you can move five times as fast as your enemy, then, whilst the military hour will remain 60 minutes for him, it will be reduced to 12 minutes for you, and every mile will become less than two furlongs."[11]

This observation by Maj-Gen Fuller highlights advantages to be gained from superior physical mobility. This ability to manoeuvre quickly is an essential feature of modern battle, especially in view of the threat posed by heavily armoured forces. It permits units to disperse or concentrate quickly as the situation demands, and is thus the mainspring of security and surprise. This advantage in mobility is especially important to the artillery because it permits more intimate support of highly mobile formations, the swift deployment and concentration of fire-power, and effective extension of range by rapid, forward re-deployment of weapons to assure continuous close support.

The limitations of towed 105 m.m. and 155 m.m. howitzers have been clearly recognized in the decision to re-equip artillery units in support of 4 C.I.B.G., and the rotational brigade with the M 109, 155 m.m. (S.P.). This weapon has a maximum range of more than 18,000 metres; on-carriage traverse of 6400 mils; a road speed in excess of 35 miles per hour; and an emplacement time of less than three minutes. Its cross-country mobility, when combined with rapidity of traverse, accuracy, and nuclear capability, make it an unusually versatile general purpose weapon.[12] In highly mobile operations, such as might be encountered in a nuclear environment or other fluid battle situations, its advantages in speed and fire power permit it to meet a threat from any direction.

In the case of the air-mobile brigades, there is a requirement for light air-mobile artillery. At present, the available weapons which could fulfil this need are the U.S. 105 m.m. XM-102 howitzer, currently in service in Vietnam; the Italian 105 m.m. pack howitzer; and the Hotchkiss-Brandt 120 m.m. rifled mortar.[13] While it is not intended to enter into a detailed study of the capabilities or limitations of these weapons, it can be said that the XM-102 enjoys advantages in its 11,500 metre range; use of ammunition already in service in Canada; and direct fire capability. This latter characteristic is most advantageous in a weapon which is to support air-mobile forces; since their general lack of armoured support makes the additional anti-tank capability a very desirable bonus feature. All three weapons can be towed by ¼ ton vehicles and are air-portable by transport helicopters currently in use. Examination indicates that composite units of mortars and howitzers would meet the requirements of mobility and permit flexibility in weapon selection and weight of fire.

Development of improved helicopter capabilities since World War II and more recent applications of their use in Vietnam, make the conduct of air-landed and air-supported operations over restrictive terrain, the most challenging field for current study. If the Canadian Forces are to be effective in fulfilling the roles assigned to air-mobile elements, these forces, along with their supporting artillery units, must develop, refine and practice the tactical skills required to effectively meet the challenge of such operations.

A final requirement of mobility, either for mechanized or air-mobile artillery, is that of logistic support. Weapons are useless without ammunition; and lose their mobility without essential fuel supplies. However, the development of new techniques of logistic support can be combined to meet this requirement. Three methods of delivery which are suited to this modern concept of mobility are: air landed, by transport helicopter; cross-country, by XM 548 tracked cargo carrier,[14] and

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[11] Maj-Gen J.F.C. Fuller, **Armoured Warfare**, (Harrisburg, Pennsylvania: The Military Publishing Company, 1943), p. 36.

[12] Lt-Col Walter R. Davis, "The M 109, Capabilities Plus ...", **Artillery Trends**, June 1964, pp. 8-11.

[13] "The 120 m.m. Rifled Mortar and Its Ammunition", **Hotchkiss-Brandt**, 52 Champs Elysees, Paris, October 1961.

[14] "XM 548 Cargo Carrier", **Artillery Trends**, December 1964, pp. 64, 65.

fixed wing air delivery by low level extraction (L.O.L.E.X.) technique.[15] Such methods which provide swift and effective logistic support to artillery units, assist in resolving the inherent conflict between weight of shell on the one hand, and mobility on the other. These solutions must, however, be tested and refined; and where necessary the unit echelon system of maintenance adapted to exploit their advantages.

> "Every arm and branch of the army is affected by the recent progress in mechanical movement, and unless they can adapt themselves to it, they are in course of decay."[16]

Weight of Fire

It has been noted that the penultimate purpose and product of fire planning is to produce "timely and effective fire." To be successful, this fire must destroy the enemy, or prevent him from using his weapons effectively and deny him movement or observation. Recent improvements in target acquisition and weapons delivery systems suggest substantial advantages may be exploited in the application of fire.

In the past, the weight of fire available to the forward observer (F.O.O.) was primarily determined by calibre of shell and the ability of several units to concentrate their fire. While improvements in mobility and range of weapons have served to ease this problem, the prospect of an expanded battle field which makes ammunition re-supply difficult, emphasizes the requirement that F.O.O.'s be capable of controlling all available fire support.

A substantial addition to the arsenal of close fire support is the CF 5 tactical ground support aircraft. This highly mobile weapons platform serves to enhance the flexibility and volume of fire power available to forward elements in battle. However, if its support is to be "timely and effective", there must be closer co-operation, incorporating its fire power into the highly manoeuverable, mechanized and air-mobile fire support teams. In order to avoid the time-consuming descriptions which justify requests for fire support, we must ensure that whenever operations require and weather permits, "cab-rank" or "runway-alert" aircraft are available and that the artillery advisers, who are at the point of crisis and already responsible to the supported arm commander for close fire support, are capable of assessing the amount of air support required and effectively directing the aircraft to their targets.

A second development which requires consideration, stems from the enemy threat. Recognizing the fact that the potential threat is primarily one of highly mechanized forces, it seems advisable that increased efforts should be directed toward projects which will defeat armour. The M 109 155 m.m. (S.P.) with its improved mobility, protection, traverse and weight of fire, upgrades our anti-tank capability. To further narrow the advantages of enemy armour, increased emphasis must be placed on "direct fire" practice and artillery anti-tank tactics. Another measure which will assist in defeating tanks is to revise current ammunition scales, providing additional smoke ammunition. This smoke may be used to surround tanks, whose visibility is already impaired when "buttoned-up", causing confusion and loss of direction. White phosphorous (W.P.) smoke can also be used as an incendiary to ignite fires on tanks, thus compounding the confusion. Conversely, smoke can be used to good effect in support of our own tanks; "for when a tank attack is effectively screened by smoke, anti-tank guns become blinded victims, more helpless than the infantry they are supposed to protect."[17]

Finally, improved target acquisition techniques downgrade the requirement for heavy barrages which are time-consuming in preparation and often wasteful of ammunition. Modern techniques for control of fire, reliable communications and improved facilities for ground and air observation also serve to indicate the replacement of this type of fire by heavy area or point concentrations. Furthermore, the improved capabilities of the close support aircraft with its substantial firepower makes massive concentrations of artillery less likely in future. However, this does not mean that we should discontinue teaching this technique of artillery fire, for to do so would be to abandon the ability to provide flexibility in fire support under adverse weather or terrain conditions. It should also be remembered that Major-General J.F.C. Fuller, writing in 1932 observed, "Artillery barrages as employed during World War I will seldom be used unless frontal attacks are unavoidable or the mouth of a defile has to be blocked...",[18] yet on at least two occasions during World War II (Operations GOOD WOOD and TOTALIZE), the results of barr-

[15] "L.O.L.E.X.", **Artillery Trends**, July 1965, pp. 70-73.

[16] Capt. B.H. Liddell Hart, **Thoughts on War**, (London: Faber and Faber Ltd., 1943), p. 189.

[17] Capt. B.H. Liddell Hart, **The Remaking of Modern Armies**, (London: John Murray, Albemarle St. W., 1927), p. 22.

[18] Fuller, **op. cit.**, p. 103.

ages employed in support of tanks and carrier borne infantry were generally satisfactory.[19] The points the gunner should remember are: that under the threat of nuclear operations, heavy concentrations of guns will rarely be practicable; that when weather and observation are favourable, close support aircraft can provide "sudden fire", the surprise effect of which gives results equal to that of expenditures of large quantities of ammunition; and that when target intelligence and observation are good, the artillery "concentration" can provide the advantage of suddenness and surprise, especially if combined with cunningly regulated periods of silence.

Communications

Effective communications are an essential feature of artillery support, especially under highly mobile conditions. Radio sets, currently in operation, offer reasonably good performance; however, the limitations imposed by lack of range, restricted availability of frequencies, susceptibility to interference and time-consuming tuning and operating procedures, emphasize the priority which must be given to improving our present communications.

A current U.S. Army development which offers a solution to these problems is the production of a new family of single sideband radios, designed to replace current amplitude modulated (A.M.) sets.[20] The principle features of single sideband are:

1. Only one ten-thousandth of the available power output is applied to the transmission of the carrier, all remaining power is used to transmit intelligence, thus increasing operating efficiency;
2. It provides up to ten times the number of operating channels available from A.M. radio in a given frequency spectrum; and
3. Has better reception because of less noise in the receiver due to its very narrow band width.

The single sideband set is being produced as a lightweight "manpack" of approximately 29 pounds. Carried and operated by one man, the set has recently achieved efficient operation to a range of 500 miles.[21] With the increased range of operations which will characterize mechanized and air-mobile warfare, these characteristics of communications have become mandatory. The advantages of single sideband are suited to this need and should be exploited to increase the effectiveness of artillery fire support.

COMMAND AND ORGANIZATION

The effectiveness of fire support depends on a great degree on sound unit organization and effective grouping of units for command. As far as practicable each unit should be organized and trained in peace as it must fight in war; and the prime requirement of artillery organization and grouping for command is that it fulfil the needs of the supported arms.

Improved range capabilities of weapons and communications now permit the restoration of advantages in centralized command of artillery at divisional level. Although units must be organized to permit flexibility of grouping and employment in a "battle group" concept, it should be borne in mind that replacement of this method of artillery employment by one of centralized command, paved the way for the crucial desert victories at Alam El Halfa and El Alamein; "Above all it had been done by the concentrated use of fire power. In General Montgomery's own words, the concentrated fire of artillery had proved itself to be still 'a battle-winning factor of the first importance', and for this reason 'command must be centralized under the C.R.A. so that he can use the divisional artillery as a 72-gun battery when necessary.'"[22]

At unit level, current reorganization requires careful study, to ensure the adoption of organizations which are tactically sound. In the case of light regiments, a major consideration must be the tactical loading capabilities of aircraft and the necessity of space for ammunition and other essential logistic support.

Regiments supporting N.A.T.O. formations in Europe must maintain maximum fire support, mobility and flexibility in their organizations to effectively counter the potential threat. It is against these standards that the proponents of the six, or eight gun battery organizations must validate their arguments. To accept an organization simply because an ally has found it adequate, would be abandoning responsibility for tactical planning, and accepting unrelated factors which influenced its adoption by

[19] Pemberton, **op. cit.**, p. 236.

[20] Maj. George F. Bealle, **"Why Single Sideband??" Artillery Trends**, April 1965, p. 47.

[21] "10,000 Voices", **Army**, May 1966, p. 88.

[22] Pemberton, **op. cit.**, p. 138.

another country. For example, two main reasons given for adoption of the six-gun battery by the Royal Artillery were:

> "To retain the organization existing in 1959 would have meant reducing the total number of regiments, or manning only four guns in each of the regiments in being at the time.
>
> The calls by the Army as a whole on Captains was such that only two could be provided for each battery instead of three."[23]

This organization suited the needs of the Royal Artillery, although disadvantages in reduction of fire support had to be compensated for by adjustments in ammunition scales and possible allocation of additional artillery resources from higher formations. However, these factors and solutions are not applicable to the organization of Canadian Artillery units.

Changes in organization should be made on the basis that they will improve the support of infantry or armour in war, and only after detailed studies and trials have been completed. Many factors, such as finances, manpower and equipment availability must be considered. However, if such factors result in reductions in manpower or equipment, it is better that they be effected within a flexible organizational structure which has been battle-proven and which can be quickly augmented as conditions permit.[24]

TRAINING CONSIDERATIONS

The diversity of roles and the variety and complexity of equipments with which the gunner must cope, present a major challenge in his training.

It has been concluded that technology forces us to a variety of equipments to fulfil our roles. This means that gunners must, through their training, be prepared to serve in various units and quickly develop the required skills. There is nothing new in the idea that man is more adaptable than his tools, or that "the best results are not to be expected from the one tool users of any profession, be they mechanics, surgeons, dentists, or golfers."[25] Unless this approach is taken in training and employment within mortar, field, medium, locating, or air defence units, our outlook will become narrowed and units which were constructively designed to exploit special fire support capabilities will soon become symbols of difference and division.

The gunners, having been given a variety of special weapons must suit their training to the needs of the day, and in keeping with the "golf bag principle",[26] play each shot with the appropriate club. By this combination of alternative weapons and dual purpose gunners, we can ensure the most effective and economical use of both weapon and man power.

Finally, the requirement for air-mobile artillery to serve anywhere in the world, demands that consideration be given to special training under various terrain and atmospheric conditions. Experience gained in the employment of light artillery by 28 Commonwealth Brigade in Brunei during 1963-64, emphasizes the importance of such training, including the closest possible co-operation with infantry: "Ideally an incoming unit requires at least three months to work up to the required standard, and this is expecially true of gunner units who are expected by theatre policy to perform as infantry as well."[27] This confirms the necessity of environmental training, which might possibly be arranged through co-operative training agreements between U.N. or Commonwealth members in a peace-force training programme.

CONCLUSION

There have been relatively few changes in the size, shape, or lethality of artillery shells over the past seventy-five years; yet, through advances in technology, it has been possible to increase the effectiveness of artillery fire by improved techniques in target acquisition, communications, fire direction and physical mobility. In improving the effectiveness of artillery fire, these advances have also, to a

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[23] Major J.F. Kenyon, R.A., "The Six-Gun Field Battery", **The Journal of The Royal Artillery**, Summer/Winter, 1962, p. 165.

[24] The six-gun battery was discarded by the British Army in 1938 in favour of a twelve-gun battery of three (4-gun) troops. Later, operations against German forces resulted in final development of an eight-gun battery of two troops as being the most acceptable tactical organization: Pemberton, **op. cit.**, pp. 10 and 36.

[25] Pemberton, **ibid**, p. 253,

[26] Pemberton, **ibid**, p. 253.

[27] Brig. R.G.S. Ridwell, "The Gunner Task In South East Asia", **The Journal of The Royal Artillery**, September 1964, p. 89.

great extent, resolved the seemingly discordant elements of tactics; with the result that improvements in one element no longer impose corresponding disadvantages in another.

The foregoing study has indicated several areas in which progress can be achieved, now and in the future. If we are to meet this challenge, we must remain flexible in our approach and relentless in our search for avenues of advance. Only by the progressive exploitation of technology and the continuous evaluation of the suitability of our tactics, techniques and equipment, can we be assured that we have achieved the "best" in terms of "timely and effective fire."

> "....when a time of fundamental change comes in the art of war, a great prize goes to that military institution with the perception to realize that a time of great change has come, with the wisdom to see its outline, with the creativity to exploit technology and human inventiveness to meet the new conditions, and with the leadership – and good luck to bring about constructive adaptation.
>
> Today – with the nuclear weapon, the wars of liberation', and the immense scope and potential of modern military technology – we are in such a time of change."[28]

– FINIS –

[28] Lt-Col. John H. Cushman, "The British Experimental Armoured Force", **Army**, January 1965, p. 36.

YET ANOTHER VERSION OF THE 105MM HOWITZER

The 105mm howitzer, light, M102, is the United States Army's lightweight, towed artillery weapon currently employed in support of airborne and airmobile forces. The US Army's 101st Airborne Division, operating in the vicinity of Tuy Hoa, South Viet-Nam, is now using this weapon in support of its operations.

The M102 is 36% lighter than the M101A1 105mm howitzer used by Canadian units. It can be lifted by combat zone fixed wing transport aircraft or by helicopter. A low silhouette is obtained from the weapon's 30-inch trunnion height. Full 6400 mil traverse is made possible by use of a firing platform which serves as a pivot. Traversing is accomplished through a handwheel which transmits power to the *terra tire*, located at the rear of the trail assembly, which physically moves the howitzer.

The range of the M102 is slightly better than that of the M101A1, the normal-sized towed version of the 105mm howitzer.

The M102

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4. I am glad to report that my husband, who was reported missing, is now dead.
5. Sir, I am forwarding my marriage certificate and two children, one of which is a mistake as you will see.
6. Unless I get my husband's money, I shall be forced to live an immortal life.
7. I am sending my marriage certificate and six children. I had seven children and one died which was baptised by the Rev. Thomas on half a sheet of paper.
8. I am writing these lines for Mrs. J... who cannot write herself. She expects to be confined next week, and can do with it.
9. Please find out if my husband is dead, as the man I am living with won't do anything unless he is certain.
10. In answer to your letter and according to instructions, I have given birth to twins in the enclosed envelope.
11. You have changed my little boy into a girl. Will this make any difference.
12. In answer to your letter, I have given birth to a 10 lb. boy. Is this satisfactory.
13. Please send me the money at once. I have fallen into errors with my landlord.
14. I have no children as my husband is a bus driver and works all day and night.
15. I want my money as quick as you can send it. I have been in bed with a doctor and he doesn't seem to be doing me any good, if things don't improve I shall have to get another doctor.
16. Milk is wanted for the baby and the father can't supply it.
17. Re your letter regarding dental enquiry, the teeth in the top are alright but the ones in my bottom are hurting me terribly.
18. I cannot pay my income tax, I have had my teeth out and a new gas stove put in.
19. I want a form to put a child on, please.
20. I am no longer claiming for a child, so will now leave it in your hands.
21. Please send me my post mortem (post war credit) certificate.
22. You will note that my profits are down this year, I have bought £1000 of Defence Bonds.

From the C P Log

On 29 October last, 11 Field Regiment RCA(M) of Guelph, Ontario, celebrated the completion of one hundred years of service. Although the weather was unkind, the centennial was a great occasion for the unit. Following an inspection by His Excellency Governor-General Georges Vanier, accompanied by the Honourable George Drew, Honorary Colonel of the unit, a message was read by Mr Drew from the Queen, the Captain-General. Later in the day a comprehensive tattoo was staged in which members of the Regular and the Militia forces took part, and which opened with a one hundred gun salute. The day was climaxed by a parade through Guelph during which the unit, commanded by Lt Col DG Ingram, was honoured by being granted the freedom of the city.

* * *

On 25 February 1966, Number 13 Artillery Staff Course at RCSA had the unique experience of receiving successive lectures from a father and son combination. Capt RV Thompson, one of the School IGs, ended one of his periods of instruction by introducing his father, Maj VA Thompson, as a guest lecturer. Maj Thompson, of the Directorate of Training at CFHQ, was visiting Camp Shilo in connection with Young Officer Training and was invited to speak to the course on the subject of assessment and grading. Maj Thompson had been a gunnery instructor at RCSA during 1946/47.

* * *

On Dominion Day this year, 30 Field Regiment, of Ottawa, fired its guns as an integral part of the performance of Tchaikovsky's "1812 Overture" by massed bands on Parliament Hill. The unique operation was handled largely by 1 Battery, under the command of Capt KG Farrell.

During a street fight in Winnipeg between two groups of youths in their late teens or early twenties, Lt RJ Lucas of 3 RCHA left his house to disarm one of the troublemakers who was attempting to set upon one of the others with an axe. Meanwhile, Mrs Lucas telephoned the police who arrived very quickly. Jail sentences resulted for the delinquents and Lt Lucas was subsequently awarded the Queen's Commendation for Brave Conduct.

* * *

3 RCHA, for many years a power in regimental hockey circles, again produced a winning team during the 1965/66 season when they captured the Manitoba Area Hockey Trophy. One of the perennial members of the team, Gunner "Sonny"

Van Tassel, who is adept at other sports when there is no ice available, received the Boettcher Memorial Trophy from the Honourable RS Bowles, Lieutenant-Governor of Manitoba, on 27 June 1966. This trophy, in memory of Captain Douglas Boettcher of 3 RCHA Air OP Troop, who was accidentally killed during a training exercise in Germany in 1962, is awarded annually to the best all-round athlete in the unit.

* * *

Departing from the usual format of unit birthday parties, 1 SSM Bty RCA, stationed in Germany, on 19 September 1966 celebrated its sixth anniversary by taking a cruise in one of the famous Rhine River boats. Over 200 members and dependents embarked at Bonn, cruised downstream to Linz, and returning upstream, disembarked at Cologne.

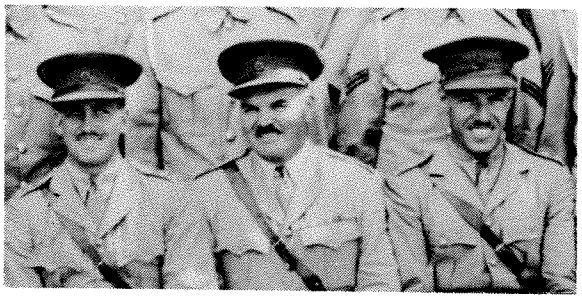
Major JE Crosman, CD inspecting the engine-room of the Rhine cruiser "Dusseldorf"

* * *

One of the more interesting training events on this year's calender for 1 SSM Bty was the attachment of a party to a British battery training in the South of France about 60 miles North of the Mediterranean coast. The base, Camp Larzac, formerly a camp for Algerian prisoners of war, fell somewhat short of preconceived Riviera standards, but this had no ill effect on training. Activities included a journey by canoe through the rugged Gorges du Tarn, an expedition which resulted in the write-off of two canoes, although happily all canoeists returned to base.

* * *

On the appointment, this year, of Lt Gen WAB Anderson to the top position in Mobile Command, a unique situation arose. Two of the six Commands of the Canadian Armed Forces are headed at the present time by officers with Army backgrounds. The other such Command is Materiel Command, of which Maj Gen RP Rothschild is the commander. These two officers, ardent Gunners both, were once subalterns together in A Battery RCHA. The Battery Commander at the time was Maj (later Maj Gen) JH Roberts.



Lt Anderson, Major Roberts, Lt Rothschild

* * *

During the Regular Officers' Part 2 Promotion Examinations held at RCSA this year, Capt JJ Fraser earned a Distinguished rating on both Part 2A and Part 2B of the Captain to Major Examinations. Officers who received a Distinguished rating on either Part 2A or Part 2B are Capts FC Ayers and EL Schrader and Lts WR Johnston, RG Elrick, GR Smith and KG Stowell.

* * *

During the year, Militia units from across the country flew to Shilo on various weekends for range practices additional to the normal summer camp. Leaving their houses on Friday evening after work

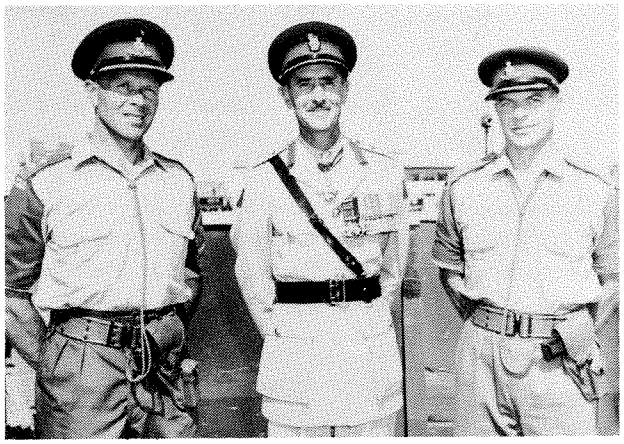
or school, they were firing on the Shilo ranges on Saturday and Sunday morning, and back in their homes by Sunday evening. Most of the flights were by service aircraft. On one weekend, the ranges were used simultaneously by units whose bases are more than 3000 miles apart – 3 Fd Regt of Saint John, NB and 15 Fd Regt of Vancouver, BC.

* * *

Drum Major AH Butler, CD
3 RCHA

The band of 3 RCHA thrilled parade watchers in the heart of the "Friendly City" during the annual Calgary Stampede Parade. The band won enthusiastic applause along the entire route for their arrangements of "Canadian Sunset", "Green Beret", "William Tell Overture" and a Sousa medley. In the words of a press release, "Although numbering only 21, and dwarfed by bands with over 100 members, the trumpet band produced a brand of music that was one of the clearest and cleanest that the stampeders had the pleasure of hearing that day."

* * *



Lt Col DW Francis, CD, (left), handed over 4 RCHA to Lt Col LC Baumgart, CD, formerly Second-in-Command, 1 RCHA, on 18 July 1966 of CFB Petawawa. Lt Col Francis, who had commanded the Regiment since September 1964, has been appointed to the directing staff of the Staff College in Kingston. Shown at centre is Brig JA Dextraze, CBE, DSO, CD, then Commander 2 CIBG.

* * *

"A" gradings are awarded very sparingly at RCSA. As often as not none is awarded on a course. Between 1 September 1965 and 1 December 1966 the following students achieved "A" gradings:
Artillery Staff Course: Maj CE Beattie;
OCP Phase 3: O/Cdt JB Lapointe;
Chief Gunnery Assistant Group 4: SSgt MRJ Sauve;
Surveyor Group 3: Bdrs JG Hanlon, TM Mitchell;
Gun Number Group 3: Sgt WD Harrison;
Meteorological Assistant Group 2: Gnr WG Harrison;
Gun Number Group 1: Gnrs CT Donovan, RA Gayler, TE Johansen, RH Mauss, GC McLearn, EM Pottie, PT Scott, SJ Stuart, RW Webb, AV Bedford, JG Thomas, LA Graham;
Technical Assistant Group 1: Bdr PP Lepine, Gnr DH Sprott;
Signaller RCA Group 1: Gnrs BI Davidson, PH Watkins.

* * *

The RCHA memorial in Kingston, Ontario

Every year on 11 November old and new Horse Gunners gather informally at the RCHA Memorial in Kingston, Ontario. The old ones wear their medals and the beret of the RCHA Brigade Association. Prayers are said by the Association padre, Rev AV Laverty, heads are bowed in silent commemoration of fallen comrades, a trumpeter sounds Last Post and Reveille, wreaths are laid. The ceremony is impressive in its simplicity.

This year's ceremony was well attended. Regular Gunners were represented by a party despatched from 4 RCHA in Petawawa, as well as by CA(R) artillerymen serving in various appointments in the Kingston area. Lt Cols Chabot and Francis of the Staff College Directing Staff were noticed among the group. Old RCHA Gunners who journeyed to Kingston from out of town for the event included the Bulger brothers – Tom and Vic – from Toronto, Bill Moses from Niagara Falls and George Benstead from Gananoque.

Brig JS Ross was the senior Gunner present. Mrs Ross laid a wreath on the monument, escorted by Maj Jerry O'Shea. The oldest Gunner there was ex-RSM Ginger Guy, father of WO1 George Guy and S Sgt Tut Guy. Mr Guy laid a wreath on behalf of the Association. Master of Ceremonies was Maj Slim Irwin, and the calls were sounded by Trumpeter Vivian, an ex boy-soldier of the Regiment. After the ceremony, all ranks retired to the RCHA Brigade Association clubrooms for a stand-to. □

A 250th ANNIVERSARY FOR THE ROYAL ARTILLERY

Midway through December, as 1966 eked out its last few remaining days, the Chief of Artillery, Colonel JP Beer, MBE, CD, made a presentation of two carved wooden lecterns to the British School of Artillery at Larkhill, Wiltshire. The lecterns were a birthday gift from the Royal Regiment of Canadian Artillery to mark the 250th anniversary of the Royal Artillery.

Actually, there were Gunners in English armies centuries before the founding year of 1716, but they were always hastily organized and inexpert groups, thrown together for a particular campaign and disbanded as soon as the fighting ceased. A few of them, particularly after the time of Henry VIII, were professional Gunners but they were not grouped in formed artillery units, being spread about, two or three here and there, in various forts and garrisons, and expected to train whatever raw soldiers were given to them when war became imminent.

The very early gunners included firemasters (subsequently called master gunners), responsible for drill and storekeeping; fireworkers, whose duties included manufacture of ammunition; and mattrosses, who were more or less unskilled assistants. In a mortar detachment there was a fellow called a bombardier; his is one of the few old titles to survive, though nowadays he might be serving a guided missile or a radar locating set.

Their weapons were splendidly named: culverins and sakers and minyons and falconets, pieces with effective ranges of a few hundred yards and a slow rate of fire. As late as the middle of the last century, guns had low muzzle velocities and the larger shot could be seen in flight coming towards one. If you were nimble enough, like one Sam Davies, an officer's batman at the battle of Dettingen who committed his experiences to paper, you could dodge out of harm's way.

Between campaigns the guns were stored in the Tower of London and other strongholds and were issued only when operations seemed likely. Then they were hitched behind teams of horses supplied and driven by civilian contractors. This was not very satisfactory: in 1715 the Jacobite rebellion was over and done with before the artillery could be mobilize.

