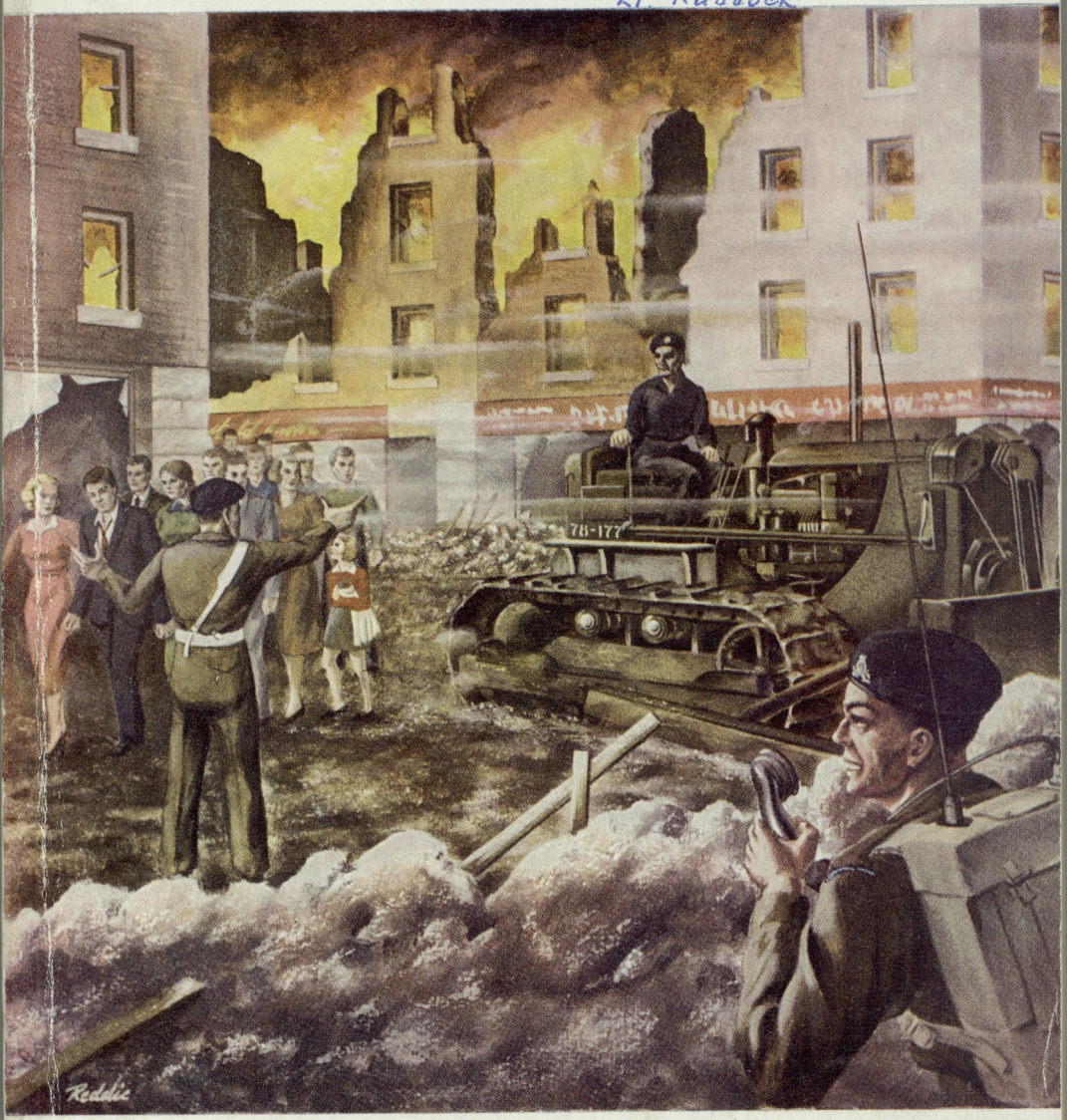
Canadian ARMY Journal

Lt. Ruddock



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CANADIAN ARMY JOURNAL

The aim of the Canadian Army Journal, which is published quarterly by the Directorate of Military Training under authority of the Chief of the General Staff, is to provide officers of the Canadian Army with information designed to keep them abreast of current military trends, and to stimulate interest in military affairs. The views expressed by authors are not necessarily those of the Department of National Defence.

CONTENTS

WINNERS ARE ANNOUNCED IN PRIZE ESSAY COMPETITION

The Conference of Defence Associations have announced the first and second prize winners in their 1957 Prize Essay Competition for cash awards of $200.00 and $100.00, respectively. Details of the contest were published in the April and July 1957 issues of the Canadian Army Journal.

Winner of the first prize is Major W. H. Pope, MC, CD, of the Royal Canadian Infantry Corps, who is GSO 2 at Headquarters Eastern Quebec Area, Quebec City.

The second prize has been won by Major J. C. Morrison of the Royal Regiment of Canadian Artillery, who is employed in the Military Section, Cabinet Secretariat, Parliament Buildings, Ottawa.

The subject of the 1957 Competition was:

"Eminent authorities have suggested that the three fighting services can be replaced by a single unified fighting service. Discuss the desirability of such unification. What do you think should be the preliminary phases in this conversion?"

With the exception of one entrant who is a member of the Canadian Army (Militia), all essays were contributed by officers of the Regular force.

The aim of this annual Competition is to stimulate interest and to encourage original thought and good writing on military topics of general interest.

The contest is open to officers of the Canadian Army (Regular and Militia), Canadian Army Supplementary Reserve and Officer Cadets of the Tri-Service Colleges and the Canadian Officers' Training Corps.

Initial judging in the Competition, which was instituted in 1956, was done by a Board of Officers named by the Director of Military Training at Army Headquarters. The final judging to select the two prize winners was done by the Conference of Defence Associations.

Authorship of the entries remained strictly anonymous during the judging.

Executive members of the Conference of the Defence Associations who have played an important

THE CENTREPIECE — A STUDY OF NUCLEAR WARFARE

By

COLONEL A. J. B. BAILEY, DSO, OBE, ED, CHIEF OF STAFF, HEADQUARTERS, WESTERN COMMAND, EDMONTON, ALTA.

This study* deals with tactical nuclear warfare; it does not concern itself with the strategic intercontinental nuclear duel. Whether these two phases of nuclear warfare will ever be completely divorced cannot, of course, be forecast, but it does seem possible that warfare in which tactical nuclear weapons only are employed may occur: in "small wars", purposely kept outside the confines of the major powers, or as a prelude to or an aftermath of the strategical nuclear holocaust. In any event if seems appropriate to consider tactical nuclear warfare as a separate study.

Tactical nuclear warfare will be fought by formations of infantry, armour and artillery, the latter of which will include the nuclear delivery systems and their warheads. The delivery systems may be organic to the ground force formations or they may be attached for specific operations, but the warheads, which are the tactical nuclear weapons, will be allotted under strict control according to their availability and to the importance of their immediate employment.

The term "tactical nuclear weapon" is, itself, difficult to define precisely since there is no clear division between the various yields of warheads, relative to their employment on the battlefield. A definition which suits this study,

* *This article should be read in conjunction with two previous articles by the same author which were published in the* Journal: *"Guns and Guided Missiles" (April 1955), and "The Age of Nuclear Gunners" (July 1957).*—Editor.

Prize Essay Competition

(Continued from preceding page)

part in the sponsorhip of this Competition, and who made the final selections, are Brigadier R. J. Leach, MC, Honorary Secretary-Treasurer, and Brigadier A. W. Beament, CBE, VD, CD, and Lieut.-Colonel W. F. Hadley, ED, CD, both past presidents.

Details of the 1958 Prize Essay Competition will be published in the July 1958 issue of the *Journal*. The winning essay in the 1957 contest will also appear in the July number.

however, is that a tactical nuclear weapon is one which can be employed with safety in proximity to friendly forces; "proximity", in this sense, being the distance between the centre of the target and the foremost friendly forces—a distance which must be traversed quickly by friendly forces moving up to take advantage of the nuclear effects upon the enemy. Because this critical distance must be kept to a minimum, the yield of the warhead which it is safe to employ is limited by the mobility of the friendly forces; this, in turn, may limit the size of the nuclear delivery system and increase its mobility.

The formations of all arms, formed into battle teams of various sizes, will comprise the bulk of the field army on the battlefield, but the centrepiece, and the most important element, will be the nuclear delivery system and its warheads. Around the delivery system will revolve all other elements of the ground forces, for they exist solely to protect it and to manœuvre the enemy into a nuclear killing ground where the warheads can be employed to the best advantage. This is a logical outcome of the development of tactics, since a nuclear weapon of even the smallest yield has latent destructive power equivalent to a large force of infantry, armour and artillery; and this destructive power must be husbanded so as to be employed with battle winning effectiveness at the critical time and place.

The delivery system may be a gun, a rocket or a guided missile which, with its warheads, constitutes the most powerful element in the hands of a commander. He must ensure that the delivery system and its warheads are protected and concealed; that they are positioned within range of his probable targets; and that they are employed when he is certain that a suitable target has been presented.

The absolute protection of the delivery system and its warheads is vital. Close protection is required to deny enemy reconnaissance of the assembly areas and launching sites by ground and by air, and to prevent penetration by patrols. Penetration by a small fighting patrol, for instance, for the purpose of destroying some or all of the delivery system and/or its warheads, would be a venture the value of which would be out of all proportion to the effort expended by the enemy. For the loss of a few men, the potential of a large battle group of all arms could be destroyed by detonating only one small warhead.

In arranging the close ground protection of the delivery system site the commander will be re-

quired to allot a proportion of his battle team strength, sufficient to achieve the aims outlined above. In an Honest John type field artillery rocket system, for instance, the force required might be as much as a battalion-size group of all arms deployed around the perimeter in a defensive position, complete with patrols, mines and wire. The battle group must also be sufficiently mobile and have sufficient reconnaissance elements to ensure protection when the delivery system is on the move in the advance or the withdrawal.

Close air protection, both against direct attack aircraft and missiles and against airborne reconnaissance, must be arranged with a fast firing, accurate and mobile light anti-aircraft gun or rocket or a small surface-to-air guided missile. This would be point defence of a vital area in its most important sense.

Concealment is a further very important aspect of close protection. By the cunning use of dummy and alternative positions; by cautious movement when visibility is poor; and by confusing ground surveillance radar by electronic counter measures and other means, the delivery system will have some chance of avoiding detection before it is required to be active. Having become active, the requirement will be immediate re-deployment to a previously selected and reconnoitred position. Effective concealment will require a most imaginative plan and absolute adherence to it.

The above concerns the close protection of the delivery system and its warheads; the real protection of both will be provided by the battle teams and air defence systems in the forward areas. Battle teams in contact with the enemy will defend, attack, withdraw, counter-attack and advance in tactical manœuvres which are designed to force the enemy to present a suitable nuclear target. Elements of the battle teams will be dispersed at greater distance than heretofore in order to avoid becoming nuclear targets themselves, but dispersion will not be so great as to allow the enemy to advance upon the delivery system undetected and unopposed. Every manœuvre of the battle teams in the forward areas will be directed towards securing the area of the delivery system and its warheads and to setting up the enemy as a suitable target for the employment of a nuclear weapon. As before, the initiative must rest in our hands; if we begin to conform to the enemy's desire, the opportunity to employ our nuclear resources effectively will never be presented.

The air defence systems required

to provide long-range protection of the delivery systems and their warheads will be part of an over-all air defence plan for the army area and will comprise radar for detection of approaching aircraft and missiles, and surface-to-air missiles for the destruction of these airborne carriers. The most dangerous elements are the airborne reconnaissance vehicles, whether they be aircraft or missiles. These must be destroyed before they can investigate the areas in which the delivery systems are deployed because even the best concealment and deception plans can be defeated by powerful long range infra-red cameras.

Having ensured the protection of his nuclear weapon, the commander must plan its employment; and the most vital factor in this problem is to make certain that the delivery system is positioned so as to be within range of the targets he desires to engage. This problem is similar to that of all field artillery commanders, but is slightly more complex, partly because of the relatively short maximum range of some of the delivery systems and partly because of the intricate and time-consuming electronic check-outs which have to be applied to the delivery system and its carrier before launching.

An Honest John rocket system, for instance, has a maximum range of some seventeen miles. Thus the launching sites for the rockets must be positioned not more, and probably less, than ten miles from the forward troops so as to ensure sufficient usable range in enemy-held territory. The actual launcher is relatively small and quite mobile and is, therefore, not difficult to conceal and to move quickly into its launching position. There are other elements of the Honest John system, however, which are more difficult to move and to conceal in the forward areas; for example, the assembly areas where the three portions of the rocket are brought together. Of the other delivery systems now in existence, some have shorter maximum ranges but are less mobile and some have longer maximum ranges. Some newer systems will be smaller and more mobile for equivalent maximum ranges.

There would be no point in securing the delivery system and its warheads or in positioning them in an ideal location, if the warhead could not be used; the problem here is to find and fix a suitable nuclear target. In making his decision to employ a nuclear weapon, a commander will be influenced by such factors as the importance of the target to his own operations, the availability of delivery systems

and the supply of warheads, the safety of any friendly troops in proximity to the target and the time available and required to commit the weapon.

In the main a suitable nuclear target will be made, not found, because the enemy will be just as keen to avoid presenting a target as we are. Some targets will be found by ground and air reconnaissance but most targets will be made by pre-selection of suitable nuclear killing grounds into which the enemy will be driven or led by the battle team manœuvres in the forward areas. The battle teams will attack and defend always with the aim of concentrating the enemy in the killing ground. Forcing the enemy to conform will require bold, imaginative and cunning commanders with plenty of initiative, for the enemy will resist their efforts to the utmost.

Once concentrated into a killing ground within range of the delivery systems available to the commander, the enemy must be held there while the bulk of the friendly forces are withdrawn to areas which are outside the danger area of the nuclear weapon. This manœuvre will require most skilful handling if the enemy is to remain unsuspecting.

The stage is now set. An enemy force of sufficient size and importance to warrant a nuclear weapon has been concentrated in a nuclear killing ground; the undetected delivery system has been positioned and readied within range of the target; friendly forces have been warned and have employed protective attitudes; and a strong mobile battle team is organized and waiting to move into the target area to take full advantage of the effect of the nuclear weapon upon the enemy. At this point, destructive power equivalent to numbers of guns, tanks and infantry is launched into the air and is directed towards the enemy. If the target is really suitable the result will be out of all proportion to the size and cost of the nuclear warhead used.

Appreciating the immense killing power of one small nuclear warhead and the size of the all-arms force which would be required to achieve a similar result, one will realize at once that the tactical nuclear weapon has become the dominant factor on the battlefield, whether we like it or not. Every action on the battlefield will be directed towards avoiding creating a nuclear target for the enemy and towards employing our own nuclear weapon against him.

And, since the nuclear weapon is dominant, all manœuvres must be directed towards its protection

SOLDIERS TAUGHT USE OF RADIATION INSTRUMENTS

A REPORT WRITTEN BY THE DIRECTORATE OF PUBLIC RELATIONS (ARMY), ARMY HEADQUARTERS, OTTAWA

Canadian soldiers are undergoing instruction in the use of modern scientific instruments in the battle against nuclear radiation from radioactive fall-out—the silent, invisible killer in nuclear warfare.

Specially designed for the three armed services, and recently adopted by the Army for general use, the instruments are all for use in the detection field. Plotting nuclear fall-out and the immediate safety action that follows detection of nuclear radiation is, at present, the only defence against it.

The instruments range in complexity from small individual detectors issued to every soldier to airborne survey systems for army reconnaissance aircraft and helicopters.

All components of both the Regular Army and the Militia will be issued with, and trained in the use of, the new equipment. The training will play an important part in the role of the Militia with the Civil Defence.

Much of the equipment, some of which is already in general use, has been thoroughly tested by the Army's Radiation Detection Unit under nuclear test conditions at the United States' testing grounds in Nevada and at the United Kingdom's atomic test site at Maralinga, Australia.

Troops trained in the use of the new devices will be able to locate, survey and plot areas of contamination and accurately assess the local radiation hazard.

Every Canadian soldier will be issued with a small dosimeter to be worn around the neck like an

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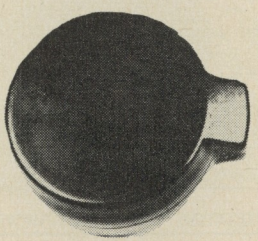
A Study of Nuclear Warfare

(*Continued from preceding page*)

and employment. The nuclear delivery system centrepiece, surrounded by strong mobile battle teams of infantry, armour and artillery, seems to be an accurate portrayal of the shape of things to come.

What the future holds, no man knows; but his plans must influence its course.

DETECTOR, RADIAC, TACTICAL DOSIMETER



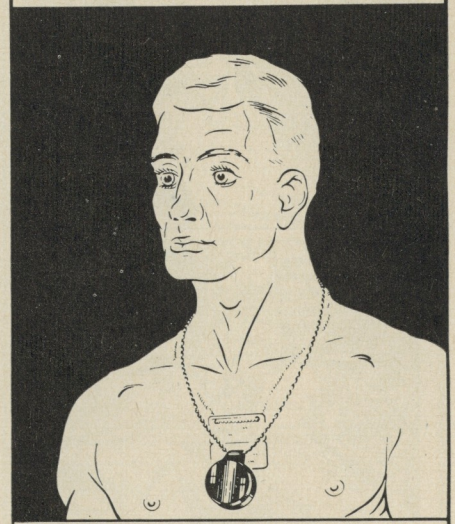
DETECTOR, RADIAC, TACTICAL DOSIMETER
DT-60/PD

PURPOSE — *TO PROVIDE MEDICAL AUTHORITIES WITH INFORMATION OF RADIATION DOSAGES IN EXCESS OF 10 ROENTGENS RECEIVED BY PERSONNEL.*

DATA —

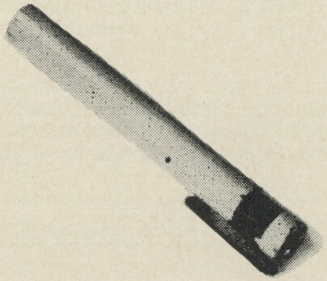
1. WEIGHT — 2 Ounces.
2. DIMENSIONS — (a) Diameter - $1\frac{1}{2}$ Inches.
   (b) Thickness - $\frac{5}{8}$ Inch.
3. RANGE — 0 - 600 r
4. NOTE — This Instrument is non-self-reading.

USE



ISSUED TO ALL RANKS IN THE NAVY, ARMY AND AIR FORCE FOR PERSONAL RADIATION RECORDING.

RADIACMETER, TACTICAL DOSIMETER



RADIACMETER, TACTICAL DOSIMETER, IM93/PD

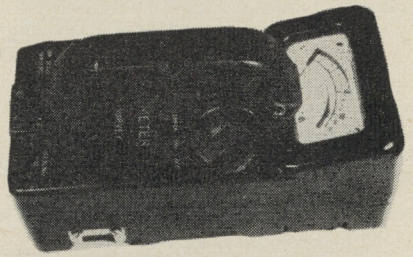
PURPOSE – *USED BY LOCAL COMMANDERS AND MONITORING TEAMS TO PROVIDE IMMEDIATE KNOWLEDGE OF DOSAGES TAKEN BY SUB-UNITS.*

DATA –

1. WEIGHT – $1\frac{1}{4}$ ounces.
2. DIMENSIONS – $4\frac{1}{2}$ inches x $\frac{1}{2}$ Inch dia.
3. RANGE – 0 - 600 r.

USES

RADIACMETER, GAMMA SURVEY



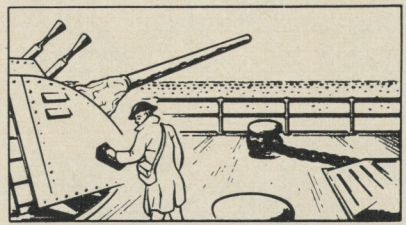
RADIACMETER, GAMMA SURVEY,
IM-5010/PD

PURPOSE – *THE INSTRUMENT IS USED TO READ RELATIVELY HIGH LEVEL GAMMA AND BETA-GAMMA RADIATION DOSE RATES. IT IS THE BASIC INSTRUMENT USED IN RADIOLOGICAL SURVEY TO ASSESS ACCURATELY THE LOCAL RADIATION HAZARD.*

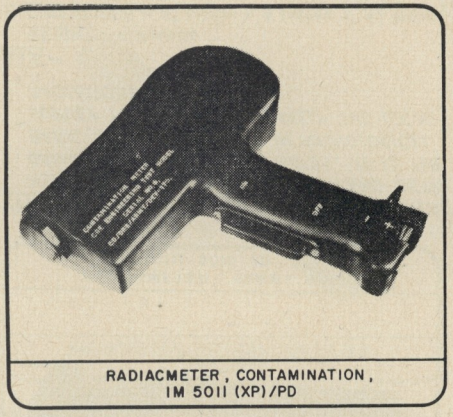
DATA –

1. **WEIGHT** – 4 Pounds.
2. **DIMENSIONS** – $8\frac{3}{4}$ Inches x 4 Inches x $4\frac{1}{4}$ Inches.
3. **RANGE** – 0-500 r/hr.

USES



RADIACMETER, CONTAMINATION



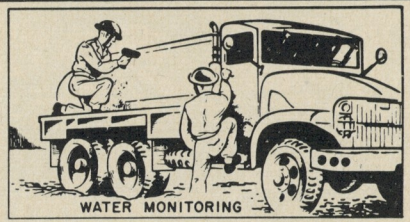
RADIACMETER, CONTAMINATION,
IM 5011 (XP)/PD

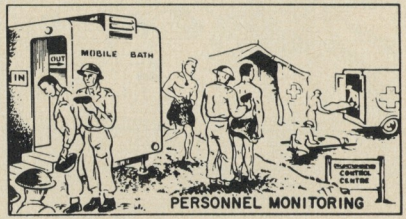
PURPOSE – *TO DETECT LOW LEVELS OF RADIO-ACTIVITY ON PERSONNEL, CLOTHING, EQUIPMENT AND FOOD, OR IN WATER TO DETERMINE IF A HAZARD EXISTS AND TO TEST THE EFFECTIVENESS OF DECONTAMINATION PROCEDURES.*

DATA –

1. WEIGHT – 2 Pounds.
2. DIMENSIONS – 8 Inches x 8 Inches x $1\frac{1}{4}$ Inches (Pistol Design).
3. RANGE – 0 to 50 mr/hr.
4. CAPABILITY – β and γ Radiation.

USES



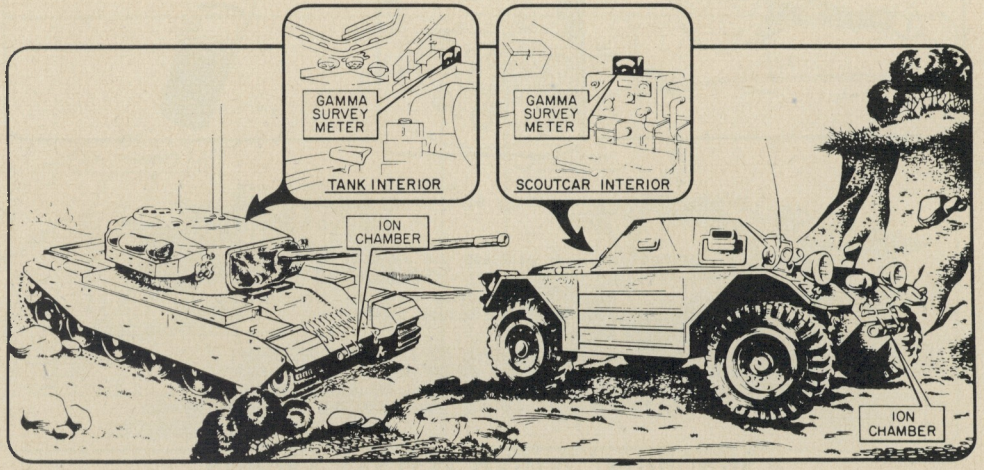


RADIACMETER, GAMMA SURVEY, VEHICULAR

PURPOSE – *TO PROVIDE A MEANS FOR RAPID SURVEY OF AREAS CONTAMINATED WITH RADIOACTIVITY.*

DATA –

1. WEIGHT – 6 pounds maximum.
2. DIMENSIONS – No dimension to exceed 9 inches.
3. RANGE – 10 - 1000 r/hr.
4. NOTE – Equipment to meet the military characteristics for this item is under development.

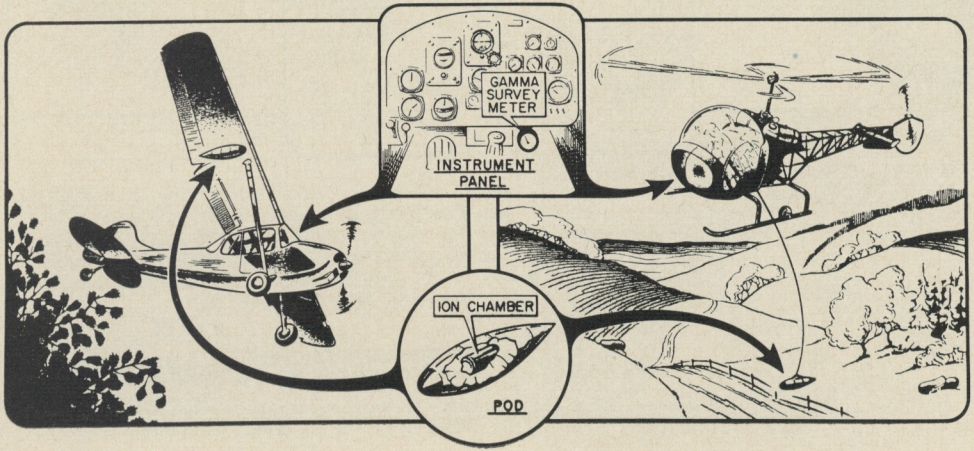


SURVEY SYSTEM, RADIAC, AIRBORNE

PURPOSE – *THE AIRBORNE SURVEY SYSTEM WILL PROVIDE EARLY INFORMATION ON THE EXTENT AND NATURE OF THE HAZARD THAT MAY EXIST IN AREAS SUSPECTED OF CONTAMINATION BY NUCLEAR FALL-OUT OR THROW-OUT.*

DATA – 1. The fallawing data is taken fram the Canadian military characteristics af the equipment.

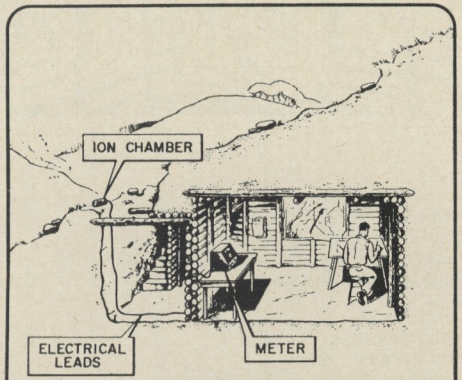
2. WEIGHT & DIMENSIONS – The equipment will be as light and campact as passible and designed ta fit into aircraft available far the purpase.
3. RANGE – 0 - 500 r/hr.
4. NOTE – Equipment ta meet the military characteristics far this item is under develapment.



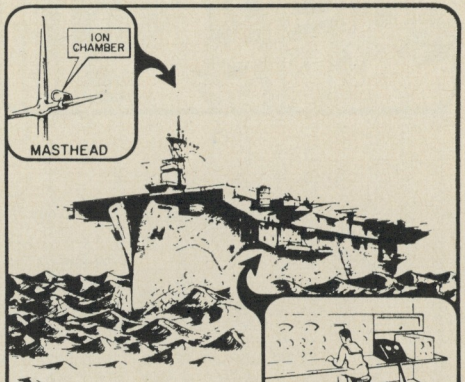
RADIACMETER, GAMMA SURVEY, REMOTE

PURPOSE -- *TO RECORD AND INDICATE EXTERNAL RADIATION INTENSITY LEVELS ON SHIPS, VEHICLES, AIRCRAFT AND STATIC LOCATIONS WHILE IN PROTECTED INTERNAL LOCATIONS. THE RADIATION PICKUP DEVICE MAY BE EXTERNALLY MOUNTED BUT METERS AND/OR RECORDING DEVICES MUST BE MOUNTED INTERNALLY WITH REMOTE CONNECTIONS TO THE PICKUP COMPONENT.*

DATA - 1. WEIGHT - 6 Pounds (Maximum). 2. DIMENSIONS - 1 cu. ft. (Maximum each unit). 3. RANGE - 10 to 1000 r/hr. 4. Equipment to meet these military characteristics is under development.



CUTAWAY VIEW OF
UNDERGROUND BUNKER

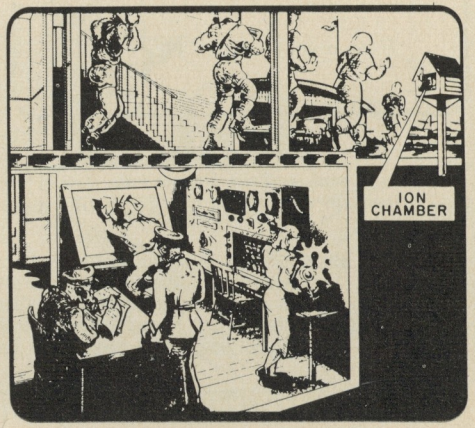


ALARM, NUCLEAR FALL-OUT

PURPOSE – *TO GIVE WARNING TO PERSONNEL WHEN THEY ARE BEING SUBJECTED TO RADIOACTIVE FALL-OUT AFTER A NUCLEAR EXPLOSION.*

DATA –

1. WEIGHT – 15 pounds maximum.
2. DIMENSIONS – None greater than 11 inches.
3. RANGE – To functian at 5 mr/hr.
4. NOTE – Equipment ta meet military characteristics is at present under develapment



identity disk and which will register radiation and provide medical authorities with information of dosage received by the wearer.

On a slightly lesser scale of issue, fountain-pen type dosimeters will be carried by trained personnel. This instrument will also register radiation and provide immediate knowledge of radiation exposure to sub-units.

Every unit is to be issued with survey meters which will indicate relatively high-level radiation readings. This meter is the basic instrument used in radiological surveys to locate and assess the areas of danger. Radiac slide rules are used to calculate the safe time-of-entry and duration-of-stay in radioactive areas.

Another piece of equipment which can be used by the individual soldier is the contamination meter. This hand-gun type instrument is used to detect low levels of radiation on personnel, clothing, equipment, food, water, etc., and to assess the effectiveness of decontamination procedures.

Under development at the present time are compact gamma-survey meters for armoured vehicles, light aircraft and helicopters. When used with aircraft these instruments will provide early information on the extent and nature of the hazard and, when mounted on armoured vehicles, will make possible a rapid ground survey of areas of contamination.

A remote reading survey meter will record and indicate external radiation intensity levels while the operator is in a protected internal location. With this instrument, operators in an underground bunker will be able to determine the intensity of gamma radiation at surface level.

An alarm system, by means of sound or light, has been devised to alert personnel to the presence of fall-out in an area exposed to a nuclear explosion.

The invisible, silent and deadly gamma rays that follow a nuclear explosion have created a training problem that authorities believe will be solved with the perfection of a simulated gamma-survey meter for training purposes. This equipment simulates the radiation intensity of a contaminated area by means of radio waves. These waves are detected by a survey meter and the intensity of the radiation is measured.

With this equipment, unit and individual training in the Canadian Army now can be more realistic, without exposing men to the hazards of radioactivity from radioactive sources previously used in this type of training.

THE ARMY AND CIVIL DEFENCE

By

General Sir Robert Mansergh, GCB, KBE, MC, ADC,
Commander-in-Chief of the United Kingdom Land Forces

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* * *

Introduction

For the first time in peace a full-time Commander-in-Chief United Kingdom Land Forces was appointed at the beginning of this year. For some years previously very valuable preparations had been made by General Sir Miles Dempsey in his part-time capacity as C-in-C UKLF (designate).

On my appointment as full-time C-in-C, a small General Headquarters was established comprising a planning and liaison staff to assist in reviewing plans for the land defence of this country, and in issuing guidance and direction on operational planning. It also serves the Commanders-in-Chief (United Kingdom) Committee which is responsible to the Chiefs of Staff for co-ordinating all plans for home defence, and of which the C-in-C UKLF is chairman.