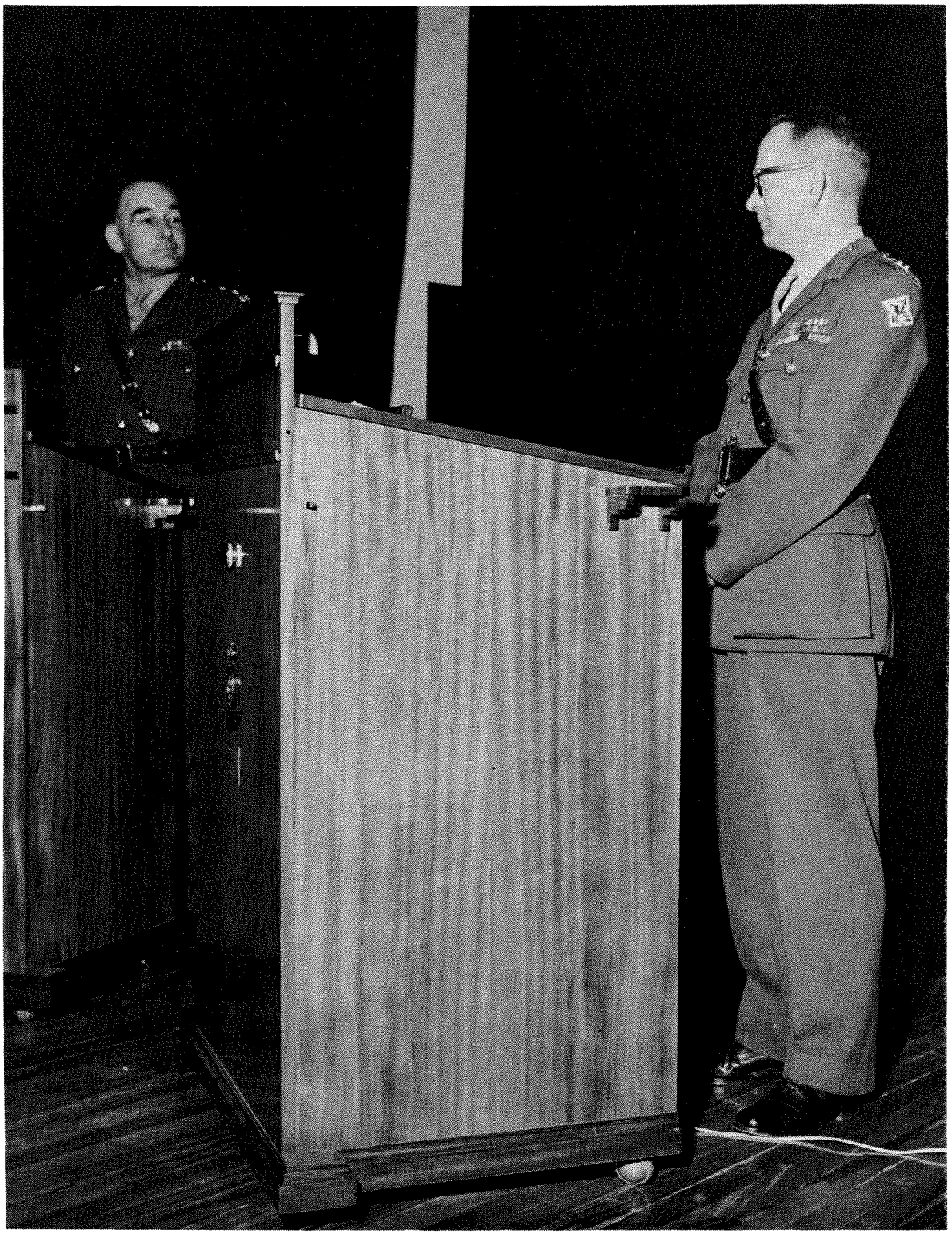
The man who created the permanent Royal Artillery was John Churchill, Duke of Marlborough. He started his career as an infantry soldier, but he was very artillery-minded, and, despite the problems of civilian horse drivers who sometimes, perhaps understandably, removed their teams from the battlefield at inconvenient times, used his guns to great effect. At Blenheim, in 1704, he personally sited every weapon.

In 1716, in the peace that followed the War of the Spanish Succession, Marlborough's proposal resulted in the establishment of two companies of Royal Artillery at Woolwich. They were known as J Richard's Company and T Pettinson's Company, from the names of their commanding officers, and their total strength was 148. It cost the Government £4,800 a year to pay them.

Five years later the title "Royal Regiment of Artillery" was conferred, and the foremost artilleryman of the time appointed Colonel: Albert Borgard, a Dane. Borgard was a highly professional mercenary in an age when national armies were only just beginning to emerge, and soldiers of fortune hired out their swords and their skills. He had served the Danes, the Prussians, the Hungarians, the Poles and the French. He joined the English in 1693 and stayed with them until he died at Woolwich in 1751, at the age of 92, with 24 sieges and 18 pitched battles on his record.

There is hardly a hamlet in Britain which has not given its men to the Royal Regiment of Artillery. At the end of World War 1 there were more than half a million Gunners in Britain's Army. In World War 2 their number was about three quarters of a million: one soldier in every four in the British Army was a Gunner.

Today in the British Regular Army of 180,000, one soldier in nine is a Gunner (32

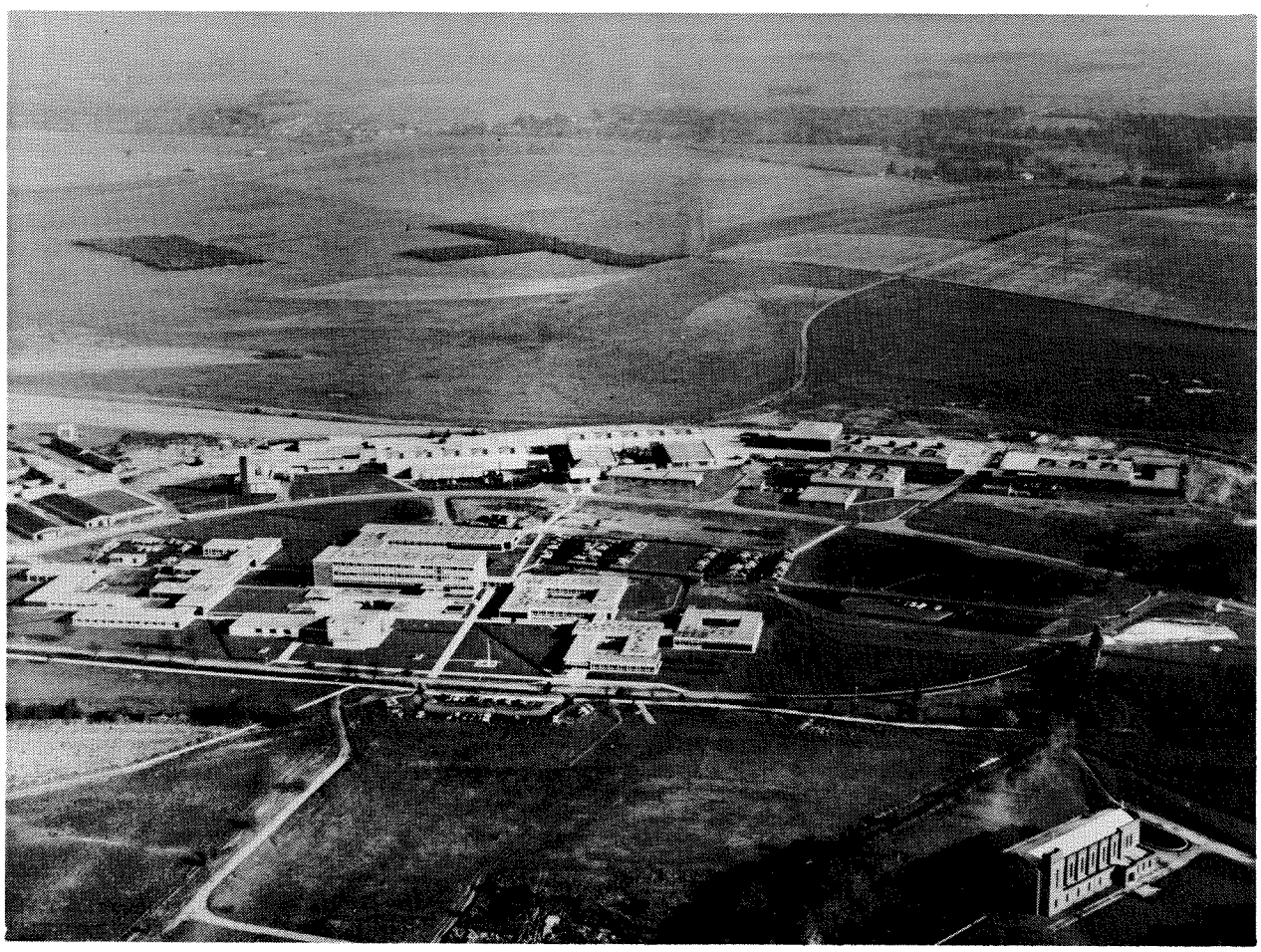


Brigadier RS Streatfeild, MC, Commandant of the British School of Artillery, and Colonel JP Beer, MBE, CD, try out the new mahogany lecterns, an anniversary gift from Canadian Gunners to the RA.

regiments) – a total of 20,000 of them – and there is an approximately equivalent number of them in the Territorial (Militia) units.

To celebrate the anniversary, events ranging from tattoos to church parades were held in Gunner stations from Glasgow to Plymouth. On 8 July the Queen attended a thanksgiving service in St Paul's cathedral in London, and on that and the following day the Royal Artillery took over Horse Guards Parade for a show of old and new weapons and equipment. One of the more unusual events was a pilgrimage by personnel of 17 Training Regiment, RA, to Aarhus, Denmark, birthplace of Lieutenant General Albert Borgard, the first Colonel of the Royal Artillery.

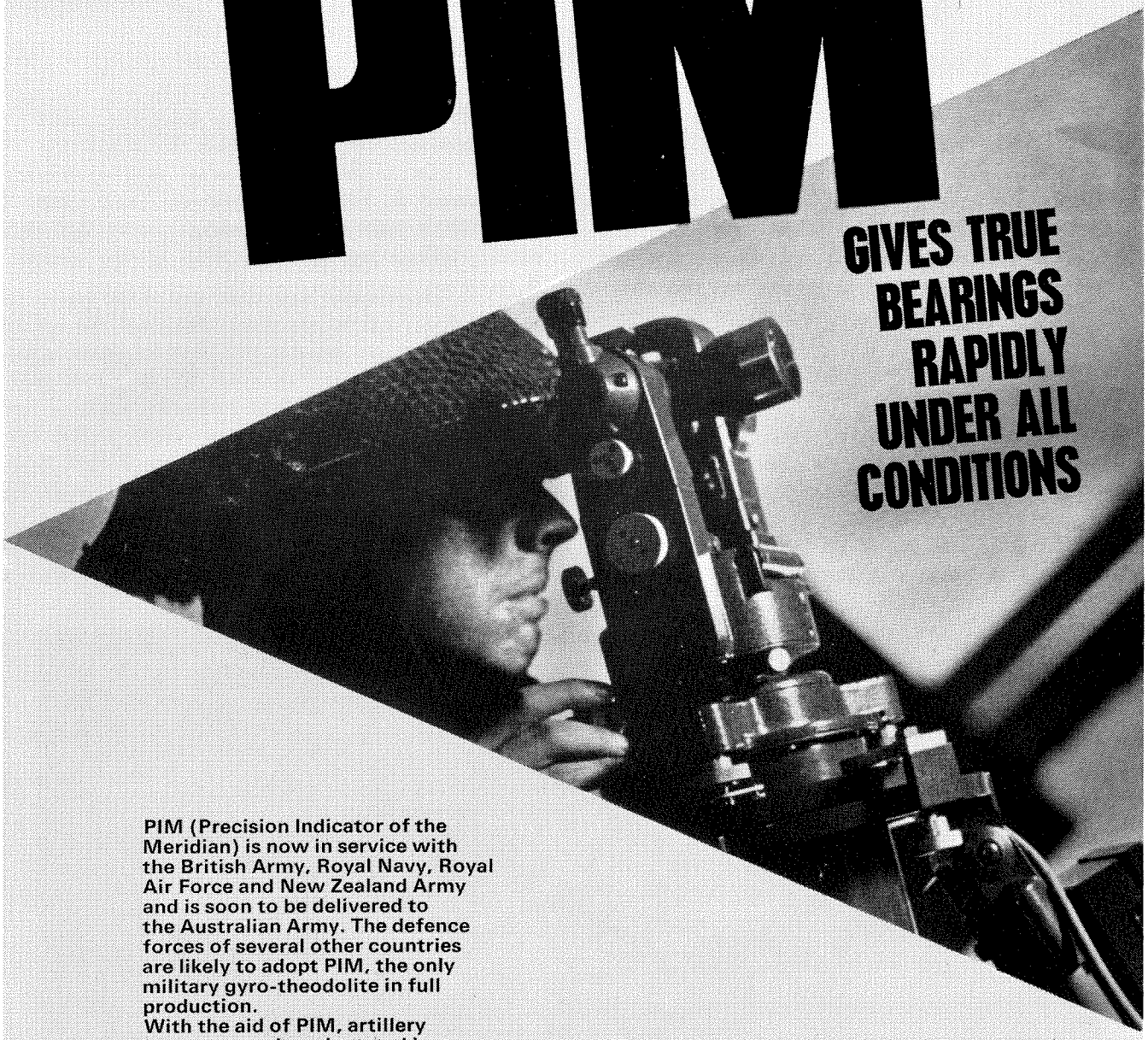
Borgard's little band of 148 would enjoy looking back over their shoulders to see the followers they have picked up over 250 years. □



The new set of training and office buildings opened this year at the School of Artillery, Larkhill. The Canadian presentation lecterns will be used in Newcome Hall, the square white building in the left foreground

PIM

GIVES TRUE BEARINGS RAPIDLY UNDER ALL CONDITIONS



PIM (Precision Indicator of the Meridian) is now in service with the British Army, Royal Navy, Royal Air Force and New Zealand Army and is soon to be delivered to the Australian Army. The defence forces of several other countries are likely to adopt PIM, the only military gyro-theodolite in full production.
With the aid of PIM, artillery weapons can be orientated in ten minutes; survey bearings of astro accuracy can be obtained in two to three hours. In successfully passing all the British Army proving trials, PIM showed itself to be an extremely robust, reliable instrument which is easy to use and rapid in operation.

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Aerial Artillery

Major GF Walsh

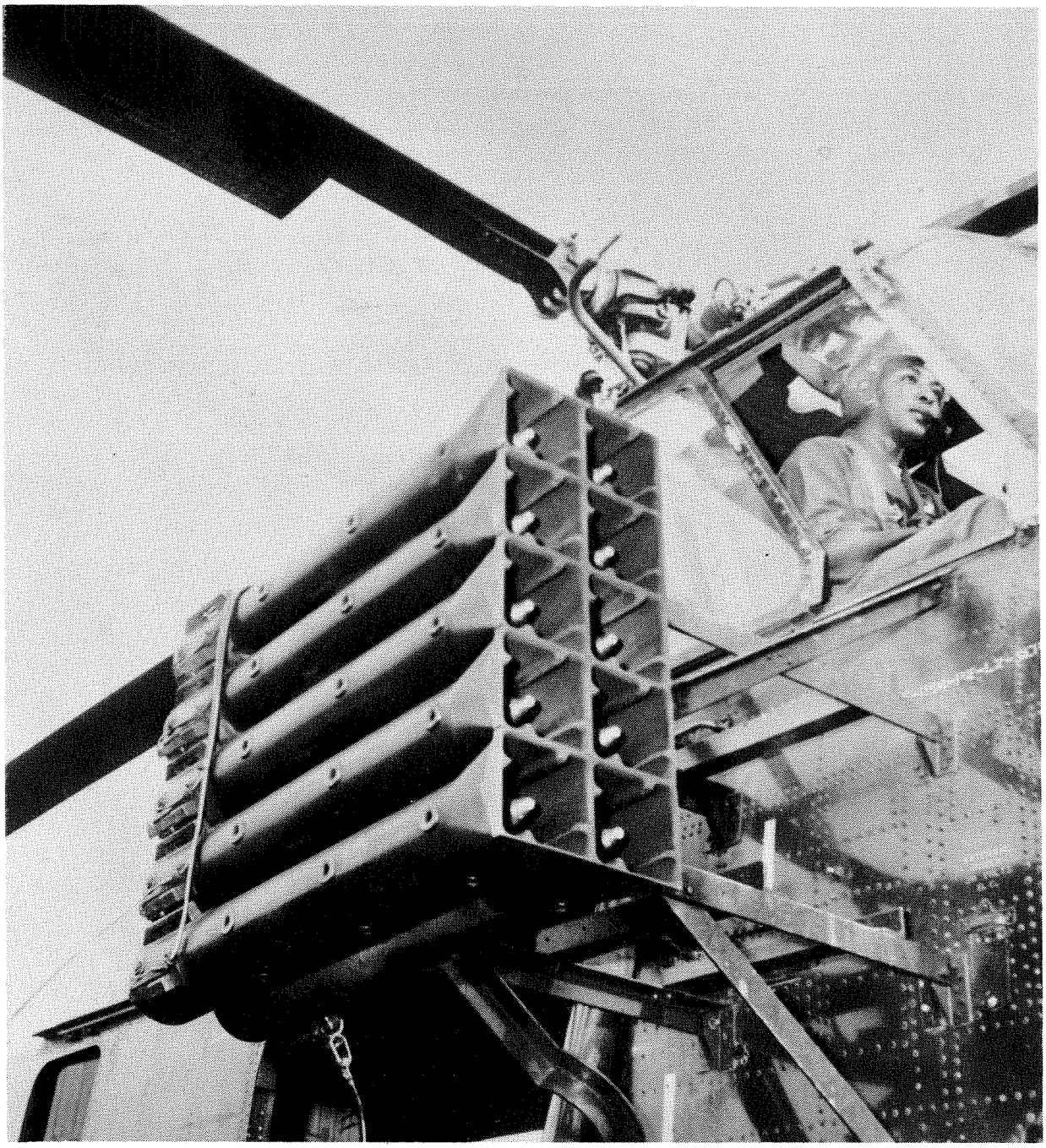
US Army Liaison Officer, RCSA

Over the past few years combat mobility has taken a great leap forward. Infantry are now lifted into battle by helicopters which carry them to within a few yards of the enemy. In these circumstances, artillery units which are restricted to ground transportation will not always be able to provide the close and immediate support which has become expected. Likewise, when helicopter availability is restricted, it is possible that helicopter-lifted guns or mortars might not be on hand – at least not in the quantity required – during the initial assault.

A simple solution to the problem of providing our infantry with the necessary fire support might lie in the use of aerial rocket artillery units, these units being a combination of an artillery weapon system and an aerial carriage which can discharge warheads either from the air or from the ground as circumstances dictate. To test the feasibility of such a unit, a provisional aerial artillery battery was formed at Fort Sill, Oklahoma, and equipped with CH-34 helicopters mounting twenty 4.5 inch rocket tubes, ten on each side of the aircraft.

The system was then tested to determine its capability to deliver direct fire from the air as well as direct and indirect fire from the ground. The fire unit was required to move into an area, land, fire, and move out, all in a matter of minutes; and be capable of delivering a large volume of fire into a designated area within this short period of time. In the indirect role, there is no radical departure from the time-proven fire control procedures. The helicopter lands behind a protective slope and, by means of a panoramic sight attached to the rocket

CH-34 Helicopter mounting twenty - 4.5 inch Rocket Tubes, ten on each side of aircraft.



- *US Army Photograph*

4.5 inch Rocket Pod ready for firing

bracket, is laid on the bearing to the target in the usual way. Elevation is applied to the rocket bracket, again as for a normal howitzer, and when the lay has been completed and the order given, the rockets are sent on their way.

In the direct role from the air, the helicopter pilot must point his machine directly at the target in the manner used for strafing.

One CH-34 mounting twenty 4.5 inch rockets is capable of delivering the equivalent fire of one volley of one battalion of 105mm howitzers. Visualizing that the aerial artillery battery could have from four to six such fire units, the battery could move into position, deliver a volume of fire equivalent to one volley from four battalions, then rapidly move out. Although not the answer for sustained support, this fire power would be available to the supported commander during the initial phases of combat and could neutralize targets which, for various reasons, might not be within the capabilities of more conventional artillery. □

Airborne artillery.

Guerrilla warfare. Shifting, difficult, bitter—full of traps. How do you cope with it? Against the surprise of guerrilla tactics, the Canadian Mobile Command can deliver its own brand of surprises—with its CH-113A Voyageur transport helicopters.

To neutralize the enemy, the Voyageur can carry—into areas inaccessible to surface transport—howitzers ammunition and gun crews.

Hitting the enemy with artillery where he least expects it can turn the tide of battle.

The CH-113A Voyageur is the performance-tested tactical transport of the Canadian Defense Force.

BOEING Helicopters

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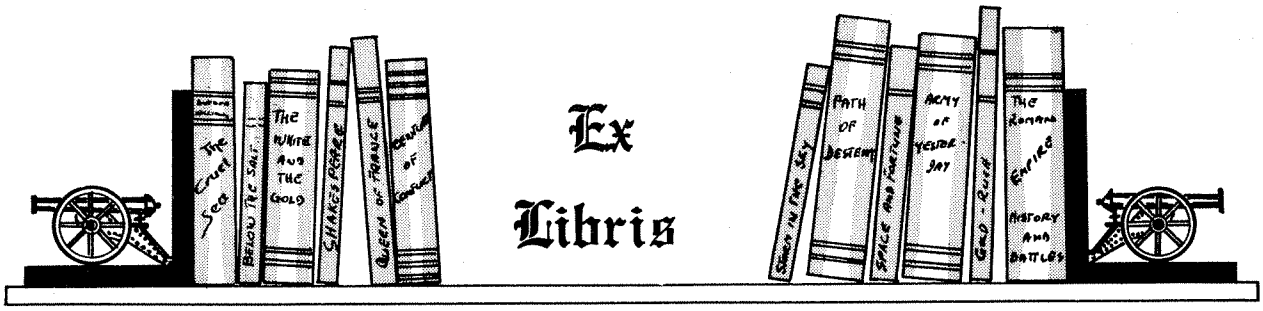


Ex Libris

The poet Byron once said, "*Words are things and a small drop of ink, falling like dew upon a thought, produces that which make thousands, perhaps millions, think*". The following passages, conjuring up pictures of earlier Gunners, might cause us to think, for a moment, along unaccustomed channels, they might strike a reminiscent chord, they might raise a smile, they might introduce us to further reading. In any event, they are good situation reports by intelligent observers, and as such should be appreciated within a regiment in which observation and accurate, descriptive reporting should be highly developed. Apart from all that, they are interesting little stories about Gunners, which is really the reason for their inclusion here.

Canón Frederick George Scott was the Senior Chaplain of First Canadian Division of World War 1. The following is taken from his book "The Great War As I Saw It".

(FD Goodchild Company, Toronto)

I went on down the road to the well concealed trenches which led to the 1st and 2nd Artillery Brigade Headquarters. In the deep dugout, I found the OCs of the two brigades and their staffs hard at work. It was an anxious time, because ammunition was short, and every available man was employed in carrying it up to the guns. The Senior Colonel asked me if I would go round to some of the gun pits and talk to the men. They were tired out, he said, with the constant firing, and there was still no prospect of a rest. I told him that if he would give me a runner to act as guide, I would visit all the gun-pits of the two brigades. Accordingly a runner was sent for. and he and I started off at midnight. It was very dark, and when we emerged from the trench and turned to the right on the Lens-Bethune road we met parties of wounded men coming back, and the batteries in the fields beside us were firing over our heads. We visited first the cellar of a building by the way, where there was an aid post. Here were many men being attended to by the doctors. They were all worn out, and did not look forward with much pleasure to their journey back to Maroc along the dark and dangerous road.

From the dressing station, my guide and I went into a trench and along this to the gun positions. As we came to each, we visited the officers and men. Some of the guns were fearfully heated and were hard to handle. Yet the SOS signals from the front trenches would go up every now and then, telling our gunners that the Germans were making another counter-attack, and asking for artillery support to save the situation. We made our way through the trench towards the batteries at the foot of the Loos Crassier. In doing so, we had to pass under the road. I was going on ahead, and when I stooped down to pass under the bridge, to my surprise I could dimly descry in the darkness a row of silent men sitting on each side of the passage facing one another. I said, "*Good-night, boys*", but there was no answer. The figures in the darkness remained motionless and still. I could not quite make out what the matter was, for our men always responded to my greeting. Suddenly an enemy flarelight went up in the distance, and I saw, to my horror, that the two rows of men sitting so silently were Germans. I was wondering if I had run my neck into

a noose, when a voice from the other end of the passage called out, *"They are prisoners, Sir. I am taking them back with me and giving them a few minutes rest."* I must say that I was greatly relieved. I went on to the gun-pits just in front of the crassier, and here the men were working hard. It was splendid to see their absolute disregard of everything but their duty. I felt myself to be such a slacker beside them, but I told them how gloriously they were carrying on, and how their work was appreciated by the infantry. The night began to wear away, and when I reached the gun-pits that were further back it was broad daylight. In fact, I visited the last one at six a.m. Some of the batteries had by this time ceased firing, and the men had fallen asleep in all sorts of curious positions, ready to be roused in an instant. Altogether, my guide and I visited forty-eight gun-pits that night, and it was about seven o'clock when we returned to Brigade Headquarters.

The next night the Germans sent over a rain of gas-shells on the batteries, and the men at the guns found it impossible to see the sights through the eye-pieces of their gas-helmets, and so chose to face the poison unprotected rather than run the risk of injuring our infantry by bad firing. There were of course heavy casualties among the gunners as a result of this. Some died and many were badly gassed, but the line was held.

Lt (later Maj Gen) EWB Morrison went to the Boer War as Left Section Commander of D Battery, RCA, a six gun battery which was recruited in Ottawa for the war which had developed in South Africa. He gives his impressions in a diary type book "With the Guns". (Spectator Printing Company Ltd, Hamilton, Ont) of which the following is an extract.

Our Baptism of Fire

Dewegendrift July 21, 1900

D Battery, RCA, has been in its first action and has come off well. Two transport drivers, half a dozen mules killed, and a lengthy list of narrow escapes sum up the day..... It has been the custom of this campaign to detail a number of guns to accompany the rear guard each day and a section of our battery takes it in turn. This morning the centre section was on duty with the rear guard, which remains behind to protect the big supply column and baggage. The other two sections of D were with the advance guard..... We were marching slowly along with the cavalry out in front and the lines of infantry closer in, when there was a *"boom!"* from the kopje over two miles to the left, and then we heard an eerie whistle like the wind in the chimney of a haunted house (and it gave you about the same chill down your spine), then a shell plunked into the ground a couple of hundred yards from the battery and threw up a cloud of dust like a dynamite blast on a sewer. Maj Hurdman wheeled the battery into line and we got *"action left"*. Before our horses were clear with the limbers there was another boom and doleful whistle, this time over our heads, and a shell plunged into the ground about 150 yards right in rear of the battery. Says I to myself, says I, they've got us bracketed--one short and one long--the next will land right on us. Now any man who did not listen for the next shell with extreme anxiety must have more nerve than most people. All this time we were working away with the usual *"fire discipline"* routine prior to opening fire ourselves, but every second seemed a minute, and while I mechanically gave my orders and looked after things as we have had it drilled into us, my senses were keenly alive to the fact that there was another shell coming that would probably divide the bracket and do other things. At last she came--*"boom!"*--I heard the crooning whistle in the air coming right for us, and I thought for three seconds that I was the only man on earth and that shell was bound to land in the pit of my stomach. Whoo—oo—oo, it swooped down over the heads of my section, and threw a shower of dirt and gravel over the men on the limbers as they moved to their proper position in the rear. Then we opened fire, and I got very busy looking after the working of my own guns. After that I think I can honestly say that the shells didn't bother me much.

Lt Col (later Maj Gen) TB Strange, who has been referred to as the "Father of Canadian Artillery", visited the sites of the Franco-Prussian War of 1870. In 1872 he presented a paper on the subject (Published by Gazette General Printing Estb, Quebec) to the Literary and Historical Society of Quebec. The following extract is taken from his discussion of the siege of Paris.

I was told a somewhat characteristic story of a young French lieutenant of artillery, conspicuous for his devotion in the batteries of

Paris, who, nevertheless, managed to spend in musical recreation most of the few short hours left for rest. As provisions got scarcer, his meat-ration was reduced to a sparrow per diem; these he kept in a cage at the window near his piano, and fed with the crumbs of his daily biscuit. His landlady anxiously watched him growing thinner and paler, and entreated, in vain, to be allowed to transform his little pets into a delicious *pâté d'alouettes*. At length a bullet found its destined billet: a Prussian shell struck the cage at the window, and death liberated the young lieutenant and his pets as he sat at his piano singing his own last requiem. I was assured of the truth of the story.

YANKEE GO HOME

Lt Gen Frederic Haldimand, Governor General of Quebec, 1778 - 1784, received the following letter during the summer of 1782 from a Mr Felix O'Hara, a citizen of the town of Percée.

May it please Your Excellency,

I take the earliest opportunity to inform you that we have for some time past been in a Continual Alarm from Two American Privateers, one of which Landed at Percée, Captured all the Craft found there, with whatever they found valuable on shore, spiked up the Twelve Pounder and hove it over the Clift. The other Two four Pounders they carried off. They next proceeded up the Bay, Burned all the Craft they found there, Took me Prisoner on Board And after a long Examination before the most Despicable, Rancorous and unjust Tribunal that ever a poor Culprit appealed to, I was acquited of the false and groundless accusation of being Rich, and was dealt with accordingly for I was ordered on Shore in a Clamor with every mark of disrespect

After every Act of wanton destruction, (except that of striping and burning Houses), They dropt down with the Tide, came to an Anchor where they still remain and how long we shall be able to say That our Houses are our own, God only knows.. .. ..

Felix O'Hara

N.B. The Government House at Percée is not yet demolished, but is well plundered.

Chronicle of a Gunner Career

Circa 1904 to 1946

Being an account of the peregrinations of Major WG, alias Charlie, alias Busty, Kear, who, after four decades of serving the guns as a Regular soldier, now keeps his eye on affairs from an OP at 221 Oak Street, Winnipeg, Manitoba. It is the story of what happened to a boy with a sparse education who started his military career as a pot-walloper in the cook house, progressed to the Other Ranks' Artillery Staff Course (Group 4), and from there eventually to a variety of officer appointments.

Charlie was born in London, England, in June 1887, fourth of a middle class working family of ten children. He was doubly orphaned at the age of 13 years but, thanks to the benevolence of his father's firm, was able to continue in school until he was 15 when he entered the firm as a boy clerk at five shillings a week. When he was 17, he falsified his age and enlisted in the 2nd City of London Rifle Volunteers with which unit he attended one annual training camp in the New Forest as a foot-slogger. Charlie was bitten. From then on he wanted to be a soldier and not a postage stamp licker on a high stool in an office.

Leaving the office, he enlisted in the Royal West Kent Artillery Militia at Dover Castle with a view to enlisting in the Regular Army. After intensive recruit training, and attaining the age of 18, he enlisted in the Royal Garrison Artillery; taking the King's shilling a day and all found was far better than five bob a week and nothing found.

Life at Dover as a militiaman was pretty hectic; one hour in the gym or a very cold swim in the sea before breakfast, followed by intensive recruit training morning and afternoon.

Meals were not so good, being carried from the cook-house in metal dish pans to the barrack room about one hundred yards away, and dished out by the Senior NCO of the room, two meals on one plate; tea brought up in metal pails was served in soup bowls, shared by two men. One day, Charlie's partner was an old sweat from India wearing a huge shaggy walrus moustache; Charlie went on the wagon that day. A daily ration of one pound of bread and one ounce of butter or margarine was issued at breakfast; the loaf was cut in two, with a small recess cut in one half to hold the butter, and was kept in one's boot on the shelf above his bed.

Saturday was fatigue day: barrack rooms and the Sgts' Mess floors were scrubbed on hands and knees in the morning, and in the afternoon coal in buckets – three men to two heavy metal buckets – was carried about half a mile outside the castle to Other Rank married quarters; many trips had to be made before tea time at 4:30 P.M.

The bedsteads in barrack rooms were of iron construction with a pull-out section (no springs) on which were placed three small biscuit-shaped mattresses made by prison convicts. The pillow was an elongated circular bolster (no feathers). Charlie was detailed as cook's mate, his duties being to scrub and clean all utensils, pots, pans, tea pails, etc. On his first day he made the mistake of asking the Sgt cook for some hot water. "*There is sand outside and use your own elbow grease*", was

the reply. It took Charlie nearly three hours, the pans, etc. were so greasy, but after he had gone over them for the third time the sergeant finally accepted them.

On 10 October 1905 Charlie was attested in the Royal Garrison Artillery. A few days later, with eight other lads, he was posted to a Depot Company, No. 25 Coy RGA, at Pembroke Dock, from which drafts of men were sent to all stations of the British Empire.

On arrival at the barrack room to which he and another recruit had been assigned, there was a shortage of Boxes, Soldier Kit; only one left. To gain possession of the box the senior gunner in the room said that they would have to fight for it, "*each with one foot in the box*". Charlie won the box but, agreeing that this was not the ideal way to allocate stores, shared it with his chum who was not cast in the prizefighter mould.

Gnr Charlie in his Broderick, a hat style which did not last long in the service

Intensive training was carried out on 9.2 inch, 6 inch, 3, 6 and 12 pounder Q.F., 10 inch muzzle loaders and the Maxim gun, and included not only gun-drill but also the electric firing and breach mechanisms, tracing electric circuits, ammunition and fuzes, the placing of stores, and a knowledge of the applicable stresses and strains.

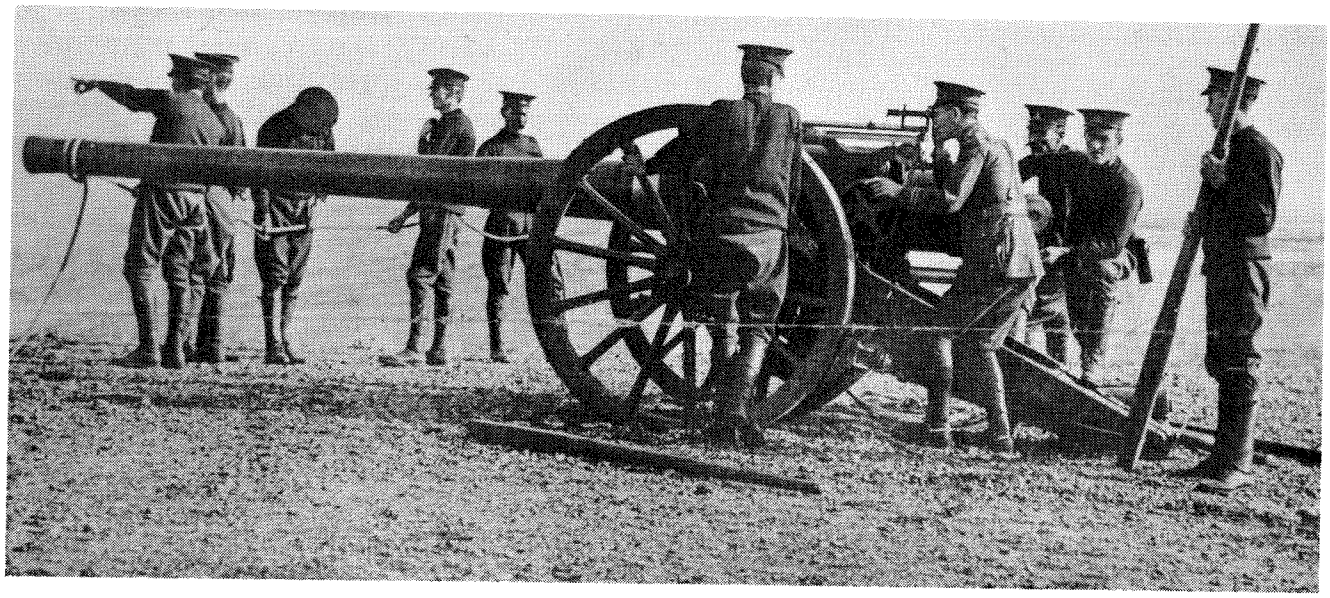
Drill was carried out on shifts, shears and derricks, temporary and permanent sleighs, skidding, ropes, tackles, etc. A qualified gun-layer for his three pence per day and GL badge had to have knowledge of all equipments, firing circuits, etc. and to pass a severe GL test; only ten GLs in the company were paid; Charlie came eighth on his first Annual Test, much to the disgust of many older soldiers.

Late in 1906 it was announced that volunteers for a Canada draft of 150 men from The Royal Garrison Artillery (RGA) who were fully qualified Gun-layers, Signallers, Rangetakers, etc., and who were between the ages of 18 and 25 years, would be given a free discharge from the RGA with a view to enlisting in the Royal Canadian Garrison Artillery with pay at 50 cents a day. Charlie was one of the draft which was assembled from many stations at Liverpool Barracks on 21 February 1907 and which sailed the next day for Canada. A couple of days later, at sea, all were sworn in and attested to the Royal Canadian Garrison Artillery (RCGA). After a very rough and eventful voyage of eight days (they were battened down for two days, and one civilian was lost overboard), they arrived in Halifax.

The members of the draft were given a choice of postings; either Halifax or Quebec. Charlie chose the latter and arrived with about 50 others at Quebec five days later where he was posted to No. 3 Coy RCGA, which later became 3rd Heavy Bty RCGA and still later became 3rd Medium Bty RCA.

On arrival at the Citadel the draft was inspected by the Fortress Commander, a very famous artillery colonel, who wanted to see their medals, but they had none to show as the Boer War had been over before any of the lads had enlisted.

Snow had to be cleared from the Sally Port – the officers' entrance to the Citadel – either by prisoners under the watchful eye of the Provost Sgt or by fatigue party. One morning the Fortress Commander, the famous artillery colonel, came through and enquired of the Provost Sgt why he was not saluted by the snow shovellers. The following day the Provost Sgt had all the prisoners (12 in all) lined up each side of the Sally Port and as the Colonel came through gave the order "*Prisoners! General Salute! Present Shovels!!*" The Provost Sgt got a good humoured blast from the "*Old Man*"



The 4.7 inch gun

and there was no more saluting from prisoners or fatigue parties, only from the Provost Sgt.

Intensive spring training was carried out, especially in gun drill and gun laying on the 4.7 inch gun on travelling carriage, preparatory to gun practice and field exercises and the training of the Militia batteries at Petawawa summer camp.

Introduction of the draft to Petawawa took the form of clearing the Lower Ranges, for which operation each man and NCO was issued with a somewhat dull axe from Ordnance and then route marched to the "*enemy*". Most of the lads had never used an axe, and what with badly blistered hands, the heat, mosquitoes and sand flies, they found it hard to appreciate the advantages of Petawawa.

The Permanent Force men were not used as instructors of the Militia until they had achieved NCO rank, and Charlie was promoted to Acting Bombardier in Petawawa in 1907. He first met the Militia artillery as an instructor on a wooden range finding instrument with mirrors plus 10 yards of cord. Qualified gun layers at that time were paid an extra five cents a day, and gun laying, using the old wooden Gun Arc with the tip of a match stick as a foresight, became something of a challenge when one lost the foresight.

Church parades summer and winter in Quebec were for the very strong. Troops paraded on the company parade ground at 9:30 A.M., were inspected by the Coy Orderly Sgt, and then by the CSM, then taken over by the Senior NCO to the regimental parade ground where they were inspected by the Regimental Orderly Sgt and by the RSM who turned over the parade to the Officer in Charge who then made his inspection. The parade moved off, sometimes with the RCGA Band, down Citadel Hill and St. Louis St. to the Cathedral of the Holy Trinity by 10:30 A.M. The troops sat in the balcony. The service would be concluded anytime between 12:15 P.M. and 1:15 P.M., after which, on return to the Citadel, the faithful would be confronted with a closed canteen and a cold meal.

On arrival of spring weather, the Old Chain Gate entrance and Citadel Hill had to be cut free of snow and ice, and all hands, including the Band, had to turn out with pick or shovel. The Bandmaster complained that the fingers of the bandsmen would be impaired by the rough work and so they were ordered to play, whilst the men worked, until their instruments froze up.

In 1908 the Tercentenary of the foundation of Quebec called for grand celebrations by the public and the several thousands of troops, Permanent and Militia, who were brought in from all parts of Canada to be inspected and marched past H.R.H. the Duke of York, later King George 5th, on the Plains of Abraham. All went well with the two heavy horse drawn 4.7 inch guns until they reached the saluting base, when the horses suddenly balked and refused to move; the horses were unhitched and the guns cleared over the soggy ground by troops hauling on the dragropes. A very unedifying affair.

During the stay of H.R.H. at the Citadel, several sentries were posted around his quarters. Charlie was in charge of relief sentries one night when, on approaching H.R.H.'s quarters, he heard a voice from an upper window saying, "*Please stop your talking, I cannot get to sleep*". Sentries were not allowed to meet and so, on return to the Main Guard, those involved were placed under close arrest.

One summer at Petawawa, Bdr Charlie with several others volunteered to fill 12 pdr shells with gunpowder charges in small red bags as they had heard a rumour that the troops would be paid 25 cents per day extra for the task. After completing the job, under intensive heat in Bell tents, they learned that no pay was involved, so after the closing of the wet canteen, eight lads full of beer proceeded to the OC's tent to demand payment. The Major, a one time middleweight boxing champion of the Mediterranian Fleet, soon settled that argument; no charges were laid. The Major was a very fair but hard disciplinarian who took a great deal of interest in the welfare of the men under his command. During the 1st World War he became CRA of all heavy artillery including railway mounted guns, and he ultimately died in Duncan, B.C. in 1937. At one time, in Quebec, he heard rumours of complaints about the church parades in winter and so he organized in lieu, one Sunday, a volunteer snowshoe tramp. Many came forward and the parade marched through Quebec to Montmorency Falls – some seven miles distant – over fields and into dense bush beyond which he left the party to find their way back. All went to church the following Sunday. He was a great fisherman and hunter of big game, and he always shared his spoils with the troops. He made No. 3 (H) Battery one of the most proficient units in Canada in gunnery, musketry, infantry exercises and sports; also, due largely to his training, the Militia heavy batteries gave a first class account of themselves in the 1st World War.

Over the years, Charlie had qualified in gun-laying, telephone and range-taking, being promoted bombardier, corporal, as vacancies occurred, and in 1911 was promoted to sergeant and No. 1 of his sub-section – latterly known as *"Shiny C"*. Charlie never stood over his drivers when cleaning harness, they knew more about it than he did, but he always inspected the harness before Saturday's inspection by the OC and usually placed first; hence the *"Shiny C"*.

There were characters galore in the days of the horse. On one occasion, at a proficiency examination, the Section Commander asked a rather indifferent gunner, *"How many spokes are there in that wheel?"* The gunner looked first at one wheel and then the other, and then turning to the Section Officer said, *"How many would you say there was?"*

To keep himself in good physical shape, Charlie would spend from one to two hours each night in the gym, his love of sports including baseball, swimming, soccer – which he played until he was 50 – rowing, mounted sports, tennis and cricket. He played the latter game as a member of the Quebec Cricket Club. In his later years he took up golf.

In 1908 at Petawawa there was great excitement when the pilots Baldwin and McCurdy arrived with their early model bi-plane for trials on Drury Plain. Charlie was one of a great many who saw the *"lift off"* and the plane flying for a few hundred yards. A truly historic moment.

At Petawawa summer camp of 1910 No. 3 (H) Battery RCGA was held in camp for an extra three weeks owing to a number of extensive forest fires threatening the camp. Animals of all kinds, including bear, moose, deer, skunks, porcupines, partridges, etc., came in from Algonquin Park. Some of the lads armed with stable brooms gathered up many *"porkies"* and steered them to an area where races were run to a selected point; bets were made by a *"Bookie"* and the fun was on.

At the permanent barracks in Quebec, Charlie was given, among the other usual assignments, responsibility for clearing old muzzle loading (ML) guns from the Ordnance Yard in the Citadel. One wintry day he was in charge of a party moving an old and heavy ML gun, mounted on a temporary skid sleigh, down Citadel Hill to the C.P.R. station with a detachment of men. Drag ropes were attached fore and aft for hauling and braking, the hill being very steep and having two nasty turns, and a sheeved rope tackle was attached to the sleigh and to alternate telephone poles to assist in braking. The sleigh had just passed the first turn of the hill when one of the ropes in the tackle broke. The men did their best to hold on but the weight and gathering speed of the sleigh was too much and they were scattered right and left on the icy hill; gun and sleigh took charge down the hill for about 300 yards and eventually came to a stop in the yard of what was at that time Boswell's Brewery, just missing the open steel gates. Charlie states that the troops were not invited into the brewhouse.

5 November 1913 was a very sad day for Charlie when he was tried, convicted and sentenced by a Regimental Court Martial to the loss of 13 months seniority on the basis of his own evidence given at a previous Board of Inquiry. He had made the mistake of selling a bottle of whisky to a Gunner friend who gave evidence against him (and who later became a brigadier during World War 2).

Charlie thought of purchasing his discharge from the Army at this point but his Battery Captain, who had been President of the Court Martial, told him later that members of the court realized the predicament he had been put in, and he advised him to soldier on.

In 1914 Charlie attended the Artillery Staff Course (now designated the CGA Group 4 Course) and was awarded a certificate of Military Instruction in which he was graded *"Distinguished"* in ammunition, carriages, mathematics, guns, electricity and heavy artillery. He had not failed in any subject. On 3 August 1914 war was declared and 3rd (H) Battery left Petawawa at 11:00 P.M. the following day for Quebec. On 6 August the battery moved its 60 pounders to the Island of Orleans in the St Lawrence River as an Examination Battery. Two weeks later, leaving the guns behind, all personnel reported to Valcartier Camp. Charlie and another sergeant went recruiting through the Militia lines to bring their 3rd (H) Battery up to war establishment. A few recruits were obtained but had to be handed over to the RCHA. They tried again next day but were chased out of the Militia lines with threats of violence if they called again. Later Charlie was attached to a Militia unit as instructor to some 600 all ranks and taught the NCOs and men to ride and drive. In the centre of the field one afternoon he was giving lectures on stable routine and economy, grooming, harnessing, saddling and how to pick up a horse's foot – he demonstrated by having his own horse in the centre of the circle – and at the end of a two hour lecture an estimated 1200 other troops, including officers, had joined the party. On 21 August 1914 he was posted to the unit as BSM. He was transferred to HQ 1st Canadian Division Artillery on 1 February 1915 where he took over the duties of BSM in charge of stables and QMS responsibilities. One year later he was recommended for a temporary commission. During his tenure with HQ he had some very exciting times, some good and some not so good, on many occasions when up in the front line.

He returned to England to await his commission and was posted to Reserve Bde C of the Canadian Field Artillery (CFA), a unit of approximately 600 ORs. Here he served as Acting RSM and on 25 February 1916 was promoted to Warrant Officer Class I. On 1 June he was posted to the Canadian School of Gunnery as instructor to officers and COTC cadet classes in gunnery, ammunition, application of instruments, work on miniature range, and 18 pounder and 4.5 inch howitzer equipment.

At the testing of the new 18 pounder Mark V gun at Salisbury Plain he was sent down from the C.S. of G. as a representative of the Canadian Army to observe the action and firing of the gun, a feature of which demonstration was the placing of a bottle of water on one wheel where it remained during the firing of the gun. He was not allowed within 50 feet of the equipment and therefore could not make any detailed inspection of it. Charlie felt that he had gone a long way at the expense of the Canadian taxpayer to see a bottle of water remain on a gun wheel after firing and admits that his report was something less than enthusiastic.

8 November 1916 was a very joyful day for Charlie. He was called to the CO's room where he received hearty congratulations and was presented with two pairs of gilt stars.

In 1916, when an instructor at the Canadian School of Gunnery in Shornecliffe, England, he was visited by three very senior British officers and was told that all questions that they would put to him were to be regarded as strictly secret. The questions put forward related to the tieing down of gun tools and stores in a restricted compartment where they were to remain stable when the gun was fired and when travelling. He suggested that all tools, etc. be placed near at hand on the sides of the compartment, held in place by strong steel spring clamps, depending on size, and securely bolted, and that ammunition boxes should be clamped and bolted to the floor by wide steel bands. Whether the above was a forerunner of the tank he had no idea at the time, and whether his suggestions were adopted he does not know, never having seen the inside of a Mk I tank.

When a Canadian Field Artillery school was authorized at Pernes, France, as a refresher for a number of officers from the front, Charlie and four other officers from the Canadian School of Gunnery were selected as the instructors. The duration of the course was from 22 December 1917 to 23 February 1918. Later he was selected as an instructor to the Canadian Corps Artillery School near Arras, from 28 October to 23 December 1918, with approximately 100 officers and 200 ORs attending. Despite the declaration of the Armistice on 11 November, the CCRA ordered the course to be continued to the date as set when the troops would return to their respective units. The instructional staff was told that transportation would be supplied to Boulogne and that boat tickets to Folkestone were on the way. None came, however, so the staff split up into groups and hitch-hiked as best they could to Boulogne where they talked their way aboard ships which got them to England in time for Christmas.

On return to C.S. of G. he was told to put into writing all his lectures, which, with those of other IGs, would be completed and forwarded to Ottawa for future guidance. He was horrified and shaken for he had never carried notes on any lecture; his lectures were all given by memory from his knowledge of the many subjects on which they were given. What he did do was tabulate the subjects on which he had lectured and he quoted the various treatises and manuals in which the information could

be found. In due course, after seven days of leave, spent visiting brothers and sisters, he reported to the Canadian Repatriation Depot at Rhyl in North Wales. He arrived in Quebec on 25 February 1919 where he reported to the District Depot, only to be told to report to the Officer Commanding RCA at the Citadel. On reporting to the Adjutant (a friend of war days) he was told *"the local Lt Col did not want to see him as he was not a PF officer"*, and to report back to the District Depot for further instructions. Thoroughly disgusted, he talked over the situation with the Officer Commanding the District Depot. The latter was in a quandary: what to do with a PF sergeant who had become a Temporary Lieutenant. On being advised by OC District Depot to apply for a PF commission through him he did so at once, and when the application had been endorsed by the OC District Depot and forwarded to the Military District Headquarters, Charlie went on 30 days leave.

He was now in a dilemma as he was married with family, when he suddenly recalled the advice of the Colonel (who was at this time Chief of the General Staff at Ottawa) who had conducted the draft from England in 1907. *"If at any time any of you are in trouble"* he had said, *"I implore you to write me personally and let me know the circumstances"*. Charlie thought this over and finally framed a letter dealing with, not only his own predicament, but that of other NCOs of PF units, who had risen to even higher ranks. On 7 March 1919 a personal letter was received from the CGS stating that he had received the letter and would inquire into the matter. Look into it he did, for later Charlie and others were placed on a Special List and attached to their PF units until such time as the PF would be reorganized. This was exalting news, for Charlie had married his fiancee who had gone overseas from Quebec in January 1916. Three children were born of the marriage, a boy in England and two girls in Canada, but he suffered a great blow when his wife died and the younger daughter of 18 months died five days later.

By authority from Ottawa in May 1919 Charlie was attached to the Clearing Services Command where he took up the duties of adjutant of troop transports bringing troops back to Canada from overseas. He had made several trips when he was posted for duty to the RCA at the Citadel in Quebec. (The local lt col had retired).

During the visit of H.R.H. the Prince of Wales (later King Edward 8th) to the Citadel, a special mess dinner was held in his honour. When the toast was called, Charlie's heel caught the rung of his chair and he fell over backwards, which prompted a charmer beside him to announce in a loud voice that *"Charlie's drunk"*. Such was not the case, however, as Charlie had only the port served at the table. He was the last to be presented to the Prince who, smiling, said, *"I hope you did not injure yourself"*.

When the 22nd French Canadian Regt (later the Royal 22nd Regt) was organizing as a PF unit and preparing to take over command of the Citadel from the RCA, Charlie was a member of a Board of Officers organized for the handover.

In 1920 he was detailed as instructor to assist in the re-organization of the 57th (Quebec) Field Battery N.P.A.M. of which some of the officers had passed through his hands at the Canadian School of Gunnery (overseas). Years later he again visited Quebec to conduct a Provisional School of Artillery.

On one occasion he was detailed with a detachment of men to move and mount a 7.5 inch garrison gun from a Lower Fort to the Drill Hall at Levis, a distance of several miles. This was quite an undertaking as he had had no experience in mounting a gun of this size since his recruit days in the Royal Garrison Artillery. It was a very tricky business, first in the transportation, which involved some twisty hill climbing, and finally getting the gun into the drill hall. An extra hazard was presented by the fact that most of the skidding, the 4 × 4s, 4 × 8s, 14 × 8 × 8s were old, dried out, splintered and cracked. The ceiling was very low and so the head of the Prypole was jammed against it and the legs of the Prypole lashed together to prevent splaying. To avoid accidents, the pedestal was lowered by four hydraulic jacks with the aid of the tackle on the Prypole; the carriage and cradle were much easier to handle and were finally in position to receive the gun when the job was called and Charlie went to Petawawa to assist in the training of the Militia.

1 June 1920, was a very happy day. The reorganization of the PF was completed and Sgt (T/Lieut) Charlie was gazetted in the PF as a lieutenant and posted to the RCA at Quebec.

After the handover of the Citadel from RCA to the 22nd Regt in 1922, he was posted to the 3rd Medium Battery, in Kingston, Ont, which he had joined in Quebec in 1907 as a gunner, and where he found many old friends, including the BSM, who had been his old crony who had gone with him recruiting in the Militia tent lines in 1914. Apart from the usual duties with his battery, he was called upon for many assignments in connection with the RCHA Bde and with District HQ. These included: Acting Bde Adjutant when the regular incumbent was away, Member of Boards and Courts of Inquiry, General and Regimental Courts Martial, Bde Canteen

Committee, Bde Sports Committee, Board of Examiners of Artillery Staff Course, Prosecutor at Courts Martial, Friend of Accused at Courts Martial, Conducting Provisional Schools of Artillery in Eastern Ontario and Quebec, Manager and Coach of Regimental Hockey Team, Coach of Regimental Soccer Team, Officer I/C (by roster) Regimental Church Parades.

In 1928 3rd Medium Battery was being mechanized by an RASC Captain on loan to the Canadian Army when he had to report to the RMC to write the Staff College entrance examinations. Charlie was then detailed to take over and complete the training of all ranks in driving Internal Combustion engined vehicles, their maintenance, and the functions of all parts of the engine, etc. He was a driver owner only, but had to do some hard studies overnight and thus became an *"expert"* on MT vehicles.

Over the years at Petawawa he was called upon to carry out the following duties:

Assist in training the Militia Artillery Brigades, Medium and Heavy Batteries.

Range Officer.

Training and examination of Militia gun layers.

Fire Marshal for the camp and ranges, which at times provided hectic moments.

I/C *"Observation of Fire"*, both Practice and Competitive Shoots for the Canadian Artillery Association.

Member of the Canteen Committee.

Member of the Sports Committee (preparation of sports grounds).

As Range Officer he often used his own car for towing the mockup *"Tanks"*, in both practice and competitive shoots, when the *"Scammel"* (a specially built Army tractor) broke down; this was not known to the CIG who wondered, at the time, about the relative slowness of the *"tanks"*.

In the early 1920s there were strikes in the coal mines in Sydney, NS, and the RCHA was sent there to maintain order and to ensure that essential maintenance crews were allowed to enter the mines. It was a ticklish situation as many of the miners had themselves been soldiers in the recent war and looked askance at the mounted gunners, their erstwhile comrades, who stationed themselves around the pithead.

Charlie's affairs prospered during the 20s as he married his present lovely wife, from Quebec, in 1923 and passed his promotion examinations and was promoted to Brevet Captain in 1927.

At the age of 40 he was far too old to be a candidate for Staff College but was offered the Gunnery Staff Course which he declined, unfortunately, as it meant leaving his young family for a year and he considered the extra expenses involved to be prohibitive.

He was promoted to captain in June 1930 and in December was posted to Winnipeg. He saw no further prospects of promotion as a combatant officer, and having the amount of service required, applied for promotion to the appointment of Quartermaster Major. He was gazetted in 1931 and from then until the outbreak of World War 2, apart from his duties as QM with C Bty RCHA, was called upon on many occasions to perform AQ duties at summer camps at Camp Hughes, Sarcee and Shilo, and also at times at Military District Headquarters. When mechanization arrived at C Bty – the last RCHA battery to lose its horses – he was again held responsible for the training of all personnel as drivers of MT vehicles.

On mobilization for World War 2 a call came from the CO of 1st Field Regiment, RCHA, who wanted Charlie as his regimental quartermaster. Although acceptance meant having to revert to the rank of captain, and although he was 52 years of age, Charlie opted for operational regimental service. He enlisted his eldest son, age 21, in the RCHA, with which unit the son served throughout the campaigns in Sicily, Italy and Germany, and in December 1939 Charlie went to war for the second time, this time leaving behind a wife and four children.

The early days of World War 2 were a quartermaster's nightmare in England. A great deal of equipment had to be drawn, especially gun stores, fire control instruments and signal equipment. Charlie lived in a sea of indents and vouchers but very little equipment. The QM, RQMS and a sergeant journeyed daily to various ordnance distribution centres to see what was to be had, but it was a very thin trickle. On the evening prior to the departure of the regiment for France in June 1940 (Editor's Note – See *"Flashback 1940"*), the unit still lacked a few stores and Charlie was told to *"go get them"*. He phoned the OC of Field Stores and told him that an emergency had arisen and that he wanted the stores opened. The reply was that *"the stores cannot be opened after hours except on orders from the War Office"*. Knowing the old Army game, Charlie at once said that he would phone the WO, whereupon he was told that the stores would be opened. He was met by the OC and, accompanied by four other officers, searched all night and finally found some of the missing items.

At Leipzic Barracks, Ewshot, England, 1940

Left to right, front row: Maj EC Plow, Capt DK Todd, Lt Col JH Roberts, Charlie (Maj WG Kear), Maj LG Clarke
Second row: Lt JM Sinclair, Lt MacMillan, Lt RP Rothschild, Lt RCD Stewart
Rear row: Capt RS Dwyer, Maj deLHM Panet, Lt JE Baird

He then returned to his unit just as it was moving off for the Embarkation Port.