All this sprang from the realization that the advent of the hydrogen bomb has radically altered the shape of future global war, and has brought into prominence the responsibility of the Army in the United Kingdom to support the civil authorities. It is, in consequence, my chief concern to ensure that the United Kingdom Land Forces are prepared to meet their responsibilities if nuclear war should come.

The increased emphasis now being placed on this duty of assisting the civil authorities has caused misgiving, particularly in the Territorial Army. It is because I believe such concern to be due both to a failure to realize the magnitude of the threat presented by the H bomb, and to ignorance about how the Army will be employed, that I welcome this opportunity to comment on some of the problems

which we shall face in the event of attack, and of indicating how we can best prepare ourselves to meet them.

The Struggle for Survival

There are two things we must all recognize. The first is that the megaton weapon is not just a bigger bomb than before, but that it can be the cause of a man-made catastrophe so vast that it is almost impossible for our imaginations to comprehend. It presents us with an entirely new problem which is nothing less than that of survival, not only as individuals, but also as a nation.

The second is that there are people who think that the battle for survival will be a matter for the Civil Defence Corps, the police and fire services, assisted possibly by the armed forces. Such an idea is both false and dangerous. We must all realize that we have no chance of survival unless all the nation's resources of men, women and material are organized to play their full part. No one can stand aside.

We in the Army who have so much to offer shall be failing in our duty if we do not take every opportunity to prepare ourselves to meet the task if war should come. The volunteers who, in peacetime, have given their spare time either in the Forces or in civil organizations, will be in the best position to help both themselves and the nation, but every able-bodied person left alive will have to play his or her part.

Support to the Civil Authorities

The Statement on Defence 1956 specifically places on the armed forces the responsibility of supporting the civil authorities by all possible means in this struggle for survival. How are we to do this?

We must first be clear what we mean by the civil authorities, for there is a danger that our plans will be unrealistic if we underrate the civil effort. This will compromise all the resources of the United Kingdom; not only the central and local authorities, the Civil Defence corps, the police forces, the National Fire Service, the public utility undertakings and voluntary bodies, but also industry and the sum of the individual efforts of every member of the population. In short, the civil authorities have resources of men and materials that the Army cannot begin to match. With that understanding of the civil effort and of our responsibility to support the civil authorities, let us now look at some of the tasks with which we in the Army are likely to be confronted.

The Nature of Military Assistance

I am certain that the Army can help the civil authorities most effectively as an army, not as a new type of Civil Defence formation. As unskilled labour or as providers of material our contribution is small. It is only by using our military characteristics and skills to the full that we can make the maximum contribution to the common cause. What are these?

First, the Army chain of command which extends throughout the country gives us something of inestimable value. It will enable us not only to maintain control, but to adapt our support to deal with unforeseen changes of circumstances. Military operations rarely go according to plan and it is the swift reaction of all commanders and staffs to the unexpected which enables operations to continue to their appointed end and to achieve their object without rigid control from the top. This is largely a matter of experience and training, and in the Services there is a wealth of experience second to none.

Second, I am convinced that Service training and experience produce in quantity that type of leader who in times of stress will be vital at all levels if the country is to survive. I do not of course for one moment wish to infer that the Services have a monopoly of good leaders. This is obviously not true. On the other hand I do suggest that our experience in war and our training in peace do produce commanders at all levels who can work under conditions of great strain.

Third, the Army is equipped and organized to be independent of its surroundings. Units can go to the aid of the civil authorities without at the same time becoming a burden on their resources; even when units have exhausted their own resources they can be supplied from civil stocks as units and not as collections of individuals. Ultimately, of course, the Army depends on civil resources for everything it needs, and the size of the stocks we can hold is limited. We still have the advantage, however, of the ability to organize supply in the field; and that ability will be invaluable, whatever the source from which these supplies are drawn.

Many Arms and Services are by their very nature particularly suited to operate in support of the civil authorities. For example, the Royal Engineers, the Royal Signals and the Administrative Services can all fulfil vital taks in their normal role.

I have no doubt that we can make our best contribution only

by using these military characteristics to the full. Furthermore, these are in many instances complementary to the weaknesses of the civil organization we are to support. In the appendix I set out in some detail the sorts of ways in which the Army can make the best use of these inherent characteristics in support of the civil authorities.

Requirement to Ensure the Most Effective Military Support

If we are to give the civil authorities really efficient support, not only must we know when and where help is needed and what the tasks are, but the civil authorities must have a wide knowledge of our military capabilities and of what we can do and what we cannot do. It follows, therefore, that the civil and military chains of command must match as closely as possible, and that at each level co-operation must be as perfect as planning and practice in peace can make it. I believe that we must aim at a degree of co-operation between the Army and the civil authorities that is far closer than has ever been achieved between the three armed services in the past. We must aim at that state of affairs where any commander or staff officer on the civil side knows instinctively when the experience and training of the soldier will be of assistance to him, and similarly we as soldiers must know where the advice of the civilian can profitably be sought. It is perhaps worth remembering that the co-operation achieved between the three armed services developed to its present high level only during the last war. We must now ensure that the knowledge and experience of working with the other services, which we learnt in the last war, is extended to cover co-operation with the civil authorities at all levels. It became an accepted fact that commanders and staffs of joint headquarters not only worked together but lived together, and the confidence gained by knowing one's opposite number in another service was invaluable. If this were necessary among service officers with similar backgrounds, how much more will it be necessary now that joint planning and training with the civil authorities have started.

If we are to develop the necessary high degree of joint planning in peace and command in war, much practice is clearly essential. We must also aim to achieve a far higher standard of joint command technique than exists at present. We must in fact first learn to understand each other's language and eventually work out and use a common language to deal with

our common problems. At present we lack many of the aids which are so essential to efficient co-operation and are covered by the term "staff duties". Another stumbling block at present is our mutual ignorance of each other's organization. The armed services must learn a great deal about the organization of the Civil Defence forces and the system of local government in this country, and the civilians equally could learn with advantage much more about our military organization, methods and capabilities.

Apart from limited training in light rescue and an increased attention to first aid, except for commanders and staffs, I do not believe that this new task calls for special training on the part of units.

Formations and units must of course train to live, move and work under thermo-nuclear conditions.

Conclusion

If this country is ever attacked with thermo-nuclear weapons there will follow a struggle for survival of the grimmest sort. It will need the whole of our national resources of manpower and materials to survive the initial shock and ensure that civilization as we know it continues to exist in these islands. Whether we like it or not, we shall all be in it, either as part of a formed and disciplined body or else as so much unskilled manpower pressed into service at the last moment by the nearest authority.

The Army has a vital role to play, and I cannot do better than quote from the Government's Statement on Defence, 1956:

"All armed forces, whether regular or reserve, in the country at the outbreak of war will have to be prepared to assist in the struggle for survival. The armed forces are in no sense a substitute for civil administration; the aim will be to support the civil authorities by all possible means."

If we are to meet these increased responsibilities, I consider it essential that all commanders and staff know the nature of the problem, and that they and the civil authorities understand how best we can help, both in planning and in executing joint operations. The closest liaison at all levels with civil authorities is clearly becoming increasingly important.

Every unit must first become and remain an efficient military unit; once that is achieved, the additional skills like rescue and first aid can be learnt to good purpose.

To support the civil authorities we must operate as an army, and the better soldiers we all are, the

better can we help.

APPENDIX

Tasks for the Army in Support of the Civil Authorities

1. In Peace:

Assistance to local authorities in the preparation of plants, and co-operation in training.

2. In War:

(a) Providing a steadying influence on the population.

(b) Aid to the Police—Reconnaissance, Traffic Control, Cordoning, Law and Order.

(c) Aid to the Fire Service.

(d) Shepherding, control, feeding, accommodation of homeless to reception areas.

(e) Screening, treatment and evacuation of casualties.

(f) Organization of mass evacuation.

(g) Provision of guards on vital stocks.

(h) Distribution of essential supplies.

(i) Maintenance of Signal and other communications.

(j) Provision and control of transport, including civil transport.

(k) Provision of working parties.

(l) Organization of skilled and unskilled labour units from civilian refugees.

(m) Restoration and maintenance of road, rail and water communications.

(n) Light rescue (MDC battalions; advanced rescue).

(o) Reconnaissance and liaison (especially Air OPs and RAC).

(p) Provision and running of camps for all purposes.

3. In addition, Commanders and staffs, including Advisers and Heads of Services at all levels, will of course have the responsibility of doing all they can to assist and advise the civil authorities in peace in the preparation of plans and in the preparation of appropriate training exercises; and in war in the execution of operations and in the collection and dissemination of intelligence.

Pincer Movement?

50 Years Ago: Madame Jacques, the inventor of a corset for men, has asked Surgeon General O'Reilly to take up the subject of introducing this article of wearing apparel in the Army. She claims that it is especially valuable for officers as they get on in years and become obese ... The Surgeon General is disinclined to give the matter serious consideration.—*From the files of the "Army-Navy-Air Force Journal"* (U.S.).

Canadian Army Photograph

The ground crew of Petawawa's No. 1 Air Observation Post Flight ready one of the Flight's L-19 Cessna aircraft for an early morning practice sortie over Algonquin Park during Exercise Cold Duck.

ARMY AIR OP FLIGHT ON WINTER TEST EXERCISE

A REPORT WRITTEN BY THE DIRECTORATE OF PUBLIC RELATIONS (ARMY), ARMY HEADQUARTERS, OTTAWA

Using only normal equipment, and with Algonquin Park's ice-bound lakes as their ready-made landing fields, a small group of soldiers and airmen of No. 1 Army Air Observation Post Flight, Royal Canadian Artillery, stationed at Camp Petawawa, Ont., has successfully completed a winter exercise designed to prove that light aircraft can operate from an advanced base for a long period of time in the roughest kind of weather.

For fourteen cold days, and colder nights, the compact unit consisting of just sufficient personnel to operate and maintain their five L-19 Cessna Aircraft, and carry out their three-way role in support of the fighting arms, lived and trained last February in weather that often fell far below the zero mark.

During Exercise Cold Duck

Canadian Army Photograph

Major G. M. Henderson, left, commander of No. 1 Air Observation Post Flight, briefs pilot Captain R. G. Heitshu before an early morning take-off on a practice reconnaissance during Exercise Cold Duck at Algonquin Park.

Canadian Army Photograph

Major Henderson, right, looks on while Cpl. G. Brown and LAC W. Charmell unload a new automatic camera following a photographic sortie over Algonquin Park.

normal maintenance of the aircraft was carried out under the most difficult conditions, sorties were flown each day, aerial photographs taken and processed in the field and reconnaissance flights made not only in the daylight hours but also during the bright moonlight nights. Artillery spotting was the only normal role of the unit not exercised.

From their home station at Camp Petawawa the ski-equipped aircraft were flown to Algonquin Park where, on the shores of the Lake-of-Two-Rivers, an advanced tented base was established. Non-flying members of the Flight made the trip in Army vehicles.

For most of the 35 servicemen—29 Army and six Air Force mechanics—the experience was completely new. However, they quickly adapted themselves to their surroundings and soon became used to living in unheated tents and having their meals out of doors in all kinds of weather. While there was a certain amount of physical discomfort, not a single severe cold resulted from their two weeks in the open.

Canadian Army Photographs

Above: Starting out on a snow-shoe patrol. *Right to left:* Sgt. C. Gallant, Gnr. M. Rocheleau, Gnr. G. Rapin, Bdr. L. Geirmaert. *Below:* Captain W. B. MacDonald, right, and LAC R. Grosvenor try their luck at ice fishing at Lake-of-Two-Rivers, Algonquin Park.

Canadian Army Photograph

Gnr. S. Sirois, the cook, obviously has nothing but praise for his own cooking as he prepares soup for the mid-day meal.

From the base at the Lake-of-Two-Rivers, reconnaissance and photographic sorties were flown against a make-believe enemy that had seized industrial centres in southern Ontario and was striking northwards. During the exercise the unit's photographic section experimented with a new type of aerial camera which had not previously been used in cold-weather work. Not only did the camera function well but negatives were developed and printed in the mobile dark room with a minimum of delay, with snowshoe-clad runners rushing the film from the air strip to the van.

Major G. M. Henderson of Toronto, Commanding Officer of No. 1 Air Observation Post Flight, directed Exercise Cold Duck and reported it to be a complete success. In his opinion, the results were ample proof that, with some modifications of equipment, his unit could carry out its complete role under the most severe winter conditions.

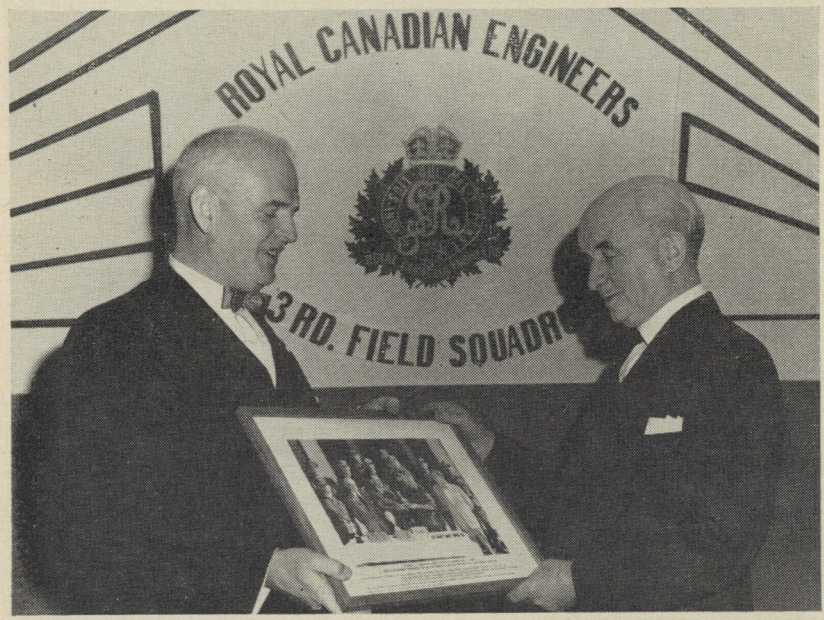
CANADIAN ARMY RIFLE TEAM TRAINS FOR BISLEY

By

CAPTAIN D. G. MACKINNON, ROYAL CANADIAN ENGINEERS,
ARMY HEADQUARTERS, OTTAWA

Winners of the Canadian Army (Regular) Rifle Competition held last summer at Connaught Ranges, Ottawa, the Royal Canadian School of Military Engineering Rifle Team are now in training for the 1958 Bisley Matches in England.

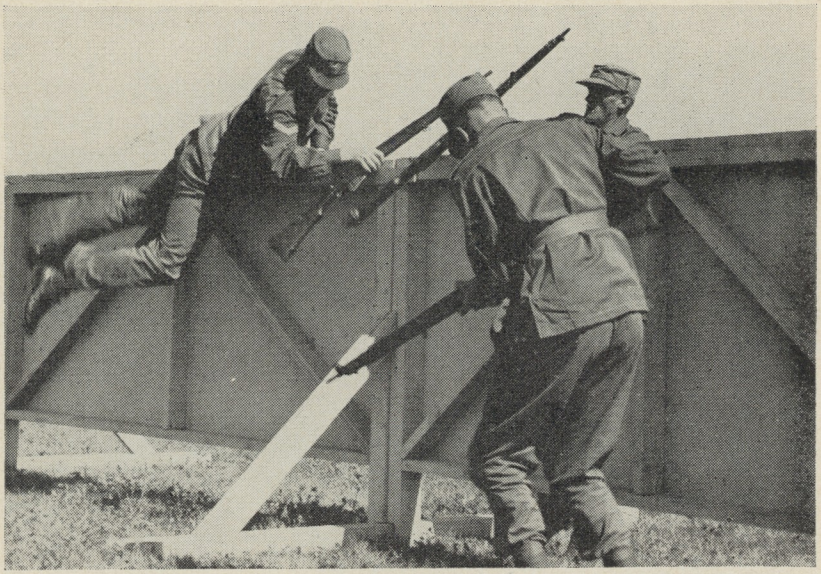
Known as the "Canadian Army Rifle Team, 1958", members of the Western Command champion-



Canadian Army Photograph

Brigadier J. L. Melville, CBE, MC, ED, right, Honorary Colonel Commandant of the Corps of Royal Canadian Engineers, accepts a framed picture of the 1958 Canadian Army Bisley Rifle Team from Captain Donald G. MacKinnon, RCE. Captain MacKinnon is captain of the team which will travel to the United Kingdom for the National Rifle Association Matches. The presentation was made during the Military Engineers Association of Canada meeting at the 3rd Field Squadron, RCE, Mess in Ottawa.

Over the Top . . .



Canadian Army Photograph

Three members of the RCSME Rifle Team go over an obstacle course barrier, this competition being known as the "Hamilton-Leigh Match" at Bisley. *Left to right:* Cpl. W. J. Conway, Sgt. C. E. Smith, Sgt. M. Milko.

ship team from the RCSME at Camp Chilliwack, B.C., are: Captain Donald G. MacKinnon (Team Captain), Vancouver, B.C., and Ottawa; Captain A. Norman Heuston, Saint John, N.B.; Lieut. A. Fast, Winnipeg, Man.; Lieut. Alan S. Derrick, Kingston, Ont.; Staff Sgt. Frank Adams, Chilliwack, B.C.; Sgt. William Kayne, New Westminster, B.C.; Sgt. Michael Milko, Winnipeg; Sgt. C. E. (Bud) Smith, Vancouver; Cpl. Wilfred Conway, Vancouver; and Pte. Peter Zhukrovsky of Winnipeg.

The team will sail on 13 June for the United Kingdom with the Canadian Bisley Team, which is sponsored by the Dominion of Canada Rifle Association, on the Cunard Liner "Ivernia". They will return to Canada on the "Sylvania", 23 July.

During the winter months training was carried out on the indoor small-bore range, and physical fitness conditioning exercises to the standard prescribed in

CAMT "Shoot to Kill" were given to all members of the team by the physical training staff at Camp Chilliwack.

As the weather improved, the team moved to the outdoor ranges where a concentrated form of training is now being undertaken. This follows the pattern of the Bisley Matches as closely as possible, concentrating on service rifle practices with sights as issued, and will continue until the team's departure for the United Kingdom. Training will be resumed at Bisley for ten days preceding the National Rifle Association Matches which commence 6 July.

This will be the third year in which a rifle team has represented the Canadian Army at the Bisley Matches. The first Canadian Army team were the marksmen from the Royal Canadian School of Infantry, who competed at Bisley in 1956 with Major R. W. Hampton, CD, The Royal Canadian Regiment, as Team Captain. The following year the Army Headquarters team from Ottawa gave a good account of themselves at Bisley, the captain being Major W. J. Strachan, MBE, CD, of the Royal Canadian Ordnance Corps.

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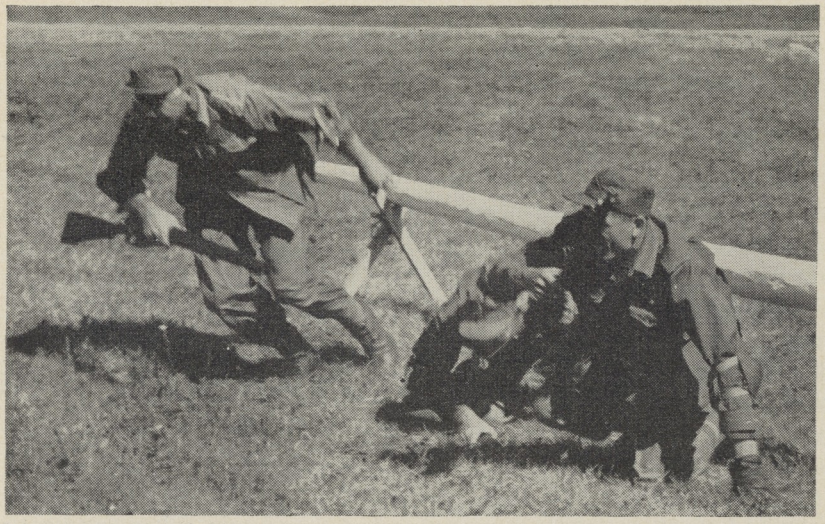
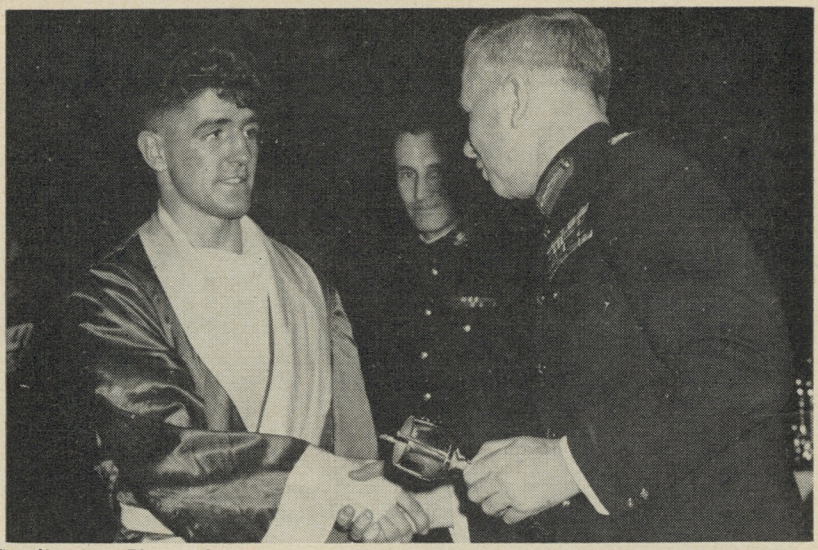


Canadian Army Photograph

Team members go under the barrier in the Obstacle Course Match. *Left to right:* Lieut. A. Fast, Captain A. N. Heuston, Pte. P. Zhukrovsky.



Canadian Army Photograph

Lieut.-Gen. H. D. Graham, CBE, DSO, ED, CD, Chief of the General Staff, presents a trophy to Sgt. Leslie Mason, the Canadian Army's Open Welterweight Champion.

BOXING IN THE ARMY

By

MAJOR E. R. SHARPE, CD, GSO 2 (PHYSICAL TRAINING),
DIRECTORATE OF MILITARY TRAINING, ARMY HEADQUARTERS, OTTAWA

The Army Boxing Championships for 1958 culminated in a final meet which was held in conjunction with the British Columbia Centennial celebrations, at Vancouver, British Columbia. The bouts were staged in the Pacific National Exhibition Gardens on April 8, 9 and 11, the first two days of the meet being devoted to eliminations.

The day of rest between the eliminations and the finals had a very beneficial effect on the quality of action, as tournament competition is quite gruelling.

These last twelve months have seen many developments in Army boxing, and their impact has yet to be fully felt on the military as well as the civilian sides of the sport. In this article I shall report briefly on our competitive achievements—and our disappointments.

Eastern Ontario Area was host

for the Army Finals for the second consecutive year in April 1957. This was a most successful meet, extremely well organized by the local committee and it marked the debut of Army boxers on live television. Sergeant L. T. Mason, 2nd Battalion, The Black Watch (Royal Highland Regiment) of Canada, fought his way to the Open Welterweight championship for the second year running, as did Sapper (now Corporal), M. C. Mercredi, 1st Field Park Squadron, Royal Canadian Engineers, in the Open Heavyweight class. Corporal W. D. Codville, 1st Battalion, Queen's Own Rifles of Canada, was also a repeater in winning the Army Open Light Middleweight championship.

The full slate of champions follows:

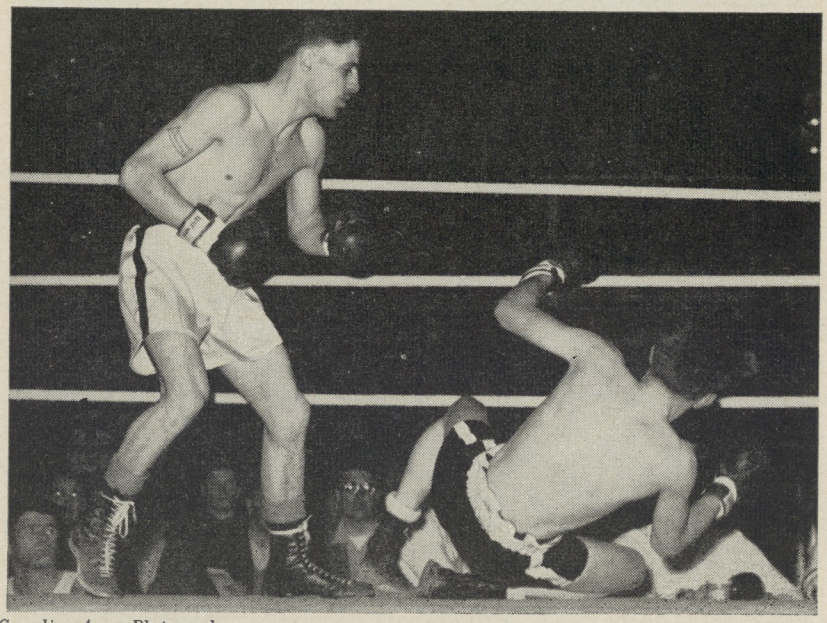
	NOVICE	OPEN
Flyweight	Gnr. F. S. Graves, 1 RCHA	Pte. E. C. Duff, 2 RHC
Bantamweight	Pte. F. M. Labbe, 2 R22eR	L/Cpl. W. A. Turner, 1 CDN Gds
Featherweight	Pte. J. J. McNeil, RHC Depot	Cfn. G. A. McKinnon, 10 Coy RCEME
Lightweight	Gnr. G. E. Whalen, 1 LAA Regt	Gdsm. J. T. Chesson, CDN Gds Depot
Light Welter	Pte. W. P. McDonald, 2 RCR	Pte. H. A. McGillivary, 2 RHC
Welterweight	Pte. J. P. Burns, RHC Depot	Sgt. L. T. Mason, 2 RHC
Light Middle	Gnr. W. L. Gibson, 4 RCHA	Cpl. W. D. Codville, 1 QOR of C
Middleweight	Gnr. F. F. Howard-Smith, 1 RCHA	Gnr. J. C. Ferlotte, 1 RCHA
Light Heavy	Gnr. A. A. Jean, 3 RCHA	Gnr. J. King, 3 RCHA
Heavyweight	Pte. G. Borjancic, 2 PPCLI	Spr. M. C. Mercredi, 1 Fd Pk Sqn

An Army Boxing Team was entered again in the National Amateur Championships which were held in May 1957 at Camrose, Alberta. The Army Open Bantam, Feather, Lightweight, Welter, Middleweight, Light Heavy and Heavyweight champions named above were included. Lance Corporal Turner was brought down a weight and entered as a Flyweight, being replaced at Bantam by Pte M. J. Christmas, The Black Watch, the Army runner-up in this weight. Corporal W. Noel, the Army Open Light Middleweight runner-up, replaced Corporal Codville on the team as the latter was starting officer candidate training. We left the Light Welter unfilled but included the Army Open Heavyweight runner-up, Pte. Ross Keleher.

Sergeant Mason won the National Welter Championship (he had won the Light Welter the year before), and Guardsman Chesson captured the National Lightweight crown. Corporal Noel was runner-up for the Light Middleweight title, Sapper Mercredi was runner-up in the Heavyweight class and Lance Corporal Turner was runner-up in the Flyweight division. Our other team members were all semi-finalists.

The Army also provided four out of five members of the Canadian team which was entered by the Amateur Athletic Union of Canada in the Great Northwestern Diamond Belt International AAU Boxing Championships at Seattle, Washington, in August. The manager and coach, also, were Army members. No titles were won but Corporal Noel won the most courageous boxer award. Sergeant Mason, on the road to a win in his bout in the finals, broke an ankle just before the end of the second round and was forced to retire. Corporal Mercredi was a finalist, while Guardsman Chesson was a semi-finalist. Naturally, we were disappointed that no championships were won, but this was our first team venture into international competition. There were approximately fifteen countries represented at the tournament. From all reports our boxers created a very favourable impression and made many friends.

A new edition of the Canadian Amateur Boxing Rules was ap-



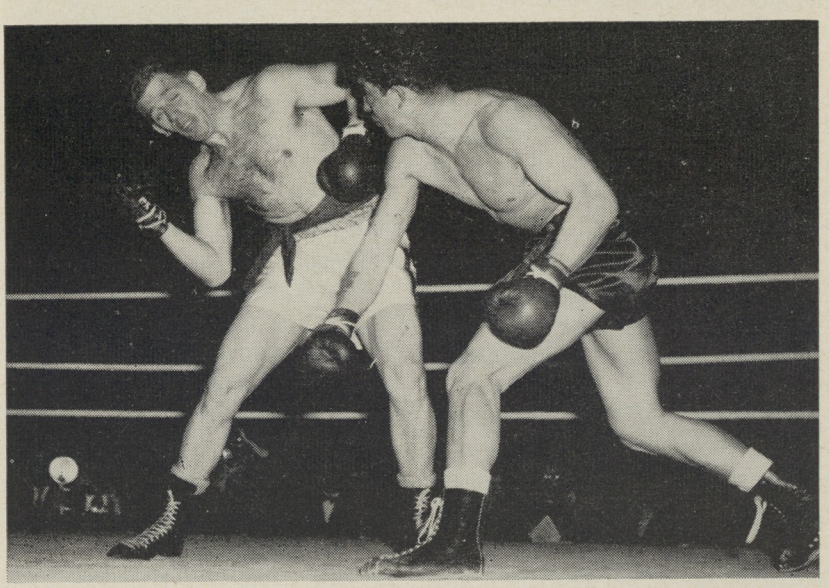
Canadian Army Photograph

Gdsm. J. T. Chesson, Open Lightweight Champion, scores a knockdown during the 1957 championships. His opponent was Pte. D. E. Holmes, Headquarters New Brunswick Area.

proved at the annual convention of the Amateur Athletic Union of Canada at Winnipeg in November. Much of the work of revising the rules to meet the requirements of the three armed services and the AAU of C was done by members of the Army Physical Training Cadre. These rules will have the effect of tending to bring all service and civilian boxing in Canada to a common standard, which is indeed progress.

A start was made last autumn to organize a planned programme for the development of Army boxing coaches. The first of what is intended to be an annual advanced boxing course was conducted at the Army Physical Training Wing to provide advanced training in boxing techniques for selected Army Open boxers. The fundamentals of coaching were also included. The programme will of necessity be a rather long term one, but this is to be expected as we are starting from scratch.

The number of referees and judges is continuing to grow. A refresher course for referees and judges was conducted in conjunction with the advanced boxing course. The candidates were all



Canadian Army Photograph

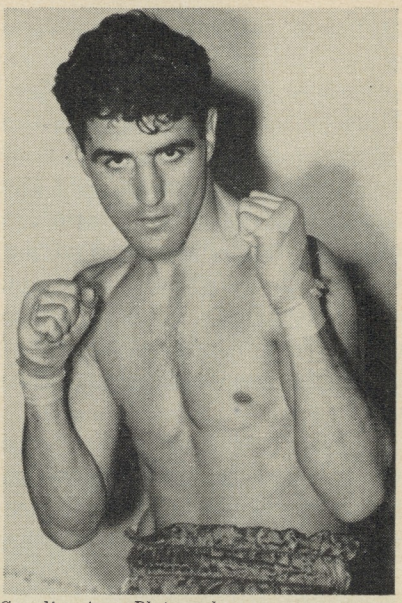
Sapper (now Corporal) M. C. Mercredi (*right*) delivers a powerful blow to the chin of L/Cpl. André Sauvé during a championship match.

previously qualified officials who wished to be brought up to date on the latest developments in the officiating side of the sport and to increase their technical knowledge of boxing.

A team from the Army Physical Training Wing conducted boxing judging clinics in each command during December and January. The purpose of these clinics was primarily to produce new judges, although a number of qualified officials attended them for refresher purposes.

We are now in the fortunate position of having a good supply of qualified boxing referees and judges. If those who are now qualified remain active in the sport so that they gain not only in theoretical knowledge but also in practical experience, the Army will soon have boxing officials second to none.

The Army Boxing Committee has set up a system for control of boxers and officials at Army Headquarters. The results of all boxing meets are reported and recorded so that officials are properly credited with the bouts at which they have officiated. Similarily, boxers can now be kept track of, even though they may move from one Command to another. The Directorate of Public Relations is also able to make use of such information to publicize Army boxing meets. The benefits of these measures, we hope, will become more apparent with the passage of time.