On arrival at Brest, France, the unit moved up through the country to the region of Le Mans where the CO received word that the French government had fallen and the unit was to return as fast as possible to Brest. After much argument and indecision, the guns were loaded aboard a ship at Brest but there was neither time nor shipping space for the vehicles or other equipment to be loaded. A dumping area was selected about six miles from the town and the troops had the unique experience of destroying, under orders, all of the equipment of the regiment rather than have it fall into the hands of the Germans. Stores which had taken Charlie months to obtain were destroyed in a very short space of time: his RQMS actually wept and Charlie had a large lump in his throat. After the demolition, the troops marched to Brest, carrying what personal kit they could, and embarked on whatever transport they found in the harbour.

Back in England the old story of obtaining stores and technical equipment to re-equip the unit was another mad nightmare for the RQM. He chased all over the south of England from Ordnance store to store, railway stations galore; word would come through that there were stores at certain Field Stores and he would race off, and after travelling some eighty to one hundred miles would be told *"nothing for the Canadians"*. At one time he travelled 84 miles, as the crow flies, to an RAOC Stores situated west of Salisbury Plain and was told *"no stores for Canadians"*, but half way back he was met by his RQMS who said that the required stores were reported to be at that place; back went Charlie and on searching the store found 10 sticks, cable, signals; for them he had travelled approximately 254 miles along the English country roads. He was often asked where had he been all day.

Late in 1940, officers who had reached the age of 45 were, with a few exceptions, removed from the field units and Charlie, being 53, had no chance of remaining with his regiment. After a series of postings, some actual and some being paper transactions only, his position stabilized somewhat in April 1941 when he was told to open a Camp Commandant office in Acton, England, for a new location of certain sections of the expanding Canadian Mili-

tary Headquarters (CMHQ) in London. The offices of Pay, Records, Printing & Stationery, Medical, Dental and Postal services came under Charlie's aegis, and every three months, civilian personnel of the Canadian Treasury Dept checked and audited all stores and equipment on charge. Charlie still recalls the chore it was to count all the various types of chairs, tables, desks, etc, of different dimensions, of oak, mahogany or what have you, and having to look under desks for wastepaper baskets, under the frosty glare of leggy typists. Charlie claims that during his three years as Camp Commandant only one chair was missing. Apparently it had been broken and "*some nut*" had thrown it out.

He was promoted to Major on 10 January 1944 and remained in England until 28 July 1945 when he handed over to his Captain QM and evacuated to a Repatriation Depot prior to embarkation for Canada. On 20 May 1946, having completed a little over forty-one years in the service of his country, he retired to pension.

Since his retirement in 1946 he has been manager of the old United Services Club in Winnipeg, the United Services Institute of Manitoba, and the old Garrison Mess at Minto Barracks which has since been closed.

He is a member of The Red Chevron Club, the United Services Institute of Manitoba, and the 'C' Battery Club which meets twice yearly and where he comes in contact with many of the lads with whom he served in peace and war.

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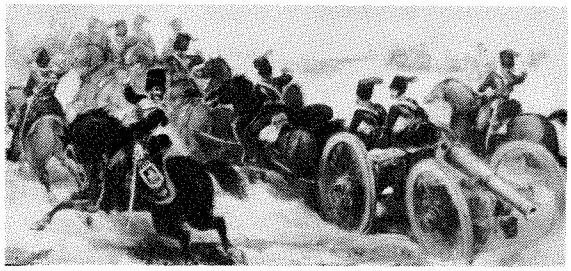

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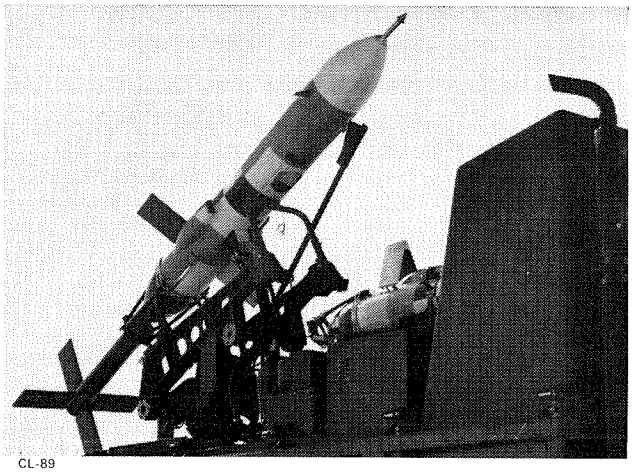

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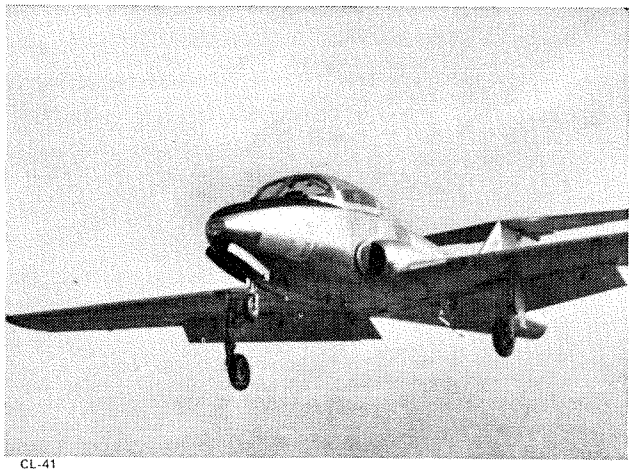

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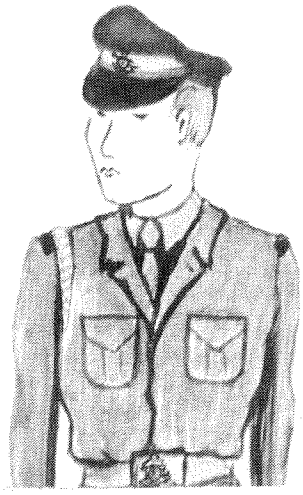
RCA DEPOT

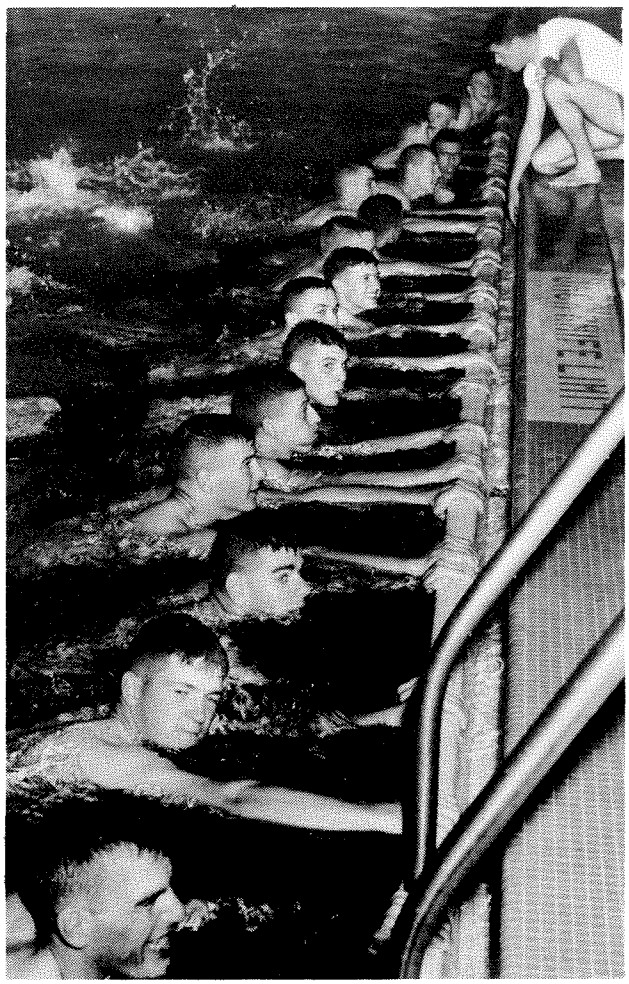


Elsewhere in this journal there appears the story of a man (still very much alive) who enlisted in the Army for a salary of "a shilling a day and all found". He thought he was well off. If he were able to enlist today his starting pay packet as an untrained recruit would be $207 per month less $65 for rations and quarters. If he were destined to be a Gunner, he would be sent to the RCA Depot at Shilo for his initial military training.

The RCA Depot, formed in Shilo in 1956, has trained and despatched some 4000 recruits to artillery field units. In ensuring that only the best applicants are retained, the Depot has rejected some 900 as training or medical failures.

The military recruiting organization sends young men to the Depot from all ends of the country. A boy from Conception Bay in Newfoundland, who had never before been more than a few miles from the roar of Atlantic breakers, becomes the fast friend of a young extrovert who grew up in the concrete canyons of Vancouver. Other members of their squad come from Yarmouth, Wetaskiwin, Espanola and Chicoutimi. Together they learn something of the crisp regime and wide-scale companionship of military life, the dimensions of Canada and the transition from youth to manhood.

After being taught the basic skills of soldiering, the recruit finishes his depot training with a two-week non-tradesman driver course which is designed to make him capable of driving light wheeled vehicles. After a ceremonial passing out parade, the newly trained soldiers are handed over to the School (of which the Depot is an adjunct) where they are trained to the Group 1 level in one



L Bdr BP March instructs 143 Troop on swimming. Top to bottom: Gnrs PD Kinnear, Toronto, Ont; SG Taylor, Dartmouth, NS; LW Duffy, Moncton, NB; RE Beek, Picton, Ont; AW Hunter, Calgary, Alta; DF Smith, Halifax, NS; JJ Otis, Ottawa, Ont; SA Sparkes, Curling, Nfld; WJ McGaughey, Vancouver, BC; RJ Crabbe, Annapolis Royal, NS; RJ Kinney, New Westminister, BC; JA Whitmore, Ottawa, Ont; BJ Kakish, Winnipeg, Man; GT Mingle, Enfield, NS; WR Simms, St Anthony Bight, Nfld; RR Smyth, Petawawa, Ont

of the artillery trades. An eastbound train finishes the task of putting the new gunner into the waiting hands of a unit commander.

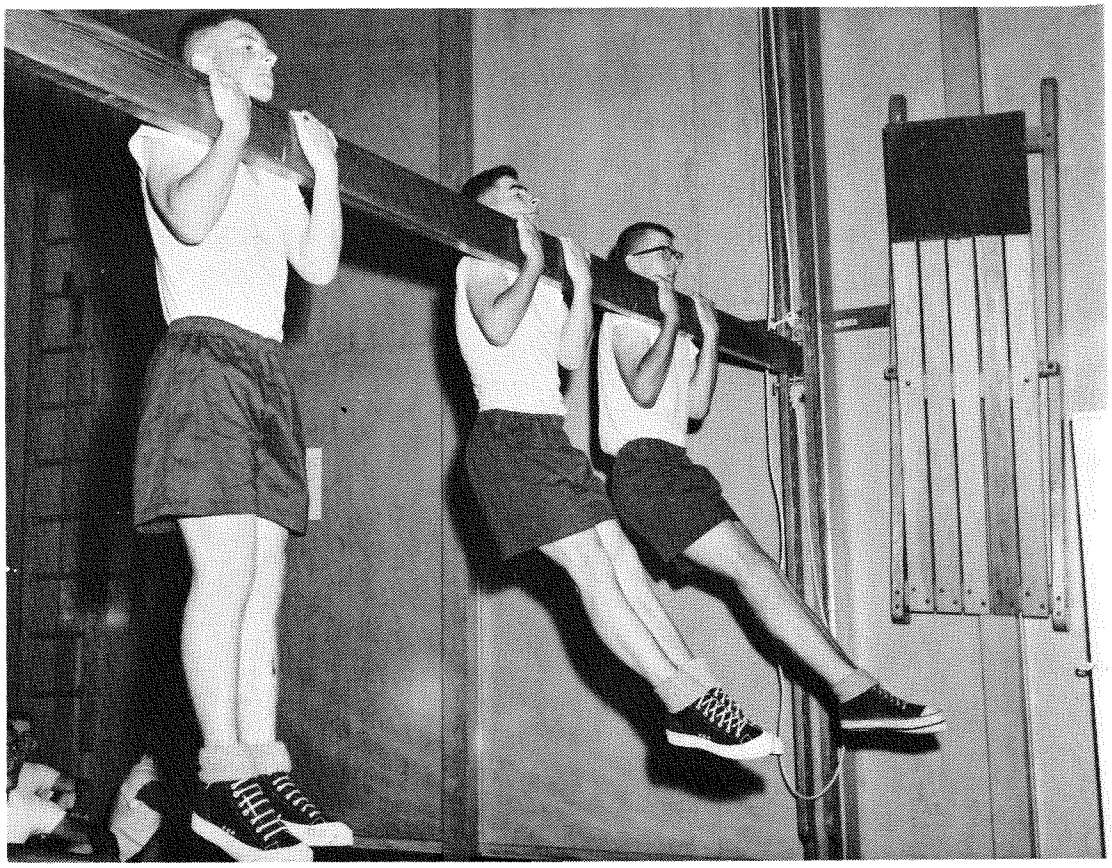
Our staff photographer has caught a few of the activities that the recruit goes through at the Depot.

Bdr WG Harrison of Dundas, Ont, supervising firing practice. Gnr AT Aiers of Edmonton fires; Gnr RJ Dimmer of Toronto scores

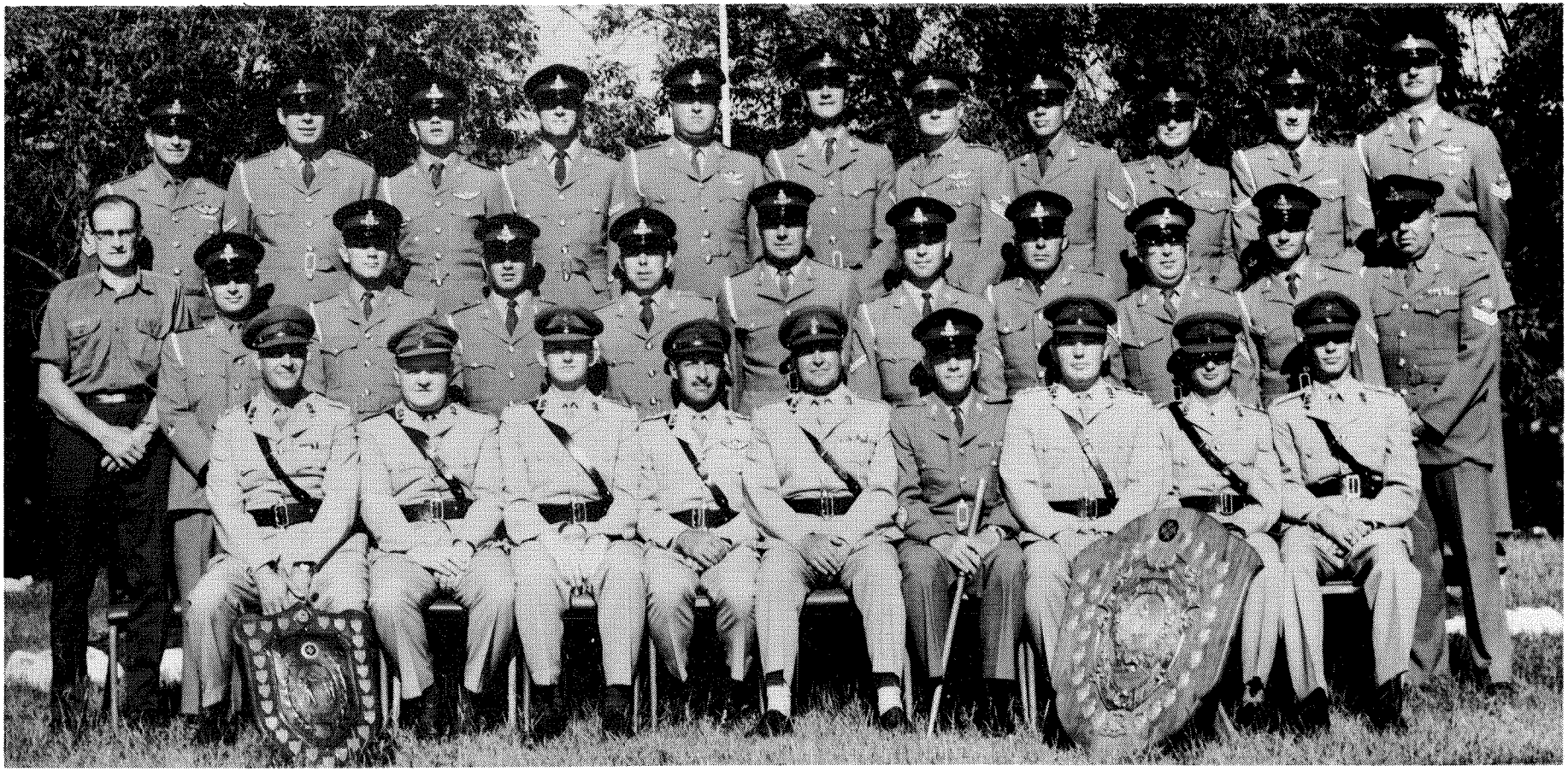
Gnr GG Stark of Etobicoke, Ont throws a grenade; Sgt LJ Giberson supervises

Gnrs of Depot apply first aid to casualty on survival exercise. Left to Right: Gnrs Emile A Comeau, Weymouth, NS; Roy J Richards, Vancouver, BC; Peter R Smith, New Westminister, BC

Bdr EC Master inspects a rifle belonging to Gnr J Noseworthy of Portugal Cove Rd, Newfoundland



Left to Right: Gnrs Taylor, Duffy, and Hunter discover it's harder than it looks



RCA DEPOT STAFF 1966

Front Row Left to Right – *Lt GP Prior, CD, Lt TG Power, Lt JA Roszell, Capt AF Ouellette, CD, Maj HP Stickley, CD, QMS(WO 2) CE Hicks, CD, Lt DA Gronbeck-Jones, Lt DR Robertson, Lt AG Mills*

Middle Row Left to Right – *Mr WB Duncon, Gnr WJ Fraser, CD, Bdr HC Mitchell, Bdr T Miller, Sgt OL Deurbrouck, CD, L/Sgt F Kuhar, Bdr JC Pynn, Bdr DJ Sly, Sgt BB Royal, CD, Bdr RA Chesterton Sgt JH Pineau, CD*

Rear Row Left to Right – *Sgt WJ Nesbit, CD, Bdr WH Huffman, Bdr WI Martens, Bdr KF Dolan, Bdr AG Coffey, Bdr CH Dent, Sgt EM Leach, CD, Bdr J Prokop, CD, Bdr EC Master, Bdr PJ McDonald Sgt LJ Giberson*

Missing – *2/Lt PW Forsberg, Sgt LA Hull, Sgt AW Robinson, CD, Bdr WG Harrison, Bdr WH Hodkin, CD, Bdr JP Roberge, Bdr JJ Sterling, CD, Bdr JW Taylor*

A Militia Regiment Has A Busy Year

The day to day, week by week routine of a military unit in peacetime does not make exciting reading. It is simply a prosaic reflection of a striving for the cohesion and efficiency without which the unit might as well cease to exist. The Militia in particular are well experienced in the chill astringent atmosphere of winter drill nights in a cavernous armoury; weekend schemes in tall, wet gorse; the colour and warmth of regimental dinners and the camaraderie, sweat and sand of summer camp. The struggle towards an effective existence, perhaps even for survival, is often much the same in one unit as in another. Here is a condensed account of one unit's activities.

In September 1965, 30 Field Regiment began its 111th year. The Regiment, commanded by Lt Col B Shapiro, CD, is organized with its RHQ and 1 and 2 Batteries located in Ottawa and 25 Battery in Kemptville. A Cadet Corps and a Student Militia Training Programme round out the organization.

GENERAL TRAINING AND EXERCISES

In common with other units, the Regiment was recently required to resume Corps training to provide support for the Regular Army, internal security and survival operations. The specific aim of the training programme was to raise the special-to-corps skills and battle procedures to battery level in order to field a battery trained and manned to establishment by the summer of 1966.

The Commanding Officer issued a training programme to meet these objectives, appointing Capt MP Taggart as Training Adjutant; 1 Battery was to provide the fully trained and manned battery, and 25 Battery a troop, similarly trained and manned, by the summer of 1966. 2 Battery was charged with the responsibility of recruiting, documenting and training recruits and militiamen, and the first year student militia.

In the October/December period of 1965, 1 Battery conducted Junior and Senior NCO courses resulting in the qualification of eleven junior and seven senior NCOs. In the same period 2 and 25 Batteries carried out Recruit and Trained Militiaman courses.

On 6-7 November 1965, and again on 2-3 April 1966, the Regiment carried out live firing exercises at CFB Petawawa. The November exercise, under Maj JJ Shaver, consisted of troop level training in preparation for battery training in April. The spring exercise, run by Maj GE Ward, 1 Battery, consisted of battery dry deployments, carried out despite difficult conditions of mud and snow, and live firing on the second day.

Early in January 1966, 25 Battery conducted Gun Number Group 1 and Technical Assistant Group 1 courses, while 2 Battery began the second round of the Recruit and Student Militia courses.

1 Battery was then re-organized into the operational battery of the Regiment and started Signals, Driver Mechanic, Gun Number, Technical Assistant, and Lieutenant Indoctrination courses.

STUDENT MILITIA TRAINING

The Student Militia Training Programme for the Ottawa Garrison was held at Dow's Lake from 4 July to 12 August 1966; young soldiers from 30 Field Regiment, 3 Signals Regiment, the Governor General's Foot Guards, the Cameron Highlanders of Ottawa, 3 Field Squadron RCE and the Ottawa Service Battalion participated. Of 193 candidates completing the course, 45 were from the "30th". The Regiment's platoon was commanded by Lt RD Holt, assisted by Sgt HJ Teskey. During this programme, our Student Militia visited Upper Canada Village, Old Fort Henry and the Regiment's summer camp at Petawawa. The Graduation Parade, held on 11 August at Dow's Lake, was inspected by Col T deFaye, MBE, CD, Commander, Eastern Ontario District.

SUMMER CAMP

After a further exercise in dry deployments at Connaught Ranges, 85 members of the unit went to summer camp at CFB Petawawa for the period

1-9 July 1966.

The first two days were devoted to settling into camp routine, recreation, a church parade and preparation for the activities of the coming week.

On Monday morning the unit carried out "shake-down" drills and allotted personnel to their positions for the week. In the afternoon, the Regiment watched three demonstrations by 2 CIBG: the reconnaissance squadron of the 8th Hussars in action, an infantry company of the Canadian Guards in the advance to contact (dismounted), and a quick action and battery deployment by 4 RCHA using 4.2 inch mortars.

On Tuesday 1 Battery practised deployments and the use of the new fire discipline. In the evening the annual gun laying test took place, while the officers attended a TEWT directed by the District Headquarters and unit commanding officers.

On Wednesday the Regiment moved out on "Exercise Summer Fun Time" – a two-day practice of the battery in all phases of war. The battery deployed initially in a very small area and then moved into a full defensive position, which was developed so well that the Commanding Officer and several other senior officers had difficulty in spotting it from the air.

At dusk the battery came under enemy fire and was ordered to an alternative night position. The deployment and the defensive arrangements were so successful that the enemy was unable to penetrate the position and in fact lost a prisoner to the defence during their attempt.

At sunrise on Thursday morning, having successfully covered the withdrawal of the troops it had been supporting, the battery moved to its final position 12 miles away. That evening a regimental party, with all ranks participating, was a huge success, marked by the presentation to the Commanding Officer of a valued walking stick which he had "lost" during the course of an earlier exercise. The honours in this year's "Boat Race" between the officers and NCOs, went to the officers.

On Friday the Regiment participated in "Exercise Swan Lake", an all arms battle group exercise at the company level. The unit band, under Capt BF Stafford, was also involved in the fray, acting as part of the enemy force. Our Honorary Lieutenant-Colonel, Lt Col AH Birks, and Col T Bond, a former Commanding Officer, visited the battery position during the exercise. That evening both the officers and the Senior NCOs held guest nights.

Sgt F Farley (left) and Gnr HA Smith receiving fire orders during the competition. They were among 75 men from the Regiment who were flown to Shilo for the event

Saturday morning saw the Regiment deployed for live firing which went very well despite strenuous activities the night before. The Regiment returned to Ottawa that afternoon, much improved in morale and state of readiness.

SALUTES

The Regiment had the honour of firing salutes on eight occasions during the year and firing in the ceremonies marking Dominion Day.

On 11 November, the Regiment fired the salute in conjunction with Remembrance Day ceremonies. Following the salute the Regiment paraded to the national Artillery Memorial in Major's Hill Park where wreaths were placed in memory of fallen comrades by Lt Gen (then Maj Gen) WAB Anderson, Lt Col HT Vergette, and the Commanding Officer. Every year on this date, the 30th Field Regiment places wreaths on this memorial on behalf of the Regiment at large.

ANNUAL INSPECTION

On 11 May 1966 the unit was inspected by the District Commander, Col T deFaye, MBE, CD. The entire Regiment was on parade, 1 Battery under command of Maj GE Ward; 2 Battery under Maj JJ Shaver; 25 Battery under Maj JGT Chillcott, and

the Cadets under Cadet Major R Lee – a total of 247 all ranks. On completion of the inspection, the Regiment conducted demonstrations: an OP exercise on the Miniature Range, and a battery command post and two troops in action.

Col deFaye commended the Regiment on its efficiency and spoke on the important role of Militia units in the overall organization and objectives of the armed forces. He dealt particularly with the change of emphasis from survival to corps training.

The day ended with receptions held in both the Officers' and NCOs' Messes.

SOCIAL AND OTHER

The annual dinner of the Regiment, held on 25 September 1965 marked the unit's 110th anniversary. On this occasion the Regiment was honoured by the presence of Mrs Frank Ryan, widow of the Regiment's late Honorary Lieutenant Colonel; five former Commanding Officers: Lt Cols EC Scott, T Bond, WD Callaghan, GWV Andrews and HT Vergette; and Col GFF Reynolds, Militia Advisor.

The following trophies were presented on this occasion: the Ryan Trophy for the Best Subaltern, to Lt SV Miscampbell; the McLaren Trophy for the Best Sergeant, to SSgt WR Nichol; the Hutchinson Trophy for the Best Bombardier, to LSgt CJ Roy; the Beamont Trophy for the Best Gunner, to Gnr GW Crawley; the Andrews Trophy for the Best Bandsman, to Gnr H Massey; the Vergette Trophy for the Best Regimental Shop, to BSM(WO2) RF Henzler; the Adams Trophy for the Best Gun Detachment, to LSgt AJ Voss (No 1), Gnr K Cunningham (No 2), Gnr TE Davis (No 3), Gnr P Morreau (No 4), Gnr JV Debene (No 5), Gnr IS Paris (No 6), Gnr RD Thompson (No 7), and LSgt F Farley (Driver).

The Commanding Officer presented Commission Scrolls to Lts TT Spur, RG Thompson, and PJ Thibault. He also presented Canadian Forces Decorations to Capts KG Farrell, DG McGowan and MP Taggart; SSgts DJG Anderson and RD Cameron; and Sgts F Farley and BR Rushlaw.

Three members of the Regiment are shown tucking into a hot meal served in the field during the annual Militia Artillery Competition at CFB Shilo on the week-end of 12-13 November 1966. Left to right, Gnr BD Dickman, LBdr RA Gravelle and Bdr RE Dubuc

Rifle shooting awards were made to eleven men who had achieved "marksman" and "first class shot" standards.

On Saturday evening, 1 May 1966, while the Regiment was at Connaught Ranges, an all ranks party and variety night was staged. Lt Col Shapiro presented regimental awards to all those taking part and a sing-song concluded the evening.

Despite 111 years of Regimental history, there are still first occasions and an outstanding one occurred on Friday, 23 May 1966, when the Senior NCOs joined with the CPOs and the POs of the Ottawa Reserve Naval Division in a special guest night. This, on good authority, was the first such integrated event in Canada. Those attending were fortunate in having Air Chief Marshal FR Miller, then Chief of the Defence Staff, as guest-of-honour and principal speaker. The event was given wide television coverage and is considered a highlight of our Regimental year.

On Wednesday evening, 25 May the Senior NCOs invited the officers to their Mess and jointly celebrated the first anniversary of Lt Col Shapiro's appointment as Commanding Officer.

Another all ranks party was held on Saturday, 28 May, when the Regiment was at Connaught Ranges, and gifts were presented to the retiring RSM, WO I EK McInnes.

The Officers' Mess held dinners on three occasions during the year and also a dinner and a buffet with their ladies. At a Spring guest night the officers welcomed Lt Col AH Birks, DSO, ED, whose appointment as Honorary Lieutenant Colonel of the Regiment became effective on 28 January 1966.

During the spring, 25 Battery held its first dinner; Mayor Raina of Kemptville, and Maj D Metheral, the former battery commander, were guests along with the Commanding Officer and the Regimental Sergeant-Major.

The Regimental Band, which has brought much credit to the Regiment, had a most successful year. It performed at the Royal Ottawa Winter Fair during the week of 25-30 October 1965; at the Winter Carnival at Saranac Lake, New York State, 12 February 1966; the Armed Forces Parade, 11 June; and also in the parade opening the Central Canada Exhibition in August.

In connection with recruiting and public relations, the Regiment put on a gunnery display at Carlingwood Shopping Centre, Ottawa, during the Easter weekend.

The foregoing indicates something of the achievements and activities of the Regiment during the past year; while training and efficiency are the primary objectives, other activities have helped further the Regimental spirit which is so important to efficiency and morale. The year 1965-66 achieved a fine balance between these two aspects of regimental life in 30 Field Regiment.

DOES THIS GET FORGOTTEN ON TRAINING EXERCISES?

During most of the war in Korea, and this applies to any static or defensive war, patrolling was the main infantry role. The artillery is vitally concerned at all levels.

The principles are:

(a) Battery Commanders must participate in all patrol planning, with particular reference to ensuring that our standing patrols are so placed that they are unlikely to hamper the fire of our own artillery, but will give warning of enemy approach, so that DF can be brought down at the right time and place.

(b) The artillery Commanding Officer, Battery Commanders and OP officers must know at all times what patrols are out and where they are. In spite of the large number of patrols out nightly, this can be done quite easily by means of a patrol trace on a piece of talc, tacked on the fighting map.

(c) Patrol fire plan, not to be confused with DF, must be arranged.

We did not normally send Forward Observation Officers (FOOs) out with the patrols in Korea. However, on one occasion an enemy patrol was engaged by a patrol dog indicating the target by pointing. This was probably the first four-legged FOO in artillery history.

AFTER NEWFOUNDLAND . . . NORWAY

*Maj RG Heitshu, CD

Exercise WINTER EXPRESS, held in North Norway from 21 February to 26 March 1966, was the culmination of over twelve months hard training and detailed preparation by all members of K Battery, Canada's only artillery component of the Allied Command Europe (Land) Mobile Force. As readers will recall from last year's "*Gunner*", K Battery, as part of the 1st Black Watch Battalion Group, spent most of 1965 conducting individual, sub-unit and unit training in airportability climaxed by a battalion group exercise in Newfoundland in June and July called Exercise ACE HIGH.

To prepare ourselves further for the large-scale exercise in Norway, the battalion spent most of January 1966 in Newfoundland on Exercise WHITE CARIBOU. This exercise was a dress rehearsal for WINTER EXPRESS as well as a test of our capability to operate efficiently with our new equipment under winter conditions. It was immediately followed by such pre-departure activities as mounting new radios, painting all vehicles white, repairing equipment that had been damaged in Newfoundland and, of course, getting our fair share of innoculations for the trip overseas. The most difficult and painstaking task was to devise, at short notice, new aircraft configuration diagrams. Although this information had been prepared long beforehand and was part of the Regimental SOP for air moves, a last minute cut-back in the number and types of aircraft available required a complete change in the number and type of vehicles and equipment which could be taken to Norway.

After spending long hours fitting scale models of vehicles into scale models of aircraft and of calculating and re-calculating centres of gravity, Capt FAW Jurgensen, the Unit Emplaning Officer, came up with a most efficient plan for loading the aircraft. With further study it was possible to re-arrange groups and parties to ensure that the battery could be employed in a tactically sound manner, notwithstanding the reduced number of men and vehicles which could be conveyed to Norway.

Exercise WINTER EXPRESS took place about 240 miles north of the Arctic Circle. It was divided into three main phases. Phase 1 consisted of the deployment of the force to Norway and was conducted during the period of 21 February to 5 March. Phase 2, from 6 March to 19 March, covered the period of the field exercise proper. Phase 3 consisted of the re-deployment to home bases and lasted from 20 March to 26 March 1966.

On 21 February the Battery Commander and his party left Petawawa for Uplands where they boarded a Hercules C130E and proceeded to Fredericton to join the remainder of the battalion advance party. The next morning, after a refueling stop in Iceland due to strong easterly winds, the group landed in Bardufoss, Norway. The advance party immediately set up camp just off the end of the runway and began to make preparations for setting up the main bivouac area for the battalion. The next few days were spent in ground and air reconnaissance of the general manoeuvre area.

Meanwhile, the battery moved out of Petawawa to the transit camp which was set up, as for Exercise ACE HIGH, at the Connaught Rifle Ranges. Considering the lack of facilities available there in the winter months, much credit must be given to M Battery for the efficient manner in which they set up and manned this camp during the fly-out.

The first chalks of the battery main party main party began to arrive in Bardufoss on 27 February. Upon arrival, after a 13 to 15 hour flight, they were permitted to stretch their legs and have

* *The author was BC of K Bty from 1964-1966.*

Bdr JG Henshaw (on right of photo) with – from right to left – Gnrs Green, Maillet and Skidmore, snowshoe their way to waiting helicopter

Sgt JH Fiddler contemplates next phase, as two complete mortar detachments (note toboggans in foreground) move by Voyageur helicopter

Mortar detachment dismounting from Voyageur. The depth of snow often prevented the ramp from opening fully, and the effort of loading and unloading was further aggravated by propellor driven snow which sometimes reduced visibility to a few feet

Gnr P Caplin on shift as detachment sentry. Note lightweight Swedish camouflage net for use against snow background

a warm or cold beverage at the air terminal where they picked up their first few words of Norwegian and were able to exchange their money for *krona* and *ore*. Afterwards they moved to the other side of the airfield to the force logistics base, where, under the efficient supervision of the BK, Capt RV Carriere, they were given a fresh ration supplement and refueled their vehicles, lamps, and stoves. From there all groups moved to the main bivouac area which was set up near the small town of Oldsborg Moen.

The drive from the airport to the bivouac area is a most picturesque one and, with clear, crisp weather, all ranks agreed they were tremendously impressed by their first view of this wonderful country. It was not unlike Newfoundland to see all all the children waving and saying *"Welcome"* – in perfect English – to the troops as they drove through the small villages to the new area.

By 3 March the battery was complete in Oldsborg Moen. The next few days prior to the start of the exercise were very busy and interesting ones. The unit was camped near a modern Norwegian school and it was soon arranged with the principal to allow the students to view, as a group, the weapons and equipment of the battalion group which for this occasion were laid out in county-fair fashion. Also, the press corps from all the NATO countries participating in the exercise, together with military observers from many nations, flocked to the area to view our equipment and to ask scores of questions, especially regarding our winter clothing which everyone found to be first-rate.

At this time each company and K Battery in turn was given a 24-hour pass to visit the old city of Tromso, where *Tirpitz* was sunk and where the world's most northerly brewery is located. Comfortable modern buses were hired for the occasion and the troops were lodged overnight at the Norwegian leave centre. The OIC of this leave centre for the period involved was Capt DW Wellsman, who was congratulated by all for the manner in which he conducted this venture and for his tireless efforts in briefing the officers and men on the amenities available.

At Oldsborg Moen all officers, TSMs and mortar detachment commanders were sent on individual recces throughout the area to familiarize themselves with the terrain, road conditions, depth of snow, etc. It was during this period that the battery took part in a regimental signals exercise. Although the battery is part of the 1 RHC Battalion Group it is also the senior battery of the AMF(L) Multi-National Field Artillery Battalion. The other two batteries were the Alpini Suza (Italian) battery, equipped with 105mm pack howitzers, and a British battery from 19 Light Regiment, RA, similarly equipped. The Regimental Headquarters or Fire Co-ordinating Centre of the battalion is formed from the RHQ of 19 Light Regiment. The Commanding Officer of the regiment together with his intelligence officer, the air liaison officer, and the naval gunfire liaison officer form the Fire Support Co-ordination Centre at Headquarters AMF(L). Although each battery is normally in direct support of its national contingent battalion, flexibility exists for the provision of fire support to other units as in a normal field regiment. During the exercise the deployments were controlled by the manoeuvre officer (2IC) and in some cases changes in affiliation were made. However, due to incompatibility of radio sets, FOOs and OPs remained with their national battalions and passed fire missions through the FCC.

Although the battery had some experience in moving its mortars by UH-1D helicopters in summer conditions, further experience was required should the need arise to deploy using the CH-113 Voyageur. To this end, two days were spent in training mortar detachments how to deploy by CH-113 using both internal and external loading.

In Phase 2 of the exercise 1 RHC, with K Battery under command, was given the task of defending, against sea and air landings, an extremely large area facing north-west, overlooking the many fjords which indent that part of the coast of Norway. Because of wide dispersion between companies, it was not possible for the battery to cover the whole front and therefore each of the three forward companies was given a troop in direct support, the third troop coming from the British battery. In this position B Troop OP was deployed on the top of a rather high feature (Swartarsen Mountain) by helicopter. Due to poor weather and unavailability of helicopters, re-supply was carried out on foot. *Volunteers* from B Troop will long remember that trek. GPOs took advantage of the excellent mortar positions available in this area and camouflage and local defence was of the highest order. The only action of any consequence in this position was the landing by helicopter of a ski-borne enemy force behind the battalion area. The enemy's aim was to destroy battalion headquarters after last light. Fortunately, B Troop air sentries spotted the enemy machines and in very short order the reserve company of the battalion carried out an air mobile assault of its own and destroyed the enemy. For this operation the mortars of B Troop, under 2Lt JP Davies, the GPO, were turned 180 degrees and the CPO, Lt BG Earl, accompanied the air assault as an airborne FOO.

Subsequently the whole force was redeployed facing east in the area of Oldsborg Moen.

In this position the three batteries were deployed as a regiment. Regimental survey was provided and an ammunition dumping programme was carried out using H-33 Mojave helicopters (US). The area allotted the Canadian battalion was very mountainous without roads or tracks. Consequently the three forward companies including OP parties were all air-lifted at night to their new positions.

Very soon after we took up our positions, the enemy closed in and there followed a very spirited defensive battle.

A helicopter-borne patrol of 1 RHC which was sent out to catch a prisoner called for the first regimental target of the exercise (Force Fire Mission).

As the battle developed all OPs were busily engaged on all types of targets from troop to regimental, and in passing back valuable and accurate information. In concert with an armoured thrust along the only road leading west to the right of the battalion area, the enemy eventually landed an air mobile force behind the battalion to secure the only bridge which crossed the river to our rear. A counter attack by A Company of 1 RHC was rapidly mounted and Lt WJM Walsh, the GPO of A Troop was sent along as a FOO. The battalion commander and the battery commander controlled the attack from the air in a CH-113, the BC using the battalion net alternatively with the CO to engage enemy targets not visible from the ground.

At this juncture the exercise was halted for several hours and King Olav V visited the the battalion. The King gave the BSM, WO2 Wade, a warm smile and paused to allow him to take a picture. Unfortunately the camera failed to function.

When the battle resumed, the AMF(L), having stopped the enemy, took to the offensive. Here ensued a long and difficult advance. In the Canadian sector, as stated earlier, there were no roads and the advance over deep snow, through high mountain passes, and over wind-swept lakes was difficult. The FOOs were especially hard pressed, as when one company passed through another at the end of a local attack the FOO carried on with the fresh company. In the meantime, because the mortars were now out of range, a change of affiliation took place and the British battery supported the Canadians together with the Italian battery when not committed to their own battalion. K Battery now supported the British battalion which was moving east along the main road to the right of our sector. To keep up with the advance both troops constantly leapfrogged to new positions. Whereas the gun batteries each required a bulldozer to clear gun positions, the mortars were speedily deployed using toboggans. The spirit and morale of the gunners were never higher than in this phase; with little sleep and the constant requirement to manhandle their equipment over deep snow they proved themselves superior to the task on all occasions.

At the end of the battle all national contingents returned to their initial bivouac area. There was, however, very little time to celebrate our victory as the following day Phase 3, the re-deployment, began. This phase was carried out expeditiously and all members of the battery were home by 26 March.

To ensure that as many people as possible receive the benefits of training with the AMF(L), L Battery has assumed the AMF role from K Battery. – Ed.

A MANNER OF SPEAKING

"Son of a gun". In the days when horse drawn trains of muzzle loading seige guns lumbered leisurely and slowly to and from the battle zones, they were administratively self-contained with ammunition, supplies, forage and camp followers of various types. Children were sometimes born on the line of march. The sobriquet *"son of a gun"* found its way into the language.

"...spike their guns". By far the simplest way to render useless the muzzle loading guns of an opposing force (provided one could first lay hands on them and work reasonably unmolested) was to drive a tight fitting metal spike into the vent at the rear of the barrel, thus blocking the flash passage by which the gunner ignited the propellent charge.

"For what we are about to receive...". In order to eliminate controversy and embarrassment stemming from the use of various prayers of grace at regimental dinners, a decision was taken that the grace to be used within the Royal Regiment of Canadian Artillery would consist only of the words *"For what we are about to receive, thank God."* It is set out at page 28 of the Standing Orders, and it is surprising how many people seem not to know of it.

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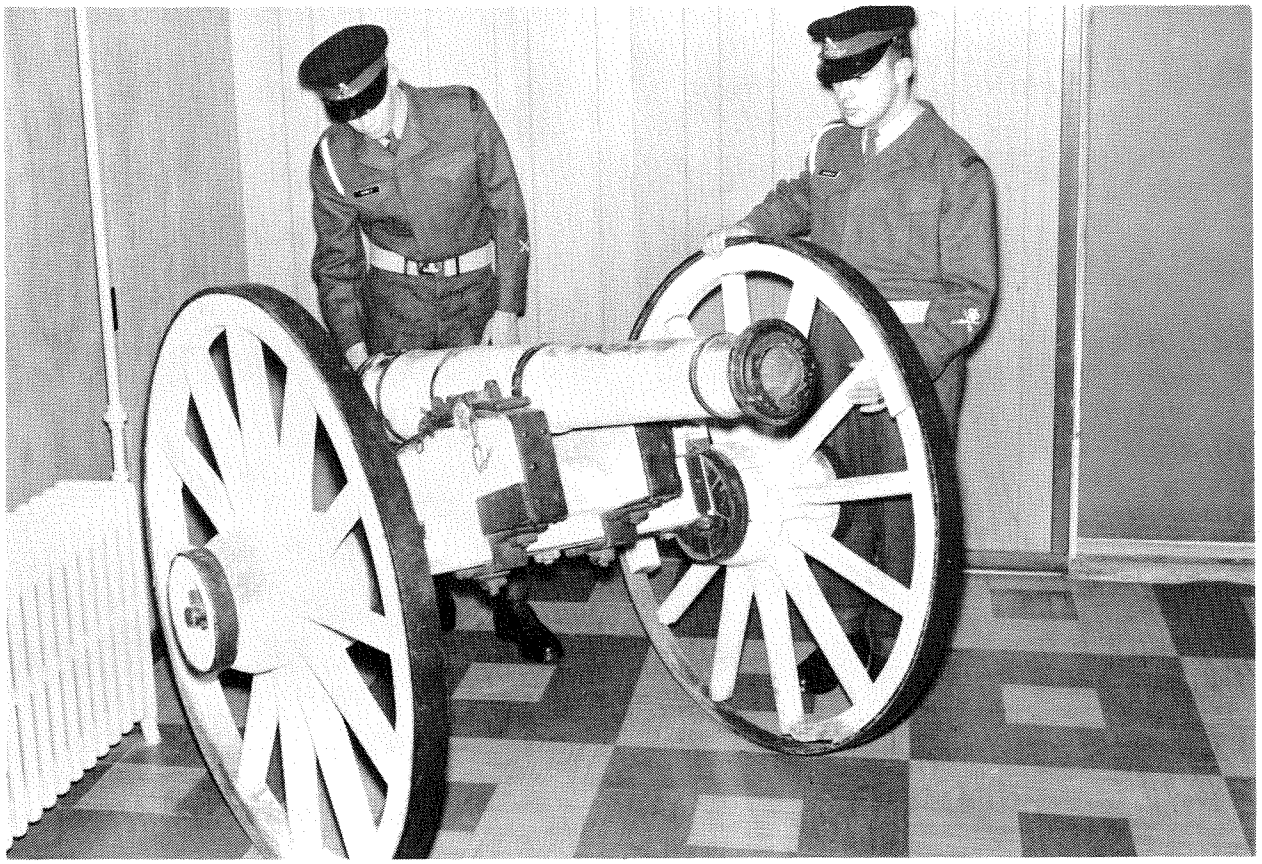
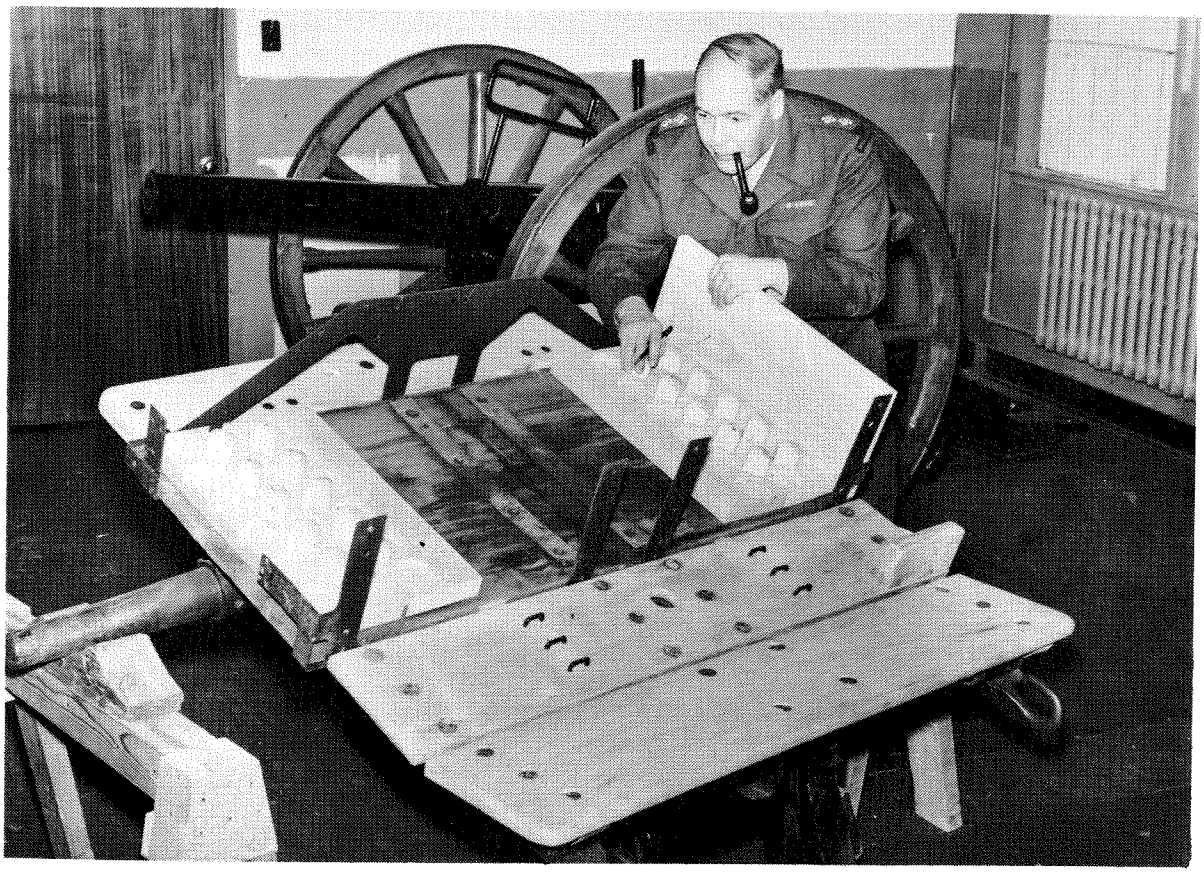
MUSEUM PIECES

Treasure is often found where it is least expected. Recently, children playing on the prairie near a Manitoba farmyard noticed a strange looking stick protruding a few inches above the earth. After a certain amount of tugging and digging, the stick turned out to be the hilt of a sword – with two foot blade attached. It was a very rusty sword, and a very blunt one, but the children found it useful in their games. Subsequent examination by adults revealed the sword to be of ancient Oriental origin. By what route and through whose hands did this strip of foreign steel pass before reaching its lonely grave on the Canadian prairie? Nobody knows and probably nobody ever will.

Swords, cannons, uniforms, parchments – they come to the Regimental Museum from all directions. One of the latest acquisitions, a solid brass six-pounder muzzle loader gun, which for years weathered under sun and sleet on the grounds of Headingly Gaol near Winnipeg, was handed over to the museum through the good offices of the Manitoba attorney-general. During refurbishing at the museum, the staff was only mildly surprised to discover the gun was loaded, with cannon ball in place. The gun, manufactured in 1796, is of the type issued to the first Canadian Volunteer Militia Batteries founded in 1855. It remained in the Canadian Service until 1868. The gun from Headingly Gaol was probably once the pride of the artillery detachment stationed at Fort Garry, the military antecedent of the city of Winnipeg.



A recently acquired brass 6-pounder, manufactured in 1796, attracts the attention of Gnr B Patrie (left) and Gnr YM Belanger, students at RCSA who have just completed their recruit training at the RCA Depot



Lt JD Chown ponders the reconstruction of a 12-pounder limber which was used with the 12-pounder gun shown in the background

A gun of another era, recently obtained by the museum, is the 40 millimeter Bofors gun. This item completes the museum's collection of anti-aircraft weapons employed by the Royal Canadian Artillery during World War 2 and in the immediate post-war period. It takes its place beside the 3.7 inch and 90mm AA guns.

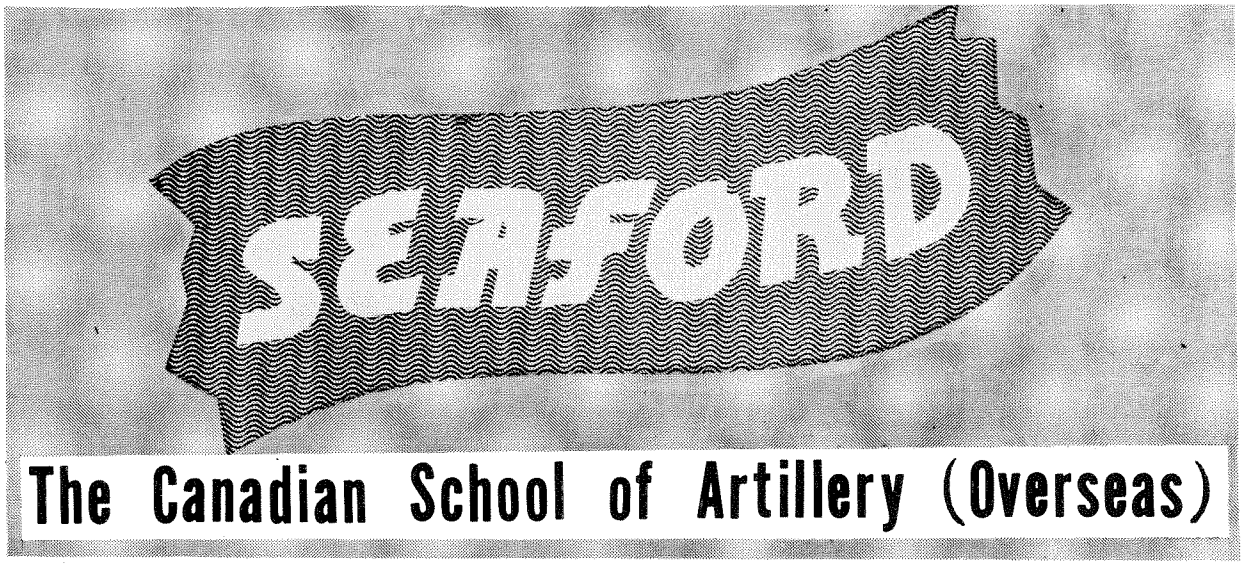
Recently two 12-pounder limbers were recovered from the Shilo ranges. Presumably they had been placed there as targets many years ago, having been rendered obsolete by the advent of new equipment. Although in understandably poor condition, at least one of them will be completely refurbished and on display in the museum in the near future.

Behind the quiet facade of waxed floors, polished display cases and labelled memorabilia, the task of repairing the ravages of time and neglect goes on constantly in the museum workshop. It is a large task, some of the items requiring almost complete reconstruction. A parallel responsibility of the staff in respect to each item is the cataloguing, research and recording of detail.

Research is greatly facilitated by the museum's ever growing library. One of the interesting recent additions to this department is *"Artillery Retrospect of the Last Great War, 1870 – with Lessons for Canadians"*, a published copy of a series of lectures delivered to the Quebec Historical Society by Lt Col T Bland Strange.

The museum receives many requests for information – over 60 during the past year – and in nearly all instances is able to carry out the necessary research and provide relevant information. Close liaison is maintained with the National Historic Sites Division of the federal Department of Northern Affairs.

Donors of books, pictures, medals, badges, clothing, accoutrements, equipment and the multifarious wealth which forms the substance of the museum need have no misgivings as to care and security. Probably no family heirloom receives greater attention than that provided by the museum staff, under curator Capt WMJ Wolfe, in the substantial concrete building in Shilo where the regimental relics are on display. □



The Canadian School of Artillery (Overseas)

The ranks of World War 2 veterans still on parade in uniform are thinning with the inevitability of nightfall. With them go a host of memories of shared experiences in an age which has already been claimed by the ghosts of the past. It was the age of Churchill, Hitler, Roosevelt, Stalin, Rommel and Lord Haw Haw. It is an era which has closed. Could it be 27 years since Canada's first contingent sailed from Halifax and thousands of Canadian youths took up temporary residence in South-east England? Different units followed different routes and rested at different landmarks during the war. The landmark which was seen by perhaps more World War 2 Canadian Gunners than any other was the School of Artillery and its ranges at Seaford in Sussex. Those of its alumni who are still around will recognize the places and people mentioned below.

In the late summer and fall of 1942 it became increasingly apparent throughout the Regiment in England that insufficient vacancies were available on courses at the British School of Artillery at Larkhill. To remedy this situation, Brig HON Brownfield, CBE, MC, conceived the idea of forming a Canadian School of Artillery, using as instructors Canadians who had qualified on the War Gunnery Staff Courses held at Larkhill.

After endorsement by General McNaughton and the Canadian CRAs, the necessary steps were taken to bring into being the Canadian School of Artillery (Overseas), the CS of A(O).

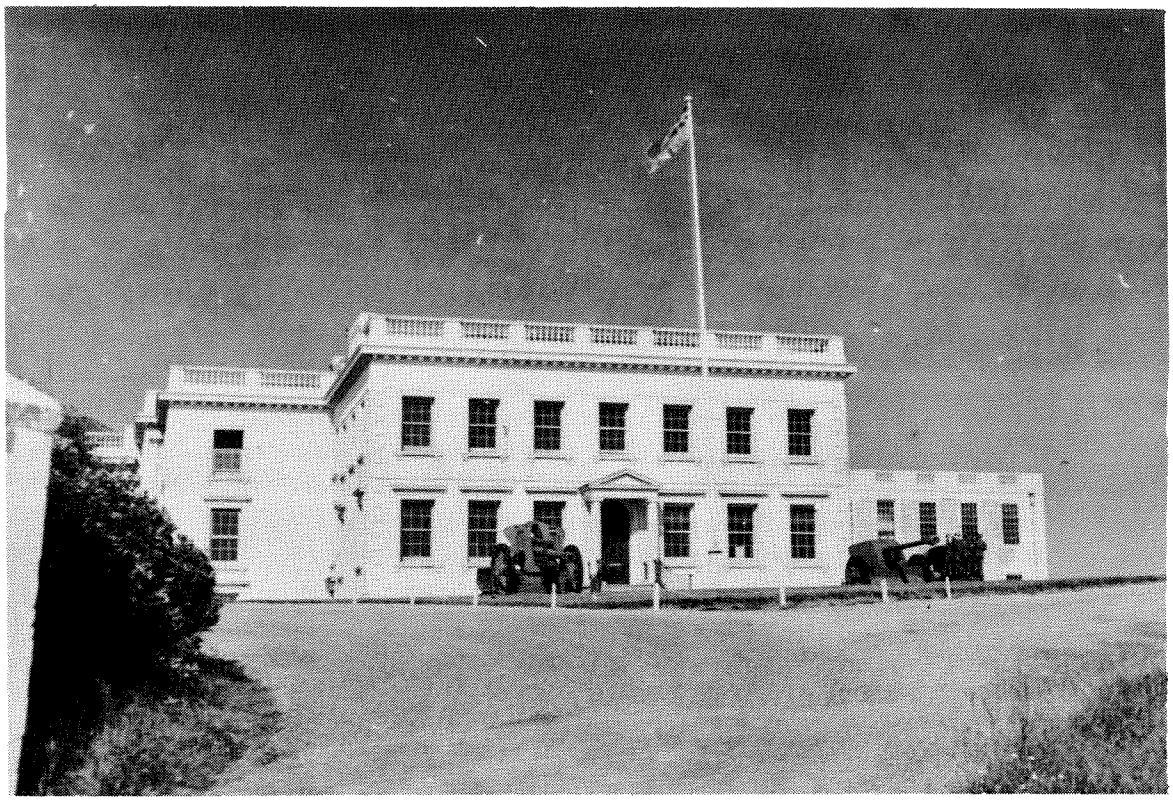
It was decided initially that the School should function as part of "*C*" group and be situated with the Canadian Army Reinforcement Units (CARUs) in Borden to make use of facilities and equipment already available. No space was available for the HQ, however, and for this purpose a private house – "*Pinewood*" – at Whitehill, Hants, was requisitioned.