Canadian Army Photograph

Sgt. Leslie Mason

Whatever improvements have been made in Army organization for boxing are the result of the great interest of the many officers and men who are active in the sport. The Army has already made quite a reputation for itself in boxing circles. How much farther we will go in national and international competition depends on the extent to which we achieve mass participation in this sport.

Created for Command

General Craufurd was, indeed, one of the few men who was apparently created for command during such dreadful scenes as we were familiar with in this retreat. He seemed an iron man; nothing daunted him—nothing turned him from his purpose. War was his very element, and toil and danger seemed to call forth only an increasing determination to surmount them. I was sometimes amused with his appearance and that of the men around us; for, the Rifles, being always at his heels, he seemed to think them his familiars. If he stopped his horse, and halted to deliver one of his stern reprimands, you would see half a dozen lean, unshaven, shoeless, and savage Riflemen standing for the moment leaning upon their weapons, and scowling up in his face as he scolded; and when he dashed the spurs into his reeking horse they would throw up their rifles upon their shoulders, and hobble after him again. He was sometimes to be seen in the front, then in the rear, and then you would fall in with him again in the midst, dismounted, and marching on foot, that the men might see he took an equal share in the toils which they were enduring.—*Rifleman Harris, Recollections, 1848.*

The Peril of Prejudice

Prejudice against innovation is a typical characteristic of an Officer Corps which has grown up in a well-tried and proven system. Thus it was that the Prussian Army was defeated by Napoleon. This attitude was also evident during the war, in German as well as British officer circles, where, with their minds fixed on complicated theories, people lost the ability to come to terms with reality. A military doctrine has been worked out to the last detail, and it was now regarded as the summit of military wisdom. The only military thinking which was acceptable was that which followed their standardized rules. Everything outside the rules was regarded as a gamble; if it succeeded, then it was the result of luck and accident. This attitude of mind creates fixed preconceived ideas, the consequence of which are incalculable.—*Field Marshal Erwin Rommel.*

THE LIVES OF A FRENCH SURGEON — AMBROISE PARÉ

By

MAJOR R. R. JEFFELS, UNIVERSITY OF BRITISH COLUMBIA CONTINGENT, CANADIAN OFFICERS' TRAINING CORPS, VANCOUVER, B.C.

The sounds, he remembered, had been the most terrifying experience on that first day of battle. Again and again, Scottish mercenary, Breton peasant, and Parisian captain moved to the attack with chessboard precision against the enemy before Turin. On all sides the regular volleys of musket fire and the sullen roar of the bombards beat a martial accompaniment to the advance and the retreat. An aide, resplendent in burnished breast-plate and plumed helmet, cut across the young surgeon's line of vision, only to disappear the next moment as a squall of grapeshot sent horse and rider to the ground in a tumble of violence and colour.

Recently appointed surgeon to a colonel-general of infantry in the armies of Francis I of France, young Ambroise Paré was seeing battle for the first time. True, he had spent three years as an apprentice in the Hôtel-Dieu, the great hospital in Paris; but his training had been scanty enough and his decision to serve in the Army doubtless resulted from the fact that he had not yet qualified as a regular practitioner. Nor had he ever before seen the wounds produced by gunshot. Bone-weary, he retired to bed after dressing his charges. But sleep was impossible, for the night was broken by the cries of the wounded as they twisted in pain and fear on the straw-littered floors of barns or among the débris of shattered farm buildings. The next morning he rose early and went about his grisly tasks. In a barn he found three newly-arrived French soldiers, "their faces wholly disfigured and their clothes yet aflame with the gunpowder that had burned them." An old soldier, veteran of many a campaign, approached Paré and asked if anything could be done for the men. The surgeon shook his head reluctantly: nothing. Then, deliberately and methodically, the veteran drew his knife, crossed himself, strode over to the wounded men—and dispassionately cut their throats. He was performing an act of charity: better than the surgeon he knew the tortures of gunshot wounds. But more to be feared than the wound

itself was the cure prescribed: cauterization with boiling oil or hot iron.

Profoundly disturbed and shocked at the sight, Paré was never to forget this incident throughout a long career with the Army. Writing at an advanced age—he was well over seventy—he still recalled the incident with a shudder. At that moment, he declares, he resolved to seek a more humane treatment for gunshot wounds, and shortly after this incident he managed, more by chance than by calculation, to discover a method which was to become general practice for many years to come. The date: 1537.

Trained to believe as articles of faith the medical dicta of Galen, Hippocrates and Avicenna, young Paré had been taught that wounds made by weapons of fire "did participate of Venomosity by reason of the powder", and for their cure the leading surgeon of the times commanded that they be cauterized " with oyle of Elders scalding hot in which should be mingled a little Treackle." Knowing no other treatment, Paré had used the method on patients in the past, horrified though he was at the pain inflicted. But upon one occasion he chanced to run short of oil and without knowing exactly what he should do, the young novice prepared a digestive of yolk of egg, oil of roses, and turpentine. This he smoothed gently into the wounds of certain soldiers. When next he came to visit his patients, he found that those who had been treated according to the usual method were hot with fever and in great pain, whereas those who had received only his soothing balm had rested comfortably throughout the night. Their wounds, strangely enough, gave no signs of inflammation or tumour. And then Paré declares in his famous work *The Apologie and Treatise*, "I resolved with my selfe never so cruelly to burne poor men wounded with arquebuses." He never gave up trying to improve upon his own method and would take extraordinary pains to trace down cures which were drawn to his attention. Years later we find him courting a learned physician who claimed to have discovered a secret brew of great potency in the curing of gunshot wounds. Pursued and badgered by Paré for more than two years, the physician finally revealed his secret, but only with reluctance: his magic medicine was prepared by boiling new-born puppies in oil. Paré did not question the value of such medication and claims to have used this puppy broth with some success. Though constantly on the alert

for medical chicanery and ever ready to challenge ideas he thought to be wrong, Paré remained throughout his medical career a remarkable mixture of bold innovator and gullible traditionist.

In 1537 at the battle of Turin in Northern Italy, Ambroise Paré stood on the threshold of a distinguished career. He was to become, according to many medical historians, the greatest surgeon of his day, worthy to stand in the company of such celebrated contemporaries as Vesalius, the first modern anatomist; Servetius, who in many ways anticipated Harvey's work on the circulation of the blood; and Sylvius, the learned professor of anatomy at the University of Paris.

Although his principal contribution to surgery was concerned with the treatment of gunshot wounds, Paré also evolved other methods and practices which were quickly picked up by his associates. He perfected the technique of podalic version whereby the unborn infant is moved by the surgeon's hand into the correct position for birth. It was he who hit upon the idea of drawing an infected tooth and than placing in the gum a living tooth which, he declares, took root and grew. Not the least of his contributions was his insistence that the patient be bathed regularly, and that the hospital ward—such as it was—be kept clean and well aired so that the danger of infection might be lessened.

Such were his contributions. Yet, in 1537, Paré was by modern standards the product of a very lean medical training. As a lad in Paris he had been apprenticed to a barber-surgeon and had learned to perform such routine services as cutting hair, drawing teeth, bandaging wounds, and letting blood. In the medical hierarchy the Masters of the Mystery of Barber-Surgeons stood last; Paré made his medical début in the ranks of those who were held in low esteem by layman and professional alike. Immediately above the barber-surgeon in the scale were the surgeons, properly trained and all duly appointed members of the College of St. Cosmas. The highest group comprised the gentlemen of the long robe, the distinguished—though sometimes inept—professors of the Faculty of Medicine. Each level jealously guarded its rights and privileges; pseudo-scientific discussions degenerated into bitter polemics and carping scholastic argumentation; co-operation between the groups was rare and only grudgingly given.

Medicine at that time was largely a question of the theoretical

study of texts written in Latin by the Aneients. Centuries before, Galen the Greek anatomist had, it was believed, established onee and for all the strueture of the human body through the study of animals. During the whole of the Middle Ages and well into the sixteenth eentury, his work remained the *vade mecum* of all medieal men, and it was not until Vesalius dethroned the master that a serious study of human anatomy was undertaken. Thus limited in his knowledge, Paré, like the rest of his assoeiates, began his investigations by probing and delving into the eomplex organs of a body whieh he thought to resemble that of a pig or a ealf in basie eonstruetion.

To a large extent the Chureh was responsible for this lamentable state of affairs. The human body, the handiwork of God, was eonsidered inviolable and saerosanet; in eonsequence the Chureh looked with the gravest doubts and suspieions upon disseetion, and espeeially upon disseetion of the head where the soul was supposedly housed. Anatomies were carried out, to be sure, but under the strietest supervision, and only the body of a gallowsbird eould be used for sueh purposes. Laymen of rank and distinction were admitted to publie anatomies by speeial invitation: they came more for the sport and the speetaele than for any real interest in the seientifie aspects of the proeedure. The actual disseetion was considered beneath the dignity of the professor; he was eontent to point with a long wand to organs and entrails held aloft by the barber-surgeon who handled the knife. As an apprentiee, Paré must have assisted at sueh demonstrations.

In his early studies Paré found himself at a grave disadvantage: he was unable to read Latin—the standard language for all serious and dignified writing—and he found himself obliged to learn his anatomy through direet observation, rather than through those writings of the aneient masters whieh he would find in French translations. In his own works Paré frequently boasts that experienee and experiment had taught him more than all the learned theses he had been obliged to study during his days as a student. He eompleted his medical novitiate in that great hall of merey and charity, filth and disorder: the Hôtel-Dieu in Paris, where the patients—men, women and ehildren suffering every sort of disease—were lumped together in beds of straw, five and six at a time.

Following this apprentieeship, Paré became a surgeon to the

French Army, a position which he held on and off for nearly half a century. As such he had no official position, no commission, and certainly no regular pay. It was customary for princes and lords to be accompanied on their travels and campaigns by a personal physician. The rewards for such services, though sometimes attractive, were not always in money: Paré reports that a grateful baron who had received his care "sent me a Tunne of wine to my lodgings and bid tell me, when it was dronke hee would send me more." Personal physicians like Paré had no duty or obligation whatsoever to the ordinary soldier. More often than not the wounded musketeer was entrusted to the gentle care of pain-hardened comrades who did what they could in a crude and primitive way. Paré seems to have been an exception, however. His writings in the *Apologie and Treatise* show him as a pious man of infinite gentleness and compassion who would, when the occasion demanded, serve as doctor, cook and general lackey to wounded soldiers. Having performed just those services once for a wounded soldier, he was gratified and not at all offended when the soldier's friends presented him with a small gift of money and offered speeches of thanks and affection. His essential humility and goodness very rapidly won him esteem from officers and soldiers alike.

As a military surgeon, Paré found almost limitless scope for his energies. War, savage and brutal, external and civil, raged across the face of sixteenth-century France. Brief interludes of peace were only uneasy respites during which opposing forces marshalled new resources for the attack. The prolonged fighting during the first half of the century between the armies of Francis I and those of Charles V, the Holy Roman Emperor, were followed swiftly by the long, debilitating Wars of Religion during the second half—wars in which brother was set against brother and father against son.

No period of French history was ever more eventful—nor more fascinating. Surgery in the field was of the most primitive order. We of the twentieth century are tempted to think only in terms of advanced dressing stations and base hospitals, of the rapid evacuation of casualties to permanent installations where the best medical care can be quickly given. In the days of Paré, however, little was or could be done for the wounded. Anaesthetics, antibiotics, aseptic surgery and wonder-working drugs were all unknown. The crude ampu-

tation of shattered limbs and the burning out of infected wounds were the usual duties falling to the surgeon. His instruments were heavy, cumbersome things of iron, rusted and spattered with dried blood, so rude in appearance that they would not have found a place in the blacksmith's shop of our grandfathers.

He worked long hours under the most adverse conditions. Cleanliness was completely disregarded by most surgeons, for few—Paré was an exception—saw any connection between dirt, pestilential flies and the rapid spread of disease. Often enough the surgeon was half sorcerer and believed in the efficacy of such drugs as Egyptian Mummy, which means exactly what the name implies and which, it was supposed, had a curative power all of its own. Others put great trust in the bezoar stone as an antidote to all manner of poisons. It came, the vendor would swear on his mother's soul, from the body of the fabulous unicorn; in reality, it was nothing more than a stone from the inwards of a sheep or a goat. Paré was one of the few who bitterly denounced its use.

Apart from the purely medical aspects of Paré's writings, there is another side, perhaps more interesting and more topical for the modern devotee of military history. During his lengthy service—he eventually became surgeon to no fewer than four kings of France—Paré took part in most of the major battles of his time. His writings—really a surgeon's diary, although they are liberally interlarded with technical information — are the memoirs of a man who was successively in battle against the Italians, the Germans, the Spanish, and the English.

Although Paré's writings show little of the heavy overlay of classical learning which characterizes most prose of the Renaissance, he possessed that full-blooded, rollicking style which one associates with a Rabelais or a Cellini. On every page there is some interesting bit of gossip about his great contemporaries, for he knew many of them and brought them medical aid on more than one occasion. He loved a good story, a sharp retort, or a happy turn of phrase. There is a certain mellowness and meandering to his style, a lack of precision and arrangement, which give his work the breath and blood of life itself: he had the happy faculty of recording the spoken word with complete candour. His work teems with anecdotes and asides about army life, all turned in the vivid and picturesque language of a man who wrote simply and completely without affectation.

He knew the wounds and sights of a camp awakening at dawn, the low rumblings of men-at-arms before the assault; he knew the gallantry and the barbarity of Renaissance warfare, the pride of victorious battleflags streaming in the wind and the despair and ignominy of defeat.

Moreover, Paré has the soldier's eye for the humour and horror of war which makes that side of his writings as valid today as when he wrote nearly three hundred years ago. Good soldier though he was, he could never quite understand the needless carnage and destruction: why men, one moment great lusty fellows full of vital spirit and quick energy under their captain's command, should be turned over to him, the surgeon, the next moment broken, wounded and dying.

He roundly condemns that "whole wretched shoppe and magazine of cruelty . . . All sorts of Mines, Countermines, pots of fire, traines, fiery Arrowes, Lances, Crossbowes, barrells, balls of fire, burning faggots, Granats, and all such fiery engines and Inventions . . ." His wrath falls in particular upon the wretched man who first invented the gun:

> I think the deviser of this deadly Engine hath this for his recompense, that his name should be hidden by the darkness of perpetuall ignorance, as not meriting for this his most pernicious invention, any mention from posterity.

Elsewhere Paré recalls the horror of the siege of Metz in 1552, when the French found themselves surrounded by the armies of the Emperor, for "where there was a horse hurt, he was flayed and eaten by the Souldiers in stead of beefe and bacon." He sees again the English, striking fear into the hearts of the French as they descend by ship upon the coast of Brittany in such numbers that they "seemed like a Forest which marched upon the sea."

Throughout his work, Paré remains completely honest about his own fears on the eve of battle; at the same time, he seems to have been aware that the power to control natural fear is the measure of the man and the soldier. Called and recalled for each succeeding campaign, Paré was not above pleading domestic difficulties, principally the recurrent illness of his wife, in order that he might escape the rigours of war. Yet not once did he fail to go, though the memories of battles were still fresh in his mind. Here are his thoughts as he prepares to slip through the enemy lines:

> Being near the Campe, I saw a league and a half off bright fires round about the Citty, which seems as if all the earth were on fire, and I thought wee would never passe through those fires wit hout being discovered, and

by consequent to be hanged and strangled, or cut in peeces, or pay a great ransome. To speake truth, I wished myselfe at Paris, for the eminent danger which I foresaw.

At such moments of strain, Paré, a profoundly religious man, was able with the help of faith to surmount his fears. Indeed, he rarely performed any major surgery without first offering up a prayer. Summoned to attend a badly wounded nobleman, he tells us of his immediate action:

> Having seen him, I went awalking into a garden where I prayed to God that He would give me the grace to cure him, and that he would give a blessing to our hands and medicaments to combat against so many complicated remedies.

And not infrequently, after working a cure on a patient, Paré follows his account with the statement which will always remain attached to his name as a mark of his essential humility: "I dressed him and God healed him."

At times Paré was capable of acts of real heroism, as when, for example, he found himself besieged by the Imperial troops in the castle of Hesdin near Térouenne, Artois, in 1553. While the other officers made hurried arrangements to quit the city, leaving behind the wounded, Paré refused to accompany them and elected to stay where he was. In his own words:

> I slept not eyther night or day, by reason of the great number of hurt people, which were about two hundred. The dead bodies yeelded a great putrifaction, being heaped one upon the other like Fagots, and not being covered with earth because we had not of it . . . When I went forth, there was striving who should have me, and they carried me like a holy body not touching the ground with my foote in spight one of another, nor could I satisfie so great a number of hurt people.

Nothing obliged him to remain behind; he had no military responsibility to men who had already been deserted by their officers. Feelings of humanity alone prompted this act of courage and nobility. So he changed his fine velvet coat and silken doublet for "a scurvy olde doublet and leather jerkin." This was the only measure he took for his personal safety: he thought to disguise himself as a common soldier and so avoid the special treatment meted out to captured officers.

On reading the work of Paré, one is struck by the fact that the sense of comradeship and good humour, the penchant for the comic and the boisterous change but little among military men throughout the ages. The *Apologie* is full of wry humour and comic interlude; it abounds in the unfailing good spirits which are the mark of the soldier. He recalls the army games after the defeat of the English in Britanny in 1543:

> Monsieur d'Estampes [the governor of Brittany] to make sport and pleas-

ure to the sayd Monsieur de Rohan and Laval and other gentlemen, caused diverse Countrey wenches to come to the feasts, to sing songs in the Low Brittan tongue, where their harmony was like the croaking of Frogges, while they are in love. Moreover he made them dance the Britany Triory, without mooving feete or buttockes, he made them heare and see much good.

He recounts moments of tragi-comedy which might have taken place within the last ten or fifteen years. Two comrades come to blows over a game of dice, and, in the presence of the surgeon, one gives his mate "a stroake with a Halbard upon the head, penetrating even to the left ventricle of the braine, without falling to the ground. Hee that strooke him saith, he had heard that he had cheated at Dice, and that he had drawne a great summe of money, and that it was his *custome* to cheate . . ." The whole story has a familiar ring.

Paré delights in the whisperings of private soldiers and in the gossip of captains. He gives a delightful account of the manner in which rumour runs like a flash fire through an army on the eve of battle. The French king had laid careful plans for an attack at Damvillers in 1552:

> Now there was a Groome of the Kings chamber who lay under the Kings bed in the Camp to sleep, understood that they resolved the next day to give an assault, he presently revealed it to a certaine Captaine and told him for certaine the day following assault should be given, & that he had heard it of the King, & praid the said Captaine that he would not speake a word of it to any body, which he promised, but his promise was not kept, for at the same instant, he went and declared it to a Captaine, & this Captaine to another Captaine, and from the Captaines to some of the Souldiers, saying alwayes, *say nothing*.

Dame Rumour, it appears, has always been the camp-follower of armies in the field.

Surgeon, soldier—and in the eyes of many of his patients—saint, Ambroise Paré is one of the truly outstanding figures of Renaissance France. If he had done nothing more than bring ease to the unfortunate soldier with his new technique for treating wounds made by gunshot, he would merit a place of distinction in the history of medicine. But he did much more: to the cold indifference of battlefield surgery he brought that gentleness, humility and goodness which humanizes and ennobles the practice of medicine.

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The RCAF Staff College Journal Essay Contest for 1958

The essay contest which was a feature of the 1957 issue of the RCAF Staff College Journal will be continued in 1958. The contest is designed to encourage serious writing on military problems; in the words of the Editor, "we do not want the contest to reflect a narrow, air force point of view, and thus we are particularly anxious to obtain entries from the other Services." Rules of the contest are published below.—Editor.

* * *

1. An award of $250.00 will be made to the member or former member of the Canadian armed forces or Civil Service who writes the best unsolicited essay, not exceeding 5000 words, likely to stimulate thought on military, and particularly air force, matters. This includes strategy, operations, training, logistics, personnal administration, technical, research, production, or any other field.

2. In addition to the prize money, the writer of the winning essay will be paid at the rate of three cents per word if his work is published in the *RCAF Staff College Journal*. Moreover, all entries will be considered for publication and those selected will be paid for at the basic rate of three cents a word.

3. Entries are not to contain classified information. Manuscripts must be delivered to *The Editor, RCAF Staff College Journal, Armour Heights, Toronto 12, Ontario,* by June 1st, 1958.

4. The Board of Directors of the *Journal* will appoint the judges, whose decision will be final. Arrangements for the presentation of the award will be made known when the winner is announced. If no essay meets the standard of excellence set by the judges the right to make no award will be reserved to them.

The Lives of a French Surgeon

(*Continued from preceding page*)

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* *All passages cited from Paré are taken from this work. In making her selection, Mrs. Singer used an English version of 1634, prepared by Thomas Johnson, a botanist and apothecary.*—Author.

HELICOPTERS IN THE ARMY

By

MAJOR-GENERAL HAMILTON HOWZE, UNITED STATES ARMY*

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. . . In this article I do not attempt to outline the functions of Army aviation, which I hope are now broadly known in the Army. What I call "new uses" all fall within our authorized functions.

I'll start with the use of aircraft for the movement of combat troops. Perhaps this cannot be designated, with complete propriety, a "new use" of Army aviation, because the Army already has a considerable number of helicopter and fixed-wing aviation transport companies, comprising a total of several hundred troop-carrying aircraft. These units are broadly distributed in the continental United States, in the Far East Command, and in Europe, and participate regularly in troop exercises in those areas.

But while this sort of thing has lost some of its novelty, the proper tactical exploitation of the capabilities of slow-flying aircraft in the movement of combat units does require a new understanding and a new and imaginative application.

It should be first acknowledged that the helicopter is not a routine substitute for the truck. The helicopter is sufficiently expensive and difficult to maintain, and its availability in quantity is thereby sufficiently restricted to make it a special-purpose item. Its use should be reserved for certain special purposes, for which it is indispensable.

Actually some (not all) of the jobs of the helicopter may be undertaken by short-take-off-and-landing airplanes when greater discretion in the selection of landing areas is operationally possible.

In moving troops, the helicopter will perhaps find its greatest utility as an obstacle crosser. It has unparalleled capabilities in this respect. And the battlefield is essentially a conglomeration of obstacles.

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Natural obstacles are rivers, hills and ridges, creeks and swamps. The old familiar artificial obstacles are the areas swept by enemy fire, interdicted roads, blown bridges and culverts, craters, minefields of all varieties, and (if we move offensively) the enemy positions themselves.

New obstacles not heretofore encountered by our troops are large areas irradiated by atomic blast, areas in which the woods and fields are set afire by atomic blast, areas in which all bridges are down and a town's rubble lies across the road—and possibly areas contaminated by persistent gases.

The question now is how to move troops rapidly from A to B, from C to D, from E to F, etc., etc. If the problem is not to move rapidly, if surprise is not a factor, surface means may be used, but certainly they will be slow and in many instances very hazardous. In these circumstances helicopters can move troops and certain equipment with speed and efficiency and generally without regard to the nature of the obstacle, but they can't do it on a routine basis unless a great many machines are available.

Another application of the troop-carrying helicopter derives its importance from the characteristic speed of aircraft. Ninety knots on a straight line is still very fast when compared with the speed of a truck following a tortuous, rutted, crowded road.

There seems to be universal agreement to the proposition that troop formations in the atomic era must take the form of a number of dispersed islands of force, each island being garrisoned by semi-independent units of all arms. But these islands are not rooted; even in defence they must be movable.

For years we have talked of "mobile defence"—some of us not understanding the meaning of the term. Now we have to understand it. Mobile defence implies flexibility, a deliberate rejection of the idea of defending bits of ground "at all costs". One may be blasted off a terrain feature by a single explosion—and will be, if too much force is committed to its defence.

Mobile defence requires (it has got to be said) mobility. Armoured units have their own, organically. Helicopter lift for infantry must come mostly from helicopter companies attached to divisions and, usually on a one-shot basis, to smaller units. Infantry mobile reserves so essential to this type of defence may be made so by the attachment of helicopters, bivouacked alongside and ready to go.

An attack cannot be preceded

The H-13 reconnaissance helicopter, typical missions of which are observation, medical evacuation, wire laying and command liaison. The cruise speed is 0-70 knots and range (normal cruise speed), 130 nautical miles. The allowable cargo load is 400 lbs.; crew, 1 (pilot); troop capacity (normal cruise speed, normal gross weight), 2; litter capacity, 2; hours of flight (normal cruise speed, normal gross weight), 3.

by an assembly of assault forces in strength in what we used to call attack positions, for such concentration will invite wholesale destruction by the enemy's area weapons. Notwithstanding, the requirement is still to produce the maximum practicable amount of force (with constant regard to the atomic threat) at the proper place with the best possible timing.

The only solution lies, again, in mobility. Some portion of the attacking infantry can, of course, move by surface means to a position from which it can jump off in attack, and armoured elements can do the same. Armoured elements, of all our forces, are best equipped to withstand atomic blast while on the move.

Helicopters can contribute greatly in this situation. Helicopters can carry infantry from positions well to the rear (say twenty-five miles) rapidly and with very precise timing to any given area. This affords to helicopter-borne infantry great latitude in the selection of the point of thrust against the enemy and enhances greatly the possibility of surprise.

These are factors of the utmost importance, the implications of

The H-23, another reconnaissance helicopter. Its missions are the same as for the H-13. The cruise speed is 0-60 knots and range (normal cruise speed), 117 nautical miles. Troop capacity (combat equipped) is 2 and litter capacity, 2.

which must be pondered a bit to be fully understood. Additionally, the unique ability of the helicopter to cross obstacles (as previously described) affords to helicopter-borne infantry additional latitude in the direction of thrust, for there will be many occasions on which natural and artificial obstacles—the latter including the actual positions of the enemy—can be negotiated quickly and the assault troops placed in position to move against the enemy from unexpected directions. The problem facing the defender will thereby be greatly increased.

The vulnerability of the helicopter is, of course, a pertinent consideration. The machines will be subjected to normal hazards of combat, and it will not be unusual to see one crash and destroy its occupants. War can be dangerous. But the answer to the survival problems lies in the techniques of helicopter employment, with special reference to the use of supporting fires to enhance greatly the chances of survival.

To reduce vulnerability, helicopter operations in daylight must, generally speaking, be conducted over land areas dominated by weapons organic to the Army. This in effect means the helicopters must be used either over friendly territory or in the course of only very shallow penetrations over enemy territory.

Our new missiles, Hawk in particular, give promise of being able to afford excellent protection to helicopters against the depredations of enemy fighter aircraft. The helicopter probably will be able to avoid engagement by heavy enemy anti-aircraft fire by flying very close to the ground—contour flying, well below the ridge lines.

Enemy small-arms fire may be suppressed by conventional and unconventional means. It is obviously easy to neutralize large areas by the use of atomic explosives, an almost unfairly simple solution to the problem. But conventional artillery fire—which can be delivered in heavy concentrations for the short period of time necessary for a flight of helicopters to pass a given danger area—can have an efficient suppressive effect on the enemy. Additionally, we expect to arm our cargo helicopters with a single machine-gun each to permit them, when moving into a dangerous area, to at least spray the ground as a sort of sanitizing measure. And remember that helicopters arrive very quickly, frequently with complete surprise, and unload and depart very quickly.

Perhaps the most important way, however, to cope with vulnerability lies in the use of helicopters at night and in inclement weather. Here the Army is moving as rapidly as it can, but it should be stated that our helicopter companies do not at the present moment have the capability of flying in inclement weather very close to the ground—and this is the tactical requirement.

Even a casual consideration of a dispersed battle formation raises in the most obvious way the question as to how the enemy may be kept out of our area of defence.

In the Korean war the Communists developed to a high point of efficiency the tactic of infiltration. Our units were privileged (so far as the atomic threat was concerned) to concentrate as much as they wished; even so, they were unable to prevent enemy infiltration into and through the forward defensive area on a fairly regular basis. Apparently some of the snappiest hand-to-hand actions were fought in battalion and regimental command posts.

In a defensive formation gaps of several thousand yards will exist between our units. How to keep the enemy, in small numbers, from moving into those gaps is not susceptible of solution. In truth, we cannot keep him out. Reconnaissance aviation can contribute materially toward solution, but to establish an impenetrable screen will be quite impossible.

A similar situation exists when our forces are moving offensively,

for again, as has been said before, the formation must be sufficiently dispersed as to not invite nuclear attack. Attacking units operating perforce at minimum density cannot hope to sweep all enemy from penetrated areas.

How, then, are the units in forward areas to be resupplied? Enemy infiltrating parties, or enemy elements bypassed by our attacking spearheads, represent the most serious sort of threat to our ground lines of supply—a threat so serious as to make resupply by ground means practically impossible.

I therefore suggest that we consider the resupply of isolated units (which in effect means the majority of units in the most forward areas) by air to be routinely necessary. Air resupply, indeed, appears to be the only solution to a problem which, left unsolved, will make impossible efficient operations by units deployed for combat.

Resupply by air will, of course, have its own hazards. It appears essential that it be conducted, as a normal thing, at night or in inclement weather by very low flying aircraft. A new possibility in this respect lies in the use of fairly small drone aircraft, which will presumably be capable of carrying larger payloads than similar manned aircraft and will be less hazardous to personnel. The drone will be equally efficient, day or night.

The use of light aircraft in the ground-reconnaissance role is not altogether new, but it does represent a possibility thus far only superficially explored.

Until now reconnaissance by aircraft—whether high performance Air Force aircraft or Army observation airplanes—has been performed as an entirely separate task only remotely connected with the detailed type of reconnaissance habitually performed by the Army's armoured reconnaissance forces.

In the vast majority of cases the aircraft were not organic to the ground reconnaissance units, and aircraft pilot and observer reports were made directly to major headquarters and usually reached the ears of the reconnaissance unit commander.

Without disturbing that process, it is time now that we proceeded rapidly in the true integration of aircraft in our reconnaissance units to allow those units to perform more efficiently their classic roles of reconnaissance, security, seizure of critical areas, and pursuit. I am not suggesting independent air reconnaissance battalions but rather the intimate combination of air and surface reconnaissance means.

Nowhere in any Army-approved

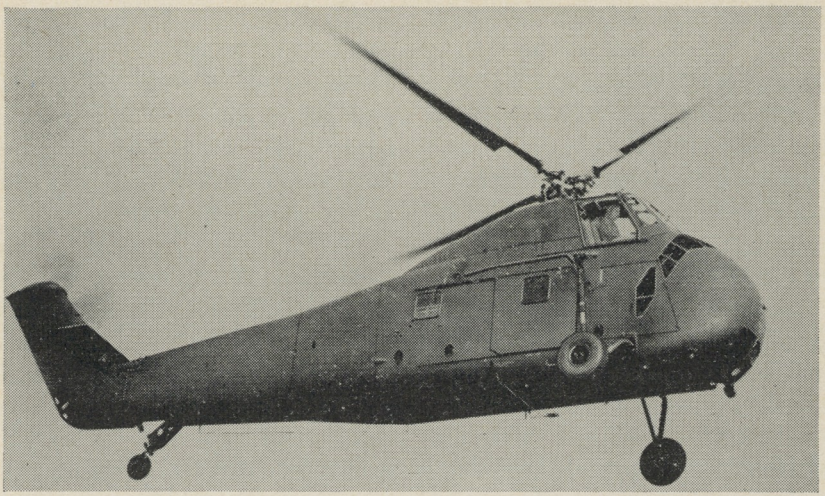
The H-21 light transport helicopter. Typical missions are troop and cargo transport and medical evacuation. Cruise speed is 0-85 knots; range (normal cruise speed), 280 nautical miles; allowable cargo load, 3000 lbs. (40 nautical miles radius), 2200 lbs. (140 nautical miles radius). It has a crew of 3; troop capacity (combat equipped), 12; litter capacity, 12; hours of flight (normal cruise speed, design gross weight), 3½.

table of organization and equipment at the present time does there exist a reconnaissance team composed of a light aircraft, a pilot, and a regularly designated observer. This, I think, is a startling state of affairs. We have not exploited the capability of the team, trained and regularly practised in the art of reconnaissance.

I visualize the incorporation in our present ground-reconnaissance units—the division reconnaissance battalions and the armoured cavalry regiments—of platoons of these reconnaissance teams riding for the most part in light reconnaissance helicopters, each of which will be armed with a single light machine-gun. The techniques of operation of these small teams have yet to be developed, but we are working on it.

In this development, however, we should rule out at the start the process of flying the aircraft directly into the enemy, or directly over territory known or suspected to contain hostile elements. This idea is very difficult to put over, and when it is not fully grasped the whole concept is misunderstood.