The first entry in the War Diary, dated 17 December 1942, reveals that Lt Col WE Harris proceeded to Larkhill to study School organization and training syllabi. Lt OC Hoover drew barrack stores and took over the premises. The first Part 2 Order, also dated 17 December 1942, indicated that the CIG, 12 IGs and 20 AIGs had reported to the school. On 3 January 1943 the first three courses reported. The school had started to function.

After being in operation for some months, it became obvious to Lt Col Harris and the BRA, Brig Brownfield, that the School was merely an adjunct of the CARU without entity, prestige or esprit de corps of its own. Therefore, on 8 April 1943, we find the following entry in the War Diary:

> *At the request of the BRA a new proposed WE was prepared by the Commandant, CIG and Adjt, for the CS of A(O) to operate with a HQ and wings at one location as an independent unit, and at the same time administer the Anti-tank Ranges at Beachy Head and the Field Ranges at Alfriston.*

A battle ensued before the establishment was accepted, but the backing of Brig Brownfield and the untiring effort of Lt Col Harris were responsible



The Main Building – Seaford College

for its acceptance and the subsequent move of the CS of A(O) from Borden to Seaford College, Sussex.

The School came under command of HQ "*C*" Group for all purposes except local administration, although for a period it was under command of 2nd Cdn Corps and for a short period under CMHQ for training. This question of command and channels of communication remained a most controversial problem until disbandment.

The School functioned in two separate departments, i.e., Administration and Training, both under the jurisdiction of the Commandant.

The CIG and the Adjt, though nominally on the training staff, worked closely with the Administration Officer for coordination of the work of both departments. During the years that followed, a number of minor changes were made to the establishment.

When originally organized in the Aldershot-Borden area, the school had been located over a wide area.

HQ Administration	Pinewood, Whitehill
Field and Medium	Louisburg Barracks AIG and OR quarters at 1 CARU
Anti-Tank	2 CARU
Anti-Aircraft	3 CARU
Survey	2 CARU

On the move to Seaford, two school buildings, two garages, one hotel and a number of private homes were requisitioned. Also, the school took over control of Beachy Head Anti-tank Ranges.

In November 1943 Lt Col DR Corbett, MBE, ED, assumed command. One of his first undertakings was to requisition the Beach Hotel as Other Ranks' Quarters, to replace a number of requisitioned private homes.

During 1943 the training effort of the school had been concentrated on the artillery units in the field. These had now reached a high level of training and there was now considerable discussion about the future of the School and its possible dissolution. Meanwhile, Lt Col Corbett decided that a cleanup and improvement of facilities was in order and so the slack period was used to repaint buildings (2000 pounds of calsomine were used in a matter of a few weeks), remodel equipment, and make new demonstration tables and benches. Every member of the staff not required for courses was employed on the project. The discussions came to an end and the School remained at Seaford. With some necessary changes in establishment, the role was changed from

one of training field units to the training of individual reinforcements.

As mentioned earlier, one of the main arguments in favour of moving the CS of A(O) to Seaford was the close proximity of the Alfriston Range. Alfriston was a small range of approximately 8000 yds by 4000 yds, situated in the midst of a fairly populous area, and no one was really surprised when a certain RCHA Regiment engaged a village. Surprisingly few accidents occurred despite constant use.

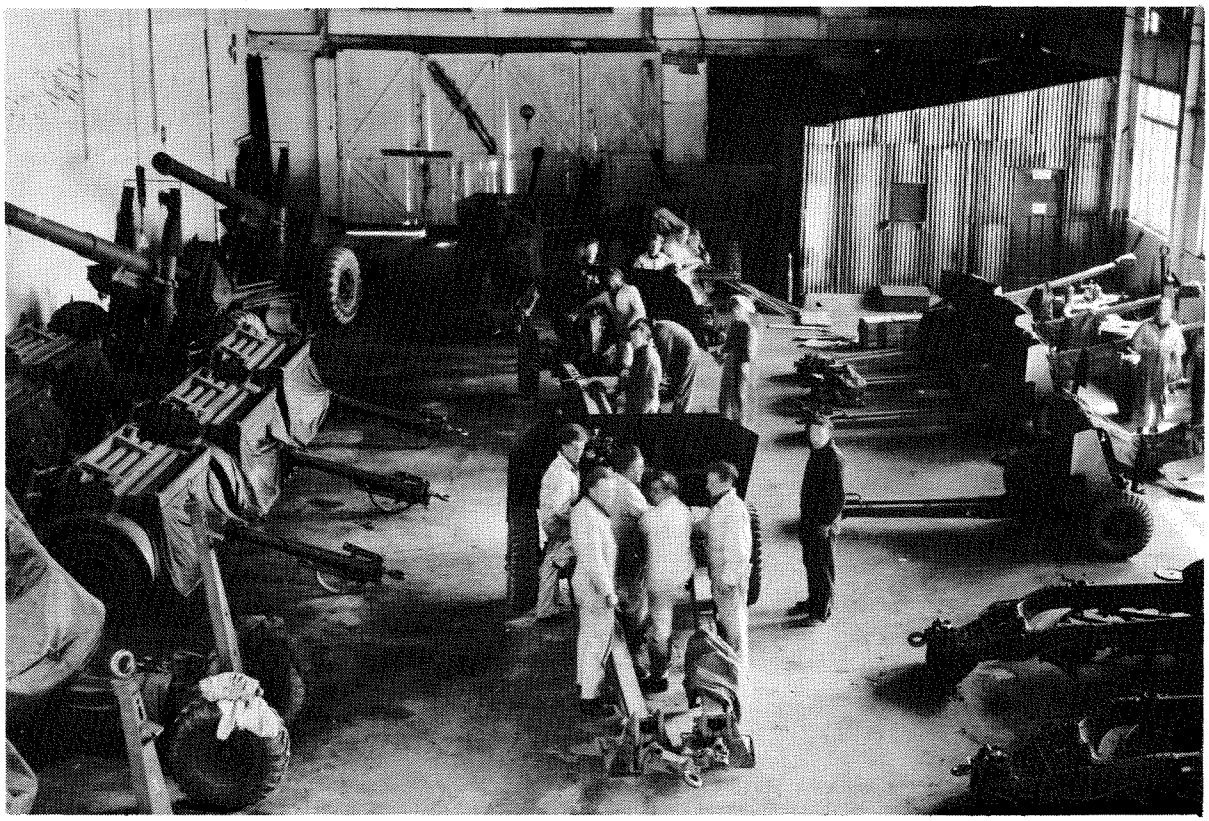
The Beachy Head Anti-tank Range was actually composed of three ranges, *"Michel Dean"*, *"Belle Toute"*, and *"Shooter's Bottom"*. The Range had started life in the fall of 1942 as a two-pounder school. After a considerable search by the BRA staff of 1st Cdn Army, the area adjacent to Beachy Head was selected. At the BRA's request, Maj EMD McNaughton, an IG from the School of Artillery, was made available for the task of organizing a range. Targets were originally towed by vehicle but special engines were later installed, and a 125 Range and a manhandling course were built.

In 1944 extensive new facilities were added under the direction of Capt BCM Smith. This project, like most carried out by the school, was on a *"self-help"* basis. As always, during those years, money and materials for such purposes were almost entirely lacking and the emphasis was placed on *"self"* rather than on *"help"*.

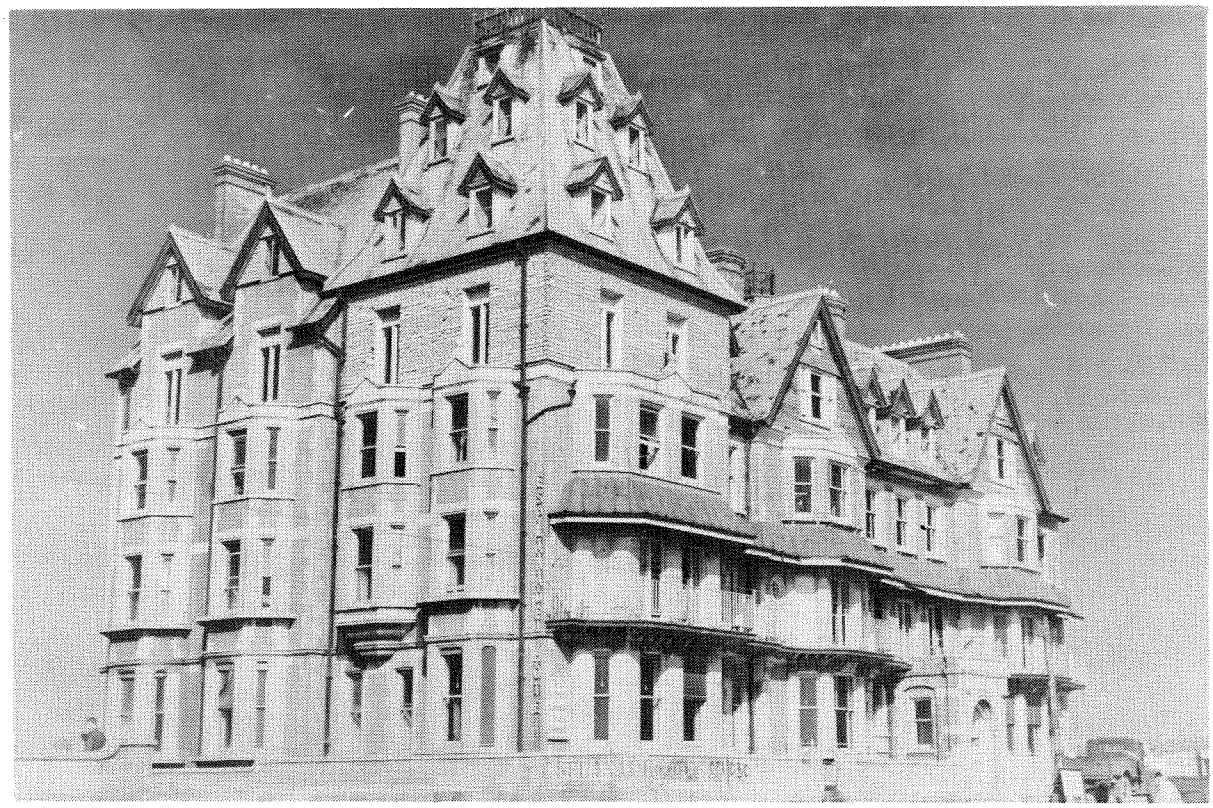
The incredibly low cost to construct the ranges was always a matter of considerable interest to senior officers. Capt Smith's high-pressure, Class A tour of inspection for senior officers was always a source of amusement to members of the Staff; it was, however, the cause of much help from HQ South-East Command at a later date. Considerable time was lost because of aircraft and ships in the channel. Beachy Head is probably the only location where an aircraft (Spitfire) was shot down by a 25-pounder firing in an anti-tank role. Late in 1944, *"Michel Dean"* range was converted to an infantry assault course to cater to the special infantry training for RCA replacement officers.

The anti-aircraft wing of the School was never a large establishment but maintained a high standard throughout the war. At one time, when asked to produce a drill for the 20mm Quad SP, it did so within two weeks and an instructional team was in the theatre of operations within a month.

The survey wing was plagued during the first two years by a shortage of equipment. During 1944, however, the wing was gradually expanded



The Gun Shed



The Sergeants' Quarters – Esplanade Hotel

and was instrumental in setting up some of the most successful courses conducted for the British and Canadian Armies. One type of course was in reality an exercise, the regimental survey parties of a division being called together and exercised together on a divisional level. Eventually the wing also took over the job of training surveyors RA, Group B, for the School of Artillery at Larkhill.

With an average instructional staff of 12 IGs and 20 AIGs (excluding those attached to other units) some 2000 officers and 2500 other ranks were trained on courses by the School during its two and a half years of life. To this must be added many special assignments, the more important being listed below:

a. Gun drill for the 25-pounder "*Sexton*" Capt CF Martineau was responsible for the first draft, produced for the 19th and 23rd Field Regiments and eventually used by Larkhill.

b. Gun drill for the 40mm Bofors.

c. Gun drill and trials on the Land Mattress rocket equipment.

d. Trials on correctional signal lights and wire-cutting capabilities of the 40mm Bofors.

e. Trials on modifications to the 25-pounder carriage for upper register shooting.

f. Anti-tank and light anti-aircraft firing in the indirect role.

g. Laying error trials.

h. The retraining of 1st LAA Regiment.

Perhaps the most difficult special problem was the Reinforcement Officers Training Wing. By the summer of 1944 the build-up of reinforcement officers in 1 and 2 CARU had exceeded the facilities. These officers were quartered at Ludshott camp which was suddenly required for other use. The CS of A(O) was requested to accommodate and train these officers. In a matter of 48 hours accommodation in Seaford was arranged, and on 17 August 1944 Lt Col EC Plow, with 217 officers and 80 other ranks under command, arrived in Seaford.

Planning had proceeded quickly and the officers were divided into five training batteries. Equipment was obtained from the CARU and within a week Lt Col Plow and some 50 other ranks were able to return to their respective CARUs. The CS of A(O) Infantry Battle School was an unqualified success, so much so that higher formations decided to relieve the shortage of infantry officers by re-mustering the greater percentage of the course. On 31 October 1944, after the reinforcement holdings had been reduced to the proper number, the wing was disbanded.

The School continued to function until June 1945, and perhaps the best summary of the part which it played is contained in the following letter from Brigadier Brownfield dated 22 June 1945.

Comd
1 Cdn School of Arty(O)

On the occasion of cessation of artillery training by 1 Canadian School of Artillery (Overseas) it gives me a great deal of pleasure to recognize the contribution made by you and all ranks under your command to the high standard of training of the Royal Canadian Artillery in the field.

The excellent Record achieved by Canadian Gunners wherever they fought must be a source of pride to all Canadians, and it should be a great satisfaction to the Canadian School of Artillery (O) to remember that a great deal of the training of the Royal Canadian Artillery has been done by the School and its instructors. From the first day of its commencement till the day of its disbandment the School has carried out its duties in a most efficient and enthusiastic manner, and all ranks may be justly proud of their contribution to the record of the Canadian Army in general and the RCA in particular.

(HON Brownfield) Brigadier
Commanding "C" Group
Canadian Reinforcement Units

THE REGIMENTAL DUTY OFFICER

2Lt AG Gallant
1RCHA

I feel I should not deprive others of the benefit of my vast experience as Regimental Duty Officer. I fancy myself an expert on the matter, having served in the capacity of Duty Officer as often, if not more so, than any of my brother officers. These so-called comrades-in-arms seem to regard their monthly turn as Duty Officer as a punishment. I maintain that this proves a lack of sound thinking and conscientious material in the post-war army. It appears that very few of us are left who can be trusted to do a good job.

This business of doing a good job is complicated by the stream of contradictory orders in the Duty Officers Instructions and those coming from the Adjutant's office. Our beloved Adjutant, on the morn of my first tour as Duty Officer, impressed upon me the necessity of looking my best when making my rounds so as to be a good example to the men. He then told me to wear the Regimental Patrol Blues for the night tour, including the evening meal at the men's kitchen. This dashing uniform tends to become very uncomfortable when worn for a great length of time, but I reject the suggestion that the Adjutant has sadistic and anti-subaltern tendencies.

The routine of being Regimental Duty Officer is ridiculously simple and consists of wearing a uniform, as mentioned above, in the Mess and striking a pose of single-minded purposefulness at the bar. One also attends the men's meal parade so as to prevent them from rushing the cooks and making off with the food set aside for the bombardiers. Also he checks and signs the ration sheet to see that the food advertised is actually being served. In the evening one drops into the various canteens and messes to ensure that the beer isn't flat, collects the days receipts at the officers' and sergeants' messes, and drives down to the bank to deposit the loot in the night deposit box.

He also is expected to sleep in the Regimental Guard Room to be on hand during the night to quell any disturbances or emergencies in the regimental lines, but I have heard the Duty Sergeant remark that "*It is harder to wake the ——— Duty Officer than to settle the affair myself*". This seems eminently fair to me: it has the effect of teaching subordinate ranks to display initiative.

Among his other good works, the Duty Officer visits the hospital each day and casts a dispassionate eye over the patients from his unit to see if they have any problems or complaints and generally to ensure that they are not pulling the wool over the Medical Officer's eyes. Friday is a special day for the patients when the Duty Officer brings them their weekly comfort in the form of a package of cigarettes. By guessing wrongly as to preference over filters, non-filters, blended, menthol, etc, he manages to thoroughly upset the sick and the wounded, who subsequently require the soothing attentions of the nurse.

There is a quaint custom that survives to this day which consists of making out a report at

the end of one's tour of duty on a sort of question and answer form. It appears to have been created early in the century and has been amended over and over without changing the basic structure of the proformae.

Basically the tour of the Duty Officer is relatively simple, starting with reporting to the Adjutant in the morning, making several inspections of the regimental lines during the day, attending meal parades, collecting the cash and depositing it in the bank and finally locking the Mess. In the morning one arises and fills in the blanks of the Duty Officer's Report. One then turns over the keys to the on-coming Duty Officer, giving him a "*good luck old pal*" slap on the epaulette, and mouthing some reassuring comment to the effect that all is well, or that the fire in the gun park appears to be under control, or whatever might seem suitable to the occasion.

With my vast experience as Duty Officer, I realize that if I don't terminate this essay soon, I shall likely wind up being informed by the Adjutant that he would like me to do it a few more times this month in order to demonstrate to the younger lads how the job should be carried out. □

"...*to prevent them from rushing the cooks...*"

USEFUL INFORMATION

WO 2 RMI Rhyno of 1 RCHA, currently attending the Master Gunner Course at RCSA, found the following nuggets in a paper written at the Royal Arsenal, Woolwich, 14 February 1854 entitled Colonel Burns' Questions and Answers on Artillery.

What are the peculiar advantages of Horse Artillery?

Possessing, from their lighter construction and mounted detachments, much greater locomotive powers than other field batteries, they are especially adapted for following the rapid evolutions of cavalry, for sudden attacks upon particular points, and for supporting the advance or covering the retreat of an army.

Why is a piece of ordnance made stronger at the breech than towards the muzzle?

Because the elastic force of the inflamed gunpowder is there greatest, constantly diminishing in intensity in proportion as the space increases in which it acts.

What is a mortar?

The shortest piece of ordnance in the service: the trunnions are placed in rear of the vent at the breech; the bore very large in proportion to the length, and it is provided with a chamber, similar to that of the new brass howitzer.

What projectiles are thrown from mortars?

Common shells, carcasses and light balls.

What is understood by ricochet fire?

That obtained by firing a piece of ordnance with a small charge, at an elevation under 10 degrees, by which means the shot or shell makes several bounds along the ground before it reaches the target.

How is the velocity of a shot or shell ascertained?

Divide three times the weight of the charge by the weight of the ball, and multiply the square root of the quotient by 1600 for the required velocity in feet, or the space passed over by the ball during the first second.

Sergeant-Major Rhyno's preparatory study for the Master Gunner Course was apparently more searching than the School intended. Incidently, a carcass was a type of incendiary projectile. – Ed.

MINUTES OF THE 81st GENERAL MEETING OF THE RCAA
HELD AT CFB SHILO, MAN, 29-30 SEPTEMBER 1966

1. The eighty-first Annual Meeting opened at 2:00 P.M., September 29, 1966, with the President, Lt. Col. E.R. Clemis, MBE, ED, CD, in the Chair.

2. The President called on Col. J.S. Orton, MBE, MC, CD, Commandant, Royal Canadian School of Artillery, who welcomed the delegates to the Home Mess of the Regiment and expressed the wish that their stay would be an enjoyable one.

3. Major General H.A. Sparling, CBE, DSO, CD, acting on behalf of the Colonel Commandant, Major General A.B. Matthews, CBE, DSO, ED, CD, expressed the latter's regrets at being unable to attend the meeting because of his unavoidable absence on business in England.

4. The President presented his report which will be printed in full in the Annual Report.

5. Both Col. J.P. Beer, MBE, CD, Chief of Artillery, Headquarters' Mobile Command, and Col. J.S. Orton, MBE, MC, CD, Commandant, Royal Canadian School of Artillery, spoke to the Meeting. Both these talks will be reported in full in the Annual Report.

6. Lt. Col. R.J. Connor, Vice-President, reported on behalf of the President on the Conference of Defence Associations held in January, 1966. The full report with Resolutions and replies will be included in the Annual Report.

7. Resolutions – Two Resolutions Committees were established:

(a) One consisting of Lt. Col. J.H. Turnbull and Lt. Col. J.D. Cambridge was to consider the Resolution on Unification, and

(b) One chaired by Lt. Col. W.S. Jackson was to deal with the remainder of the Resolutions.

The Resolutions dealt with were as follows:

(1) To be passed to the Minister of National Defence:

(a) Re unification and continuance of the RCA as a Corps.

(2) Those to be passed to the Conference of Defence Associations:

(a) Re Trade badges

(b) Re Camp Training Bonus

(c) Re Classified Commissions for Quartermasters

(d) Re sending selected Militiamen overseas with CA(R) Units during the summer months

(e) A copy of the Resolution on unification is to be sent to the Conference

(3) To be passed to the Directorate of Reserves:

(a) Change of establishment TSM Vacancy.

(4) Those discussed and defeated:

(a) Re longer summer camp period

(b) Greater assistance to RCA Militia Units at camp and weekend shoots

(5) Those discussed and withdrawn:

(a) That Dental vacancies be used for Gunner appointments.

(b) Overage qualified Officers and NCO's be retained.

8. The following communications were sent:

(a) A cable to the Master Gunner

Photo by Major George Lilley

Members of 50 Field Regiment RCA (M) of Peterborough, Lindsay and Cobourg board plane after week-end firing at Shilo

(b) A wire to the Colonel Commandant

(c) Greetings sent by letter to the 59 (Newfoundland) Heavy Regiment Reunion which was taken by Col. Nicholson.

9. Amendments to Annual Report 1965-66:

On the motion of Lt. Col. Lynch-Staunton and Major Chapman, the minutes of the last Annual Meeting, as detailed in the Annual Report, were adopted with the following corrections:

(a) On page 19 it should read 1038 points for 15 Fd. Artillery Regiment instead of 038 points.

(b) On pages 78 and 80, the correct name of the C.O. 6 Fd. Artillery Regiment should be Lt. Col. J.G. Lefebvre instead of Lt. Col. J. Chouinard.

10. Change in location of 1967 Meeting – On the motion of Lt. Cols. Harvey and Shapiro, the action of the President in changing the location from Montreal to Ottawa was approved. The Secretary was directed to see if reservations can be made for the 18th to 21st October as a first choice or 20th to 23rd September as a second choice.

11. The financial statement presented by the Secretary Treasurer was approved on the motion of Lt. Cols. Scott and Hogue.

12. The budget as amended by the Executive Committee for 1966-67 was approved on the motion of Lt. Cols. Hegan and Hogue. This included authorization for $500 office rental and an increase of $100 remuneration for the Assistant Secretary.

13. The History Committee Report was presented by Major General Sparling and was approved on the motion of Lt. Cols. Davis and Hogue. The Committee was authorized to proceed with arrangements with the publisher for Volume I to the value of $11,000 for 2,500 copies and to complete arrangements for a pre-publication price per volume and a package deal of both Volumes I and II.

14. Sales Committee for History – Lt. Col. Cambridge was appointed by the Executive Committee to head this Committee and to add to it as he sees fit. Lists of potential buyers are to be completed by Units and forwarded to the Secretary. This latter point was stressed as of the utmost urgency.

15. On the motion of Lt. Cols. Harvey and Lefebvre, it was agreed that the History Committee have leather bound copies of the History made for presentation to certain people.

16. The Competitions Committee report was presented by the Assistant Secretary and approved on the motion of Lt. Cols. Vergette and Turnbull.

17. Notice of motion to amend the By-Laws in certain sections was given by Lt. Col. Connor and Lt. Col. Jackson. These amendments will be written out in detail in the Annual Report in order that delegates may have the opportunity of studying them before the next Annual Meeting.

18. It was approved on the motion of Lt. Cols. Connor and Jackson that two ad hoc members be added to the Advisory Committee for the coming year and to attend the meeting next year.

19. Chairs for Shilo Committee – was presented by Lt. Col. McAlpine and was adopted on his motion seconded by Lt. Col. Shapiro.

20. Payment of the maintenance cost for the Artillery Memorial in France and the cost of a wreath to be laid at the annual November Remembrance Ceremony in London by a Canadian Gunner was approved on the motion of Brigadier Robertson and Lt. Col. Grose.

21. Travel expenses for delegates to next year's meeting were approved on the motion of Lt. Cols. Harvey and Taylor. These are Manitoba (including Kenora) and west by air, Ontario and Quebec by rail, and the Maritimes by air and an allowance of $15.00 a day for the Meeting.

22. Regular Officers in attendance included Major General Dare, Deputy Chief of Staff Reserves, Air Vice Marshal Stovel, Commander, Training Command, Col. K. Toms, Commander, Manitoba District, Lt. Col. J.M. Sinclair and Major W. Stirling from D Reserves, and Col. J.S. Orton and Col. J.P. Beer. Talks by some of these Officers will be printed in full in the Annual Report.

23. The nominating Committee, chaired by Lt. Col. Jackson, presented the following slate for office, which was approved on the motion of Lt. Cols. Platt and Hogue to close nominations:

President	– Lt. Col. R.J. Connor,
Vice-President	– Lt. Col. J.D. Cambridge,
P.E.I., N.B. and N.S. Districts	– Lt. Col. J.H. Turnbull,
Western Quebec District	– Lt. Col. S.D. Smith,
Eastern Ontario District	– Lt. Col. B. Shapiro,
Central Ontario District	– Lt. Col. J.A. Williamson,
Manitoba and Saskatchewan Districts	– Lt. Col. T.G.K. Hegan,
Alberta and British Columbia Districts	– Major D.V. Reynolds,
Past President	– Lt. Col. E.R. Clemis,
Advisory Committee	– Major General H.A. Sparling,
	Lt. Col. E.A. Royce,
	Lt. Col. J.G. Lefebvre,
	Lt. Col. L.O. Grose,
	Lt. Col. W.D. Elsdon,
Secretary	– Lt. Col. E.C. Scott,
Assistant Secretary	– Lt. Col. H.T. Vergette,
Auditor	– Chas. W. Pearce.

24. Motions of thanks were unanimously approved to Major General Dare, Air Vice Marshal Stovel, Col. Orton and his staff, and Col Beer. The secretary was directed to write letters of thanks to these gentlemen, and this has been done.

25. Lt. Col. McLean brought up the question of scholarships and the matter was referred to the Competitions Committee for study during the next year.

26. On the motion of Brig. Robertson and Lt. Col. Turnbull the meeting approved the purchase of a gift to the School of Artillery Officers' Mess not to exceed $200.00.

27. On the motion of Lt. Cols. McLean and Grose, approval was given that the chair, for which $2.00 was collected from each delegate, be presented to the RCSA Mess to commemorate the name of General A.G.L. McNaughton, a former Life and Honorary Life Member of the Association.

28. Adjournment took place at 4:00 P.M. on September 30.

HOW IT'S DONE

"We've just got to get to press in December". This anguished cry is frequently heard echoing down the halls near the Editor's office. Write, re-write, proof read, layouts, reduce, blow-up, paste-up, just to name a few, are words that make up the jargon of the Canadian Gunner's editorial staff. But just how is this journal produced and printed? When and how does it all start so that you, dear reader, end up with a handsomely bound book full of interesting articles and pictures through which you diligently search for typographical and other errors?

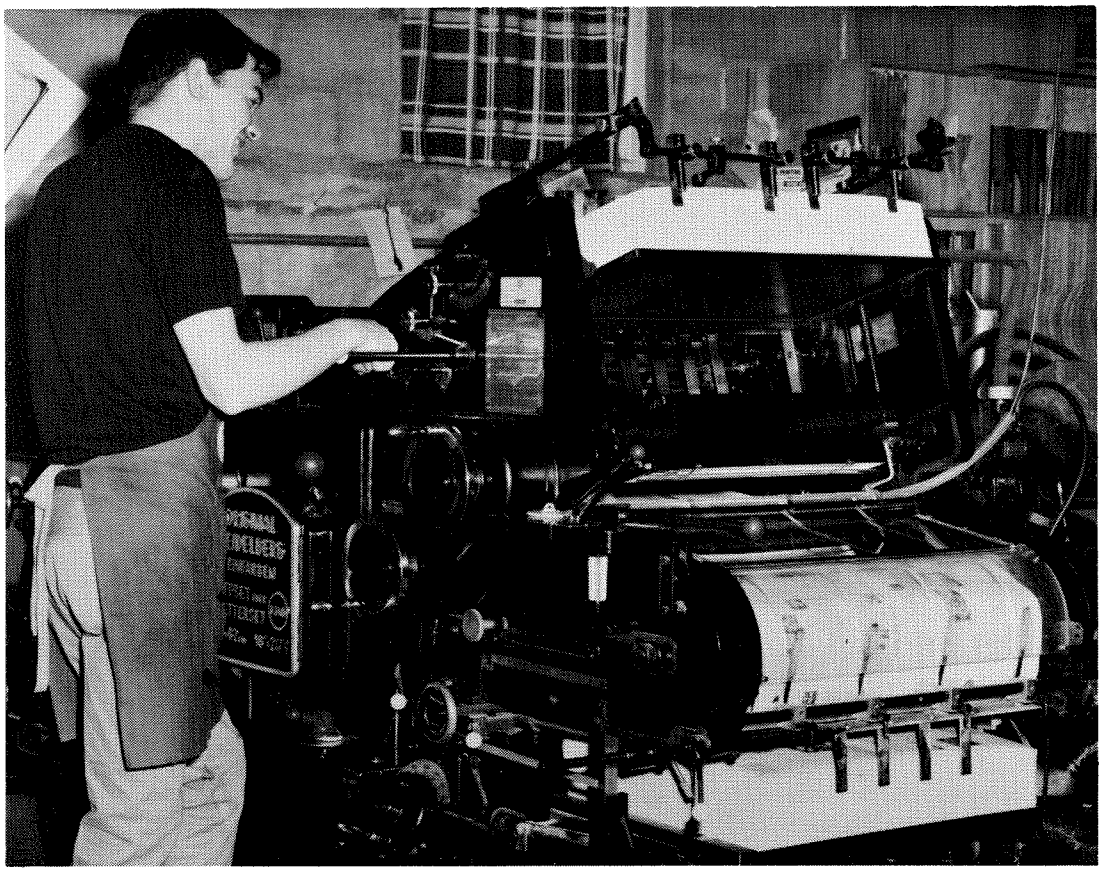
Make Up

Early in the year, the Commandant of The Royal Canadian School of Artillery appoints the staff of The Canadian Gunner and a meeting is held to discuss the policy of the year's production. The Editor assigns specific tasks to the staff and then the search for suitable material begins. All units, Regular and Militia, as well as certain individuals, are invited to submit articles for publication.

Once the material has been collected, it must be edited and in some cases re-written. A little red pencil comes in handy here. Finally, a point is reached where the editors are satisfied that an article is *"ready to go"*. However, the article is still a long way from being ready for printing. It is now sent to be varityped on special paper in columns of appropriate width and length (the technical term is *"justifying"*), in an appropriate size of type. Each page is typed twice to facilitate centering and line composition. The varitype machine is capable of producing various sizes of type such as you see here and in even columns as you see throughout this magazine.

aA *bB* eC dD *eE* fF gG hH *iI* jJ kK *lL* mM

Articles in the process of being varityped at RCSA



Pressman operating an offset press which has a speed of up to 5500 sheets per hour on a maximum paper size of 18" by 24½"

Now the varityped copy of the article is proof read. Here a blue pencil is used to do the slashing and marking, as blue will not show up when the pages are photographed for printing. As soon as the proof readers are satisfied that no typographical errors are left, the article is ready for final paste-up.

At this point the varityped columns are cut, layed out and pasted on cardboard paper called Final Make-up Sheets. Photographs and captions are inserted, titles and page numbers added, and when this has been completed, the page is ready for the printer. The entire process up to this point is referred to as the *make-up stage*. It might be interesting to note here that most of the design work for the advertising is done by draftsmen at RCSA.

Printing

The Final Make-up Sheets for the complete magazine are submitted to the printer in one package. All the editorial staff can do now is wait hopefully, since the magazine is beyond the fail-safe point.

The first step for the printer (Leech Printing Ltd, in Brandon) is to photograph the final make-up sheets and produce a negative. The negatives are then corrected by spotting (touch-up to negatives with ink) and subsequently transferred to a press plate by a chemical process. Four negatives are put in the press, the press rolls and presto, we have the first four pages of the magazine. This method of printing is known in the industry as offset printing.

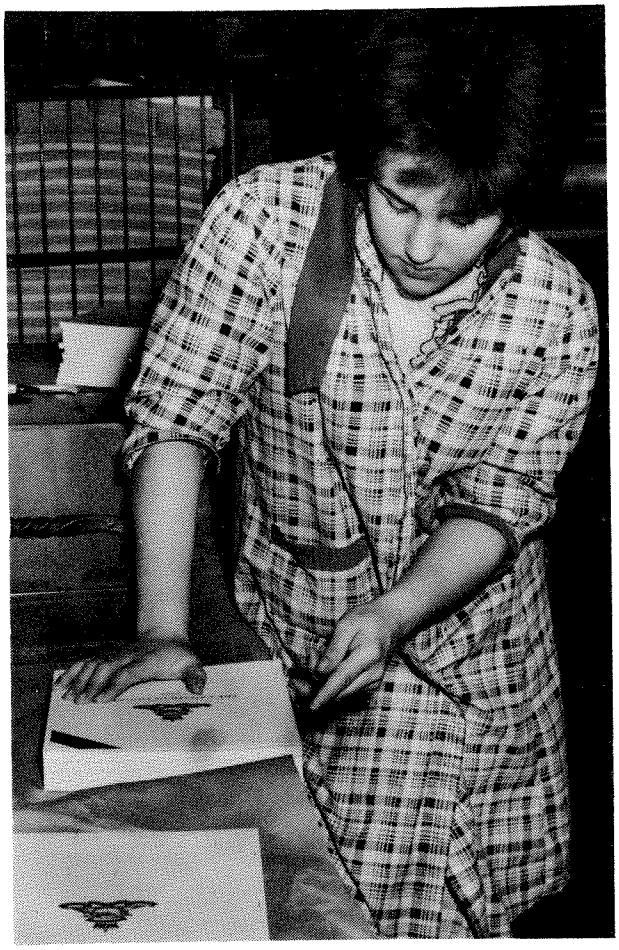
Binding

The printer now finds himself with voluminous stacks of pages in his plant which must be put together as a magazine. The pages are sorted, trimmed and stitched. All that remains is for the covers to be glued on, pressed until dry, and we can have our copy of The Canadian Gunner. Well not quite!

Final touch-up to negatives prior to having a plate made for offset printing

Pages being sorted in correct sequence before stitching

Bindery operator at stitching machine



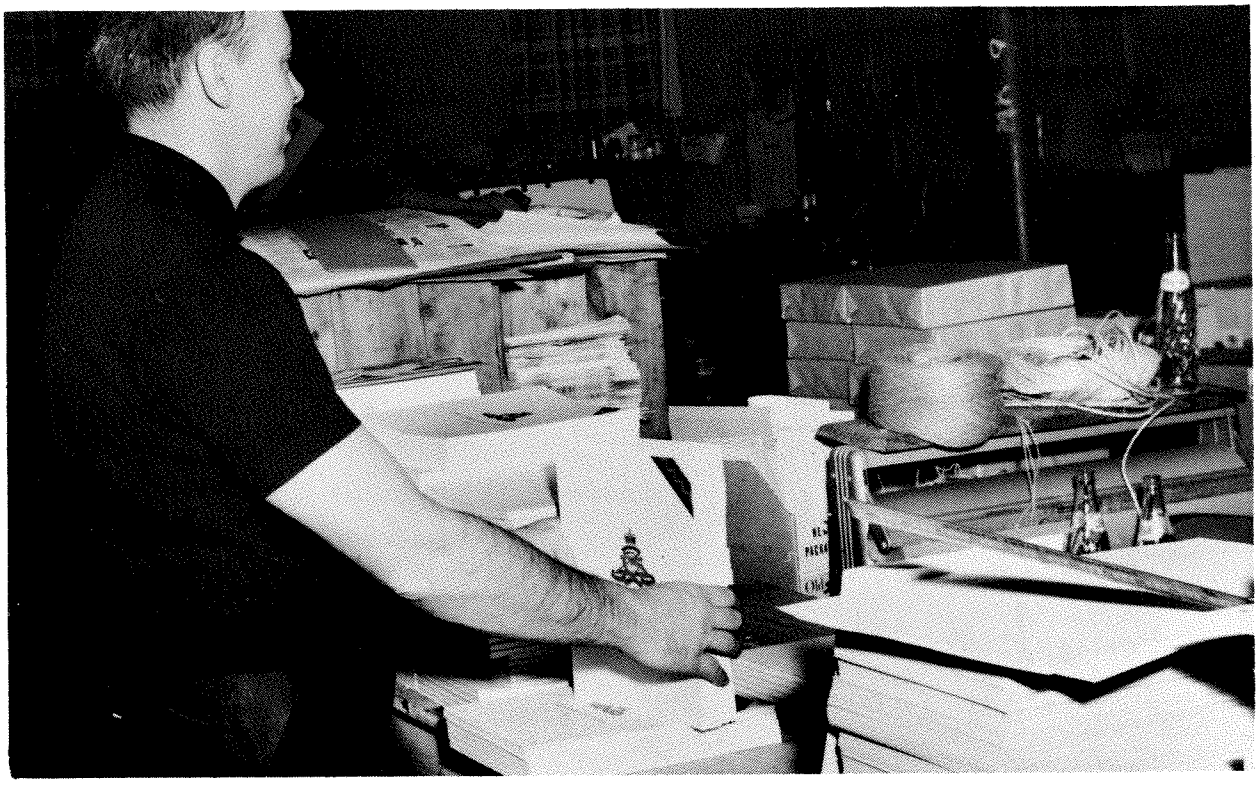
Covers are glued by hand

Distribution

The printer, having completed his task with the delivery to Shilo of bundles of fresh, crisp Canadian Gunner magazines, needs only to send his bill which runs to about two dollars a copy. The final stage for the magazine staff is to draw up a list of recipients, package the books, attach labels and mail. The editors by this time have gone over the finished articles with a magnifying glass and fine-tooth comb, thus accounting for the low moans and groans over which can frequently be heard the soft but steely promise *"We'll change that next year!"*

You can probably read the entire contents of this magazine in less time than it took to produce one page! □

A limited number of extra copies of the "Gunner" is available on a first come, first served basis, at $2.00 each. They may be obtained by contacting Lt JD Chown, Secretary, RCA NPP, RCSA, CFB Shilo, Man.



The final product!

OFFICERS' LOCATION LIST

(As of 1 November 1966)

Lt Gen	WAB	Anderson, OBE, CD	Commander, Mobile Command
Maj Gen	RP	Rothschild, MBE, CD	Commander, Materiel Command
Maj Gen	DAG	Waldock, CD	Deputy Chief Engineering, CFHQ
Brig	AJB	Bailey, DSO, OBE, ED, CD	Director, National Defence College
Brig	LE	Kenyon, CD	Director General Intelligence, CFHQ
Brig	ML	Lahaie, DSO, CD	MCCD, Viet Nam
Brig	EMD	Leslie, DSO, CD	Commander, 2 CIBG
Brig	HW	Sterne, DSO, MBE, CD	Exercise Fallex, CFHQ
Col	JP	Beer, MBE, CD	Chief of Artillery, HQ Mobile Command
Col	GRA	Coffin, CD	National Defence College
Col	JL	Drewry, DSO, CD	Director, Canadian Forces Staff College
Col	JS	Dunphy, CD	Superintendent, CADEF
Col	RE	Hogarth, DSO, CD	Secretary Defence Staff (Army)
Col	RG	Kingstone, MBE, CD	Commander, Western Ontario District
Col	GP	Marriott, ED, CD	Deputy Director General Centennial
Col	RE	Nourse, CD	Director Postings and Careers (Army)
Col	JS	Orton, MBE, MC, CD	Commandant, RCSA and Commander, CFB Shilo
Col	NW	Reilander, CD	Commander, CFB Petawawa
Col	KA	Toms, CD	Commander, Manitoba District
Col	WW	Turner, CD	Commander, UNFICYP

Lt Col	L	Atack, CD	CBU (UNEF) (Retires 14 Dec 66)
Lt Col	DC	Badenoch, CD	Directorate of Land Forces Operational Requirements (Land/Air), CFHQ
Lt Col	CR	Baker, MC, CD	Defence Research Board
Lt Col	LC	Baumgart, CD	CO 4 RCHA
Lt Col	RER	Borland, CD	Air Section, HQ Mobile Command
Lt Col	GO	Brown, CD	DS, Royal Military College of Science, Shrivenham, UK
Lt Col	JM	Brownlee, CD	DS, RMC
Lt Col	JEJ	Caryi, CD	CADEE
Lt Col	MLA	Chabot, CD	DS, CASC
Lt Col	EA	Coolen, CD	Directorate of Force Development, CFHQ
Lt Col	DB	Crowe, CD	CO 1 RCHA
Lt Col	JD	Crowe, MC, CD	DS, CFSC Toronto
Lt Col	LV	Cushing, CD	UNTSO (Palestine)(to Deputy Secretary Defence Staff in Feb 67)
Lt Col	JEG	deDomenico, CD	CO 3 RCHA
Lt Col	JK	Ewing, CD	HQ Training Command
Lt Col	DW	Francis, CD	DS, CASC
Lt Col	JP	Francis, CD	SHAPE
Lt Col	DL	Fromow, CD	Directorate of Land Force Operational Requirements (Arms), CFHQ
Lt Col	DE	Gayton, CD	Directorate of Manpower Programming and Control Establishment Records, CFHQ
Lt Col	C	Giokas, CD	CFB London
Lt Col	DH	Gunter, CD	HQ ACE Mobile Force (Land)
Lt Col	JA	Hilliard, CD	Director General Personnel Plans and Requirements
Lt Col	PDS	Lafferty, CD	HQ Materiel Command
Lt Col	JEAJ	Lamy, CD	CFB Montreal
Lt Col	SV	Lloyd, CD	DS, CFSC Toronto
Lt Col	AB	MacKenzie	Director General of Senior Appointments, CFHQ
Lt Col	JW	MacNaughton, CD	UNMOG (India-Pakistan)
Lt Col	RN	McKay, CD	Artillery Section, HQ Mobile Command
Lt Col	JOVF	Menard	CDLS (Washington), NATO Planning Staff
Lt Col	OR	Monette, CD	CFB St Jean
Lt Col	SA	Mooney, MC, CD	CJATC
Lt Col	PJ	Paterson	Directorate of Armament Engineering Land, CFHQ
Lt Col	JF	Pendergast, CD	Directorate of Survival and Emergency Operations, Deputy Chief Reserves, CFHQ
Lt Col	JSG	Peterson, CD	29 NORAD Air Division, Duluth
Lt Col	JE	Pincock, CD	Deputy Secretary Defence Staff, CFHQ
Lt Col	JM	Reynolds	25 NORAD Region, Tacoma
Lt Col	WO	Roney, CD	HQ Western Ontario District

Lt Col	WE	Sills, CD	CO 2 RCHA (To HQ Central Ontario District)
Lt Col	W	Simcock, CD	CIG, RCSA
Lt Col	JM	Sinclair, CD	Deputy Chief Reserves, CFHQ
Lt Col	AB	Stewart, CD	29 NORAD Region, Kansas City
Lt Col	JC	Stewart	Canadian Liaison Officer, Office of the Deputy Chief of the Defence Staff (Mil Ops) Washington
Lt Col	RCD	Stewart, CD	UNTSO (Palestine)
Lt Col	DG	Struthers, CD	Canadian Liaison Officer, Fort Munroe
Lt Col	HH	Winter, CD	Directorate of Project Formulation and Management, CFHQ
Maj	EY	Adkin, CD	HQ Training Command
Maj	DR	Baker, CD	4 RCHA
Maj	CR	Balfour, CD	Secretary Defence Staff, CFHQ
Maj	FW	Bayne, CD	Exchange IG, School of Artillery, Larkhill, UK
Maj	AK	Beare, CD	RCSA
Maj	CE	Beattie, CD	1 RCHA
Maj	JLP	Belanger, CD	DS, CMR
Maj	SB	Benton, CD	HQ New Brunswick/Prince Edward Island Area
Maj	EJ	Berris, CD	Student, US CGS Course
Maj	T	Boldt, CD	Directorate of Electrical Engineering Land, CFHQ
Maj	RP	Bourne, CD	HQ 2 CIBG
Maj	CA	Buchanan, CD	MCCD, Viet Nam (to British Columbia District in Mar 67)
Maj	MC	Buckwell, CD	Directorate of Nuclear Weapons, CFHQ
Maj	RGG	Buell, CD	UNMOG (India-Pakistan)
Maj	CF	Burant, CD	Deputy Chief Reserves/Cadets
Maj	FA	Bussieres, CD	HQ CBUE
Maj	C	Butler, CD	Directorate of Land Forces Operational Requirements (Land), CFHQ
Maj	RM	Callard	CADEE
Maj	MD	Calnan, CD	HQ 1 BAOR
Maj	FS	Card, CD	HQ Training Command
Maj	JT	Carpenter, CD	HQ New Brunswick/Prince Edward Island Area
Maj	LL	Charest, CD	Student, CFSC Toronto
Maj	CAR	Christenson, CD	Office of Director General Centennial (to retire 29 Nov 66)
Maj	JM	Church, CD	Assistant Secretary, Assistant Chief of Defence Staff, CFHQ
Maj	DH	Clark, CD	AOP Troop 4 RCHA
Maj	WS	Conrod, CD	Directorate Land/Air Operational Research
Maj	RS	Cork, CD	CFHQ Administrative Unit
Maj	JA	Cotter	2 RCHA (to Artillery Section, HQ Mobile Command in Jan 67)
Maj	CA	Coull, CD	Army Examining Board, HQ Training Command
Maj	ELK	Cowan, CD	Student, CFSC Toronto

Maj	WD	Creighton, CD	Student, CFSC Toronto
Maj	JE	Crosman, CD	CO 1 SSM Battery
Maj	CJ	Crowe, CD	Directorate of Training, CFHQ
Maj	JD	Currie, CD	CDLS (Washington), Office of the Chief of Staff, The Pentagon
Maj	AW	Curry, CD	Experimental Army Signal Establishment, Carp
Maj	MW	Dauphinee, CD	UNTSO (Palestine)
Maj	CR	Davidson, CD	CFSC
Maj	PW	Davis, CD	HQ 2 Wing, AAC, UK
Maj	JE	deHart, MC, CD	Directorate of Postings and Careers Army (RCA), CFHQ
Maj	JK	Devlin, CD	Student, CFSC Toronto
Maj	JJ	Donahue, CD	MCCD, Viet Nam
Maj	JJA	Doucet, CD	RCSA
Maj	SS	Drew, CD	Nova Scotia District
Maj	RH	Duke, CD	Artillery Section, HQ Mobile Command
Maj	DF	Elkins, CD	RCSA
Maj	FJR	Ervin, CD	CFB Gagetown
Maj	RA	Finney, CD	4 RCHA
Maj	DR	Foster, CD	Artillery Section, HQ Mobile Command
Maj	WES	Gamblin, CD	RCSA
Maj	VW	Gay	Directorate of Personnel Requirements Control, CFHQ
Maj	RN	Gleason-Beard, CD	HQ Mobile Command
Maj	THC	Goodfellow	Directorate of Operations, CFHQ
Maj	JE	Goodine, CD	Directorate of Survival Emergency Operations, CFHQ
Maj	RE	Gorham, CD	HQ Alberta District
Maj	RD	Gowland, CD	Canadian Liaison Officer, USAADS, Fort Bliss
Maj	GK	Grace, CD	Director of Clothing General Engineering, CFHQ
Maj	T	Graham, CD	DRB (Chemical Laboratories)
Maj	WH	Green, CD	UNMOG (India-Pakistan)
Maj	GF	Hammond, CD	3 RCHA
Maj	HT	Haney, CD	CFB Calgary
Maj	PDA	Harrison, CD	British Columbia District
Maj	PF	Heenan	3 RCHA
Maj	RG	Heitshu, CD	HQ Training Command
Maj	RM	Hemmingsen, CD	Directorate of Land Forces Operational Readiness Training, CFHQ
Maj	DA	Henderson, CD	Directorate of Personnel Career Policy, CFHQ
Maj	GM	Henderson, CD	Directorate of Flight Safety, CFHQ
Maj	JG	Henderson, CD	UNFICYP (To be prom and to comd 2 RCHA in Feb 67)
Maj	EC	Hipwell, CD	Experimental Army Signal Establishment, Carp

Maj	GH	Howitt, MC, CD	DRA, The War Office, UK
Maj	JMA	Hulsemann	HQ CBUE
Maj	SP	Hunter, CD	3 RCHA
Maj	W	Johnston, CD	AN/USD 501 Drone Trials, Yuma, Arizona
Maj	DW	Jordan, CD	HQ Alberta District
Maj	CA	Justice	BRIXMIS, HQ BAOR
Maj	MD	Kearney, CD	Director General Plans/Directorate of International Plans, CFHQ
Maj	EA	Keenan, CD	Central Ontario District
Maj	JC	Kennedy, CD	1 RCHA
Maj	TJT	Kennedy, CD	HQ Central Ontario District
Maj	E	Lasch, CD	Directorate of Armament Engineering Land, CFHQ
Maj	KD	Lavender, CD	AOP Troop, 1 RCHA
Maj	RV	Leamen, CD	CAFTT Tanzania (to Central Ontario District in May 67)
Maj	VJ	Legere, CD	CADEE
Maj	HF	Leggett, CD	HQ Northern Army Group
Maj	OJ	Lester, CD	Directorate of Land/Air Operational Research, CFHQ
Maj	WDW	Lewis, CD	Student, CASC
Maj	JM	Liston, CD	I Staff, Western Ontario District
Maj	DM	MacDonald, CD	HQ CCUNFICYP
Maj	LR	MacDonald, CD	Nova Scotia District
Maj	WA	MacIntosh	Directorate of Continental Plans, CFHQ
Maj	AGM	MacIsaac, CD	Directorate of Land Forces Operational Requirements (Land), CFHQ
Maj	JB	Mackay, CD	2 RCHA
Maj	EB	MacLatchy, CD	Directorate of Training, CFHQ
Maj	NM	MacLean, CD	Directorate of Integrated Defence Programme
Maj	RB	Mallory, CD	Experimental Army Signal Establishment,Carp
Maj	JL	Mantin, CD	CO 2 SSM Training Battery
Maj	H	Marston, CD	Deputy Secretary Defence Staff, CFHQ
Maj	EH	Martin, CD	Directorate Army Engineering Land, CFHQ
Maj	PB	Martin, CD	CDLS (Washington), Office of the Assistant Chief of Staff Intelligence, The Pentagon
Maj	FR	McCall, CD	Student, CFSC Toronto
Maj	JB	McCanse, CD	HQ Training Command
Maj	GA	McDonald, CD	AOP Troop, 2 RCHA
Maj	AWA	McDowell, CD	Royal Canadian School of Infantry
Maj	MA	McDowell, CD	Directorate of Officer Cadets, CFHQ
Maj	J	McGregor, CD	Eastern Ontario District
Maj	FE	McLean, CD	Experimental Army Signal Establishment, Carp
Maj	HA	McLellan, CD	Directorate of Land Forces Operational Readiness Training, CFHQ

Maj	JR	Milani, CD	HQ Saskatchewan District
Maj	AC	Moffat, CD	DS, CFSS Toronto
Maj	RF	Morrison, CD	CFB Shilo
Maj	EStJC	Murdock, MC	CFB Gagetown
Maj	TW	Musgrave, CD	HQ UNFICYP
Maj	CA	Namiesniowski, CD	2 RCHA
Maj	MT	O'Brennan, MC, CD	CFB Halifax
Maj	GNR	Olson, CD	CFB Shilo
Maj	AR	Pettigrew, CD	UNTSO (Palestine)
Maj	NM	Pettis, CD	1 RCHA
Maj	KS	Pickard, CD	CDLS (London), Tygroes, Wales
Maj	DG	Porter, CD	Directorate of Armament Engineering Land, CFHQ
Maj	PF	Pride, CD	New Brunswick/Prince Edward Island District
Maj	GR	Proulx, CD	HQ Eastern Quebec District
Maj	NE	Ramsey, CD	Directorate of Land Forces Operational Requirements (Air), CFHQ
Maj	WJ	Ready, CD	Directorate of Electrical Engineering Land, CFHQ
Maj	DJ	Redknap, CD	RCSA
Maj	JF	Reeves, CD	Directorate of Physical Education and Recreation, CFHQ
Maj	GH	Reid, CD	CFB Winnipeg
Maj	ME	Rich	HQ New Brunswick/Prince Edward Island District
Maj	JK	Robertson	Directorate of Electrical Engineering Land, CFHQ
Maj	JN	Robertson, CD	HQ Saskatchewan District
Maj	NA	Robertson, CD	CDLS (London)
Maj	WG	Robson, CD	Northern NORAD Region, North Bay
Maj	DI	Rodway, CD	CAFTT Ghana
Maj	RW	Roscoe, MC, CD	Directorate of Land Forces Operational Requirements (Land), CFHQ
Maj	L	Sanschagrin, CD	Civil Defence College, Arnprior
Maj	HD	Saxon	HQ Mobile Command
Maj	JM	Selman, CD	Student, CASC
Maj	CR	Simonds, CD	2 RCHA
Maj	JM	Skinner, CD	UNTSO (Palestine)
Maj	RD	Smyth, CD	Directorate of Armament Engineering Land, CFHQ
Maj	DD	Snow, CD	1 RCHA
Maj	A	Sosnkowski, CD	4 RCHA
Maj	IC	Stewart, CD	Canadian Liaison Officer, USAAMS, Fort Sill
Maj	HP	Stickley, CD	OC RCA Depot
Maj	WB	Stoddart, CD	Directorate of Land Forces Operational Requirements (Land), CFHQ
Maj	RAD	Stokes, CD	RCSA

Maj	RL	Strawbridge, CD	Director General Programmes, Directorate of Project Formulation and Management, CFHQ
Maj	JM	Sutherland, CD	HQ Central Ontario District
Maj	PJA	Tees, DFC, CD	CDLS (Washington)
Maj	JEY	Theriault, MC, CD	CADEE
Maj	BE	Thorsteinson, CD	CDLS (London)
Maj	WJ	Tippett, CD	Directorate of Armament Engineering Land, CFHQ
Maj	CA	Van Allen, CD	Vice Chief of the Defence Staff/Standardization, CFHQ
Maj	JAR	Vandal, CD	3 RCHA
Maj	GE	Walker, CD	Land Engineering Test Establishment, CFHQ
Maj	RK	Wallace, CD	Directorate of Electrical Engineering Land, CFHQ
Maj	JO	Ward, CD	CO 1 Locating Battery
Maj	BRH	Watch, CD	UNEF (Egypt) (to HQ Saskatchewan District in Jan 67)
Maj	CME	West, CD	HQ Newfoundland District
Maj	WJ	West, CD	HQ Mobile Command
Maj	JC	Whalley, CD	HQ Alberta District
Maj	ML	Williams, CD	UNTSO (Palestine)
Capt	EJ	Adams	RCSA
Capt	RI	Adams, CD	AOP Troop, 2 RCHA
Capt	PJ	Addis, CD	29 NORAD Air Division, Duluth
Capt	RF	Alessio, CD	AN/USD 501 Drone Trials, Yuma, Arizona
Capt	CF	Allen, CD	RSO, University of Western Ontario
Capt	PT	Alward, CD	Directorate of History, CFHQ
Capt	EH	Anderson, CD	2 RCHA
Capt	FK	Anderson, CD	HQ Training Command
Capt	RV	Armishaw, MBE	DPI, CFHQ
Capt	FC	Ayers	AOP Troop,4 RCHA
Capt	JJ	Baker	Directorate of Vehicle Field Engineering, CFHQ
Capt	P	Baldaro, CD	RCSA
Capt	ER	Barnes, CD	3 RCHA
Capt	NH	Barrett	HQ Training Command
Capt	DB	Bauerfind, CD	HQ New Brunswick/Prince Edward Island District
Capt	RP	Beaudry, CD	CASC
Capt	JC	Berezowski, CD	HQ Central Ontario District
Capt	MV	Bezeau	RSO, Carleton and Ottawa Universities
Capt	JGR	Bigras	I Staff Western Quebec District
Capt	JW	Bird	DS, RMC
Capt	JP	Bouvette	3 RCHA
Capt	SJ	Bowers, CD	Directorate of Ceremonial, CFHQ