The helicopters, operating in sections of two or three, will habitually fly very close to the ground. On a reconnaissance mis-



The H-34 light transport helicopter, which is used for troop and cargo transport and medical evacuation. The allowable cargo load is 3000 lbs. (120 nautical miles radius) or 4000 lbs. (90 nautical miles radius). It carries a crew of 3; troop capacity (combat equipped), 12; litter capacity, 8; hours of flight (normal cruise speed, design gross weight), 3½.

sion they will move laterally many more miles than frontally. Movement by bounds—one or two machines covering the movement of another—will be frequently practised. In the course of an approach to a terrain feature suspected to be occupied by the enemy, the helicopters will move deliberately and according to system from one point of cover to the next; they will hover rather frequently, but always within a few feet of cover, so that if engaged by fire they may drop quickly out of sight.

Occasionally one will land, permitting the observer to leave the machine to take up a ground point of observation. With their machine-guns they can execute the battle-tested device of reconnaissance by fire; e.g., if they suspect enemy occupation of a group of buildings or a small ridge, they can shoot a few bursts into the suspected area to see if a reply is forthcoming. If the section is engaged by hostile fire, it will always avoid a shooting duel, for the discovery of the enemy is its function, not the enemy's destruction.

In the course of the reconnaissance of an area or of a route, the helicopters will not fly directly up roads but rather off to the side of

them, for in moving situations the enemy is very apt to be on the roads. A dangerous-looking area is not flown into but is first inspected carefully at a distance, and then perhaps flown around in order to give the team the benefit of examination from several points of vantage.

Visibility from the air is generally excellent. Needless to say, one cannot see from a helicopter certain details visible to a ground vehicle; on the other hand, the reverse is also perfectly true.

In rapidly-moving situations where this type of reconnaissance will be especially valuable, our armoured ground reconnaissance units moving down roads are unable as of the present time to observe very large areas off roads where the enemy may lurk in force.

The helicopter can discover this enemy; under many circumstances it can see beyond terrain features which totally block ground observation. While helicopters cannot see details through heavy tree growth, neither can ground vehicles see very far laterally in thick woods.

So while the ground-reconnaissance vehicle and the reconnaissance helicopter each has different limitations, on balance I believe the helicopter is considerably superior in what it can see. Certainly it will be an enormously valuable collaborator. Hastily-laid mines, camouflaged roadblocks, objects or personnel away from the roads, and all objects beyond terrain masks will, I believe, be more susceptible of detection from the air than from the ground.

The platoons of reconnoitering helicopters should be backed up by other somewhat larger aircraft carrying riflemen. I do not visualize large units, but rather small quantities of riflemen specially trained for this type operation, skilled in patrol and commando tactics, and regularly assigned to very light, agile, troop-carrying helicopters. The Army is studying the development of helicopters very much smaller than the H-34 and H-21 for this role.

Backing up both the air-transported riflemen and the reconnaissance helicopters should be a small number of shooting helicopters—medium-sized machines each carrying multiple machine-guns, possibly rockets, and fairly large quantities of ammunition. These are not to be used for the engagement of heavy enemy forces, and neither are they, by any stretch of the imagination, competitors with the fighter-bomber.

Unlike the fighter-bomber they will operate habitually on the tree-tops, shooting generally from hovering positions close to cover

behind which they may drop promptly when engaged by enemy fire, and shooting always from territory under friendly control into territory under enemy control. They will not fly over the enemy, and they will not indulge in fire duels. They will deliver heavy concentrations of fire for short periods of time, drop behind cover, reappear at a new spot and repeat the process.

The vulnerability of the helicopter is a matter which needs continuing exploration. Using the tactics and techniques which are possible to evolve, I do not believe the aircraft will be unacceptably vulnerable. Remember that these craft can shoot back; that they will know promptly when they are fired on; that they will operate very close to the ground and therefore close to cover. They move faster than one thinks, and will provide no background normally available to the ground machine-gunner for adjustment of his fire. The estimate of range to these aircraft will be very difficult, and if inaccurate will render the fire against them ineffective.

Because a helicopter flying over a concentration of enemy troops not themselves under fire may readily be shot down does not mean that a reconnoitering helicopter in the hands of a clever pilot and observer, trained to their task, can be easily destroyed.

But of course some of these craft will be shot down. If anyone knows a really safe way to conduct effective reconnaissance of the enemy at the forefront of the battle area, he hasn't yet divulged it publicly. It can't be "done with mirrors".

We are all acutely aware, painfully aware, in some quarters, of the new emphasis on missiles. On the several varieties of surface-to-surface missiles the Army is placing much of its hope for that part of the close support of ground troops heretofore performed by the fighter-bomber, and the Army is leaning heavily on the surface-to-air missile to control the air space above it.

I do not believe that anyone is yet willing to predict when, or even whether, fighter aircraft will become altogether outmoded for these purposes, but on the other hand it is apparent that missiles can at least partially replace them. But how well missiles will do the job depends partly on how flexibly they may be employed.

When the ground-launched missile systems and supporting combat aircraft are conceptually compared, the aircraft wins hands down as regards flexibility of employment. Perhaps this will remain true, for it appears that it will

always be possible to concentrate in a given area a greater amount of air fire-power than missile fire-power. Every flyable fighter in Europe, for example, could be airborne over a single spot at the same time. But if the missile, despite its superiority on other counts, suffers in the field of flexibility, then we should make a strong try at improvement.

The missile in the correct place at the correct time, equipped with the correct warhead and provided with a proper target, can be very effective. The problem is to make all these conditions come about.

It would appear that light aviation is the best possible answer. While there have been a number of theoretical studies on the capacities of cargo helicopters and fixed-wing aircraft in moving missiles, and while new missile designs take, presumably, proper account of air transportability, the Army has not thus far gotten very far along toward a true integration of aircraft in missile operations. There are great advantages possible in the movement of missiles, component parts of missiles, missile launchers, and crews by air in building a concentration of fire-power for a swift attack.

Morcover, a sufficient number of missiles to afford neccssary coverage on a semi-permanent, relatively immobile basis everywhere in an extensive battle area will be prohibitively expensive; large stockpiles cannot be maintained at battery sites. Economy of *matériel* and tactical necessity would appear to demand frequent use of aviation to distribute or redistribute missile fire-power quickly according to need. The alternative is unacceptable inflexibility.

. . . Clausewitz says this: "In any specific action, in any measure we may undertake, we always have the choice between the most audacious and the most careful solution. Some people think that the theory of war always advises the latter. That assumption is false. If the theory does advise anything, it is the nature of war to advise the most decisive, that is, the most audacious. Theory leaves it to the military leader, however, to act according to his own courage, according to his spirit of enterprise, and his self-confidence. Makc your choice, therefore, according to this inner force; but never forget that no military leader has ever become great without audacity."

This means that we must see and wc must move—it's hard to be audacious sitting at the bottom of a hole. In the air just above the tree-tops lies one of the great hopes for victory on the ground.

The Aim: to make war, as far as may be, impossible.

The Means: Modern forces, suited to the modern world.

BRITAIN'S NEW PATTERN OF DEFENCE

By

CYRIL FALLS, FORMER MILITARY CORRESPONDENT OF THE LONDON *Times* AND PROFESSOR OF THE HISTORY OF WAR, OXFORD UNIVERSITY.*

"Forces to be reduced to 375,000 in Five Years" runs a newspaper headline. The extent of the cuts in Britain's defence, especially in man-power, has attracted more attention than the theories behind them. Here an effort will be made to redress the balance. First of all, however, it will be convenient to set out, in the briefest form, what the reductions amount to.

In man-power the aim is to reduce the combined strength of the three services of sea, land and air from 690,000 to 375,000. The Navy's material cuts are chiefly in ships of the reserve, considered obsolete. Little has been announced about those of the Army, except numerically, in which respect it is to be approximately halved. What abolition of units this will involve is unknown, but it is certain that the sharpest reductions will be in depot and workshop troops. In the Royal Air Force the 2nd Tactical Air Force on the Continent and the light bomber force at home, which is assigned to the North Atlantic Treaty Organization, will both be halved. Fighter Command, another home force, will be reduced in strength and confined to the defence of bomber airfields.

End of Conscription

Next let us glance at the redistribution of the forces which will remain. The new structure of the Navy will be based on a small number of carrier groups, one of which will normally be stationed in the Indian Ocean. The reduced Army will increase its hitting power with tactical atomic weapons. The central reserve in Britain will be kept in the highest possible state of mobility by means of the development of the transport aircraft fleet in RAF Transport Command and contracts with private firms. In the RAF the medium bombers

* *Reprinted from the September 1957 issue of the* Australian Army Journal *by courtesy of the Editors.*

will be supplemented by ballistic rockets. The fighter force for the defence of bomber airfields will eventually be replaced by guided missiles. Some squadrons of the 2nd Tactical Air Force in Europe will be supplied with atomic bombs.

The means of reducing the man-power of the services will be the gradual reduction in numbers called up under conscription. The final call-up under the National Service Acts is expected to take place at the end of 1960, so that by the end of 1962 it is hoped that the total strength of 375,000 will be "regulars" or voluntary professionals. Needless to say, this is an aspiration, because one cannot get volunteers unless they volunteer.

There May Be Secondary Wars

Now for explaining the theory behind the cuts promised above, it being understood that I am putting the official principles, with which I agree. The danger represented by nuclear weapons has become so overwhelming that the probable role of conventional forces has still further decreased in the last year or two. Their chief part is to stand ready for the waging of secondary wars. It is considered—and this view has historical backing—that there may be such wars, simply because nuclear weapons are so terrible, and secondary wars might break out between nations which do not possess these.

The Army thus has three major roles: continental defence within the frame of NATO, harder hitting though reduced in size; home defence, taking in some aspects of civil defence, allotted to the Territorial Army; and reserve for the needs of Britain and the commitments of her alliances and pacts. Part of this is a small Commonwealth Strategic Reserve, and in addition forces in the Persian Gulf and East Africa.

The aircraft carrier is maintained in the Navy as "a mobile air station", because expert opinion holds that it still has a significant role.

The Financial Aspect

Finance enters into the reductions as a whole because costs are rising fast and maintenance of present strength would involve gravely increased expenditures. It is this consideration which has decided the Government to abandon the project of building supersonic bombers. The desirability of putting back into civil life, into industry and science, a proportion of the present large military man-power is also a factor. Financial savings will be much smaller than those in man-power, but it is hoped that they will be substantial.

In short, the aim is to produce modern forces suited to the modern world and at the same time relieve where possible the strain on the national economy. It resembles that of a business firm whose outgoings have become disproportionate to its profits and which is determined, on the advice of its auditors, to reduce them, while keeping up, so far as may be, efficiency. It hopes to increase it in some respects, and in others to make any falling-off there may be proportionately less than the savings. The United Kingdom Government has not listened to the voices proclaiming that "nothing but the bomb matters and all else is waste."

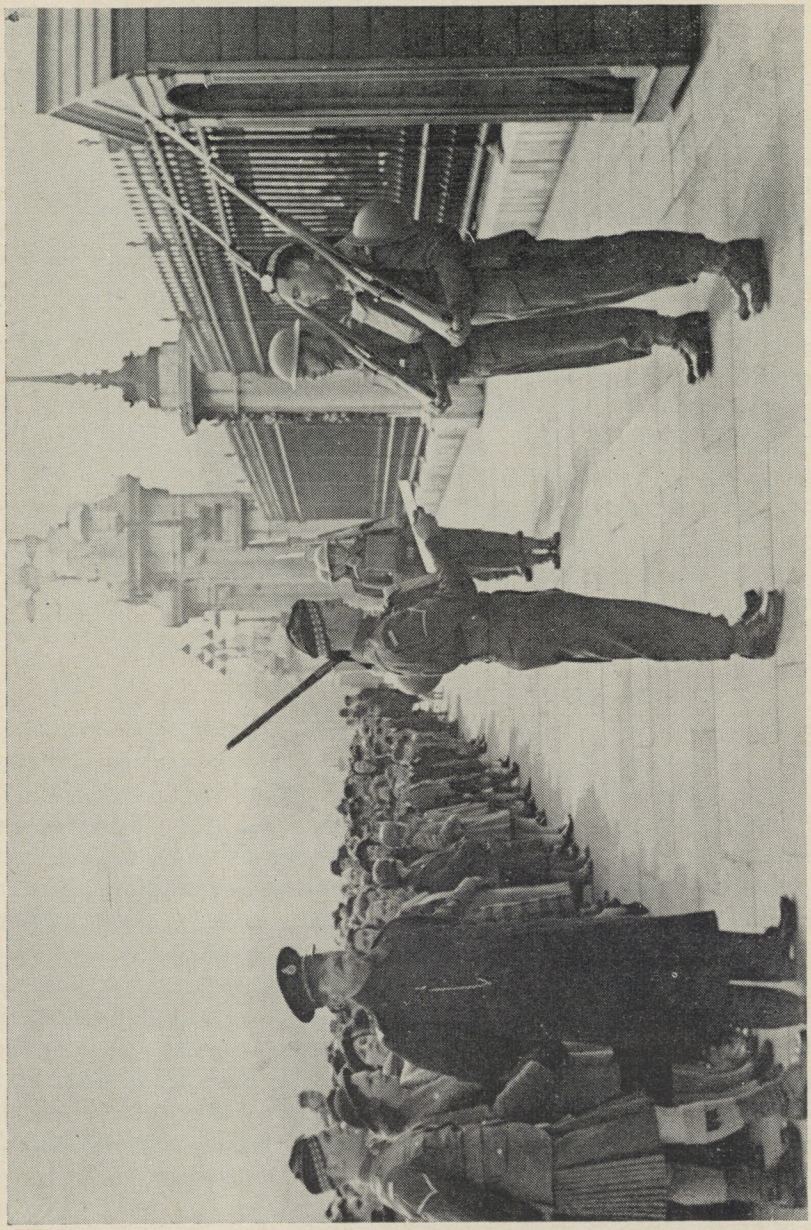
The Nuclear Deterrent

Whether the provision made for "all else" is adequate can be proved only by experience, but at all events it has been recognized that some precautions outside the sphere of nuclear war are vital. It is no less clearly recognized that nuclear war is suicidal for any party which engages in it. The nuclear deterrent must be maintained as the best hope of preventing another global war, but its value lies not in its use as a weapon but as a sanction for the avoidance of war. In the broadest sense, the object of defence measures is to render war unlikely—as near as may be, impossible—and not in order to prepare to wage war.

Camouflaged

In an article entitled "On Fatigue", which appeared in the November 1957 issue of the *Journal of the Royal United Service Institution*, Major-General B. T. Wilson made a very useful point:

"Occasionally Wellington slept in the open, wrapped up in his cloak, whilst waiting for a battle to develop. One historian records that he did so by the roadside at Quatre Bras, 'covering his face with a newspaper.' This is a commendable practice and showed the Duke's awareness of the sorry picture which even a great man can present when he is asleep. Worn out staff officers dozing in cars attract less attention by wearing black spectacles and by keeping their mouths shut. It irks the troops to see officers asleep in cars and looking grotesque."—*Contributed by J. Mackay Hitsman, Historical Section, Army Headquarters, Ottawa.*



Flashback: No. 22

THE KING'S GUARD, APRIL 1940

Narrative supplied by the Historical Section,
Army Headquarters, Ottawa

The picture opposite shows a sentry of The Toronto Scottish Regiment (M.G.) taking over from a sentry of the Royal 22e Régiment at Buckingham Palace on 21 April 1940.

The 1st Canadian Division arrived in England in December 1939. The following month Mr. Anthony Eden (then Secretary of State for the Dominions) proposed that the Canadian troops should stage a grand march through the streets of London. General McNaughton, the divisional commander, did not favour this type of advertisement, feeling that such a march should be reserved for victorious rather than untried soldiers. Instead he preferred a suggestion that the Canadians be permitted to find the King's Guard at Buckingham Palace.

On 21 March a message was received at Divisional Headquarters, that "His Majesty approves of the King's Guard being undertaken by the 1st Canadian Division between the 17 and 25 April, and of the selection of the Royal 22e Régiment and The Toronto Scottish to perform these duties". The choice of regiments was particularly appropriate. Not only was the King Colonel-in-Chief of the Royal 22e Régiment and the Queen Colonel-in-Chief of The Toronto Scottish Regiment (M.G.), but these regiments were representative of two great historic national groups of Canada.

On 17 April the guard of the Royal 22e Régiment took over from the Welsh Guards in the presence of His Majesty. The Queen watched from the balcony of the Palace. Although those were not the first Canadian troops to mount guard at the royal residence—this honour having been granted the military delegation at the Coronation in 1937—the Royal 22e Régiment was the first Canadian regiment ever to do so as such, and the guard was the first composed of men whose mother tongue was not English. On 21 April, The Toronto Scottish Regiment (M.G.) took over from the Royal 22e Régiment and remained on duty until relieved by the Coldstream Guards on 25 April.

THE LONG WOODS

By

CAPTAIN F. L. JONES, LATE THE IRISH REGIMENT OF CANADA,
HAMILTON, ONT.

In the late afternoon of a March day in 1814 Captain Andrew Holmes, 24th Infantry, stared across a ravine where the enemy was forming for an attack. The snow lay deep in the Long Woods, a vast tract of forest land in western Upper Canada. Amid the trees a glimpse of a dark green jacket betrayed the presence of a Canadian, one of the Western Rangers. The American's main concern was the British regulars in their grey-caped greatcoats who were drawn up in a column of assault. Captain James Basden of His Majesty's 89th Regiment of Foot was on the point of making the biggest mistake of his life. The decision which he made was perhaps inevitable in the light of his experience and background.

Born in Westmoreland, England, in 1785, James Lewis Basden had been appointed ensign of the 94th Foot at the age of fifteen. Shipped out to India to join his unit, he found himself in a strange and fabulous land. Like every newcomer, he wondered at the contorted figures on the temple friezes and watched the dancing girls twist and squirm in gestures which Europe never knew. It is doubtful if he felt any appreciation for the antiquity in which he moved or gave thought that here a civilization had flourished and died when his own remote ancestors were painting themselves blue with woad. Subalterns rarely fall into such reflective moods. In common with other hopefuls in scarlet regimentals who landed on the coast of Coromandel, the young ensign had his career to make. He could not have chosen a more stirring time in which to make it.

It was an India in which the soldiers of King George the Third and the agents of the Honourable East India Company were cheerfully unaware that they carried the white man's burden on their shoulders. They fought, worked, raced, gambled and not infrequently drank themselves to death against a backdrop of Asiatic splendour. A dinner attended by Arthur Wellesley, the future conqueror of Napoleon, ended with "two-and-twenty bumpers in glasses of considerable magnitude." It was under Wellesley that Basden made his first campaign in 1803. He saw the bedizened Mahratta

horsemen charge and wheel when the Anglo-Irishman, not yet cast in the familiar figure of the Iron Duke, added "ASSAYE" to the bright scroll of British battle honours.

Basden had been promoted to a lieutenancy by the time the victories at Aseeghur, Argaum and Gwilighur broke the Mahratta power. His active service in Hindostan was a life of hard marches in the torrential rains of the monsoons or under glaring skies. The creaking and squealing of the ungreased axles of the bullock carts laden with beef, biscuits and arrack for the troops had provided a monotonous *leit-motif* for the campaign. It was a sound broken by the roll of volley firing as the King's regiments and the sepoys of the Company stood shoulder to shoulder to win an empire for the gentlemen in Leadenhall Street. He had learned his trade in a hard school.

The emphasis, however, was upon brawn rather than a display of any great mental powers on the part of the regimental officers. Tactics were simple. "Dash at the first fellows that make their appearance and the campaign will be ours." When he left India to take a captaincy in the newly-raised second battalion of the 89th Foot, now The Royal Irish Fusiliers, his tactical doctrine rested on the firm conviction that a British line was invincible. A veteran at the age of twenty-one, Captain Basden had every reason to believe that the future held great things for him when he assumed command of the light infantry company of the unit.

A British battalion consisted of ten companies. Eight of these were line or "centre" companies while the grenadier and light infantry companies completed the establishment. The importance of light infantry had come to the fore during the long contest between Britain and France in North America. During the American Revolutionary War, general officers were always calling for light infantry to protect their battle line against the harassing fire of the rebels who fought in open order. To the light infantry company were posted the most active and intelligent men in a battalion. They formed the advance guard and flank guards of a unit and were trained in reconnaissance duties. When Basden joined the 89th, the light infantry wore green cords and tassels on their shakos to distinguish them from their humbler comrades of the line. On the shako plate was a small bugle horn, the device of the light infantryman.

It was an indication of the confidence placed in Basden by his Commanding Officer that he was given their regimental appointment. Wearing the distinctive light infantry wing epaulettes on his shoulders instead of the single fringed epaulette of a line company officer, the year 1812 saw him on his way to Canada. Reinforcements were needed if British North America was to be held for the Crown. The outbreak of war with the United States had found the colony almost without regular troops. The regiment landed at Halifax and in the spring of 1813 it was showing its scarlet uniform with black facings along the upper St. Lawrence.

Light infantry was required in the Niagara Peninsula during that critical summer. Captain Basden was ordered to the frontier on detached duty with his company. The journey was to be made by water. To while away the tedium of the voyage, he very unwisely invited a lady to accompany him. Her character in the light of subsequent events was not above reproach. It would appear that the men were quick to emulate their company commander. Basden's progress from Kingston to York took on a holiday aspect. Rumours of this reached headquarters. Nemesis in the shape of Colonel Edward Baynes, Adjutant-General of the Forces, British North America, was soon to overtake the amorous captain.

Colonel Baynes had entered the army before Basden had been born and after thirty years' service he knew a good deal about soldiers and soldiering. As a major in the 76th, he had served in India and had many opportunities of observing a way of life so fatally easy to fall into, in eastern climes. While it was one thing to float down the Hoogli passing the time in dalliance, it was quite another on Lake Ontario in the middle of a war. If an example must be made, one lay ready to hand. Having made up his mind, the Adjutant-General moved swiftly:

General Orders

Kingston, 14 July, 1813

Several instances of irregularity and misconduct of the 89th Regiment having come to the knowledge of the Commander of the Forces, he attributes it to a want of zeal and due attention on the part of the captain, who has, in breach of the General Orders of the Army and in violation of all regard to decency and decorum, encumbered the brigade of boats by bringing up under his protection a female of improper character. His Excellency cannot consider Captain Basden a fit officer to be entrusted with the charge of a select company in the advanced light corps, and therefore directs that Lieut.-Colonel Morrison will immediately appoint a captain to proceed to York to relieve that officer in the command of the light company of the 89th Regiment.

Edward Baynes, Adjutant-General.

His summer idyll rudely shattered, Basden could have asked for a court-martial or resigned his commission and gone home. He did neither but awaited the turn of events. No record exists of what passed between him and his Commanding Officer, Lieut.-Colonel James Morrison. Only two years older than the officer who had fallen from grace, Lieut.-Colonel Morrison may have taken an understanding view of the unfortunate incident. As the summer passed, James Basden had time to reflect on the moral climate which prevailed in Upper Canada. Disconsolate, he sat "by the waters of Babylon".

The Adjutant-General finally gave some thought to the re-employment of Captain Basden. Colonel Baynes knew that the 89th was to remain based on Kingston with the companies billeted along the St. Lawrence in the coming winter. The light company was destined to remain in the Niagara Peninsula with the Centre Division of the army. Comfortable quarters would be difficult to find and close contact with the enemy by no means unlikely. After keeping Basden in a state of suspense for a little over two months, on the 21st of September he restored him to his command. He also put him in charge of the detachment of "recovered men belonging to the Centre Division". These would be the "odds and sods": the men gone sick and then passed as fit for duty, and soldiers returning after a spell of detention. It was a holding unit job which would tax Basden's administrative ability to the limit. The light company (almost at full strength, for it stood 87 all ranks) received him with the wooden expression peculiar to soldiers. The camp fires at night would present a different scene. The nature of their captain's offence was such as to provide British soldiers with a subject of ribald conversation for weeks and weeks.

In November Basden learned that the regiment had fought its first action at Chrysler's Farm. He had missed a chance to rehabilitate himself in the eyes of the Commanding Officer by being on duty in the Niagara area. The following month the army passed over to the offensive on the Niagara frontier. Basden had an opportunity to show that he knew how to handle light infantry. On the night of the 29th of December, a force under Major-General Riall crossed the river and landed about two miles below Black Rock. The light company of the 89th went forward with spirit and dash to seize the bridge over the Shego-

quody Creek. They scattered the American militia and at daybreak Riall's force pushed on to Black Rock and Buffalo. Basden was still out in front with his company. Black Rock and Buffalo were taken and burned. Although it had been in the forefront of the fight, the losses of the light company were slight—three killed and five wounded. In his official dispatch, Major-General Riall mentioned that Captain Basden had conducted himself in an exemplary manner. This was much better than being described in General Orders as an inefficient officer with depraved habits, unfit to command.

Having cleared the Niagara Peninsula of the invaders, Lieut.-General Gordon Drummond gave some attention to the stituation in western Upper Canada. The American naval victory on Lake Erie in September 1813 and the defeat of the British land forces at Moravian Town in the next month had virtually put an end to British power in that part of the province. The Americans at Fort Detroit and Amherstburg were free to range at will up the Thames and along the north shore of Lake Erie. The depredations of American foraging parties were particularly galling to the settlers. To combat these marauders, small groups of the Canadian Militia still kept the field. In January 1814, Lieut.-General Drummond decided to send regular troops to Delaware to support the militia and to act as a corps of observation. To Delaware, a settlement of a few houses situated on the River Thames, twelve miles west of the present city of London, came the light company of the Royal Scots and Captain Basden with the light company of the 89th. They were joined by men of the Kent Militia and the Western Rangers. The entire force which numbered 196 all ranks was under the command of Captain Alexander Stewart, Royal Scots.

The Western Rangers provided this officer with the best reconnaissance service to be found in Upper Canada. Better known as Caldwell's Rangers, they had been raised by Captain Caldwell, an old officer who had served in a ranger corps during the Revolutionary War. The unit was taken through most of its engagements by his son, Captain William Caldwell. He was ably assisted by his half-brother, Billy Caldwell, the son of the elder Caldwell and an Indian girl of the Pottawattomie tribe. These two men were skilful and resolute irregulars imbued with the ranger tradition. Together, they kept watch on the valley of the Thames.

The presence of this British garrison did not escape the notice of Colonel Butler, U.S. Army, Commandant of Fort Detroit. The Canadian Militia had become increasingly active against his foragers since this British post had been established. He was determined to assert his authority over southwestern Upper Canada by an attack upon either Port Talbot on Lake Erie or Delaware far up the River Thames. Colonel Butler entrusted this operation to Andrew Hunter Holmes, a Virginian and a captain in the 24th U.S. Infantry Regiment.

On February 21st, 1814, Captain Holmes set out from Amherstburg, having as his objective the destruction of the small British post at Port Talbot. His force consisted of detachments from the 24th U.S. (Tennessee) Infantry Regiment, the 26th Vermont, the 27th New York and the 28th U.S. (Kentucky) Infantry Regiment. He had with him two light field-pieces. His instructions were that if the attempt on Port Talbot was not likely to meet with success, he had permission to attack Delaware at his discretion.

Homes' route was a forest path never before traversed by wheeled vehicles. Before he had gone any great distance, he was forced to abandon his two six-pounders. The way was obstructed by fallen timbers and the ground had not frozen to a depth which could bear the weight of guns. The guns were pounced upon by men of the Essex Militia and destroyed. The carriages were burnt and the gun barrels hidden in a nearby black ash swamp. At the Rond Eau he was joined by a small party of Michigan Rangers who had been chasing Lieutenant John McGregor and some men of the Loyal Kent Volunteers. Holmes realized that the news that he was "out" would soon reach Port Talbot. Having lost the element of surprise, he gave up the enterprise against that post and decided to strike the British at Delaware. This was a daring decision. The Virginian had no exact knowledge of the strength of the garrison at Delaware. Furthermore, the village lay one hundred miles from his base through country where the going would be very hard on men and horses.

The American force numbered 180 all ranks, nearly all mounted. For the most part it was composed of frontiersmen with considerable experience in Indian fighting. The detachment of Kentuckians were ruthless individuals. The words "civilized warfare" meant nothing to them, although they were not without a rude chivalry. Their

weapons were the rifle, the tomahawk and the scalping knife. They were the inveterate enemies of the Indians, whom they scalped as a matter of course and by whom they were scalped in turn. "There existed among them confused and unconventional ideas as to the rights of personal property, combined with a marvellous tendency towards violating them." The Tennesseans were equally at home in the forest war. Holmes' resolve to go forward was strengthened by the presence of these border fighters.

He marched northward and crossed the Thames below Moravian Town. Turning northeast he plunged into the great wilderness known as the Long Woods. The snow lay more than a foot deep upon the road. Holmes was forcing the pace because he wanted no word of his coming to reach the garrison at Delaware. By this time sixteen men had dropped by the way, worn out with exhaustion and disease. They had been told to find their way back to the base as best they could. On the morning of the 3rd March, Holmes reached a point only fifteen miles from his objective. Here he was met by a man described in American reports as "a person not unfriendly to the United States". He learned that his movements were known to the enemy. This traitor also gave Holmes information about the composition and strength of the British and Canadian units. He said that they were already in motion on the road and that an action could be expected to take place in one hour's time. Captain Holmes immediately fell back five miles to take up a defensive position on the western slopes of a wide and steep ravine. His withdrawal was covered by Captain Gill and the Michigan Rangers. As Holmes got his men across the ravine the sound of firing, flat and muffled in the forest, told him that his rearguard was engaged. Captain Gill rejoined the main body after a running fight with Caldwell's Rangers.

That night Captain William Caldwell sent a report to Captain Stewart that he had made contact with an American force which had encamped at Twenty Mile Creek. Captain Stewart ordered Captain Basden to march early the next morning to the support of Caldwell's Rangers. Stewart would be detained for part of the day at Delaware where he had arranged to meet Colonel Elliott of the Indian Department. Action did not appear to be imminent. Basden, his second-in-command, was an officer of proven ability. He had

done well at Black Rock. In mid-February, this officer of the 89th had gone to the mouth of the Thames to intercept an American foraging party operating in the vicinity of the Rond Eau. The Americans had eluded him but had been forced to abandon forty to fifty head of cattle. Every available man would parade in the morning and move off under his command.

When Captain Holmes fell back to the ravine through which flowed the Twenty Mile Creek, he lost no time in throwing up field entrenchments. Trees were felled and a formidable work soon lay across the road which ran down the eastern slope, across a little bridge and up the western side. It took the form of a square made of logs piled breast high and faced with an abattis of tangled branches. His defences which overlooked the ravine were not as strong. It was an open invitation for the enemy to attack him up the slope. Holmes knew that his only chance of success lay in fighting a defensive action. After eleven days of wilderness travel his men were tired and dispirited. A sense of isolation pressed down upon them. The long night passed.

Friday, the 4th of March, dawned with Holmes anxiously watching the eastern slopes and the forest beyond for any sign of his opponents. Some shots rang out and he saw a few little figures disappear into the woods. The Michigan Rangers went forward to reconnoitre and returned with the report that the enemy had fled in great haste. Their numbers were estimated not to exceed seventy men. Holmes was angered at the thought of retreating the previous day in the face of a force inferior to his own. Momentarily forgetting that his men were no match for the British regulars in a collision battle, he ordered the advance on Delaware to be resumed. He had covered five miles when his advance guard commander, Captain Lee of the Michigan Militia Dragoons, came hurrying back with the startling intelligence that the British were on the road in considerable strength. Holmes realized that he had been drawn from his position by a ruse. He turned about and regained his fortified camp without interference from the enemy.

Here a crisis developed in his command. The Michigan Rangers became intractable. They refused to do any more chasing back and forth on the same stretch of road. Some of the officers thought that the game was lost. Retreat before an enemy superior in numbers and under the present circumstances

was no dishonour. Holmes would have none of it. He was in a victory-or-death mood. His adjutant, Ensign Heard of the 28th Kentucky, a grandson of Daniel Morgan of Revolutionary War fame, supported him. He argued vehemently against any more running. Stand and fight—such was the decision.

Captain Basden had marched that morning with the two light companies and the Loyal Kent Volunteers. Some Indians accompanied him and more were expected to join *en route*. They moved in a winter world. Maples and birches arched their branches laden with snow over the road. No sound broke the stillness except the crunch of feet and the occasional clatter of a musket against a bayonet scabbard as it was shifted from one shoulder to the other. Basden was met by Captain Caldwell and his Rangers. This officer informed him of the situation. The Americans had been lured from their defences at the Twenty Mile. He proposed that the entire force should move by a circuitous route known to him and thus prevent the enemy from falling back to his strong position. Both the Caldwells urged Basden to make this flank movement but he refused to follow their suggestion. The march continued on the road. A halt was called at noon and time was wasted in expectation of more Indians coming in. It was five o'clock in the afternoon when the British and Canadian force reached the Twenty Mile Creek. Captain Holmes was waiting for them.

Captain Basden had every confidence that he could carry the position with the bayonet. He ordered the Loyal Kent Volunteers and Rangers to attack the American left flank. Billy Caldwell with his Pottawattomies and Wyandottes were to engage the enemy on the right. The regulars would make a frontal assault across the ravine. High and clear in the frosty air, the bugles of the light infantry sounded the advance. In open column of sections, the regulars moved off down the road. The descent into the ravine was led by the Royal Scots, the oldest regiment in the British Army, with service going back to Tangier and Marlborough's wars. The setting sun glinted on their fixed bayonets. For an instant it caught the metal shako plates showing the regimental devices—Saint Andrew with his cross, the thistle entwined with the rose and the royal monogram surmounted by the crown.

They crossed the bridge and charged up the western slope. An ominous clicking sound ran along the American front as musket locks

were pulled back to full cock. Then a crashing volley shot the leading sections to pieces. The Kentuckians and Tennesseans who held the crest of the slope maintained a rapid and deadly fire. Courage, discipline and *esprit de corps* carried the Royal Scots and the 89th to within twenty paces of the American front. The column recoiled and fell back to the bottom of the ravine. Basden, curved sword in hand, moved to the right under a scourging fire. He fell shot through the thigh. Sombody dragged him away. There was no cover to be found in the ravine. The British returned the enemy fire with spirit but with little effect. They took their punishment for almost an hour. By this time all the officers had been killed or wounded except Ensign Mills of the 89th. With darkness coming on, the regulars withdrew. The Canadians who had worked in close to the American breastwork on the left, fell back when the sound of firing ceased in the ravine. Billy Caldwell and the Indians faded away into the forest. The action at the Long Woods was over.

Captain Stewart arrived on the scene as the troops reformed on the eastern side of the ravine. He was told by Ensign Mills that they had fought nearly five hundred Americans. The young officer added, somewhat unnecessarily, that every man had done his duty and retired in good order. This was small consolation for Stewart. The bodies of two officers and twelve other ranks were already stiffening in the trampled and blood-stained snow. Fifty-two wounded men needed attention. Lieutenant McGregor, nursing an arm smashed by a musket ball, waited patiently for the surgeon's saw. He wore an empty sleeve for the rest of his life as a memento of that day's work.

Captain Holmes made no attempt at pursuit. He planned to break camp and retreat. His opponents had been given a severe mauling. Although his men were in need of footwear, he forbade them to touch the British dead. The Kentuckians were at a loss to understand such niceties. The frontiersmen who were said to have flayed the body of Tecumseh after Moravian Town and made razor strops of the skin, could not be expected to be overly squeamish about dead men's boots. Three hours after the fight Holmes left the position which had served him so well and marched to Detroit. He took the most direct route and covered the ninety miles in three days. Colonel Butler praised Captain Holmes. In his official report he noted that the force command-

er's choice of ground which compelled the enemy to attack him at a great disadvantage was the outstanding feature of the affair. John Armstrong, the American Secretary of War, disapproved of the raid. He attached no importance to the capture or destruction of a blockhouse ". . . more than one hundred miles distant from our frontier, and which, if held would have been difficult to sustain, and if destroyed, easily reinstated."

Nevertheless, the success of the expedition meant a step in rank for Andrew Holmes. He was promoted major and posted to the 32nd U.S. Infantry Regiment. He did not live long to enjoy his majority. Five months after the action in the Long Woods, he went down with five bullets through his chest while leading his men to the attack on Fort Mackinaw. His body was stripped naked and left on the field. The Indians made off with his sword. He had been a fighter, this man from Virginia. Two generations later his like followed Lee from Antictam to Appomattox.

Captain Basden recovered from his wound. For the second time since his arrival in Upper Canada, he faced a period of enforced idleness. Things had gone badly. He had underestimated the enemy. The men he had met at the Twenty Mile Creek were not the easy militia of Black Rock. Captain Stewart did not censure him in his report to headquarters. He wrote of the gallantry of the troops; "I regret that our loss is very considerable."

After almost a year on detached duty, Captain Basden got back to his regiment. He was present at Lundy's Lane where the 89th lost more than half its strength. Basden came through this desperate fight to lead the light company in the assault on Fort Erie. In September when the Americans attacked the British positions in front of the fort, Basden led the remains of the 89th in the counter-attack. The war ended on the Niagara frontier. On the 30th of December, 1815, the captain of the light company took down his faded light infantry wings and put up the gold epaulettes of a field officer.

As a major he commanded the 89th in the First Burmese War, 1824-25. It was a terrible campaign. Scurvy, malaria and cholera sent the mortality rate to an appalling level. Six out of every seven men perished. Pushing through the steaming jungle and elephant grass twenty feet high, storming Burmese stockades and burying cholera victims was all in the day's work to Major Basden. The war added another clasp to

his Army of India Medal when it was issued a quarter of a century later to those who survived.

The years which followed were uneventful ones. They passed in humdrum garrison duties and attending interminable mess dinners. During the course of these, the major was forced to listen to endless Peninsular reminiscences in which he could take no part. Major Basden had fought Mahrattas, Yankees and Burmese but had never crossed bayonets with the French. Who had ever heard of Fort Erie and Lundy's Lane when the talk came round to Salamanca and Vittoria? After forty-three years in uniform, he retired in 1843 with the rank of lieutenant-colonel. It had been a life of action, boredom and innumerable changes in dress regulations.

The authorities were slow to recognize his services. Did someone at the Horse Guards point to a certain General Order whenever his name was mentioned as a recipient for an award? Finally he was made a companion of the Most Honourable Order of the Bath. It was gratifying to wear the Badge of the Order suspended from its crimson ribbon. He had nothing to show for his campaigning in Upper Canada. Only the battle honour "NIAGARA" emblazoned on the regimental colour served as a reminder. Colonel Basden, C.B., died in 1856 at the age of seventy-one.

Before his death, the Great Western Railway had been pushed into western Ontario. It was the end of the frontier. When the forest lands were cleared and brought under cultivation, the name Long Woods disappeared from maps. A farmer plowing in the fatal ravine in 1870 turned up some bones and a few military buttons. Recollections became blurred. Even the local inhabitants were uncertain which side had won the fight so long ago.

In a thin rain, on the 16th of September 1930, a cairn was unveiled on the crest of the slope up which Basden had made his wild charge. At the ceremony some words were spoken by the Chairman of the Historic Sites and Monuments Board of Canada. A detachment of the Kent Regiment stood to attention. Then the small group of officials and spectators returned to their cars. The militiamen sloped arms and marched away. With them went a memory of the old Loyal Kent Volunteers.

The soft, autumnal rain continued to fall upon the cairn.

* * *

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Commencing with the January 1958 number the title was changed to *The Army Quarterly and Defence Journal*, and regular articles on Naval and Air Force matters, and frequent articles on Civil Defence, will be included. As in the past, most articles will deal with current military problems, but there will also be many of historical interest. Contributions of value to officers studying for the Staff Colleges and Promotion Examinations will be given special emphasis.

The journal will continue to sponsor the Bertrand Stewart Prize Essay and the George Knight Clowes Memorial Prize Essay, and will include reviews and lists of the best books on Service matters.

The Army Quarterly and Defence Journal is not an official publication, and is not tied to the official view. It, however, acknowledges with gratitude the help and advice so frequently given by the War Office and Other Ministries.

The annual subscription (for four numbers) is £2 (individual copies 10/–) post free to any part of the world. Apply to: Messrs. William Clowes and Sons, Ltd., Little New Street, London, E.C.4, England.

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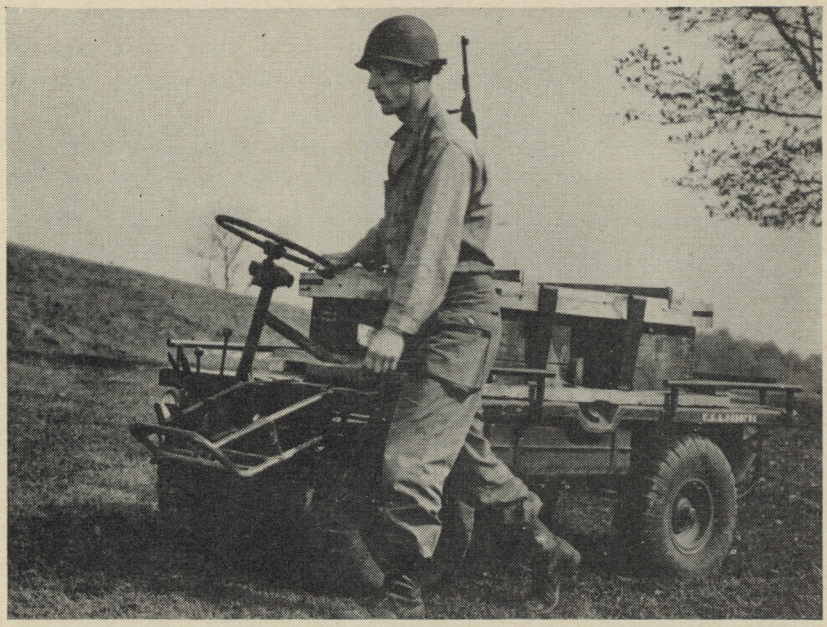


U.S. Army Photograph

This picture shows the comparative height of the "mule" to the driver. Here the soldier operates the vehicle as he walks beside it.

MECHANICAL MULE PROVIDES OFF-ROAD MOBILITY

WRITTEN FROM A REPORT PUBLISHED IN THE *Army Information Digest* (U.S.)

Providing a welcome "lift" for the combat soldier, the [U.S.] Army's "mechanical mule" serves the modern infantry in many ways.

A four-cylinder vehicle, the "mule" is designed for off-road mobility in forward combat areas. Weighing only 750 pounds and capable of carrying more than its own weight, it can be transported by truck, plane or helicopter and can be dropped by parachute.

This new tactical vehicle—first of its type to be added to the Army's mobile family since development of the jeep—is capable of moving heavy loads from one mile up to 25 miles an hour, and can climb a 72 per cent slope. It

is 8 feet 4 inches long, 3 feet 10 inches wide, with a low silhouette of 2 feet 3 inches.

Designed primarily as a cargo carrier for weapons, ammunition or other material that otherwise would have to be hand-carried over rough terrain, the "mule" also can be used as a mount for the 106-mm. recoilless rifle.

The vehicle can be operated by a soldier walking alongside.

U.S. Army Photographs

Top: The vehicle's specially designed four-wheel steering and manoeuvrability in rugged terrain make it a boon to future battle operations. Here it is being driven through water. *Bottom:* A member of the 101st Airborne Division, U.S. Army, uses the "mechanical mule" to evacuate a simulated casualty during a field exercise.

SENIOR OFFICERS RECEIVE NEW APPOINTMENTS

WRITTEN FROM REPORTS ISSUED BY THE DIRECTORATE OF PUBLIC RELATIONS (NATIONAL DEFENCE), OTTAWA

The retirement on 31 March 1958 of Major-General M. L. Brennan, OBE, CD, as Adjutant General of the Canadian Army, resulted in new appointments for two other senior officers. Announced by the Honourable George R. Pearkes, VC, CB, DSO, MC, MP, Minister of National Defence, these appointments were effective 1 April 1958.

Major-General George Kitching, CBE, DSO, CD, formerly Vice Chief of the General Staff, is the new Adjutant General.*

Major-General J. V. Allard, CBE, DSO, ED, formerly Commander of Eastern Quebec Area, has been appointed Vice Chief of the General Staff.

Brief biographies follow:

MAJ.-GEN. M. L. BRENNAN, OBE, CD

On 31 March 1958, Maj.-Gen. Brennan completed more than 36 years of continuous service in the army he entered as a boy of 17. He was born in Ottawa and attended schools in this city and at nearby Manotick. He enlisted in the Permanent Force at Winnipeg on 14 January 1922, and was assigned to the Royal Canadian Army Service Corps as a private.

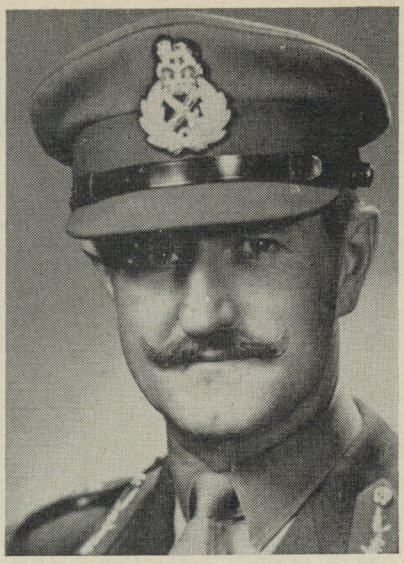
Steadily climbing in non-commissioned rank, he was a Warrant Officer when war broke out in September 1939, and in December of that year he was commissioned in his corps as a lieutenant and posted to instructional and training duties. He was promoted to the rank of captain in July 1940 and to major in February 1941.

He went overseas in November 1942 in command of the Divisional Troops Company, RCASC, 5th Canadian Armoured Division, and subsequently held senior Service Corps appointments with the 1st Canadian Army Tank Brigade and the 4th Canadian Armoured Division in the United Kingdom and North-West Europe. He was promoted to the rank of lieutenant-colonel in December 1942 and to the rank of colonel in November 1944 when, back in Canada, he took command of A-19 RCASC Training Centre at Camp Borden, Ont.

After the war, Maj.-Gen. Brennan was appointed Director of

* *Since appointed Chairman, Canadian Joint Staff, London, England, effective August 1958.*—Editor.

Maj.-Gen. Brennan



Maj.-Gen. Kitching

Supplies and Transport at Army Headquarters in Ottawa, still in the rank of colonel. He attended the Canadian Army Staff College in 1948 and at the end of that year went to HQ Central Command in Oakville, Ont., as officer in charge of administration. His promotion to the rank of brigadier and his appointment as Director General of Army Personnel at Army Headquarters came in May 1951. He remained in that appointment until November 1, 1954, when he was appointed Adjutant-General and promoted to his present rank.

It was in his appointment as Director General of Army Personnel that Maj.-Gen. Brennan revitalized the Army's career planning programme and brought it to its present high state of efficiency. Although he was already widely known throughout the Army, his deep, personal interest in the careers of every officer and soldier, and in their personal problems, made him a familiar figure to all ranks and a highly respected one.

Maj.-Gen. George Kitching, CBE, DSO, CD

Maj.-Gen. Kitching was born in China while his father was serving in that country with the British Consular Service. On graduation from Sandhurst he was commissioned in The Gloucester

Maj.-Gen. Allard

Regiment. He resigned his commission in 1937, came to Canada and was commissioned in The Royal Canadian Regiment in 1939. He graduated from the Staff College, Camberley, in 1942 and later commanded the 11th Canadian Infantry Brigade. In 1944 he assumed command of the 4th Canadian Armoured Division in the acting rank of major general, supervised the final training of the division preparatory to the invasion of Normandy, and led the formation in the fighting in July and August, 1944. Later he took command of the 13th Canadian Infantry Brigade, and in November 1944 became Brigadier, General Staff, 1st Canadian Corps. Following service in Italy, he accompanied the Corps to North-West Europe and served there until the end of the war.

His post-war appointments included Vice Quartermaster-General, Director General of Army Personnel, Commandant of the Canadian Army Staff College, Commander of the 2nd Canadian Infantry Brigade and Commander, British Columbia Area. He was appointed Vice Chief of the General Staff in 1956.

Maj.-Gen. J. V. Allard, CBE, DSO, ED

Maj.-Gen. Allard was born in Nicolet, Quebec, and was educated at the College St. Laurent, Montreal, and at St. Jerome's College, Kitchener, Ont.

He has served continuously in the Canadian Army since 1933, and during the Second World War saw service in Italy and North-West Europe. In March 1945 he was promoted to the rank of brigadier and appointed Commander, 6th Canadian Infantry Brigade, which formation he commanded until September of that year.

After serving as Military Attache in Moscow from October 1945 until February 1948 he returned to Canada and was appointed Commander, Eastern Quebec Area, where he served until

SOME NOTES ON MILITARY SWORDS

By

Commander K. E. Grant, RCN, Commandant of the Joint Atomic, Biological and Chemical Defensive Warfare School, Camp Borden, Ont.

Most of us in the military profession find the sword a slightly embarrassing item of equipment—firstly, because we do not know how to use it, except for saluting (and then only after some rehearsals); and, secondly, because we know so little about the sword and its history.

Yet today, as in all ages, the sword holds a certain mystic attraction to the professional fighting man. It is a symbol of many things: chivalry, honour, and the privilege of the freeman to bear arms. The sword is also traditionally a "personal" weapon. It is not something one draws from the Quartermaster's Stores to be returned later. It is meant to be part of the officer's personal equipment, to be at his side throughout his professional career, and to be prized in later years by his descendants.

This "cult of the sword" has been carried to quite emotional extremes by fighting men of other nations, but the Anglo-Saxon has always maintained a proper sense of modesty. One authority writes that a visiting Japanese officer entering a London club was shocked to observe British officers' swords in the umbrella rack. To the Oriental this was an insult to such a revered weapon. The Japanese, of course, have always attached an almost religious significance to their ancestral swords. When Japanese aircraft bombed Pearl Harbour a number of their pilots of Samurai breeding carried their swords with them in the cramped cockpits of

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New Appointments

(*Continued from preceding page*)

October 1950. After attending the Imperial Defence College during 1951 he was appointed Vice Quartermaster-General at Army Headquarters, which appointment he held until April 1953 when he went to Korea to command the 25th Canadian Infantry Brigade.

Upon his return to Canada he commanded the 3rd Canadian Infantry Brigade from August 1954 until September 1956, when he assumed the appointment of Commander, Eastern Quebec Area.

their aircraft.

Adolf Hitler recognized the mystic influence of the sword on the Teutonic mind, and made it a vital part of the Nazi paraphernalia, together with their drums, trumpets and torchlight parades. The Nazi dirk became the symbol of German manhood and patriotism. Those who wore this prized weapon were forever pledged to the Fatherland above all other loyalties.

Earliest History

Primitive man found himself unprotected and unarmed in a world of creatures well provided with claws, fangs, beaks, fur coats, thick hides, scaly armour and colours which served as camouflage. Many of his animal foes could outrun him. His prey could elude him by flying, swimming, burrowing or climbing. Others were equipped with deadly venom.

In the midst of a violent and dangerous creation, only *homo sapiens* was vulnerable and naked. His helplessness was, of course, not complete or he could not have survived to conquer and even enslave much of the animal kingdom. For Man had an unusually large cranium. He was sly, shrewd and cunning to a degree unequalled by any other mammal or reptile. Soon this led to his exploitation of fire. He borrowed fur pelts from the animals, ate their flesh, drank their milk, and later forced them to carry him on their backs.

One of man's first inventions was the club and the pointed stick. Later the stick became a tipped spear, a dagger, a sword. But in all its forms it became man's claw, his tooth, and his emblem of power over a hostile world. Perhaps it is some subconscious racial memory of these times which causes the modern hiker to pick up and swing a stick as he tramps through the autumn woods.

Early European Swords

Recorded history is, of course, only the last five minutes in time of the "century" or more of human development. But from a few fossils of earlier ages, and from primitive races living today, it is obvious that the pointed stick, tipped with bone or metal, has always been an implement of human society.

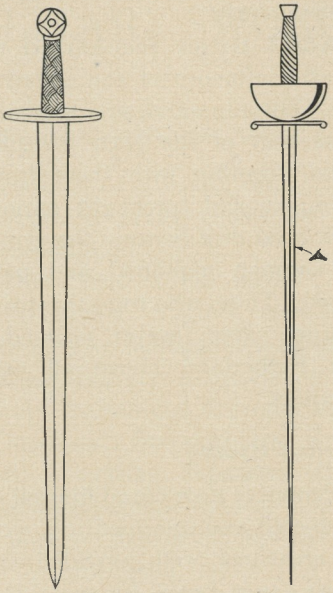
The Copper Age, Bronze Age and Iron Age brought relatively recent improvements, and left a few samples of early edged weapons. Babylon and Egypt certainly knew the sword. But it came to its best form in the Roman legions, where the sturdy short two-edged sword, used in conjunction with a shield, made possible a degree of good

swordsmanship that was not to be surpassed for centuries. The Roman soldier was careful, too, to avoid becoming too encumbered with armour. He depended upon his agility and balance in handling his weapon. And his ability to march long distances rapidly was part of the secret of the Roman success in conquering and governing their world.

The medieval knight, with his unwieldy burden of armour and his massive Teutonic type of sword, was a much inferior fighting man. Strangely enough, no other fighter waxed so enthusiastic about his weapons as the Middle Age warrior over his sword. Many knights gave their swords a personal name such as "Excalibur", "Durandel" or "Joyeuse".

Squires on the eve of knighthood prayed all night with their sword-hilt as a crucifix in some cathedral. In an age of great religious fervour the cruciform quillons and handle were always in their thoughts. In death many of these forgotten warriors still held their sword hilts to their lips in the final act of absolution.

At the Crusades the European knight discovered, however, that his massive, badly balanced, crudely shaped weapon was no match for the sword of the Oriental warrior.



The massive, Teutonic type of sword used by the knights in the Middle Ages is shown on the left. On the right is the 16th Century rapier.

The fable about Saladin's encounter with Richard makes this point. The European monarch severed an iron bar with one blow from his sword. Saladin smiled, tossed a silk cushion into the air, and sliced it effortlessly with a sweep of his razord-edged scimitar.

The Crusaders took home with them a new respect for the Damascus blade, whose quality of tempered steel and sharpness was unequalled anywhere, and whose workmanship in ornamentation of blued steel, inlaid with gold, silver and, occasionally, jewels, created

a new demand in Europe for "damascened" weapons.

The massive two-handed sword of Charlemagne and the Teutonic Knights was obsolete. The truth is that such weapons had often been laid aside in battle anyway, and replaced with spiked war hammers, battle axes, and "morning star" weapons, all of which required less skill than strength.

The Latin Influence: Milan and Toledo

Archery was always an important form of combat in the Near East from Babylonian times. It was again important at the Crusades. Finally the long bows of England at the Battle of Crécy spelled doom for the traditional French knights and their armour. The new soldier had to develop mobility, agility and a more shrewd sense of tactics.

Lighter swords were essential in this trend. The popularity of Oriental blades led to their imitation and later improvement in Mediterranean lands. Milan and Toledo became particularly renowned as a result of their success in achieving fine quality in steel.

The real contribution of the Latin races to swordsmanship, however, was their rediscovery of the pointed weapon. The Oriental sword, for all its superb sharpness, relied upon the slicing effect of its edge to achieve casualties. Such weapons may be intimidating to behold, and can produce painful and spectacular injuries, but these are rarely fatal.

The Italian and Spanish swordsmiths realized that lethal wounds are rarely inflicted on the legs or arms. Even the neck and head are relatively well arranged by Mother Nature to afford deep protection to the arteries and vital parts. For planning purposes, only the trunk of the body was considered a target for blows intended to kill. And even here punctures must be at least three inches deep to guarantee results.

This line of thinking produced the rapier and the stiletto. These weapons had no cutting edge at all, and were usually made with a triangular section. They required a high degree of skill in order to parry an opponent's blade and still remain poised for a successful lunge. This produced an entirely new type of swordsmanship, still found in today's fencing.

The rapier did not, of course, take the place of the edged sword in warfare. The science of rapier fighting proved too difficult for the rank and file ever to master. Even experts found it impractical in the *mêlée* of a mass struggle where there was no room for good footwork. In many types of com-

bat, too, particularly at sea, there was a need for a cutting weapon that could sever ropes and other materials, as well as human opponents.

Thus the rapier became the gentleman's weapon, a mark of quality and rank. Its popularity as a duelling weapon is well-known. It also had a more practical purpose in defending a gentleman's purse against cut-throats who roamed the highways and dark alleys of the medieval towns.

Finally, the appearance of these lighter, more portable "small swords" or rapiers resulted in them becoming for the first time an article of civilian dress throughout Europe after the 14th century.

Shakespeare's plays are full of young dandies and fops, each equipped with rapier or dagger, and quick to draw either at the slightest provocation. The young gentlemen of quality in Britain for several centuries made it a fashion to tour the capitals of Europe in search of culture. They brought back with them many French and Italian fads, including "the code of the duello", which prescribed in great detail the offences for which any man of honour must call for a duel, and the intricate formalities for arranging such a meeting. Death was by no means required: a gentleman could honourably terminate a duel after "pinking" his opponent in a manner which made it clear that a lethal thrust *could* have been delivered in its stead.

Shakespeare also pokes fun at a number of middle-aged social climbers who carried swords so cheap and shoddy that they would bend at the first blow, except that the owner lacked the courage to draw. Perhaps the best description of a rapier wound comes from the dying Mercutio in *Romeo and Juliet.* Asked by his comrades if he was seriously injured in a duel, Mercutio drily remarks that his wound is "not so deep as a well, nor so wide as a church-door, but 'tis enough, 'twill serve."

Duelling remained a serious blight on European—and American— society for many years. Pistols began to replace rapiers and swords after 1700. In Germany, however, duelling with sabres remained a popular sport among college students until the early years of the 20th Century. Sabres had the advantage of being rarely fatal, and they left quite picturesque scars on the face which were highly regarded among a certain class of German officer and student.

By the 18th Century, it can be noted in many portraits of the day, military and naval officers were in the habit of wearing costly small

swords or rapiers on court occasions, and plainer sturdier weapons in battle. This distinction between the fighting sword and the dress sword soon became recognizable in military patterns. Small swords for court affairs may still be found in uniform regulations of forty years ago. Diplomatic court dress includes such a sword still—a last evidence of the place of this weapon in civilian costume.

Swords of the 19th Century

France has always exerted a profound influence upon European fashions and dress, including those of the military. This became evident after the French Revolution, when the hated "aristocrats" were banished. The astute young French officer after this period was wise if he made it very clear that he was a staunch Republican, and not one of the despised blue-bloods. The rapier and straight sword were, of course, emblems of the aristocracy. The democratic weapon was the curved hanger, a cutlass-type blade with a sturdy basket hilt. This promptly became the sword of the French Army officer after the change in the "party line".

Napoleon's superlative armies made this weapon more famous than ever through their victories. His regiments meanwhile adopted very distinct and flamboyant uniforms, reminiscent to our modern eyes of the theatrical garb for a Balkan operetta.

The curved sword fitted this fashion ideally. Throughout Europe, and even in Great Britain, such fashions appeared among various regiments, usually on the grounds that the first models had been captured from an honourably defeated foe. (The "bearskin" worn by several British regiments was captured from one of Napoleon's proudest units.)

In this manner the British Army sword of the 19th Century became —with certain units—much like the curved French hanger. Cavalry units liked a longer curved sabre, with the addition of the pointed spear tip. On a long straight charge the out-thrust point offered some of the advantages of the spear itself, although thrusting it too deeply into a victim was known to be a sure way to lose such a weapon, if not to unseat the rider as well.

At the Battle of Balaklava some mathematical-minded Britons inspected more than a thousand Russian dead after a cavalry charge. They reported that only two of the dead died from sabre wounds. The remainder were victims of cannons and muskets. Although the gaudy pageantry of the cavalry squadrons with their plumes and pennons

continued another forty years, the handwriting was on the wall.

In Africa, India and in China, British officers were showing great interest in the new revolving pistol made famous on the frontier of North America. Pistol duelling had long been a sport: now the repeating pistol seemed to promise much to the young gentleman defending Her Majesty's Empire on many a heathen frontier. By 1902 even the British Navy had made pistols, rather than swords, the approved weapon for officers' combat equipment.

The final pattern sword was not unlike that of 1800: a straight Wilkinson blade, with spear point, about 31 inches in length. Highland units and certain other groups maintained their privilege of wearing the claymore or similar pattern. Cavalry sabres continued in use with mounted units.

Most British "soldiers of the Queen" knew only two types of sword. One was the type which fractured and broke at the first hard blow in battle. The other was the sword which merely bent. The latter was preferred, since it gave the gallant redcoat an opportunity to bend his blade straight over one knee and resume his struggles.

British Army swords were generally so inferior in quality that an outbreak of criticism in the House of Commons resulted in stern measures to ensure better merchandise from future contractors. These "proof-tests" are still carried out today by reputable swordsmiths.

The notion still persists among certain young officers that a sword of good quality should be capable of bending almost double. Many a broken sword of good quality has resulted from this misconception.

Proof-tested swords must merely be capable of snapping promptly back to a true position if deflected *five inches* at the tip from the straight position. Other tests place a vertical load of 30 or 32 pounds on the tip, which must then return to centre when bent *one* inch in either direction. The tests also includes striking an oak block with the front, back and sides of the blade to check on hilt fastening and other accoutrements. Swords which have been properly tested in England bear an inlaid brass stud below the hilt, dimpled with a blow from the tester's hammer.

"Made in Germany"

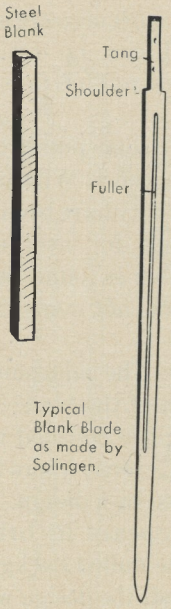
Although there are many famous swordsmiths still in business in England, it must be stated that almost every respectable blade of the past two centuries has been made of German steel from

Solingen. Solingen blades in all forms are still a major export from this region. Traditionally, the steel blank is 17 inches long, an inch and a quarter wide and a half an inch thick when it comes to the swordsmith's hands. This is heated, hammered under a machine hammer, reheated and drawn out until it is a yard in length. Grooves or "fullers" are formed in each side on a special roller. The upper end of the blade is then shaped into a "tang", ready to receive the hilt. The other end is rough shaped into a point.

Next the temper is applied by heating in molten lead and chilling in cold oil until the steel approaches brittleness. Then the cutting edge and pointed tipped end are ground sharp, and the blank is polished. The tang must now be heated and softened so that it can be pierced for the hilt.

At this point the blank blade, without handle, hilt or adornment of any type, is shipped to England where it is finished by one of the established firms of swordsmiths.

The "sword-cutler" supervises the general assembly, aided by such tradesmen as the "handle-binder" and the "hilter". The final blade is measured and provided with a scabbard. The appropriate ornamentation is etched on the blade, not excepting, of course, the name



of the British firm which "made" the final weapon.

Although Birmingham has produced many respectable blades, it can be assumed that almost all military swords of the past century, regardless of trademark, are made from Solingen blanks. The Wilkinson sword, usually regarded as the best, is no exception.

How to Look at a Sword

The "feel" and balance of a sword should be the first criterion of its worth if one is a skilled swordsman. The proof-mark verifies that it has the suppleness and strength needed for violent combat.

However, most of us are not swordsmen, and can be satisfied if a sword is merely of fine workmenship.

Here are some points to look for:

Serial Number: Wilkinson blades of good quality have been numbered in sequence for over a century. This number is found on the back of the blade, not many inches from the hilt.

Etching: The adornment of the upper part of the blade is achieved by dulling the polished metal with nitric acid, except where the surface is concealed by a design. Later this design appears in bright lines against the dulled background. In older swords the design was applied free-hand with a type of cement-pencil. Modern etchers use machine-cut transfers. The latter method produces flawless, symmetrical patterns. However, some connoisseurs prefer the imperfect free-hand designs. In general, there are wide differences between the quality of etching on otherwise identical swords, but it can be said that the more detailed, elaborate and perfect the design, the better the sword.

Royal Cyphers: The best clue to a sword's age may be found in the Royal Cypher which appears on most swords since George I began the custom in 1725. The cypher is traditionally on the reverse side of the sword, i.e. the side nearest the owner's face as he salutes. The sword-cutler's name is usually just below this. According to dubious legend, this arrangement helps, on ceremonial occasions, to remind an officer of his duty to the sovereign-and his debts to his tailor!