Capt	GWR	Bowman, CD	HQ Training Command
Capt	FS	Brown	I Staff Western Ontario District
Capt	MC	Brown	2 RCHA
Capt	SA	Brown, CD	HQ British Columbia District
Capt	JE	Bulger	HQ UNFICYP
Capt	AF	Cameron, CD	Student, Royal Military College of Science, Shrivenham, UK (to CDLS (London) in Dec 66)
Capt	AW	Carnell	RCSA
Capt	RV	Carriere	1 RCHA
Capt	AJ	Casey	I Staff Saskatchewan District
Capt	GV	Cavey	3 RCHA
Capt	HF	Champion-Demers, CD	RCSA
Capt	WB	Cheadle, CD	3 RCHA
Capt	JP	Cheevers	Directorate of Armament Engineering Land, CFHQ
Capt	LJ	Chown, CD	Directorate of Armament Engineering Land, CFHQ
Capt	MF	Clark	1 RCHA
Capt	PW	Colbert, CD	HQ Training Command
Capt	DR	Copcutt, MBE, CD	Assistant Chief of Technical Services, CFHQ (specially employed)
Capt	VAA	Coroy	AOP Troop, 4 RCHA
Capt	JA	Crowder, CD	MCCD, Viet Nam
Capt	FA	Davies, CD	4 RCHA
Capt	HL	Davis	2 SSM Training Battery
Capt	WR	Dawes, CD	2 RCHA
Capt	GA	Decker	1 SSM Battery
Capt	RA	Diespecker, CD	UNEF (Egypt) (to HQ Training Command in Mar 67)
Capt	JT	Dolan, CD	1 Locating Battery
Capt	RR	Doyon	Student, CASC
Capt	WA	Emery	1 GM Brigade, Fort Bliss
Capt	TAD	Fetterly	1 SSM Battery
Capt	DC	Fitzgerald, CD	HQ 2 CIBG
Capt	JC	Fleming	2 RCHA
Capt	AR	Fowler, CD	HQ Nova Scotia District
Capt	JJ	Fraser	2 RCHA
Capt	GA	Gamblin, CD	HQ Nova Scotia District
Capt	IWC	Gibbons	4 RCHA
Capt	RG	Glover	HQ UNFICYP (to 4 RCHA in Feb 67)
Capt	H	Goertzen	Directorate of Electrical Engineering Land, CFHQ
Capt	GF	Gower	AOP Troop, 2 RCHA
Capt	PJ	Graves	HQ Newfoundland District

Capt	SD	Green	Adjutant 4 RCHA
Capt	LF	Greene, CD	RCSA
Capt	GM	Guy	Student, Staff College, Camberly, UK
Capt	RG	Hall, CD	HQ 4 CIBG
Capt	MJ	Harmston	Directorate of Land Forces Operational Readiness Training, CFHQ
Capt	AV	Harris	HQ Manitoba District
Capt	DB	Harrison	CFB Shilo (to UNEF in Mar 67)
Capt	JR	Hartlen	I Staff New Brunswick/Prince Edward Island District
Capt	FC	Haynes	AOP Tp,4 RCHA
Capt	WB	Helman, CD	Director General Programmes, CFHQ
Capt	JD	Hetherington, CD	HQ British Columbia District
Capt	WC	Higgins	Directorate of Development Programme Co-ordination, CFHQ
Capt	WM	Hill, CD	CASC
Capt	GR	Hirter	PA to Chief of Personnel, CFHQ
Capt	JM	Hoffman	HQ 1 CIBG
Capt	JE	Howes	1 RCHA
Capt	RR	Howsam, CD	Land Engineering Test Establishment, CFHQ
Capt	NF	Hull	DS, Royal Roads
Capt	FC	Hummel, CD	RCSA
Capt	RG	Hurley	AN/USD 501 Drone Trials, Yuma, Arizona
Capt	JR	Hutchison, CD	I Staff Eastern Ontario District
Capt	RY	Hutton, CD	Directorate of Operations, CFHQ
Capt	DGH	Hyman	ADC to the Governor General
Capt	RK	James	3 RCHA
Capt	NW	Johnstone	4 RCHA
Capt	FAW	Jurgensen, CD	4 RCHA
Capt	JM	Kavanagh	2 RCHA
Capt	LC	Kempffer, CD	RCSA
Capt	DJ	Ker-Hornell, CD	HQ Central Ontario District
Capt	GD	Kerr	2 RCHA
Capt	JS	Klenavic	Directorate of Information Services/FLO, CFHQ
Capt	ST	Klubi, CD	I Staff Alberta District
Capt	JRA	Lecavalier	DS, RMC (to 1 RCHA in Jan 67)
Capt	SW	Lobban, CD	RCSA
Capt	G	Logan	Adjutant 3 RCHA
Capt	RJ	Lovell	102 KU, CFB Trenton
Capt	JM	MacFie, CD	CJATC
Capt	JG	MacGregor	AOP Tp,2 RCHA (to 1 RCHA in Jan 67)

Capt	JA	MacInnis	1 RCHA
Capt	HK	MacKinnon	Directorate of Armament Engineering Land, CFHQ
Capt	AA	MacLeod	I Staff British Columbia District
Capt	WR	MacNeil	1 RCHA
Capt	JOA	Maher	RCSA
Capt	R	Malcolm	RCSA
Capt	JAG	Marceau	AOP Tp, 1 RCHA
Capt	GN	Mastine, CD	Artillery Section, HQ Mobile Command
Capt	RB	May, CD	RCSA
Capt	RA	McClenahan, CD	HQ Central Ontario District
Capt	JP	McConville, CD	RCSA
Capt	JE	McCorkell, ED	Directorate of Armament Engineering Land, CFHQ
Capt	DB	McGibbon	GMSO Course, Fort Bliss
Capt	RW	McKinlay	CFRC Ottawa
Capt	RL	McLellan, CD	DPI, CFHQ
Capt	WE	McLeod	Student, Royal Military College of Science, Shrivenham, UK (to 1 RCHA in Jan 67)
Capt	AD	McMillan	HQ Training Command
Capt	LH	McMorran, CD	AOP Tp, 1 RCHA (to 2 RCHA in Jan 67)
Capt	KL	Miller	CFB Chilliwack
Capt	CI	Moggridge	3 RCHA
Capt	CA	Moogk	1 SSM Battery
Capt	SR	Moore, CD	Directorate of Postings and Careers Army (RCA), CFHQ
Capt	GL	Mosley, CD	Directorate of Integrated Defence Programme, CFHQ
Capt	JEA	Mosley, CD	Directorate of Personnel Legal Services, CFHQ
Capt	N	Mulikow, CD	AOP Troop, 3 RCHA
Capt	GR	Mummery	Director General Personnel Plans and Requirements, CFHQ
Capt	AW	Nethercott, CD	HQ Western Ontario District
Capt	AF	Ouellette, CD	RCA Depot
Capt	CMJ	Pachal, CD	29 NORAD Region, Duluth
Capt	CEdeL	Panet, CD	AOP Troop, 3 RCHA
Capt	GBC	Parenteau, CD	Student, CFSC Toronto
Capt	JA	Parnham, CD	HQ Mobile Command
Capt	RE	Peterson, CD	Director General Centennial, CFHQ
Capt	JC	Piasetzki, CD	DRB
Capt	M	Pisnook	I Staff Western Ontario District
Capt	MAS	Pittman	HQ Central Ontario District
Capt	N	Plishka, CD	HQ 3 CIBG
Capt	JA	Poh	1 Locating Battery

Capt	HT	Posten, CD	Adjutant, CFHQ Administrative Unit
Capt	G	Prior, CD	Assistant Secretary Defence Staff (Graphic Arts), CFHQ
Capt	GDL	Protz	Northern NORAD Region, North Bay
Capt	WJ	Quinn, CD	25 NORAD Region, Tacoma
Capt	LG	Ramsey	Directorate of Armament Engineering Land, CFHQ
Capt	EW	Rance, CD	Seconded to the National Research Council
Capt	CHG	Reid, CD	CFB Calgary
Capt	WB	Rendell, CD	HQ Newfoundland District
Capt	JH	Rennie	RCSA
Capt	TE	Roberts, CD	20 NORAD Region, Kansas City
Capt	LH	Robitaille	Directorate of Electrical Engineering Land, CFHQ
Capt	TAW	Robson	Central Ontario District
Capt	FR	Rockhill, CD	CADEE
Capt	DE	Rousseau, CD	2 RCHA
Capt	RDC	Rowdon	CFB Gagetown
Capt	GEM	Ruffee, MC, CD	25 NORAD Region, Tacoma
Capt	JH	Ryan	DPI, CFHQ
Capt	MJ	Sadler, CD	Exchange Officer, 3 RHA
Capt	JK	Sangster, CD	HQ Saskatchewan District
Capt	EL	Schrader	1 RCHA
Capt	WM	Scott	HQ Training Command
Capt	FE	Seely	RCSA
Capt	HE	Senior, CD	CFB Petawawa
Capt	JD	Shaver	Director General Management Engineering and Automation, CFHQ
Capt	GM	Shellard, CD	I Staff New Brunswick/Prince Edward Island District
Capt	P	Sherrick	CFB Shilo
Capt	M	Shewchuck	I Staff Central Ontario District
Capt	JFLP	Simard, CD	CFB Petawawa
Capt	KA	Smee	DS, RMC
Capt	AHC	Smith	Adjutant, RCSA
Capt	HK	Smith	Directorate of Clothing General Engineering, CFHQ
Capt	MW	Smith	CADEE
Capt	SM	Smith	Directorate of Recruiting, CFHQ
Capt	WL	Smith	CFRC Vancouver
Capt	JS	Soutter, CD	HQ New Brunswick/Prince Edward Island District
Capt	JA	St Louis	I Staff Eastern Quebec District
Capt	HJ	Stein	HQ Mobile Command
Capt	RG	Stewart, CD	1 RCHA

Capt	DE	Stothers, CD	Chief of Technical Services/DESE, CFHQ
Capt	RW	Strickland	Student, Staff College, Camberly, UK (to 2 RCHA in Jan 67)
Capt	JJG	Tanguay, CD	3 RCHA
Capt	JER	Tattersall	2 RCHA
Capt	LU	Thibedeau	CO Training and Liaison Flight, CFHQ
Capt	HD	Thompson	HQ 1 (BR) Division (to 4 RCHA in Jan 67)
Capt	RV	Thompson	Student, CASC
Capt	FMS	Thorpe, CD	CFRC Ottawa
Capt	WT	Thorpe	Directorate of Electrical Engineering Land, CFHQ
Capt	VA	Troop	2 RCHA
Capt	CH	Van Aggelen, MM, CD	1 SSM Battery
Capt	HR	Vye, CD	CADEE
Capt	D	Walker	Directorate of Electrical Engineering Land, CFHQ
Capt	TJ	Walsh	Adjutant 2 RCHA
Capt	DJ	Walters	Student,CASC
Capt	GG	Ward, MC	HQ Eastern Ontario District
Capt	JAS	Watts	Deputy Chief Reserves/Cadets, CFHQ
Capt	AR	Weeks, CD	HQ Alberta District
Capt	DW	Wellsman, CD	Student, CASC
Capt	LE	West, CD	Student, CFSC Toronto
Capt	GL	Wetherup, CD	29 NORAD Region, Kansas City
Capt	DI	Whalen, CD	RCSA
Capt	ET	Whalen, CD	AOP Troop, 3 RCHA
Capt	HR	Wheatley	1 RCHA
Capt	T	Wheeler	Student, CASC
Capt	PA	White, CD	HQ Eastern Ontario District
Capt	JR	Wilson, CD	HQ CBUE
Capt	WMJ	Wolfe, CD	RCSA
Capt	JF	Woodley, CD	RCSA
Capt	CE	Wormell, CD	Directorate General Engineering Land, CFHQ
Capt	NA	Wright	Directorate General Engineering Land, CFHQ
Capt	WF	Wright	AOP Troop, 1 RCHA
Capt	GL	Younger-Lewis	Directorate of Land Forces Operational Requirements (Air), CFHQ
Capt	AM	Zamoyski, CD	1 SSM Battery
Capt	WL	Zawyrucha	2 RCHA
Lt	LC	Adkins	1 Locating Battery
Lt	CJLH	Archambault	1 RCHA
Lt	TH	Argue	I Staff Manitoba District

Lt	RB	Armstrong	1 RCHA
Lt	RL	Armstrong	2 RCHA
Lt	RJ	Beardmore	2 RCHA
Lt	DJ	Beatty	1 SSM Battery
Lt	KL	Bennett	1 RCHA
Lt	EB	Beno	1 RCHA
Lt	ICM	Belton	4 RCHA
Lt	DB	Bianco	RCSA
Lt	GA	Birch	4 RCHA
Lt	RJ	Bird	RCSA
Lt	RW	Boadway	Oxford University (Rhodes scholar)
Lt	JNGG	Boudreau	2 RCHA
Lt	ABC	Bowles	4 RCHA
Lt	RC	Bowles	1 SSM Battery
Lt	LA	Branum	1 SSM Battery
Lt	JJ	Brotherton	CFRC Kingston
Lt	DH	Brown	1 RCHA
Lt	TE	Brewster	1 RCHA
Lt	JEF	Bryce	1 SSM Battery
Lt	KR	Bruce	4 RCHA
Lt	CS	Cant	3 RCHA
Lt	AP	Carroll	3 RCHA
Lt	RA	Cathcart	1 RCHA
Lt	RJ	Chamberlain	RCSA
Lt	JP	Chartres	3 RCHA
Lt	RW	Chaulk	2 SSM Training Battery
Lt	JD	Chown, CD	RCSA
Lt	SA	Colburne	1 RCHA
Lt	NH	Connolly	2 RCHA
Lt	GR	Conway	I Staff Central Ontario District
Lt	AK	Court	1 RCHA
Lt	LWF	Cuppens	2 RCHA
Lt	CP	Czartoryski	1 Locating Battery
Lt	JA	Davidson	4 RCHA
Lt	JP	Davies	CFRC London
Lt	JA	Dorman	2 RCHA
Lt	HC	Ellery	3 RCHA
Lt	DA	Elrick	1 RCHA

Lt	RG	Elrick	1 Locating Battery
Lt	BG	Earl	4 RCHA
Lt	FG	Earl	Northern NORAD Region, North Bay
Lt	DB	Fenny	3 RCHA
Lt	DR	Ferguson	4 RCHA
Lt	H	Finestone	RCSA
Lt	PW	Forsberg	RCSA
Lt	FL	Furness	CF/PARU Toronto
Lt	WE	Gordon	1 SSM Battery
Lt	WD	Gowanlock	3 RCHA
Lt	BM	Grace	Student, University of Toronto
Lt	OL	Greenizan	1 SSM Battery
Lt	DA	Greensides	R 22eR Depot (French language course)
Lt	LL	Greig	DS, Royal Roads
Lt	DA	Gronbeck-Jones	Adjutant, 1 RCHA
Lt	WH	Groom	Northern NORAD Region,North Bay
Lt	JHAJ	Groulx	3 RCHA
Lt	TH	Guiler	2 RCHA
Lt	CO	Gustafson	1 RCHA
Lt	RW	Haig	3 RCHA
Lt	MN	Hargest	CFB Shilo
Lt	EC	Hauge	3 RCHA
Lt	JE	Hawthorne	1 SSM Battery
Lt	DW	Hawthorne	1 SSM Battery
Lt	MW	Hewes	2 RCHA
Lt	RP	Hill	RCSA
Lt	JK	Hilton	3 RCHA
Lt	DR	Hopper	4 RCHA
Lt	AK	Howie	I Staff Manitoba District
Lt	RA	Hosegood	3 RCHA
Lt	EA	Hynes	AN/USD 501 Drone Trials, Yuma, Arizona
Lt	RM	Hyslop	1 SSM Battery
Lt	TT	Itani	3 RCHA
Lt	GF	Ireland	2 RCHA
Lt	WR	Johnston	1 Locating Battery
Lt	GH	Jussup	CADEE
Lt	WF	Kirk	DPI Mob Sec, CFHQ
Lt	CD	Knight	GMSO Course, Fort Bliss

Lt	MA	Kryzanowski	2 RCHA
Lt	AM	Lacey	2 RCHA
Lt	FK	Laforge	1 RCHA
Lt	GB	Larson	3 RCHA
Lt	PR	Learmonth	4 RCHA
Lt	RE	Letts	3 RCHA
Lt	DA	Lockridge	CFRC Toronto
Lt	JA	Lowe	Training and Liaison Flight, CFHQ
Lt	RJ	Lucas	3 RCHA
Lt	MJ	Mac Donald	2 SSM Training Battery
Lt	JM	Mac Innes	2 RCHA
Lt	MD	Mahar	2 RCHA
Lt	CW	Marmo	Directorate of Intelligence Production, CFHQ
Lt	BTN	McGrath	1 RCHA
Lt	JA	McKay	1 Locating Battery
Lt	L	McKinnon	Directorate of Armament Engineering Land, CFHQ
Lt	WL	McMullen	2 RCHA
Lt	MW	McQuinn	3 RCHA
Lt	CJ	Mialkowski	HQ Mobile Command
Lt	DG	Miller	CADEE
Lt	AG	Mills	RCSA
Lt	LTB	Mintz	1 RCHA
Lt	RD	Moon	4 RCHA
Lt	JW	Mortlock	4 RCHA
Lt	JDE	Niles	2 RCHA
Lt	RL	O'Banion	CFRC Hamilton
Lt	GJ	Oehring	2 RCHA
Lt	GW	Oliver	HQ 3 CIBG
Lt	JW	Owen, CD	I Staff Eastern Ontario District
Lt	RC	Pachal	3 RCHA
Lt	AZ	Palmer	2 RCHA
Lt	WL	Pender	4 RCHA
Lt	JR	Pleasance	4 RCHA
Lt	MEAR	Poirier	CFRC, Quebec City
Lt	CD	Pollard	3 RCHA
Lt	WF	Pollock	CJATC
Lt	TG	Power	I Staff Central Ontario District
Lt	BA	Reid	HQ 4 CIBG

Lt	SJ	Reid	4 RCHA
Lt	DM	Robb	1 RCHA
Lt	DR	Robertson	RCSA
Lt	RB	Rogers	CJATC
Lt	JA	Roszell	3 RCHA
Lt	JGVN	Rouleau	RCSA
Lt	RA	Salisbury	2 RCHA
Lt	GH	Sawatzki	RCSA
Lt	DG	Schott	RCSA
Lt	GDC	Scott	1 Locating Battery
Lt	GR	Smith	1 Locating Battery
Lt	TAB	Sparling	4 RCHA
Lt	A	Spooner	DGGE, CFHQ
Lt	WA	Stenton	I Staff Eastern Ontario District
Lt	JB	Stephens	RCSA
Lt	AG	Stoddard	Directorate of Personnel Requirements Control, CFHQ
Lt	KG	Stowell	3 RCHA
Lt	SS	Takahashi	2 RCHA
Lt	RG	Tomason	2 RCHA
Lt	PJ	Tomashewski	1 RCHA
Lt	TR	Toogood	1 RCHA
Lt	GE	Trainor	RCSA
Lt	RS	Usher	Directorate of Land/Air Operational Research, CFHQ
Lt	KD	Varey	2 SSM Training Battery
Lt	HA	Walinsky	1 SSM Battery
Lt	GM	Walker	3 RCHA
Lt	WJM	Walsh	2 SSM Training Battery
Lt	DB	Walton	2 RCHA
Lt	GP	Wanhella	2 RCHA
Lt	RB	Wark	3 RCHA
Lt	WR	Watling	2 SSM Training Battery
Lt	AR	Wignall	CFRC Winnipeg
Lt	AJ	Wilson	2 RCHA
Lt	DS	Wilson	4 RCHA
2Lt	MF	Burns	3 RCHA
2Lt	JF	Bryan	3 RCHA
2Lt	A	Cunniff	3 RCHA
2Lt	HRJ	Eamor	4 RCHA

2Lt	MD	Elkins	1 RCHA
2Lt	AG	Gallant	1 RCHA
2Lt	GA	Gallop	1 RCHA
2Lt	FH	Hansford	4 RCHA
2Lt	RP	Hitchman	3 RCHA
2Lt	JB	Lapointe	1 RCHA
2Lt	BM	Lees	4 RCHA
2Lt	RJ	Lees	1 RCHA
2Lt	DG	Miller	1 RCHA
2Lt	JW	Nixon	3 RCHA
2Lt	RJM	Selman	4 RCHA
2Lt	MR	Wilson	3 RCHA
2Lt	RS	Wilson	1 RCHA

WARRANT OFFICERS' LOCATION LIST

(As of 1 November 1966)

WO 1	JFW	Barham, CD	CADEE
Mr Gnr (WO 1)	LF	Binkley, CD	RCSA
WO 1	RN	Blades, CD	I Staff British Columbia District
Mr Gnr (WO 1)	AJ	Brim, CD	Assistant Director General Engineering Land, CFHQ
WO 1	WT	Chilton	HQ Manitoba District
WO 1	HA	Clarke, CD	I Staff Eastern Ontario District
Mr Gnr (WO 1)	FP	Collins	Assistant Director General Engineering Land, CFHQ
Mr Gnr (WO 1)	RL	Cull	Assistant Director General Engineering Land, CFHQ
WO 1	J	Davies	RCA Band
WO 1	JO	Dube, CD	RCSA
Mr Gnr (WO 1)	MJ	Fraser	HQ Mobile Command
WO 1	GA	Griffiths	CFB Petawawa
WO 1	RF	Hanlon	I Staff Western Ontario District
WO 1	SR	Holtom, CD	I Staff New Brunswick/Prince Edward Island District
WO 1	FG	Hooper, CD	CADEE
WO 1	DL	Hughes, CD	RCSA
WO 1	G	Jackson, CD	I Staff Nova Scotia District
WO 1	R	Jackson, CD	CFB Edmonton
WO 1	JJ	Klenavic, CD	I Staff Central Ontario District
WO 1	JA	Kolmer, CD	CADEE
WO 1	EC	Lemaire	I Staff Central Ontario District
WO 1	GN	Malcolm	3 RCHA

Mr Gnr (WO 1)	GW	Miller, CD	CADEE
Mr Gnr (WO 1)	DA	Moreside, CD	CADEE
Mr Gnr (WO 1)	RD	Nickerson, EM, CD	Directorate of Electrical Engineering Land, CFHQ
WO 1	A	North	RCHA Band
Mr Gnr (WO 1)	HN	Osgood	RCSA
WO 1	JS	Richmond, CD	4 RCHA
WO 1	JG	Stevens, CD	RCSA
Mr Gnr (WO 1)	KG	Stinson, CD	Assistant Director General Engineering Land, CFHQ
Mr Gnr (WO 1)	RG	Sutherland	Directorate of Construction Engineering Requirements, CFHQ
WO 1	R	Syrette, CD	2 RCHA
WO 1	E	Tremblay	I Staff Western Quebec District
WO 1	LJ	Vallee, MM, CD	I Staff Manitoba District
WO 1	RA	Vidler, CD	1 RCHA
WO 1	DA	Waite	DPCP, CFHQ
Mr Gnr (WO 1)	LE	Walker	Assistant Director General Engineering Land, CFHQ
WO 1	FD	West	CFB Gagetown
Mr Gnr (WO 1)	DE	Williams	Director General Engineering Land, CFHQ (to CADEE in Jan 67)
WO 1	PA	Winter	RCSA
WO 1	SG	Witt	I Staff Saskatchewan District
WO 1	FC	Wood	I Staff Alberta District
WO 2	JP	Abbott, CD	CFB Shilo
WO 2	GS	Armstrong, CD	2 RCHA
WO 2	FA	Barnard, CD	Saskatchewan District
WO 2	CG	Barnhart, CD	2 SSM Training Battery
WO 2	JPA	Begin, CD	I Staff Eastern Quebec District
WO 2	ER	Bell, CD	2 RCHA
WO 2	DD	Bittle, CD	Master Gunner Course RCSA
WO 2	EJJ	Blackwell, CD	I Staff Western Ontario District
WO 2	JE	Boyle	4 RCHA
WO 2	AF	Brown, CD	2 RCHA
WO 2	EA	Brown, CD	Experimental Army Signal Establishment, Carp
WO 2	RB	Byer, CD	1 SSM Training Battery
WO 2	KA	Cameron, CD	2 RCHA
WO 2	TH	Campbell, CD	AN/USD 501 Drone Trials, Yuma, Arizona
WO 2	JA	Charles, CD	I Staff Central Ontario District
WO 2	HJ	Cheverie, CD	RCSA
WO 2	LH	Clarke	Director General Engineering Land, CFHQ
WO 2	PD	Cloutier	2 SSM Training Battery

WO 2	EF	Cobham, CD	1 RCHA
WO 2	E	Cole, CD	1 RCHA
WO 2	W	Conway, CD	1 RCHA
WO 2	MJ	Cove, CD	2 RCHA
WO 2	DJ	Crawford, CD	Master Gunner Course RCSA
WO 2	WR	Dafoe, CD	4 RCHA
WO 2	WD	Darling, CD	1 Locating Battery
WO 2	AD	Derbyshire, CD	Master Gunner Course RCSA
WO 2	F	Dinner	Directorate of Land/Air Operational Requirements, CFHQ
WO 2	JW	Donnelly	Eastern Ontario District
WO 2	EM	Evoy, MM, CD	Master Gunner Course RCSA
WO 2	AE	Farewell, CD	British Columbia District
WO 2	RJ	Fenske, MM, CD	RCSA
WO 2	MW	Fleet, CD	1 RCHA
WO 2	FJ	Forsyth, CD	Master Gunner Course RCSA
WO 2	LE	Gargan	I Staff New Brunswick/Prince Edward Island District
WO 2	WE	Grover, CD	Master Gunner Course RCSA
WO 2	RW	Hallam, CD	3 RCHA
WO 2	C	Harrup, CD	Experimental Army Signal Establishment, Carp
WO 2	RT	Hibbet, CD	2 RCHA (to USAADS in Dec 66)
WO 2	CE	Hicks, CD	RCSA
Mr Gnr (WO 2)	FG	Hiltz, CD	Director General Engineering Land, CFHQ
WO 2	T	Holodiwsky, CD	Master Gunner Course RCSA
WO 2	RR	Hooper, CD	RCSA
WO 2	K	Hubbard	1 RCHA
WO 2	CK	Jenkins, CD	Master Gunner Course RCSA
WO 2	BE	Johnson	1 RCHA
WO 2	RM	Johnson, CD	Directorate of Electronic Engineering, CFHQ
WO 2	FE	Johnston, CD	USAADS Fort Bliss
WO 2	CT	Kirbyson, CD	1 RCHA
WO 2	L	Lacharity, CD	RCSA
WO 2	DM	Larkin, CD	3 RCHA
WO 2	TL	Larkin	1 Locating Battery
WO 2	SWJ	Lentle	1 RCHA
WO 2	FJ	MacDonald	3 RCHA
WO 2	KC	MacDonald, CD	1 RCHA
WO 2	MN	MacDonald, CD	1 RCHA
WO 2	RO	Marcum, CD	1 RCHA
WO 2	CB	McBay	1 Locating Battery

WO 2	JE	McCabe, CD	RCSA
WO 2	BR	McMillan	RCSA
WO 2	WC	McNeil	CFB Shilo
WO 2	AJ	Mulherin, CD	I Staff Central Ontario District
WO 2	LJ	Nesdoly, CD	1 Locating Battery
WO 2	TW	Niles, CD	4 RCHA
WO 2	JCW	Parsons	RCSA
WO 2	RL	Patrick, CD	Master Gunner Course RCSA
WO 2	WD	Paxton, CD	RCHA Band
WO 2	SR	Payne	3 RCHA (deceased 4 Dec 66)
WO 2	AL	Pederson, CD	Western Ontario District
WO 2	CS	Phillips	Assistant Director General Engineering Land, CFHQ
WO 2	MMP	Pinaud, CD	3 RCHA
WO 2	RG	Pyke, CD	Master Gunner Course RCSA
WO 2	RMI	Rhyno, CD	Master Gunner Course RCSA
WO 2	M	Romanchuk, CD	3 RCHA
WO 2	EW	Rounds	RCSA
WO 2	NJE	Schafer, CD	3 RCHA
WO 2	WA	Screaton, CD	CFB Toronto
WO 2	J	Scully	3 RCHA
Mr Gnr (WO 2)	AR	Smith	DLAOR, CFHQ (Retires in Dec 66)
Mr Gnr (WO 2)	W	Sonnenberg	RCSA
WO 2	RH	Speare, CD	RCSA
WO 2	NH	Stammers, CD	CAFTT Tanzania
WO 2	HG	Stein, CD	1 SSM Battery
Mr Gnr (WO 2)	W	Stephenson, CD	Director General Engineering Land, CFHQ
WO 2	A	Sterritt	4 RCHA
WO 2	HR	Steward	RCSA
WO 2	DC	Thomas	2 SSM Training Battery
WO 2	RL	Thompson, CD	3 RCHA
WO 2	WE	Tripp	Director General Engineering Land, CFHQ
WO 2	GE	Tweedy, CD	1 RCHA
WO 2	GH	Wade, CD	AN/USD 501 Drone Trials, Yuma, Arizona
WO 2	BB	Walker, CD	2 RCHA
WO 2	FH	Walsh, CD	1 SSM Battery
WO 2	HC	Wambolt, CD	RCA Band
WO 2	CF	Watson, CD	Director General Plans, CFHQ
WO 2	EE	Wells, CD	1 RCHA
WO 2	SG	Williams	I Staff Eastern Ontario District
WO 2	SG	Wilt	1 SSM Battery
WO 2	VW	Zaharychuk	Master Gunner Course RCSA
WO 2	ER	Zecca, CD	4 RCHA

Vari-typed at the
Royal Canadian School of Artillery
by
Mrs Jean Shand and Mrs Linda Moore