Other Insignia: Army insignia (or in the Navy a crown and anchor) are etched on the obverse side of the sword, so that they display to the inspecting officer saluted the identity of the bearer's service. Below this insignia is usually a vacant space, surrounded with a garland of oak leaves or flowers. This space has in various periods been used for the owner's name, or for some inscription or motto. (Many valued swords are presented to commemorate happy occasions.) It appears to be common usage, however, to leave this space vacant if an officer has purchased his own sword, and to place his name on the scabbard instead, possibly to aid in identifying the owner without running the risk of drawing the weapon inside a mess.

Stars and Dots: Some better swords of fighting quality show a star or dot about one-third down the blade from the hilt. This marks the centre of gravity of the weapon. In parrying a blow, it should be taken at this point to avoid a stinging sensation in the

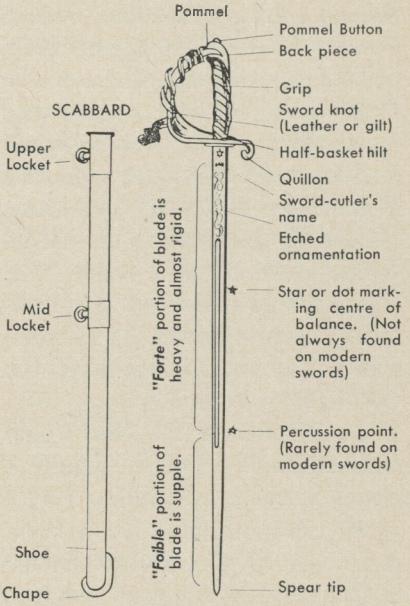
palms. A second dot, about one-third the way from the point marks the "percussion" point, where blows should be delivered.

British Army swords adopted a gilt lion's head pommel in 1795, but dropped this in 1822. This feature, however, remains on British naval swords. Military and naval swords used a plain "stirrup" hilt (shaped like the letter "D") until 1829 when the modern "half basket" hilt was introduced. The wooden grip was encased in ivory on most swords of 1800. This was later replaced with rough sharkskin, either white or black.

The hinged flap on the hilt was introduced in Army swords in 1822, and in the Navy in 1829. The locking stud was not added until 1880.

Field marshals adopted a scimitar-shaped sword about 1835, fitted with a "mameluke" hilt. Swords were worn originally on diagonal shoulder straps, due to their weight. Sword belts, fitted with a frog or two slings, became common after 1856, although many regiments had introduced them by 1832.

Military swords have generally become longer since 1800, possibly due to the greater stature of modern men. Fighting swords measured about 28 inches long, and about 1¼ inches across. By 1880 the



standard length was 31⅝ inches long by one inch in width. Typical swords of today are 32 inches long by ⅞ inches wide. Sword length should suit the wearer's height.

Some Sword-Cutlers of Recent Times

Gieves (1775-1958), Tailors; Gillot (1828-1958), Tailors; Guthrie (1863-1958), Tailors; Hamburger (1812-1917), Tailors; Hawkes & Co. (1788-1954), Tailors; Herbert & Co. (1855-1958); Hill (1842-1939), Tailors; Hunt (1854-1958); James Lock & Co. (1759-1958), Hatters; Longman (1736-1956), Engravers & Silversmiths; Charles

Reeves & Co. (1902-1958), Sword-Cutlers; Rogers & Co. (1840-1958), Military Outfitters; Silver & Co. (1825-1958), Military Outfitters; Smith (1820-1928), Tailors; Spink & Son (1803-1958), Silversmiths; Wm. Cater (1776-1923), Tailors; Benton & Johnston Ltd. (1856-1958), Gold, Silver & Lace Merchants; James Ball & Co. (1814-1939), Tailors; Christy & Co. (1852-1958), Tailors; Elkington & Co. (1840-1958); Fermin & Sons (1673-1958), Buttons & Swords; Flight Ltd. (1750-1958); J. R. Gaunt & Sons (formerly Thurkle) (1719-1958), Sword-Cutlers; Henry Poole & Co. (1810-1958), Tailors; Starky & Co. (1835-1958), Embroiderers; Stilwell (1870-1958); Thresher & Glenny (1777-1958); Thurkle (1766-1934), Sword-Cutler; Webb (1804-1958), Tailors; Widowson (1835-1958), Tailors.

Many other names than those above may be encountered on swords of the past fifty years, but in general it can be assumed that all such cutlers were basically tailors or military outfitters who purchased Solingen blades and subcontracted among the London tradesmen to have these assembled and equipped under their local name.

Royal Cyphers

George I, George II and George III all used the same cypher—an entwined "GR".

George IV used simply the letter "G" with numerals "IV" superimposed.

William IV used the letter "W" with the numerals "IV" below it.

Victoria used the familiar entwined "VR".

Edward VII used a large letter "E" with the numerals "VII" encircled by the lower loop of the "E".

George V used the letters "GR" with a smaller "V" centred between.

Edward VIII used the letters "ER" with "VIII" centred between.

Elizabeth II uses the familiar "ER" with a small "II" between.

Occasions on which Swords Are Worn

The sword is part of a military full dress in the same sense that medals are. Traditionally, an officer wore both for all formal occasions, such as calling on his superiors, or representing his service at any public ceremony. In diplomatic protocol, it is disrespectful for a military officer to call officially on a foreign potentate in peace-time without being properly dressed with sword and medals.

It may be noted, in passing, that the United States Navy, due

to its numerous contacts abroad in the past decade, has found it advisable to reintroduce the sword and full-dress uniforms as a compliment to foreign dignitaries.

Officers should, of course, carry either swords or pistols on all occasions when they command men bearing arms. However, when the occasion calls for ceremonial, rather than combat equipment, the sword is obviously correct.

Saluting with the Sword

There are two schools of thought on the origin of the salute with the sword, concerning the significance of the "Recover" position. One view is that this comes from the act of kissing the crucifix hilt to verify the sincerity and loyalty of the saluting warrior. The other theory is that this derives from the Oriental custom of shading the eyes in the "dazzling" presence of superiors.

Both schools of thought agree that the act of lowering the sword tip is a universal and ancient token of submission, and hence of loyalty to a senior.

Courts Martial

The custom at the end of a court martial, prior to announcing the Court's judgment, is to place the accused officer's sword on the table. If the point lies toward him, the verdict is guilty. The hilt toward him means that a "not guilty" verdict has been reached. This corresponds to the ancient practice, after a trial, of the executioner marching ahead of the prisoner on his return from the Court to his cell. If the headsman carried his axe with the blade towards the prisoner, by-standers knew that another head would shortly roll.

Mess Etiquette

Officers' Messes from time immorial have opposed the drawing of blades within their precincts, for the obvious reason that duelling and fighting, particularly after drinking and gambling, have deprived British sovereigns of many young gentlemen's services prematurely. This may possibly be at the root of the modern practice of leaving one's belt and stick in the ante-room, although it is just as likely that this began as an optional privilege in the interests of comfort in the Mess.

Various Messes, of course, have different rules covering this subject. However, it is apparently still correct, unless specifically prohibited, to wear a sword inside a Mess: the rules of ancient etiquette merely prohibit the drawing of such a weapon from its scabbard.

Care of Swords

Good swords require virtually no maintenance. The polished steel blade should remain bright for many years if kept clean. (Wedding cake is notorious for leaving permanent stains, particularly on *borrowed* blades!) A thin film of vaseline is recommended by most authorities when a sword is not in use. This should, of course, be removed before appearing on a ceremonial occasion. The same is true for other bright metal fittings on the hilt, and for metal scabbards. In general, abrasive cleaning materials should never be necessary, particularly if the metal is promptly wiped clean after each use, especially in wet weather. Gilded fittings should be left severely alone, except for occasional dusting.

Leather sword knots and scabbards will benefit about once a year from a cautious application of saddle soap to keep them from drying out. Otherwise, they should require nothing more than an occasional wiping with a dry, soft cloth.

Sword knots of any type should be replaced when they become shabby, since they often mar the appearance of an otherwise fine weapon. Scabbards, too, can be replaced: they rarely last as long as the sword.

Most damage to swords occurs from accidents when they are not in use. The best protection is to keep sword and scabbard in a soft chamois cover, or in a leather case, or both. This protects the metal surfaces and sword knot from the assaults of small children, movers and other service hazards.

Certain officers make a practice of displaying their swords on the wall like a museum piece. This may not be a breach of etiquette, and certainly shows a regard for the weapon. However, it exposes the sword to the ravages of domestic life, dust, smoke, fumes, moisture, and interior decorators, and generally produces in a short time the antique finish of a 16th century collector's item.

The Modern is not Vulgar

Swordsmen have never admired weapons solely for great age or history. Like riflemen, they normally look to newer weapons for precision, strength, lightness and accuracy. Most famous soldiers have owned several fine swords, many of them gifts from admirers. Only the Japanese have believed that ancestral weapons provided secret sources of courage and skill.

So today, as in the past, the well turned-out officer does not carry a battered family heirloom at his side if he can afford a better one. Such relics *have* their place—over the family hearth!

(*Continued on page 95*)

CANADIAN CHAPLAINS CITED

A REPORT ISSUED BY THE DIRECTORATE OF PUBLIC RELATIONS (ARMY), ARMY HEADQUARTERS, OTTAWA

Twelve Canadian chaplains have been awarded special citations and crests for their excellent qualifications at the United States Army Chaplain School at Fort Slocum, N.Y.

The citations were earned by one Navy and eleven Army chaplains who have each attended, since 1949, a four-month course at the school.

At a ceremony held in the American Embassy, Ottawa, Colonel John W. Forth, MBE, CD, Montreal, the Director of Protestant Chaplain Services at Army Headquarters, accepted the citations and chaplain school crests on behalf of the Canadian chaplains. The presentation was made by the United States Minister to Canada, the Honourable Tyler Thompson, on behalf of the Chief of Chaplains, United States Army. Colonel Forth will, in turn, present the citations and crests to his chaplains during the course of his regular visits to Army commands and camps.

The chaplains are: Major James W. Duncan, MBE, Vancouver, B.C., Command Chaplain, Headquarters Prairie Command, Winnipeg, Man.; Captain Robert H. Dobson, Saskatoon, Sask., Staff Chaplain at Griesbach Barracks, Edmonton, Alta.; Captain Arthur J. Alfred, Zeelandia, Sask., Chaplain at Whitehorse, Y.T.; Major J. Fred Goforth, MC, CD, Toronto, Ont., Assistant Director of Protestant Chaplains, Army Headquarters, Ottawa, Ont.; Captain Roy F. Webb, Toronto, Ont., Chaplain to the 2nd Battalion, Canadian Guards in Germany; Major Joseph Cardy, MC, Port Credit, Ont., Chaplain, Headquarters Western Ontario Area, London, Ont.; Major Harold A. Merklinger, Waterloo, Ont., Chaplain, Headquarters Eastern Ontario Area, Kingston, Ont.; Captain Harold J. Robbins,

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Military Swords

(*Continued from preceding page*)

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Army Versus Navy — Winter Style

By

J. Mackay Hitsman, Historical Section,
Army Headquarters, Ottawa

Winter in The Netherlands can be severe and lead to strange situations, as those readers who served in North-West Europe during the Second World War may recall. But nothing that befell members of First Canadian Army can compare with certain bizarre events which took place during December 1572 and January 1795.

Midway in John L. Motley's massive five-volume history of *The Rise of the Dutch Republic* is a brief description of what occurred during the course of an unusually cold spell in December 1572, after the Spaniards had sacked Naarden and just before the notorious Duke of Alva laid siege to Haarlem.

"A little fleet of armed vessels, belonging to Holland, had been frozen up in the neighborhood of Amsterdam. Don Frederick, on his arrival from Naarden, despatched a body of picked men over the ice to attack the imprisoned vessels. The crews had, however, fortified themselves by digging a wide trench around the whole fleet, which thus became for the moment an almost impregnable fortress. Out of this frozen citadel a strong band of well-armed and skilful musketeers sallied forth upon skates as the besieging force advanced. A rapid, brilliant, and slippery skirmish succeeded, in which the Hollanders, accustomed to such sports, easily vanquished their antagonists and drove them off the field, with the loss of several hundred left dead upon the ice.

Canadian Chaplains Cited

(*Continued from preceding page*)

Grafton, Ont., Chaplain, Camp Petawawa, Ont.; Captain Edward J. Dosset, Montreal, Que., Chaplain, Headquarters, Saskatchewan Area, Regina, Sask.; Captain Gordon E. Darrach, Halifax, N.S., Chaplain, Headquarters Eastern Quebec Area, Quebec, Que., and Captain Gordon C. Mercer, St. John's Nfld., Chaplain, Camp Wainwright, Alta.

The Royal Canadian Navy chaplain who has been awarded this citation and crest is the Reverend Ivan R. Edwards, Hamilton, Ont., Command Chaplain, Pacific Coast.

'Twas a thing never heard of before to-day', said Alva, 'to see a body of harquebusiers thus skirmishing upon a frozen sea.' In the course of the next four-and-twenty hours a flood and a rapid thaw released the vessels, which all escaped to Enkhuizen, while a frost, immediately and strangely succeeding, made pursuit impossible."*

The era of limited warfare which was to last for a century and a half, following the conclusion of the religious wars in Western Europe, found armies going into winter quarters as soon as the weather became inclement. But no sooner had the armies of Revolutionary France introduced the ideas of nationalism and total war, than there occurred a similar phenomenon, although with a different ending. This has been concisely set forth by Lieut.-Colonel George T. Denison of Toronto in his *History of Cavalry* which won the Czar of Russia's prize in 1877.†

"One of the most extraordinary and striking incidents in the history of the cavalry service occurred in the campaign in Holland in the month of January, 1795. The moats and canals in that country caused it to be so intersected in the summer that cavalry could hardly operate in it at all, but in the winter of that year all the ditches and watercourses were frozen, and gave a free passage to horsemen and horse artillery over the ice. The arsenal of Dordrecht was taken in this way, the troops crossing the frozen Lake Biesbos to attack it; while, at the same time, the French general, hearing that a portion of the Dutch fleet was frozen up in the neighbourhood of the Texel, and fearing that it might get clear and set sail for England, despatched a large force of cavalry and flying artillery against it. They moved rapidly through North Holland, crossed the Zuyderzee on the ice, and the strange spectacle was presented of cavaliers and light artillery investing ships of war and summoning them to surrender.

"The commanders of the vessels, confounded at the idea of being charged by cavalry, a species of attack they had never anticipated, surrendered without resistance, and to the French hussars belongs the credit of having been the only cavalry that ever captured a fleet of war vessels on the sea."*

*John L. Motley, *The Rise of the Dutch Republic, A History* (New York, 1900), Vol. III, p. 342.

†J. Mackay Hitsman, "The Czar's Prize", *Canadian Army Journal*, April 1956, pp. 95-97.

*Lieut.-Col. George T. Denison, *A History of Cavalry from the Earliest Times with lessons for the future* (London, 1877), p. 351.

The Shortcomings of Churchill

Reviewed by Colonel C. P. Stacey, OBE, CD, Director of the Historical Section, Army Headquarters, Ottawa

That Sir Winston Churchill had his doubts about the project for the great cross-Channel attack is not news. He himself has written, "I was not convinced that this was the only way of winning the war, and I knew that it would be a very heavy and hazardous adventure." This book* by an American professor starts from the opposite assumption—that the invasion of North-West Europe was the only sound way of winning the war. The professor is probably right, in essentials; but whether he is right in assuming, as he does, that France could have been successfully invaded in 1943, as it was in 1944, and that Churchill by his Mediterranean projects of 1942-43 simply postponed final victory, is quite another thing. He certainly does not prove his case.

This academic study—the book has an enormous *apparatus criticus*, the effect of which is somewhat damaged by an unusually luxuriant crop of slips and minor errors—was perhaps intended to be a piece of objective history. The author begins, "Sir Winston Churchill figures here neither as hero nor as villain." But his thesis is simply that Churchill's military judgement was *always* at fault (and, by implication, that that of the American generals—not that of the admirals or the airmen—was *always* sound); and as the book proceeds any pretence of impartiality rapidly fades. Mr. Higgins is out to make a case, and he is prepared to use any material that comes to hand, including a rather cheap brand of sarcasm. He even blames Churchill for the Dieppe raid—a project which he approved but about which he had deep misgivings—and he does not mention that raids of this type were an important part of American war policy at the time. And he seems, at least, disposed to accept the old accusations against Churchill in connection with the Dardanelles, of which little has been heard since the publication of the full story about 1929. Most

* *Winston Churchill and the Second Front, 1940-1943*. By Trumbull Higgins. (Oxford University Press, $6.50.) 1957. This review was originally published in the *Canadian Forum*, from which it is reprinted by permission.

students now consider that there Churchill produced, or made his own, a great strategic conception which might have had incalculable results had not the professional military men botched it in the execution.

All this is a pity. There is a case against Churchill and his military advisers in the matter of the Second Front, and it is a strong one, though the question is not so one-sided as Higgins makes it out to be. Other people besides Higgins have noted that published British documents—*The Turn of the Tide* is a case in point—do little to support the argument of some important British political and military figures that their Mediterranean projects were merely valuable preliminaries to what they *now* recognize as the main operation, in the English Channel. But Higgins' exaggerations weaken the effect of the many sound points he makes. Many readers in particular will feel that his attempt to represent the U.S. Army as invariably in the right with its strategy of direct approach is overdone to the point of naïveté. He does not, it is true, try to defend the American plan for an "emergency" invasion of France in 1942, which is really beyond defence; instead, he assures us that "few Americans attempted to refute" the British argument that this operation was impossible, and further suggests that the plan was put forward mainly as a tactical expedient in the Anglo-American debate. The Americans, including Generals Marshall and Eisenhower, always recognized the project as extremely hazardous, but they committed themselves deeply to it (General Eisenhower, as Higgins indeed mentions, has since written that he now believes that those who opposed it were right); and undoubtedly the fact that they could fight hard for such a wildly premature scheme did much to shake British confidence in their military judgement. The frontal attack across the Channel certainly did not make sense in 1942. Whether it made sense in 1943 is a matter of logistics, and is to say the least debatable. Mr. Higgins is content to assume that it was completely practicable if we had refrained from Mediterranean enterprises; he attempts no logistical analysis to prove it. Nor does he say what we should have done about the campaign actually in progress in the Mediterranean. We could hardly have simply gone home.

Mr. Higgins has done a very great deal of reading in the printed books about the war (he has not had access to governmental archives) but one closes *Winston*

From Dunkirk to Rangoon

Reviewed by Major T. M. Hunter, CD, Historical Section, Army Headquarters, Ottawa

To have participated in either of the retreats from Dunkirk (1940) or Burma (1942) would surely be a memorable experience for most officers. But to have had important operational commands in *both* campaigns is something altogether extraordinary. In Brigadier Sir John Smyth's *Before the Dawn** we have the unusual opportunity of comparing and contrasting those widely-separated campaigns, as seen by a participant with quick perception, shrewd judgment and a fluent literary style.

Although a great deal of the author's life has been devoted to the British Army, he has gathered laurels in other fields. Entering the Army in 1912, he won his V.C. three years later while serving with the Indian Corps in France. After the First World War he gained extensive operational experience in India, Afghanistan and Mesopotamia before becoming an instructor at Camberley. His hardships in the Second World War, outlined below, aggravated an illness that led to his retirement from the Army late in 1942. But the bowler hat brought no relaxation. Smyth rapidly became a prominent military correspondent for the British press, got elected to Parliament and produced (with Ian Hay) at least two plays—one of which, appropriately enough, is entitled *Burma Road*. It remains only to add that Smyth has long

* *Before the Dawn: A Story of Two Historic Retreats*. By Brigadier Sir John Smyth. British Book Service (Canada) Ltd., Kingswood House, 1068 Broadview Ave., Toronto 6, Ontario. $5.00.

The Shortcomings of Churchill

(*Continued from preceding page*)

Churchill and the Second Front with the feeling that he really might have spared himself the trouble—that he has arrived at precisely the conclusion he had in mind in the beginning. This could have been an interesting book; as it is, it is an irritating one, the more so since it is rather heavily written. It is no pleasure to see British and American writers competing in rearranging the facts of history to suit their respective national prejudices. Mr. Higgins is a pretty good American Roland to match Sir Arthur Bryant's English Oliver.

been a respected commentator on lawn tennis in British and international athletic circles. Faced with this record of versatile achievement we may well draw back in awe and admiration.

During the retreat to Dunkirk Smyth commanded the 127th Infantry Brigade of the 42nd (East Lancashire) Division which, in the final phase, came under General Alexander's control. The author has many pungent comments on the "Phoney War" preceding the historic retreat: the inadequacy of Allied defences and equipment, the corrosive influence of French politics, the unreality of our appreciation of the enemy—but these are not unfamiliar themes. In his opinion, the British Commander-in-Chief, General Lord Gort, was neither "a natural-born commander of troops like Alexander" nor "a great student and practitioner of the art of command like Montgomery"; but Gort was distinguished by "his own integrity, determination and force of character."

The need for commanders endowed with mental and physical robustness was never more apparent than during the operations of May 1940. In Smyth's restrained language, the pressure on a brigade commander was "severe", and he adds: "I reckoned that during those three weeks I averaged three hours' sleep in the twenty-four until the last three days when I only got about one hour."

Smyth has written graphic descriptions of many incidents in the retreat to Dunkirk. However, in this brief survey, we must turn to his analysis of the military lessons of the campaign. He has arrived at two main conclusions. First, there was the German's advantage in rebuilding their army on a new foundation.

> When the new German Army came to be formed in the early nineteen-thirties, it was built around the tank and the aeroplane—the arms of the future. The French Army of 1939, on the other hand, had been built around the infantry, the arm mainly responsible for winning the war of 1914-18, while the tank and the aeroplane were merely tacked on, as it were. It is always difficult for the victors not to re-fight their old battles and to set them up as models for the future...

The second great lesson was the inadequacy of "the Maginot Line mentality"—the completely misleading doctrine, propagated by Liddell Hart among others, of the supremacy of the defensive over the offensive. The *blitzkrieg* shattered this comfortable philosophy.

Today there would seem to be little doubt that these conclusions —the need for constant adaptation to changing concepts of war, and the vital necessity of retaining or, at any rate, immediately recapturing the initiative—apply to

nuclear warfare as well as to the less devastating methods of past conflicts.

Before the Dawn is neatly divided between the Dunkirk operations of 1940 and the retreat from Lower Burma of early 1942. In the latter campaign Smyth, having been promoted to acting major-general, commanded the 17th Indian Division (The Black Cat Division). This formation had many deficiencies. "The infantry were all newly-raised Indian battalions with a large proportion of very young soldiers and newly-trained officers." Their transport was all mechanized—a poor beginning for the Burmese jungle—and, with the Middle East as their probable destination, training had been concentrated on desert warfare!

Smyth skilfully recaptures the spirit of this critical period, when the fall of Hong Kong, the destruction of H.M. Ships *Prince of Wales* and the *Repulse* and the threat to Malaya cast sinister shadows over the future. With the Rising Sun moving rapidly westwards, through Thailand and Malaya, it was clear that Burma was in immediate danger. It was also obvious that available resources imposed a strategy of delaying operations on General Wavell, the redoubtable Commander-in-Chief at New Delhi.

In Burma the tactical problem was not so much how to barricade the door against the invader as it was to find the right door. Deploying superior strength of well-trained troops, supported by considerable aerial and amphibious resources, the Japanese were able to menace simultaneously practically the entire length of Lower Burma. The British appreciation was based on the retention of Rangoon, for its loss would mean the closing of the Burma Road and the end of all communications with China except by air. But while Smyth loyally endeavoured to carry out the instructions given him, he disagreed sharply with his superiors over the best method of delaying the Japanese advance on Rangoon. They wished to hold the Japanese back at maximum range from the approaches to Rangoon, while Smyth, keenly aware of the limitations of his division—which constituted the only effective force for the defence of Burma—wanted to hold the tactically strong line of the Sittang River, only 75 miles from Rangoon.

Much as Smyth had feared, the Japanese rapidly infiltrated and outflanked his dispersed units and it was only with extreme difficulty that he was able to extricate them. He was, however, censured for carrying out certain of these move-

ments without permission.

The climax of the campaign was the desperate race for the big bridge over the Sittang, a target that was conspicuously avoided by Japanese bombers since its capture intact would expedite the enemy's advance on Rangoon. The Japanese won the race by the narrow margin of six hours; but Smyth blew the bridge and succeeded in withdrawing the remnants of his force. Incidentally, he is highly critical of the reference to "premature destruction" of the bridge in Sir Arthur Bryant's *Turn of the Tide*. Little more than a month of strenuous operations had reduced the strength of the divisional infantry to about 3500.

In his "Conclusions and Comparisons" Smyth points out that both at Dunkirk and in Burma we were opposed by forces "greatly superior to ourselves in numbers, weapon-power and mobility." At Dunkirk the British commanders and staffs were thoroughly competent, but they could not cope with what was then "the most formidable fighting machine in the world." As regards Burma, he is understandably bitter. He is convinced that most of the senior commanders, including Wavell, seriously underestimated the capabilities of the Japanese. Smyth also feels that if he had been given a freer hand, and if two Chinese and two Australian divisions could have been concentrated in Burma by the end of February 1942, "Burma could yet have been saved and the course of the war altered." It may, however, be questioned whether, in the exigencies of the situation which developed so quickly in the Far East, it was reasonable to expect effective aid from outside sources.

What does seem certain is that, at Dunkirk and in Burma, British, Indian, Pakistani and Burmese soldiers did their best under the most trying conditions. No armies, no commanders can do more.

Training is Teaching

The Army is engaged constantly in either training or fighting. In common with all who have had experience of war, professional soldiers hope that our country will never be called upon to fight again. But in any case, training never ends, and training is teaching. Every officer and man in the Army is a teacher or a pupil most of his service. The average officer spends more of his time as a trainer and a teacher than in any other capacity.—*General Maxwell D. Taylor, Chief of Staff, U.S. Army.*

A Surgeon with the Partisans

Reviewed by Captain J. W. Roche, Royal Canadian Army Medical Corps, Rockcliffe Station Hospital, Ottawa, Ont.

This book* is a record of the experiences of a New Zealand surgeon who served with the Jugoslav partisan forces. His experiences began when, under cover of darkness, he was put ashore from a ship of the Royal Navy on the island of Vis in the Adriatic Sea, to meet, for the first time, the Dalmatian partisans.

Dr. Rogers has a sense of the dramatic and the ability to recreate the atmosphere in which he found himself. The vivid word picture of the town of Vis is worth quoting as an example of the style in which he writes:

"We saw the Red Stars on their partisan hats, their cosmopolitan uniforms, some German, a few British, but mostly ragged Italian. We saw, scrawled across the gray walls of stone buildings, "Zivio Marshal Tito"—"Zivio Marshal Stalin," and then we realised that we were working now for a different army, with a different philosophy and a different outlook from our own. The great scarlet Hammer and Sickle slashed across the town hall brought us for the first time near to our Russian ally, and the Red Flags that broke into life from dead flagpoles with every gust of wind waved a new idea and a new ideal across our essentially British outlook."

The author worked as a surgeon among the partisans, helped to organize their medical services and train many of their doctors in modern methods of surgical treatment. At the same time he shared with them the hardships and danger of their lives.

The book gives us a picture of the tremendous difficulties the partisan medical services had to struggle against: lack of equipment and supplies; no books; no periodicals; no contacts; many of the doctors unqualified medical students; and the ever-present threat of bombing, or discovery by German patrols.

The chief merit of the book lies in its sympathetic and understanding portrayal of the Yugoslav partisans in their struggle for freedom and in their efforts to put their political philosophy into action.

Dr. Rogers obviously liked and admired the men and women amongst whom he worked and his descriptions of Tito and the other Jugoslav leaders are coloured with a somewhat emotional enthusiasm.

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* *Guerilla Surgeon*. By Lindsay Rogers. Collins, 19 Dyas Rd., Don Mills, Ont. $4.00.

Resourcefulness and Initiative

Reviewed by Major B. W. E. Lee, CD, Command Provost Marshal, Headquarters, Eastern Command, Halifax, N.S.

Lieutenant D. I. Harrison of the Cheshire Regiment was bored. He had been at a training depot in Egypt awaiting orders to rejoin his regiment which was following up the German retreat from El Alamein. A chance acquaintance suggested that he volunteer for the Special Air Service. He did and was accepted. So began a series of adventures that few were privileged to share. He describes his own experiences and relates the tales told by other members of his unit in his book *These Men Are Dangerous**.

The Special Air Service, or SAS as it was known, was formed in the Middle East in September 1941 by two British lieutenants of the Middle East Commando, David Sterling and Jack Lewes. They served throughout the campaign in the Middle East, operating as a raiding force behind the enemy lines with great success. All the men were volunteers and came from all walks of civilian life and a score of different regiments. The end of the desert campaign found Sterling a prisoner of war and Lewes dead in an air attack. It was at this point that Harrison joined the SAS and was sent to Palestine for training at the Middle East Ski School.

The SAS was in danger of disbandment but was re-organized as a Special Raiding Squadron under Major "Paddy" Mayne. Harrison became a Section Commander. A new camp was set up in Palestine near the Syrian border, and the

*By D. I. Harrison. British Book Service (Canada) Ltd., Kingswood House, 1068 Broadview Ave., Toronto 6, Ont. $3.50.

A Surgeon with the Partisans

(*Continued from preceding page*)

As he states in an introductory note, many names in the book, both of places and of people, are "conspirated", adopted during the fight to mislead the enemy. He has made no attempt to distinguish between real and assumed, for he frequently did not know which was which. The conspirated names appear in the story because the author did not know the real ones.

The book is worth reading because of its vivid portrayal of the character of the men and women involved in a struggle that was bitter and merciless.

squadron was formed and trained for its role in the assault on Fortress Europe. The author spares no details of the type of training carried out and the rigorous methods used. There is no doubt that the system proved itself by the results obtained. Six weeks of general training was followed by specific training and rehearsals conducted on models of the target area and later on a full size dummy. Amphibious training came next, both in Haifa and later off Suez, culminating in a dress rehearsal in the Gulf of Akaba.

On July 4th, 1943, the squadron sailed from Port Said for its rendezvous with the invasion fleet and the great adventure had begun. The squadron's task was to destroy a coastal battery at Capo Murro di Porco in Sicily. The assault, which is vividly described from the author's eye-witness account, was a success. So much so, in fact, that the squadron was not withdrawn as planned, but was thrown into further and equally successful attacks, including the capture of Syracuse and Augusta. It is worth nothing here that, in its first day of operation, the Special Raiding Squadron inflicted seven hundred casualties on the enemy, destroyed eighteen guns at a loss of one killed and two wounded. All this by a force that numbered less than three hundred all ranks!

Sicily was ours and Italy lay ahead. After a false alarm, the squadron embarked once again. This time the target was Bagnara, a town thirty miles beyond the advancing allied armies and behind the German positions. The SAS fought a desperate battle with the Germans in the hills surrounding the town. Harrison's account of the fighting is vivid and detailed. After Bagnara came Termoli which was an even tougher nut to crack but again the selection and training of the SAS men proved their value.

After Termoli the squadron was withdrawn to North Africa and later returned to the United Kingdom. Here they were trained as parachutists and practised in initiative and resourcefulness. In an atmosphere of secrecy, the squadron was dropped in France in small isolated groups. Harrison, now a troop commander, landed with his headquarters near Auxerre as advance guard for his troop.

A series of daring escapades and hair-raising escapes followed. The author tells his own story and intermixes it with accounts of the activities of other sub units and individuals of the squadron. Since the unit was scattered over a wide area in small pockets, perhaps it is difficult to tell the story any other way. However, it is confusing and

the reader must be ever alert if he is to remember to whom the events are happening. Harrison tells his own story in the first person and quotes conversations rather than recounting details. This produces a more readable and certainly more interesting book from the average reader's viewpoint. However, the conversation appears very restrained and very British schoolboyish at times. It is highly unlikely that this form of discussion would have been carried on by soldiers in the heat of battle. On the other hand, it is refreshing to note the complete absence of the well-known four-letter words that novelists insist belong in "soldiers' language". Perhaps all soldiers do not "swear like troopers". At least Harrison thinks they don't.

After the liberation of France, the squadron moved north with the Second British Army into Holland. In March they returned to England for rest and refit. Later they returned to Europe and operated with the 4th Canadian Armoured Division in North Germany.

The book has a summary of the operational results of 1st SAS tasks in France from June to September 1944. It is an impressive list at first sight, but appears even more so when one remembers that it was compiled behind enemy lines. There are also some good photographs but unfortunately only three rather inadequate maps. It is difficult to follow this narrative without maps and the author could have improved his book considerably by including a large map showing the area of operations in France and another covering the last phase in north Germany.

* * *

The Armed Forces Year Book

*Brassey's Annual**, regarded as the standard book of reference on matters of defence policy, strategy and the development of armed forces and their weapons in all countries, is now published for its 68th year. The 1957 issue places special emphasis on the affairs of NATO, but in addition the reader is given a wide choice of other subjects.

Considerable attention is devoted to the future of war in a nuclear age in the chapters "Defence in the Nuclear Age" and "Defence: A New Look for Nuclear War". The development of guided missiles is reviewed also.

Of particular interest to the Canadian military reader at the

**Brassey's Annual: The Armed Forces Year-Book, 1957*. Edited by Rear-Admiral H. G. Thursfield. Brett-MacMillan Ltd., 25 Hollinger Rd., Toronto 16, Ont. $9.50

IT PAYS TO CHECK FIRST

By

J. Mackay Hitsman, Historical Section,
Army Headquarters, Ottawa

Contemporary critics created a legend about the Duke of Wellington by repeating myriad stories about supposed idiosyncracies. Too many historians have been content to accept them at their face value, ignoring the fact that there is a limit to what might be attributed even to this remarkable soldier-turned-statesman, or have unwittingly twisted them out of context.

Familiar with Wellington's own description of his army as being the "scum of the earth" and the obstacles that he placed in the way of a medal being issued to commemorate the service of the Peninsular War veterans, I was unwise enough to accept at face value a statement made some time ago in a book review of *The Letters of Private Wheeler:* "I don't know what effect these men will have on the enemy," said the man who was to go down in history as the Duke of Wellington, "but, by God, they frighten me." I even sent it along to the *Canadian Army Journal*, where it appeared as an item in the issue of February 1952.

Recently, while rummaging about the office, I came upon the item and showed it to Captain D. J. Goodspeed, who is writing a pamphlet on the Peninsular War to be read by Canadian officers studying military history.

Captain Goodspeed's reaction

The Armed Forces Year Book

(Continued from preceding page)

present time is the chapter which deals with the role of the armed forces in Civil Defence.

The political and military situation in the Middle East is given prominence in articles by Captain Cyril Falls, who has written an account of the Suez operation, and Mr. Jules Menken, who analyses the situation in the chapter "After Suez in the Middle East".

Inter-service collaboration in the compilation of the *Annual* is reflected in the complexion of the editorial board—Rear-Admiral H. G. Thursfield, who has edited the book since 1937, and the assistant editors—Brigadier C. N. Barclay, CBE, DSO, and Air Vice-Marshal W. M. Yool, CB, CBE.

was immediate and to the point. "Wellington was basically a shy man, and wouldn't have made a statement like that. Something similar does appear in one of Wellington's letters to Henry Torrens at the Horse Guards, but he was quoting a remark made a generation earlier by Lord Chesterfield. And he was referring to senior officers, not to other ranks."

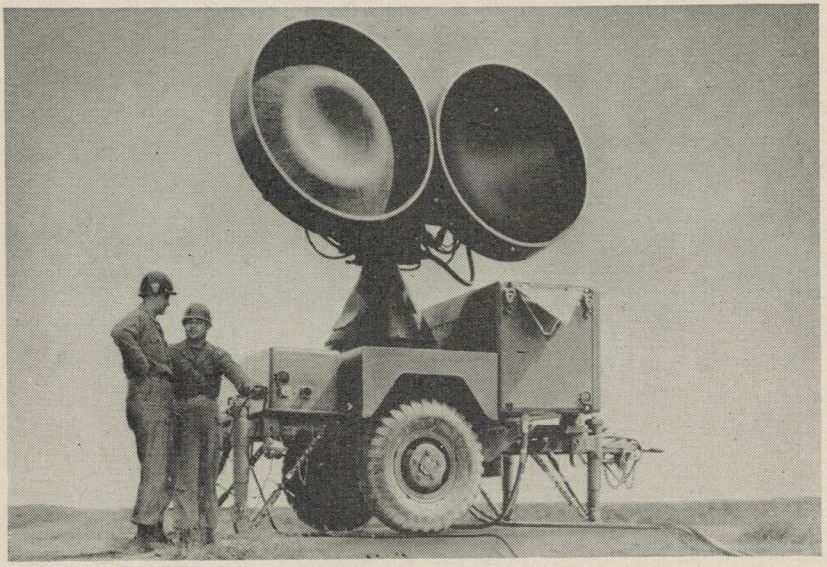
In a matter of minutes we found that Wellington's *Supplementary Despatches* included a letter that he wrote during August 1810 to Sir Henry Torrens, Military Secretary at the Horse Guards, complaining about generals being selected solely because of their seniority and sent out to Portugal without any reference being made to himself. The most relevant passage reads as follows:

"I have received your letter announcing the appointment of Sir William Erskine, General Lumley, and General Hay to this army. The first I have generally understood to be a madman: I believe it is your opinion that the second is not very wise: the third will, I believe, be a useful man . . . Really when I reflect upon the characters and attainments of some of the General officers of this army, and consider that these are the persons on whom I am to rely to lead columns against the French Generals, and who are to carry my instructions into execution, I tremble; and, as Lord Chesterfield said of the Generals of his day, 'I only hope that when the enemy reads the list of their names he trembles as I do.' Sir William Erskine and General Lumley will be a very nice addition to this list! However, I pray God and the Horse Guards to deliver me from General Lightburne and Colonel Sanders."*

**Supplementary Despatches, Correspondence, and Memoranda of Arthur Duke of Wellington*, ed. by his son, the Second Duke of Wellington (London, 1858-1872), VI, 582. Also see Godfrey Davis, *Wellington and his Army* (Oxford, 1954), 52-53 and Philip Guedalla, *Wellington* (London, 1931), 197-198.

Conventional Weapons

Although we are stressing the development of atomic weapons, missiles, and rockets, we are not overlooking the importance of continued improvement of conventional weapons which are urgently needed for the accomplishment of countless specific tasks with which a field army is faced. In any situation that might develop, you can be sure the Army will have the means at hand to apply the exact amount of force required—from the silent thrust of a bayonet to the blast of a powerful guided missile.—*Secretary of the (U.S.) Army Wilber M. Brucker.*



U.S. Army Photograph

A photograph of the radar used in the U.S. Army Hawk missile system. The radar automatically tracks the target, ignoring unwanted reflection from stationary ground objects.

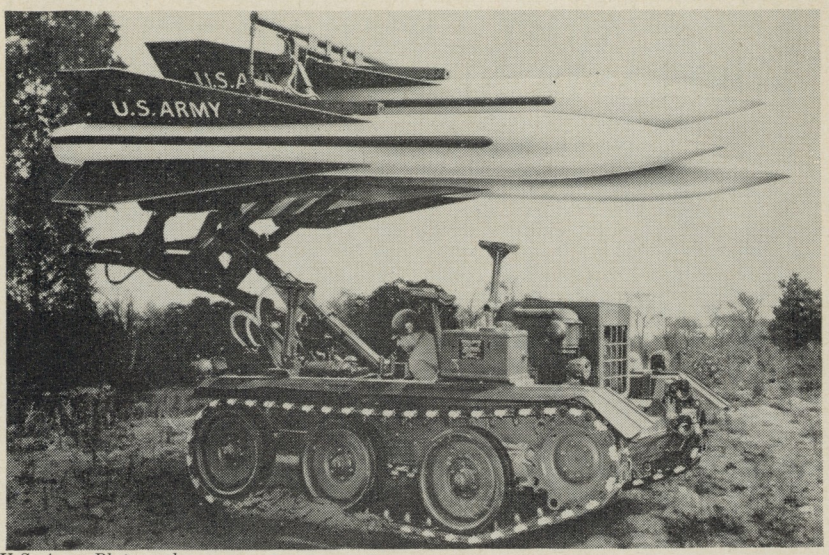
RADAR AND MISSILE LOADER FOR HAWK AIR DEFENCE SYSTEM

REPRODUCED FROM THE *Army Information Digest* (U.S.)

A radar "eye" that ignores stationary objects but speeds a surface-to-air missile instantly toward a threatening moving aerial target has been developed for the [U.S.] Army Hawk air defence missile system. The Hawk is a key defender of American cities against aerial invaders flying at even the lowest altitude.

The Hawk's outstanding ability to seek out and destroy invaders even at tree-top level is due to the use of a radically advanced radar technique in the missile's guidance system. This unique radar system makes it possible, for the first time, for a missile to pick out the reflection of a target moving at low altitudes from a mass of signals reflected from ground objects such as hills, buildings and tree tops.

Another unique aspect of the system is the extreme mobility of



U.S. Army Photograph

The tractor-driven U.S. Army Hawk missile loader makes it possible to quickly transfer three "birds" at a time from storage area to launcher.

its ground support equipment which permits Hawk batteries to travel with fast-moving assault forces. A tractor-driven Army Hawk missile loader makes it possible to transfer quickly three "birds" at a time from storage area to launcher. The loaders, self-propelled and highly manoeuvrable, negotiates rough or muddy terrain.

Units of the system, including launcher, loader and missiles, can be quickly airlifted to any isolated front-line location by airplane and helicopter, or it can be transported by land vehicle. The Hawk will carry several types of warheads.

Understanding the Men

Professional competence—that is, knowledge of the art and trade of war—is not alone sufficient to meet the requirements of leadership in modern war. Knowledge can be cold and sterile, unproductive of the stimuli which drive men to victory in battle. No effective military leader has ever reached greatness by brain-power alone. The latter must be accompanied by a deep understanding of the men who, in the last analysis, are the absolute weapon of war.—*General Maxwell D. Taylor, Chief of Staff, U.S. Army.*

U.S. ARMY CHIEF OF STAFF FORECASTS NEW DEVELOPMENTS

From Army-Navy-Air Force Journal (U.S.)

If modern Army units are to emerge victorious from battle they will need a new kind of road, cross-country and air mobility.

General Maxwell D. Taylor, [U.S.] Army Chief of Staff, speaking before the National Defence Transportation Association Convention in Washington, D.C., [November 1957] said the necessity for increased battlefield mobility has brought about an added emphasis on the development of air-transportable ground vehicles and an expansion of the Army aviation programme.

"I need hardly comment on our desire to continue to improve our organic aircraft as a means of better combat mobility," he said. "New design concepts for short and vertical takeoffs and landings are being exploited" as well as plans for lightweight gas turbine engines to propel future aircraft.

"Additionally," General Taylor said, "we are very much interested in external load-carrying helicopters—flying cranes which can carry up to 12 tons of cargo."

In the field of artillery, guided missiles and rockets, General Taylor noted that "obviously, the greater ranges we attain, the greater flexibility of firepower without physical movement." The greatly increased ranges of these weapons, he said, allows shifting "our firepower about the battlefield without displacing our men and equipment."

The Army of the future will need air reconnaissance vehicles which can quickly find, follow and report enemy units. The Army will continue to seek help from the Air Force for deep reconnaissance, he said, "but we must develop our organic resources in aircraft, helicopters and reconnaissance drones."

"Concurrently with increases in complicated equipment," the General said, "we are faced with the need to reduce the tonnage requirements necessary for operations. . . We cannot think in terms of the elaborate supply system developed to support the stabilized front in Korea."

The use of nuclear power in an undeveloped theatre of operations, the General said, has been given much consideration. As a result of these studies, he said, a project

DEFENCE RESEARCH BOARD FORMS NEW DIRECTORATE OF PLANS

A STATEMENT BY THE DEFENCE RESEARCH BOARD, NATIONAL DEFENCE HEADQUARTERS, OTTAWA

Dr. John C. Arnell, 39, of Ottawa and formerly of Halifax, has been appointed Director of Plans, a new directorate within Defence Research Board Headquarters established to co-ordinate and present information bearing on the Board's long-term planning programme. The directorate will be responsible also for foreign and domestic liaison. Dr. Arnell, who was formerly Director of Scientific Intelligence, assumed his new duties in March.

Due to the rapid development internationally of new weapons, creation of the new directorate was dictated by the need for even more detailed long-term planning than had been maintained in the past. As many aspects of this planning are closely dependent on the research programmes of friendly countries, the Board's increased co-operation with them has necessitated the strengthening of the liaison staff.

Dr. Arnell was succeeded by Harold Larnder, OBE, 55, also of Ottawa, leader of a small group of Second World War scientists who developed operational research in the United Kingdom as a new scientific specialty. As a member of the Board staff since 1951, Mr. Larnder has carried out a variety of operational research duties in senior capacities.

New Developments

(*Continued from preceding page*)

is now being developed to design a 400-kilowatt atomic plant that could be transported on a 25-ton trailer.

Studies are also being made, he said, on the use of nuclear power to propel a railway locomotive, several types of harbour and inland waterway craft, and the so-called trackless-train.

In his speech, the General stressed that the formula for victory on the ground in the atomic age had not changed significantly since the day of the bow and the war chariot. "Victory continues to depend", he said, "upon the effective firepower and rapid movement of well-trained and determined fighting men."

AN EVENING WITH CHURCHILL

The following extract from Fitzroy Maclean's autobiographical *Eastern Approaches* (London, 1949) is just one of many examples of the trials and tribulations experienced by those called upon to proffer advice upon Service matters to Britain's wartime Prime Minister:

"When I reached Chequers, I wondered if the Prime Minister would ever find time to talk to me about Jugoslavia. The Chief of the Imperial General Staff was there, and Air-Marshal Harris, of Bomber Command, and an American General, and an expert on landing-craft, and any number of other people, all of whom clearly had matters of the utmost importance to discuss with Mr. Churchill. Red leather dispatch boxes, full of telegrams and signals from every theatre of war, kept arriving by dispatch rider from London.

"Then there were the films; long films, short films, comic films and serious films, sandwiched in at all hours of the day and night. The great men stood by, waiting their turn, hoping that it would not come in the early hours of the morning, a time when the ordinary mortal does not feel at his brightest, especially if he has seen three or four films in succession, but when the Prime Minister, on the contrary, seemed filled with renewed vigour of mind and body.

"Towards midnight, in the middle of a Mickey Mouse cartoon, a memorable interruption took place. A message was brought in to Mr. Churchill, who gave an exclamation of surprise. Then there was a scuffle and the film was stopped. As the squawking of Donald Duck and the baying of Pluto died away, the Prime Minister rose to his feet. 'I have just,' he said, 'received some very important news. Signor Mussolini has resigned.' Then the film was switched on again."—*Contributed by J. Mackay Hitsman, Historical Section, Army Headquarters, Ottawa.*

Victory to the Better Trained

. . . Yet, because war is fought between men rather than between weapons, victory will always go, when armaments are relatively equal, to the side which is better trained and of higher morale—advantages which are obtained neither easily, quickly, nor without sacrifice of more than money in peace. — *Field-Marshal Sir William Slim.*

BATTLE HONOURS FOR THE UN OPERATIONS IN KOREA, 1950 - 1953

By

MAJOR W. B. ARMSTRONG (RETIRED), SECRETARY OF THE BATTLE HONOURS COMMITTEE, DIRECTORATE OF ADMINISTRATION, ARMY HEADQUARTERS, OTTAWA*

Her Majesty the Queen has approved the conditions governing the award of battle honours to regiments of the Commonwealth to commemorate their services during the operations in Korea in 1950-1953. Her Majesty's approval now leaves the way open for the Canadian Army units which fought in Korea with the 25th Canadian Infantry Brigade Group to claim the awards to which they are entitled.

The conditions of award are the same for all Commonwealth regiments which fought in Korea. It was agreed on a Commonwealth basis that the general principles and qualifying rules which were applicable for the award of Second World War battle honours† would also apply for the award of honours for Korea, subject to the following modifications:

(a) Not more than two battle honours may be emblazoned. These may be either the theatre honour "Korea", with appropriate year-dates added, and one other, *or* two named operations.

(b) In addition to the emblazoned battle honours, units may claim other serials from the Official List in which they took an active and creditable part.

(c) Only one claim will be permitted for one period of fighting; e.g., *either* the battle *or* its subsidiary engagement may be claimed;

(d) No special claims will be considered.

The Canadian Army armoured and infantry regiments eligible to claim Korean battle honours are:

Lord Strathcona's Horse (Royal Canadians) (2nd Armoured Regiment).

The Royal Canadian Regiment.

Princess Patricia's Canadian Light Infantry.

Royal 22e Régiment.

This campaign was a singular one in the history of the Canadian

* *Major Armstrong was commissioned with The Black Watch (Royal Highland Regiment) of Canada during the Second World War. Following the Korean Campaign, he served in Korea as Canadian representative on the United Nations Command Military Armistice Commission.*—Editor.

† *Notified in Part "A", Supplement Issue No. 508 of 10 September 1956 to Canadian Army Order 33-1.*

Army because Korea was the first place the Canadian Army had taken to the field as part of an International Force under the flag of the United Nations. Although this was not a major war, such as those fought in North-West Europe, the Canadian effort was considerable, for during the period of fighting from 1950 to 1953 the LdSH supplied three armoured squadrons and each of the infantry regiments supplied three separate infantry battalions. A total of 22,066 officers and men served in this theatre, a contribution larger in proportion to Canada's population than most of the nations which provided troops for Korea.

Apart from the defence of Hong Kong during the Second World War for which the Royal Rifles of Canada and The Winnipeg Grenadiers were awarded the honours "Hong Kong" and "South-East Asia, 1941", this is the only Asiatic campaign in which units of the Canadian Army have served and it is the first time Canadian units have become eligible for battle honours the names of which are Oriental.

When the two Korean battle honours are added to the colours, the RCR will have a total of 26 battle honours emblazoned on its regimental colour, the LdSH will have 23 honours on its guidon and the PPCLI and R22eR will have a total of 22 each on their regimental colours. These new honours will be displayed proudly in memory of those compatriots who went across the Pacific to fight and die among the mountains and rice paddies of Korea in the cause of freedom.

The official list of operations from which all the Commonwealth regiments who fought in Korea will select the battle honours they wish to claim for award contains the following names:

1950

Pusan, Naktong Bridgehead, Songju, Sariwon, Yongyu, Chongju, Pakchon, Chongchon I, Chongchon II, Yongwon-Ni, Hungnam.

1951

Uijongbu, Seoul, Chungchung-Dong, Chuam-Ni, Hill 327, Hill 419, Maehwa-San, Kapyong-chon, The Imjin, Kapyong, Chail-Li, Kowang-San, Maryang-San, Hill 227 I. Hill 227 II.

1952

Hill 355, The Hook 1952.

1953

Pochon-Ni, The Hook 1953, The Samichon.

BATTLE HONOURS AWARDED

Supplements to Canadian Army Orders issued at Army Headquarters, Ottawa, contain lists of Battle Honours awarded to the under-mentioned regiments by Command of Her Majesty the Queen. The Battle Honours which have been selected to be borne on Colours or Appointments are printed in heavy type. Further lists will be published as they are promulgated. Those listed below appear in the order of date of promulgation.—Editor.

* * *

THE BRITISH COLUMBIA DRAGOONS
(9TH RECONNAISSANCE REGIMENT)
The Second World War

"Liri Valley", "Melfa Crossing", "Gothic Line", "Pozzo Alto Ridge", "Lamone Crossing", "Naviglio Canal", "Fosso Munio", "Conventello-Comacchio", "Italy, 1944-1945", "Ijsselmeer", "Delfzijl Pocket", "North-West Europe, 1945".

THE ONTARIO REGIMENT
(11TH ARMOURED REGIMENT)
The Second World War

"Pursuit to Messina", **"Sicily, 1943"**, "Colle d'Anchise", **"The Gully"**, "Casa Berardi", **"Ortona"**, "Point 59", **"Cassino II"**, "Gustav Line", **Sant' Angelo in Teodice"**, **"Liri Valley"**, **"Aquino"**, "Trasimene Line", **"Sanfatucchio"**, "Arezzo", **"Advance to Florence"**, **"Italy, 1943-1945"**, "Arnhem", **"North-West Europe, 1945".**

4TH PRINCESS LOUISE
DRAGOON GUARDS
(4TH ARMOURED CAR REGIMENT)
The Second World War

"Adrano", "Troina Valley", **"Sicily, 1943"**, "Landing at Reggio", **"Motta Montecorvino"**, **"Liri Valley"**, **"Hitler Line"**, "Melfa Crossing", **"Gothic Line"**, **"Tomba di Pesaro"**, "Casale", "Sant' Angelo in Salute", **"Capture of Ravenna"**, **"Naviglio Canal"**, **"Italy, 1943-1945"**, **"North-West Europe, 1945".**

THE LOYAL EDMONTON REGIMENT
(3RD BATTALION,
PRINCESS PATRICIA'S
CANADIAN LIGHT INFANTRY)
The Second World War

"Landing in Sicily", "Piazza Armerina", "Leonforte", "Agira", **"Adrano"**, "Troina Valley", "Sicily, 1943", "Colle d'Anchise", "The Gully", **"Ortona"**, **"Liri Valley"**, "Hitler Line", **"Gothic Line"**, "Monteciccardo", "Monte

Luro", **"Rimini Line"**, **"Pisciatello"**, "San Fortunato", **"Savio Bridgehead"**, **"Naviglio Canal"**, "Fosso Munio", "Italy, 1943-1945", "Apeldoorn", **"North-West Europe, 1945"**.

THE FIRST CANADIAN PARACHUTE BATTALION (DISBANDED)

The Second World War

"Normandy Landing", **"Dives Crossing"**, **"The Rhine"**, **"North-West Europe, 1944-1945"**.

Note: Canadian Army Order 33-1 listing Battle Honours (these have been published in previous issues of the *Canadian Army Journal*) should be amended as follows:

The Canadian Grenadier Guards (6th Battalion, The Canadian Guards) (see page 120, July 1957 issue of the *Journal*): Between **"Chambois"** and **"The Lower Mass"** insert "The Scheldt" (Supplement Issue 57/539).

The Toronto Scottish Regiment (see page 135, October 1957 issue of the *Journal*): Delete "North-West Europe, 1944-1945" and substitute "North-West Europe, 1942, 1944-1945" (Supplement Issue 57/548).

Automatic Mine-Layer

A mechanical mine planter, which carries mines in a "lazy susan" type magazine, has been developed by the U.S. Army Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va.

During operation, anti-tank mines are automatically fed into the planting device, consisting primarily of a large side elevating plow which opens a trench to receive the mines, and a mechanism to arm the mines and drop them into the trench. After the mine is planted, the soil drops back into place.

The mine planter is mounted on pneumatic tires and can be towed by any crawler tractor during a mine-laying operation. The planter can be towed by any standard military truck during highway transportation.

The new machine eliminates many man-hours formerly required to plant a minefield. In the past, individual holes had to be dug manually for each emplacement.—*Army-Navy-Air Force Journal (U.S.)*.

CANADIAN ARMY ORDERS

Listed below is a resumé of Canadian Army Orders for the information of military personnel. Details of these Orders are available in all Army units. — Editor.

CAO 5–1
(*Issued: 17 Mar 58*)
System of Allocation of Service Married Quarters

This amendment provides for the deletion of additional qualifying points for married quarters for service in Japan/Korea with effect 1 Jan 58 at which date the one-half point now provided for service elsewhere beyond Canada applies.

CAO 46–1
(*Issued: 10 Mar 58*)
Participation of Bands in Service and Civil Functions

This revision, which is applicable to bands only, provides limitations on movement and requires sponsoring organizations to pay all expenses except when the Minister authorizes them to be waived.

CAO 61–33
(*Issued: 7 Apr 58*)
Symbols of Military Qualification

This revision of Appendix "A" deletes 32 obsolete and obsolescent symbols, combines 6 qualifications under 3 symbols currently authorized and authorizes the use of 5 new symbols of military qualification.

CAO 136–1
(*Issued: 17 Mar 58*)
Federal Income Tax — Service Members

This revision notifies changes resulting from amendments to the Income Tax Act, including clarification and rulings concerning its application. Also incorporates AGI 56/1.

CAO 174–22
(*Issued: 17 Feb 58*)
Medical Examinations — Civilians Employed in Hazardous Trades

This revision clarifies the policy and procedures concerning medical examinations of civilians employed in hazardous trades.

CAO 212–12
(*Issued: 3 Mar 58*)
Separated Family's Allowance

Appendix "A" which contains the Order in Council concerning the general housing shortage has been deleted. The appendix has been superseded by Order in Council PC 1957–17/843 dated 17 Jun 57 which has been broadened to include members of the Reserves on Continuous Army Duty, and

has been notified in letter form to all concerned.

CAO 219–11
(*Issued: 31 Mar 58*)
Powers—Approving Authorities for Punishment Warrants

This revision includes the designation of the Officer in charge of Administration, 4 Canadian Infantry Brigade Group and the Chiefs of Staff for Prairie and Central Commands as approving authorities for the purposes of Section 136 NDA.

CAO 225–30
(*Issued: 10 Feb 58*)
Ordnance Manual

This revision notifies changes in the titles of Volumes 6 and 11 due to the formation of the Directorate of Cataloguing and Entitlement Requirements, and also notifies the addition of two new volumes—3A and 12.

CAO 225–49
(*Issued: 10 Feb 58*)
The Queen's Regulations and Orders for the Cadet Services of Canada and the Royal Canadian Army Cadets

This revision notifies changes in the distribution of Army Cadet Regulations.

CAO 251–16
(*Issued: 10 Feb 58*)
Disposal of Stray Ammunition and Sundry Explosive Objects

This new order supersedes Canadian Army Policy Statement No. 100 and prescribes the responsibilities of the Army in respect to the disposal of stray ammunition and sundry explosive objects.

CAO 257–1
(*Issued: 3 Feb 58*)
Use of Commercial Telephone and Telegraph Facilities

This revision requires commands, areas and CAS Washington to submit to AHQ a copy of all locally-approved applications for telephone installations and cancels the requirement for a monthly return. It also requires that the rental of telegraph circuits and equipment be approved by AHQ.

Impulse and Drive

Nothing would be more futile than to suppose that a good organization can of itself produce good results. The impulse and drive can only come from the man or men who are operating the organization. — *Lieut. General Sir Ian Jacob.*

THE CORPS OF ROYAL CANADIAN ENGINEERS

ARMY ENGINEERS DEVELOP MULTI-PURPOSE HEATER

By

MR. H. PEARSON*

The Directorate of Engineer Development has produced a small heater which provides an answer to the need for a field heating unit for use in accommodation such as tents, bunkers and other temporary shelters.

During the Korean war the Canadian troops improvised heaters out of shell cases and other odds and ends of material so that they could have heat in their bunkers. The use of these heaters caused casualties either as a result of fires and explosions or as a result of smoke inviting enemy shelling.

The Director of Engineer Development was directed to develop a simple and safe heater capable of heating bunkers. Shortly after the development was started, the Korean war came to an end and the immediate need for a bunker heater passed. However, the development showed such promise that it was decided to continue the work and to produce a small heater not for bunkers only but for a wide application such as in tents and any other structure where a small heater would be needed. The title of the project was therefore changed from Bunker Heater to Heater Space 10,000-20,000 BTU.

As the title states, the heater has a capacity of 10,000-20,000 BTU per hour, this is about twice the output of the ordinary car heater. Other stipulations which were included in the military characteristics for the heater were that it should:

(a) Burn leaded gasoline or diesel fuel.

(b) Have a flue exhaust for noxious fumes.

(c) Be small, compact and easily carried.

(d) Be rugged and simple in construction.

(e) Be easily operated and maintained.

(f) Be stable and difficult to upset.

(g) Be safe if upset while burning.

(h) Make no smoke except when starting.

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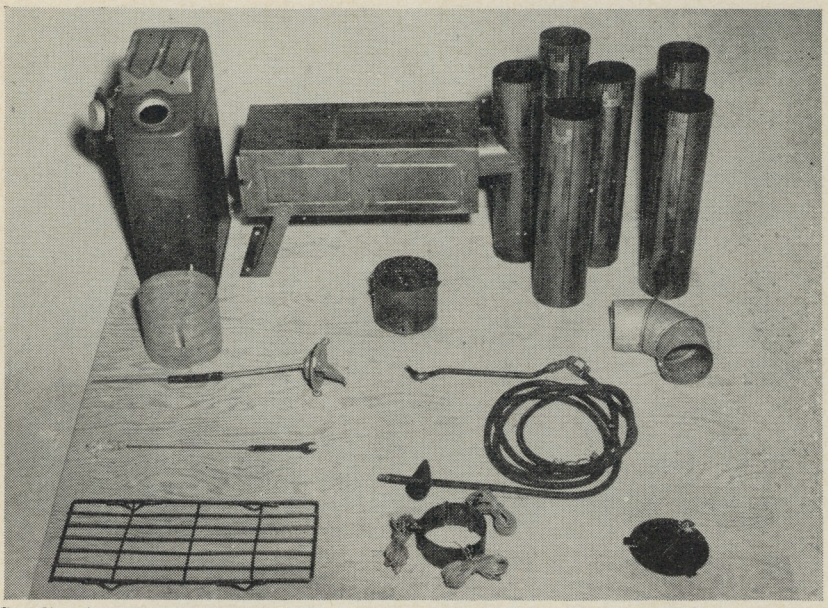
* *Mr. Pearson has been employed with the Directorate of Engineer Development, Army Headquarters, for the past five years, and was employed formerly as an industrial engineer with appliance manufacturers in Ontario. He has several patents to his credit and was responsible for the development of the equipment described in this article.*—Editor.



Canadian Army Photograph

Details of the space heater.

(i) Be quiet in operation.

(j) Have sufficient heating surface for two mess tins.

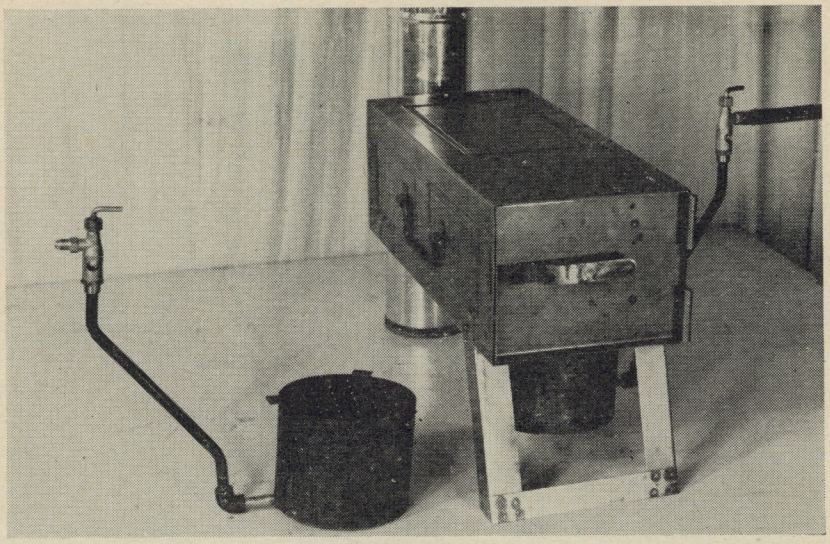
(k) Operate as long as possible without maintenance.

(i) Be as safe and foolproof as possible.

(m) Operate on a gravity feed if possible.

The heater as finally developed fulfils all the requirements of the military characteristics. It has a sheet metal body, 18½ inches long, 7½ inches wide and 6 inches deep which is mounted on folding legs at the front and supported at the back by a downward extension of the smoke pipe. A cylindrical pot burner is attached underneath the body and to this a fuel line is connected. The fuel line consists of a twelve foot length of gas and oil resistent rubber fuel hose, a fuel control valve and a rigid copper tube connection to the side of the pot burner. A standard Army "jerrican" with a filling cap adapter for gravity flow is used as a fuel tank. The heater will burn leaded gasoline, diesel fuel, kerosene, or solid fuel such as wood, coal, coke and charcoal.

To start up the heater when liquid fuel is being burned the door



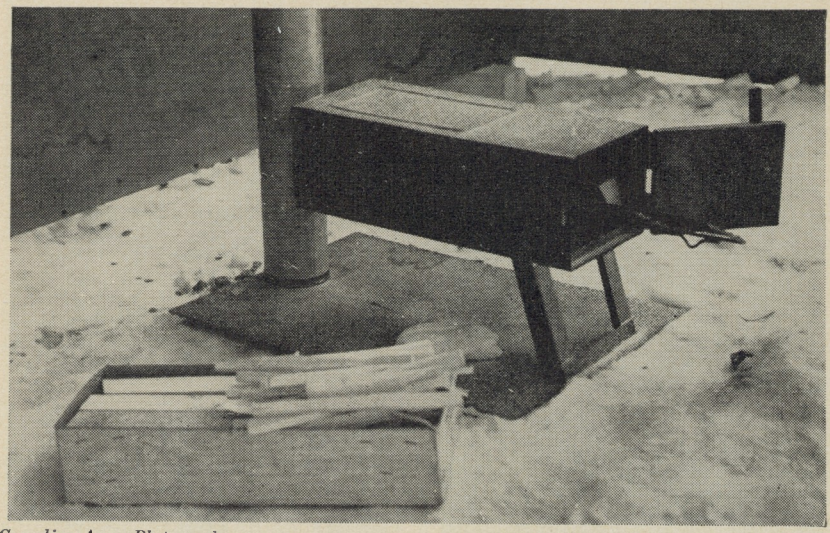
Canadian Army Photograph

The heater assembled and in position for use. On the left is a duplicate of the burner pot, fuel tube and control valve assembly.

at the front of the body is opened, the fuel valve turned on, a lighted torch applied in the burner pot and the door closed and kept closed as soon as the fuel has ignited. In order to know what quantity of fuel is flowing into the pot and to enable the operator to adjust the flow a sight-glass is incorporated in the fuel valve. When burning solid fuel the pot and fuel line assembly are removed and the pot opening in the heater body is covered with the plate provided. A wire grate, also provided, is fitted into the heater body and the fire is built on this grate. The heater now operates as a box stove and the door is used to control the draft and regulate the rate of burning.

All parts of the heater, including the collapsible smoke pipe and fuel line assembly, pack inside the body and the body is fitted with a handle so that the complete unit can be carried like a valise. Re-assembly is quick and simple and can be carried out by troops wearing arctic mitts. The weight of the heater, including all components, other than the jerrican and fuel, is 18½ lbs.

There are several special features about this heater which are worth pointing out. It combines the principles of box and drip type



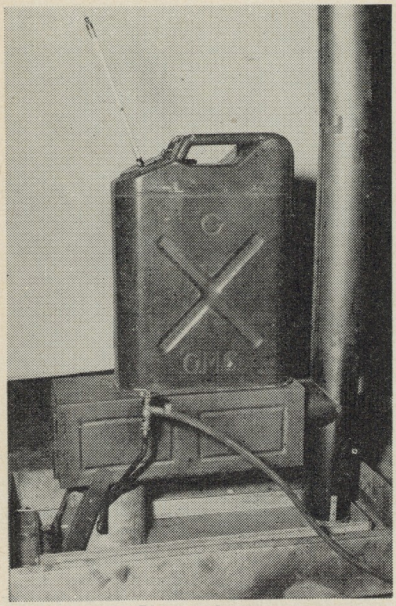
Canadian Army Photograph

The heater used as a solid-fuel stove, burning wood or charcoal.

heaters; it is extremely simple to operate and maintain; it has no nozzle or burning ring which can become choked with lead deposits from the burning of leaded gasoline; it will burn any type of fuel. Other special features have been incorporated in the smoke pipe. These include the longitudinal collapsible joint on each length of pipe which enable the whole of the smoke pipe to be packed inside the heater body and the universal elbow piece which can be set at any angle from vertical to horizontal. The military characteristics regarding burning without smoke, being quiet and safe have been met.

When first lit, the heater creates a slight amount of smoke but this thins out until it is unnoticeable after about two minutes. There is no roar from the heater when it is in use and the noise created is in fact so slight that it cannot be heard at a distance of fifteen feet. To prove the safety of the heater it has, on several occasions, been kicked over while burning and in every case burning has stopped although the flow of fuel has continued.

To make sure that the heater will perform satisfactorily under the wide variety of conditions which Army use demands, it has been subjected to a large number of tests. In the Low Temperature Laboratories at the National Research Council the heater was



Canadian Army Photograph

A jerrican of water being heated on the space heater. Note the thermometer used during the tests to register the temperature of the water.

tested at -65°F when burning leaded gasoline, at -45°F when burning kerosene and at -35°F when burning diesel fuel, and in all cases the heater gave satisfactory performance. In the field the heater was tested at Fort Churchill where it was shown to be capable of maintaining a temperature ranging from 41°F at a level 6 inches above the tent floor to 96°F, 4 feet above the floor when used in a 5-man tent at a time when the outside temperature reached as low as -31°F.

User trials have also been carried out at Camp Borden, and in the spring of 1957 a Topographical Mapping Party operating in the Barrens between Simpson Lake and the Arctic coast at Franklin Bay used the heaters in their 5-man tents. This party reported that the heater was the most satisfactory one they had so far used.

Heating is also required in troop

(*Continued on page 148*)

Canadian Army Photograph

Weighing only 18½ pounds, the heater may be neatly packed and carried like a valise (*left*). In his left hand, the soldier is carrying a jerrican of water for heating.

THE ROYAL CANADIAN ARMY SERVICE CORPS

New Honorary Colonel Commandant for the RCASC

A REPORT PREPARED BY THE DIRECTORATE OF SUPPLIES AND TRANSPORT, ARMY HEADQUARTERS, OTTAWA

Brigadier George Edward Robert Smith, CBE, CD, was appointed Honorary Colonel Commandant, The Royal Canadian Army Service Corps, effective 1 October 1957, succeeding Colonel Ormonde Herbert Barrett, OBE, ED, who has been Honorary Colonel Commandant of the Corps since 11 April 1949.

The changeover took place at The Royal Canadian Army Service Corps Association's Annual Dinner held at The RCASC School, Camp Borden, Ont., on 27 September 1957.

Brigadier Smith's appointment as Honorary Colonel Commandant of the Corps is considered most fitting in view of his long association with the RCASC and the deep interest he has always shown in the Corps. He has undertaken the task of co-ordinating the writing of a history of The Royal Canadian Army Service Corps, a project he is well qualified to see through to a successful conclusion.

Brief biographies follow:

BRIG. G. E. R. SMITH, CBE, CD

Brigadier Smith was born in Victoria, B.C., in February 1901. He graduated from the Royal Military College of Canada, Kingston, Ont., in 1923, and was commissioned in the Permanent Force of The Royal Canadian Army Service Corps in 1925.

He went overseas with the 1st Canadian Infantry Division in December 1939 and served in staff appointments during 1940 and 1941. He was promoted to the rank of lieutenant-colonel in June 1940 and became colonel in 1942 to serve as Director of Quartermaster-General Services at Canadian Military Headquarters in London.

From December 1942 until July 1945 he served as DDST, Headquarters First Canadian Army, then returned to CMHQ. His first post-war appointment was at Army Headquarters, Ottawa, where he served as a Deputy Quartermaster-General.

Brigadier Smith became Officer-in-Charge of Administration, Headquarters Central Command, in June 1947. In August 1948, after attending National Defence College, he was appointed Com-

Colonel Barrett, centre, congratulates Brigadier Smith, the new Honorary Colonel Commandant of the RCASC, who is seen holding his honorary appointment script. On the left is Lieut.-Colonel J. L. Stevens, CD, President of the RCASC Association

mander, New Brunswick Area. He became Commander, Newfoundland Area, in September 1951, and in November 1954 he assumed the appointment of Chief of Staff, Headquarters Central Command, Oakville, Ont., which appointment he held until his retirement in July 1957.

COL. O. H. BARRETT, OBE, CD

Colonel Barrett was first commissioned in the RCASC in 1928. He served continuously in the Non-Permanent Active Militia and in the Canadian Army (Active) until he returned to Reserve status in 1945 in the rank of colonel. His last appointment overseas was Deputy Director of Supplies and Transport, HQ 2nd Canadian Corps, in which capacity he served from January 1943 until the end of the North-West Europe Campaign in 1945.

A past Chairman of the Conference of Defence Associations, he is a former President of the RCASC Association. He was awarded the OBE in 1944, the Efficiency Decoration (ED); and the Order of Orange-Naussau with Swords by Her Majesty Queen Wilhelmina of the Netherlands. Colonel Barrett

Why and How

Quality Control of Petroleum Products Purchased by the Army

By

Captain J. F. Samson, BEM, CD*, Directorate of Supplies and Transport, Army Headquarters, Ottawa

The Army is interested in quality control of petroleum and associated products as a direct means of keeping down the cost of operation, maintenance, and replacement of the many types of equipment employed by the Army and which use these products.

If these products were purchased blindly without specifications, serious trouble would quickly be encountered. Low grade products would undoubtedly find their way into Army use; user units would have difficulty in describing, for purchase purposes, the types of products required for specific applications; purchase of incompatible products could present serious maintenance difficulties; purchase by competitive tender would be impractical; and many other similar problems would arise. The end results of such a blind purchasing programme would include high maintenance and replacement costs, possible danger of increased accident rates, and an unwarranted impact on the work-load of repair and maintenance units and sub-units throughout the Army.

**A graduate of the Royal Military College of Canada where he specialized in Mining Engineering, and of the University of Pittsburgh where he obtained his B.Sc. in Petroleum Engineering, the author served in England, Sicily, Italy and North-West Europe during the Second World War. After the war he served for more than four years on the CGSB Committee on Specifications for Petroleum and Associated Products and on the National Research Council Committee on Petroleum. Immediately prior to his present appointment he was Supplies and Transport Officer for the Newfoundland Area.*—Editor.

New Honorary Colonel Commandant

(*Continued from preceding page*)

was also Mentioned in Despatches.

Born in Hamilton, 2 March 1904, Colonel Barrett is a graduate of Osgoode Hall and was called to the Bar of Ontario in 1926. He was Secretary and General Counsel of the Goodrich Company for many years prior to the war.

In wartime, breakdowns of such a nature could well paralyze the operations of an Army in the field.

The above reference to "incompatible products" should, perhaps, be explained. Certain products from different sources may individually perform adequately. However, when mixed, as in topping up a system low in lubricant, they may well react together to produce a mixture with performance characteristics well below those required by the system. Such products are said to be "incompatible".

Purchase of Petroleum and Associated Products is accordingly made to specifications. Most products purchased by the Army are purchased to Canadian Government Specifications Board (CGSB) specifications, although in some instances recourse is made to other specifications for certain specialized products.

The CGSB Committee on specifications for Petroleum and Associated Products is one of thirty separate co-operative bodies in which government departments and industry participate on a voluntary basis, with the principle aim of providing, in such form as to impose the minimum restrictions on availability, technical descriptions of products which can be produced to meet the requirements of certain applications. The specifications issued by the CGSB are prepared primarily for interested government departments; however, they have come also to represent the purchasing standards of a wide section of Canadian industry.

The Committee on Specifications for Petroleum and Associated Products, then, has two basic roles:

1. To produce guides for all producers of petroleum and associated products in Canada which will help to promote production of products which are expected to be suitable for their intended uses, and

2. To produce guides for all Canadian users of these products which will ensure that they *know* what they are purchasing, and that they have a direct means of *confirming* that the products they buy and use are suitable for their intended applications.

The Army, through its technical representatives on the Committee, decides which specifications are desirable for Army use. Further, through the same avenue of approach, the Army frequently submits draft specifications to the CGSB for issue, or may submit requests for the preparation and issue of new specifications for particular applications, and may also submit existing specifications of other countries with a request for

the issue of an equivalent CGSB specification, subject to Committee review for such minor modifications as may be required to suit Canadian production methods.

The use of CGSB specifications is not mandatory upon any government department. It is felt by the Army, however, that the advantages of using these specifications, where they are available and applicable, completely overshadow any conceivable disadvantages.

At the present time, some fifty CGSB specifications are used by the Army for the purchase of petroleum and associated products. These specifications represent a wide variety of products, but are, in fact, some thirteen fewer in number than as recently as four years ago. This reduction has come about through a concentrated effort to reduce product variety.

A classic example of this programme was the development of Grease Automotive and Artillery. This grease, currently described by specification 3-GP-685b, in the past five years has been taken into general use by the Services, and for MT equipment has replaced nine separate lubricants. The resultant saving in maintenance time, reduction in likelihood of lubrication errors, and reduction in types and numbers of lubrication equipment, have all had an important impact on the over-all maintenance costs of Department of National Defence equipment.

It is hoped that further progress in this direction can be made, and development programmes are directed towards that end. The ideal would be to have one oil for engine, brakes, and other points where a liquid lubricant is required. We would then see the situation where one fuel, one oil and one grease would suffice for any one type of MT equipment.

The advantages of successful attainment of such an ideal are self-evident, both in the production world and in the user field. It may be recalled by the reader that during the Second World War 60% of the total volume of overseas shipping was employed in the transportation of petroleum products. Hence, here again, any and all progress made in minimizing product variety will effect tangible savings in the event of future hostilities.

Some mention should be made at this point of the various aspects of standardization of petroleum and associated products specifications, test methods, product identification, quality surveillance and distribution equipment.

Standardization between America, Britain and Canada (ABC

Standardization) was commenced several years ago, and was quickly followed by NATO Standardization.

As a result of certain overlapping of items between Services, the (Canadian) Joint Services Technical Panel on Petroleum and Associated products and Distribution Equipment (JSTP) was established to provide a medium for tri-service co-ordination on international standardization matters. It now functions as a means of co-ordinating most tri-service technical problems. The JSTP has agreed to a division of service responsibility for specifications and thus specifications for ground, air and marine products are handled by Army, Air Force and Navy, respectively. Where joint use of products caused overlapping, as in the case of engine oil or brake fluid, the JSTP assigned the responsibility to one Service (in these cases the Army, as the largest user) and any changes felt necessary by the Air Force or Navy in the Army-assigned specifications are requested through the Army. The reverse is true of other product specifications for which responsibility has been assigned to Air Force or Navy and in which the Army feels certain changes are needed.

It is apparent, then, that standardization on the national and the international levels is assuming ever-increasing importance and is contributing daily to the development of more comprehensive, standardized specifications to the mutual benefit of all participants.

Quality control of petroleum and associated products would be impossible without specifications to which such products may be purchased. As stated above, the prime object of quality control is to protect the equipment in which the products are being used. This object justifies the high cost of testing, which can exceed the cost of the product. (The classic example of this is watch oil, several gallons of which might cost $50.00. The testing costs in the neighborhood of $400.00, but the oil would be used to protect thousands of watches worth many thousands of dollars.)

All products then are purchased to specifications, and when a contract is awarded for such products it is a specific agreement that the products supplied will meet the requirements of the pertinent specifications.

The Directorate of Supplies and Transport has established a definite programme of sampling for analysis. Broadly speaking, this programme may be defined as follows:

(a) Routine samples are taken

when called for by DST, or when a product does not appear to give satisfactory performance or does not appear to meet the specification, or when there is any other doubt which might be resolved by analysis.

(b) Special samples may be requested at any time by DST to facilitate investigations being conducted by AHQ, by the various laboratories, and by other interested government departments.

Special sampling equipment has been designed and purchased to ensure that clean and representative samples are submitted. This equipment is held under the jurisdiction of Command and Area Supplies and Transport Officers and is available on demand.

Instructions on the method and procedure for drawing samples from the various types of containers in use are contained in paragraph B.3.4 of Part "B" of the Manual for Supplies and Transport (Canada). Also included therein are instructions for the procedure to be adopted in submitting samples and for subsequent action on receipt of the analysis report.

The testing and analysis of petroleum and associated products is a meticulous task, involving long and detailed work on specialized expensive equipment by highly skilled technicians. In the case of samples submitted by the Army, this work is performed in five different laboratories across Canada.

It is impossible to overstress the importance of this subject, and the importance of care and precision in sampling, in identifying samples and taking correct follow-up action.

To review the above thoughts in graphic form, a brief summary of the over-all picture is set out hereunder. It is arranged in the chronological order in which any new product will ultimately move through the various steps in its development, specifications preparation, quality control and product use:

Development Programme: Directorate of Vehicle Development (DVD).

Specification Preparation: DVD from results of development programme or based on other national specification.

Specification Issue: CGSB (normally).

Specification Standardization: DVD tri-service, ABC and NATO.

Product Qualification (when implemented): DVD for Army products; other Services for their products as arranged through JSTP.

Specification User: DST for purchase purposes.

Product Purchase: DDP on request from DST.

Product Inspection (when im-

NEW RCASC TRADE — TRANSPORT OPERATOR

A REPORT WRITTEN BY THE DIRECTORATE OF SUPPLIES AND TRANSPORT, ARMY HEADQUARTERS, OTTAWA

Introduction

A new tradesman's badge will soon appear on the sleeves of Royal Canadian Army Service Corps tradesmen. As shown in the illustration on page 137, the badge consists basically of a wagon wheel representing the ground transport functions of the Corps. Superimposed on the wheel are wings depicting the Corps' increasing responsibilities in air transport, embracing both conventional air supply and delivery by helicopter.

The trade for which this badge is the insignia came into being on 1 April 1957. Given the title of "Transport Operator RCASC", it was the culmination of more than two years of planning by the staffs of the Directorate of Supplies and Transport, 1st Canadian Infantry Divisional Column RCASC and The RCASC School.

Initial Planning

For some years there has been a growing awareness in RCASC circles of a need for a Corps trade

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Quality Control of Petroleum Products

(*Continued from preceding page*)

plemented): Inspection Services in their own or other laboratories before product delivery.

Product Supply: RCASC to user units.

Quality Surveillance: RCASC in accordance with NATO procedures after product delivery. Custody of reports on products held by Army.

Product Use: User units.

In conclusion, the "Why?" of quality control is to achieve economy, standardization and efficiency; the "How?" is through constant adherence to the methods and procedures detailed in the Army-approved specifications and pertinent Manuals and Instructions published by National Defence Headquarters.

(*Note:* The author acknowledges the kind co-operation of Mr. R. A. Hill of DVD in providing constructive criticism of this article).

which would fulfil more adequately the requirements of both peacetime and field operations. A number of the existing RCASC trades had overlapping functions, and others were not sufficiently closely allied to permit completely efficient amalgamation in time of war. We had specialists in each of Motor Transport operation, air supply, commodity handling and instructional duties. The need was for one trade in which a man would learn progressively to perform all of those functions. Thus on the outbreak of hostilities a tradesman so trained would be capable of taking on any of the major S & T field functions as necessary without further training.

Accordingly, DST planners began working out details of the new trade. Eventually it became apparent that the trade functions of Driver MT Groups 1 and 2, Instructor RCASC Group 2, Senior Instructor RCASC Group 3, Despatcher (Air Supply) Group 1 and Instructor (Air Supply) Groups 2 and 3 could be combined quite logically and progressively into one trade. Also, by including certain functions related to the accounting and distribution of supplies, the new trade could, if necessary, in time of war only, encompass the duties of Clerks RCASC and Storemen Supplies RCASC in field transport units.

A big problem in compiling and assessing the trade specifications was that of establishing an acceptable balance in the weight and progression of functions between the four trade groups. Several draft specifications were written and rejected before one suitable both to the needs of the Corps, and to the established requirements of approving authorities was produced.

Trade Groups

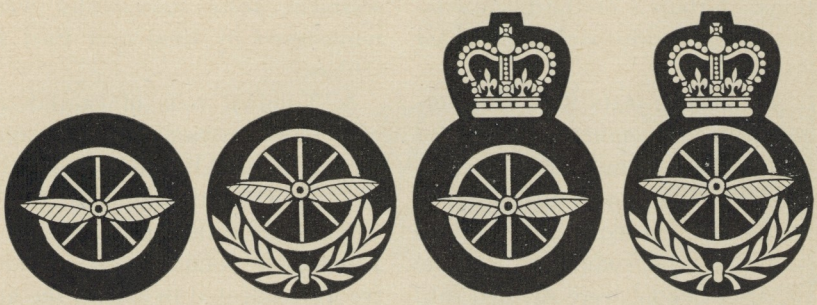
In its final approved form the trade consists of four groups, viz.:

Transport Operator Groups 1, 2 and 3
Chief Transport Operator Group 4

On attaining Group 3 level, the Transport Operator is capable of operating and maintaining all types of transport used by the RCASC, including wheeled and tracked vehicles and motorcycles; the loading and unloading of Army-controlled fixed and rotary wing aircraft; and handling and accounting for RCASC supplies in the field.

The Chief Transport Operator Group 4 is, in addition, capable of supervising the rigging and loading of stores for aerial delivery and directing operations at a supply dropping zone and a helicopter

Transport Operator RCASC



Group 1 Group 2 Group 3 Group 4

landing zone. He instructs Corps personnel in RCASC organization and operations in peace and in war, and in general military training subjects.

Method of Qualification

To qualify for each of the trade groups, a candidate must attend a formal course of instruction. The Group 1 course may be conducted by RCASC units in Commands or by The RCASC School; Group 2, 3 and 4 courses are conducted only at The RCASC School.

Implementation

The plan for implementing the new trade required very careful consideration as it involved conversion of approximately 1565 tradesmen in existing trades which were to be replaced.

Because of the varying qualifications possessed by the tradesmen to be converted, a common course at each level for all aspirant Transport Operators would not be satisfactory in the initial (conversion) stage. Credit had to be granted for the trade functions in which the candidate was already qualified in order to avoid unnecessary instruction and to enable the conversion programme to proceed as rapidly and efficiently as possible without overloading the facilities of The RCASC School.

To effect the conversion a system of assessment tests and conversion courses was evolved for application at the Group 2 and Group 3 levels, and was put into effect in September 1957. Basically, the specifications of the trade were divided into phases, each dealing with a particular aspect of the trade functions. Phase 1 covered Special to Corps functions, Phase 2, Motorcycle training, and Phase 3, the

Driving and Maintenance functions. Group 3 of the trade contained one additional phase—Air Supply.

Assessment tests were then organized to be conducted locally for Group 2 tradesmen, and at The RCASC School only for Group 3 tradesmen; subsequent conversion courses to be conducted at The RCASC School were divided into corresponding phases. Candidates who possessed previous qualification in any phase were given credit accordingly during assessment and were tested only on the remaining functions of the trade. Candidates who failed any phase of the assessment test were then selected to attend a conversion course at The RCASC School to achieve complete qualification.

The actual conversion was carried out in the following manner:

GROUP 1

All Drivers Mechanical Transport Group 1 were remustered to Transport Operator Group 1 by means of local unit Part II Orders. This operation was completed by 31 August 1957.

GROUP 2

1. Assessment tests were issued by Army Headquarters and administered locally to Group 2 candidates in appropriate trades.

2. Personnel who completed assessment tests successfully were remustered by local unit Part II Orders.

3. Nominal rolls of candidates who failed assessment tests were forwarded to AHQ, indicating the phase in which the candidate failed to reach a satisfactory standard. From these nominal rolls candidates were selected to attend the appropriate phase or phases of Group 2 conversion courses at The RCASC School.

GROUP 3

1. Assessment tests were administered at The RCASC School to candidates selected by AHQ.

2. Successful candidates who also held Instructor (Air Supply) qualification returned to their units where they were remustered by local unit Part II Orders on authority of the assessment report. Those not holding Instructor (Air Supply) qualification were selected to attend the required course at the Canadian Joint Air Training Centre, Rivers, Man., before being remustered.

3. Unsuccessful candidates remained at The RCASC School to take a Group 3 conversion course, followed by an Instructor (Air Supply) course at CJATC at a later date, if not in possession of this qualification.

(*Continued on page 147*)

THE CORPS OF ROYAL CANADIAN ELECTRICAL AND MECHANICAL ENGINEERS

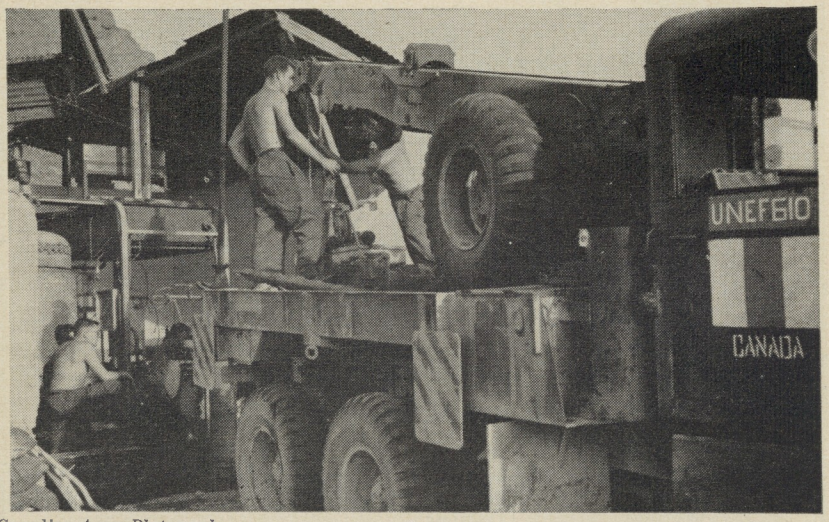
Soldiers Take Salt from Sea

From a report issued by the Directorate of Public Relations (Army), Army Headquarters, Ottawa

Members of the Royal Canadian Electrical and Mechanical Engineers have been called on to tackle almost every imaginable repair job during the corps' career but late last year they faced a task that taxed their ingenuity to the limit. It took time but the job has been done successfully.

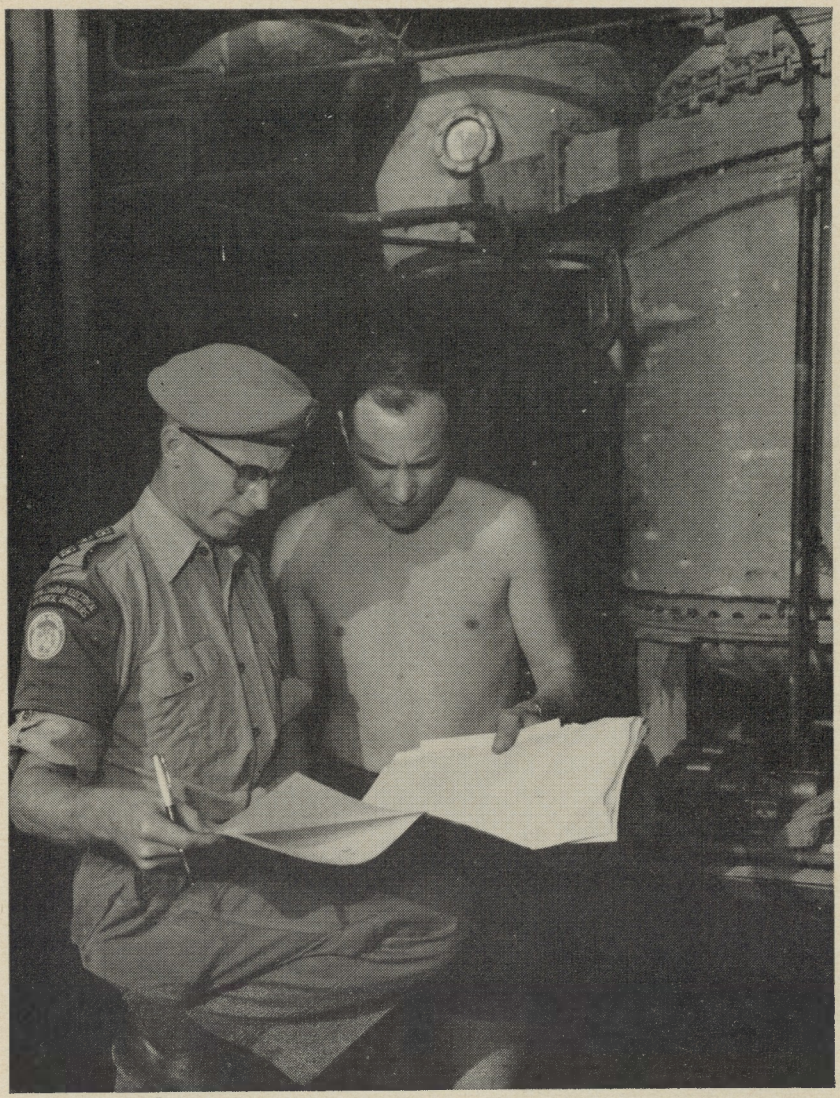
When UNEF troops established a base on the Gulf of Aqaba last year they found that the two distillation plans for removing salt from sea water had been wrecked by rearguard demolition parties of both the Egyptian and Israeli armies. For many weeks the drinking water for the garrison had to be transported by truck from a point some 80 miles away.

Last summer an Advanced Detachment of No. 56 Infantry Workshop was given the task of repairing the main Italian-made plant. The Canadian engineers assessed the damage and reported that special equipment and expert advice would be required to effect repairs and



Canadian Army Photograph

Members of the Royal Canadian Electrical and Mechanical Engineers at work on the rebuilding of the water distillation plant that supplies fresh water for the UNEF outpost on duty in that area.



Canadian Army Photograph

Captain R. J. Hamel, a professional engineer with No. 56 Infantry Workshop, RCEME, and Mr. Joseph Persicani, Italian civil engineer representing the manufacturer, study plans while directing the rebuilding of the water distillation plant on the Gulf of Aquaba.

My First Two Years in the Army as a Soldier Apprentice

This essay was written by Craftsman G. L. Clifford after he had completed two years of training as a Soldier Apprentice at the Royal Canadian Electrical and Mechanical Engineering School at Barriefield, Ontario. It is the story of a young man's reactions to Army training and discipline during an impressionable period in his life, and of his great pride in his chosen Corps.—Editor.

* * *

Two years ago I made one of the greatest decisions I have made so far in my life. I decided to join the Army as a Soldier Apprentice.

First of all, let me tell you about the Soldier Apprentice Plan. This was inaugurated in 1951 in various Corps in the Army, my own being RCEME of which I am extremely proud. The Plan allows chosen young men to join the Army at the age of sixteen. It provides them with the privileges of a regular soldier with a few exceptions such as the "Wet Canteen". During the first year passes are granted on appointed nights. It is a two-year plan with the chance to advance in your high school academic training under the supervision of selected civilian instructors. The trades are thorough and carried out under excellent conditions. Our military training is rigid and we are taught

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Soldiers Take Salt from Sea

(*Continued from preceding page*)

requested technical assistance from the firm that had made and installed the plant.

By late autumn sufficient replacement parts had arrived at the bleak desert post to begin the reconstruction job. The parts were air-lifted from Naples to the UNEF airbase at El Arish where they were picked up and transported overland by truck.

The task was completed within two months. The rebuilt plant can process 3500 to 4000 gallons of sea water every day. Water required for drinking is made more palatable by the addition of special chemicals.

by what we think are some of the Corps' finest instructors. Put the military, trades and academic training together in the period of two years and you have a great deal of work ahead of you.

Now I should like to tell you a little about myself and my reason for joining the Army. I come from Hornepayne, a small divisional point on the Canadian National Railways in Northern Ontario. Railroading is the main function of my home town and they eat, sleep and especially talk in a railroading atmosphere. Most of my school chums, particularly the boys, have joined the railroad and even the girls have done so as secretaries. Do not get me wrong—railroading is a good life. I have nothing against it. The money paid railroaders is quite good but I am one of those who believe that money is not exactly everything; of course it helps a great deal in most cases.

One day I picked up the newspaper and noticed the Army advertisement explaining the Soldier Apprentice Plan. Wanting to break away from the railroad, I wrote and inquired about the Soldier Apprentice Plan and was greatly impressed by what I read. Here was my chance to lead an excellent life, altogether different from what was going on around me. I made my application and reported to the Personnel Depot shortly after. After several days of exams and other tests, I was enrolled as a Soldier Apprentice. I returned home, proud as a peacock of my achievement. Of course, my mother, like any other mother, was very sorry to see me go but she still had my two younger brothers and my young sister. As a matter of interest, my brother has joined the Army as a Soldier Apprentice in RCEME and reports for commencement of training this fall.

We reported to the Personnel Depot in Toronto and from there we were taken as a group to the Royal Canadian Electrical and Mechanical Engineering School in Barriefield, Ont., which is situated on the north shore of the St. Lawrence River. Personnel Depots from across the Dominion sent their applicants within a few days after we arrived and as soon as we were settled, our instructors "lowered the boom".

During the weeks of Depot training that followed, many a night we flopped dead tired into our beds. In the mornings, we were up at a quarter of six and showered, shaved, brushed our teeth, combed our hair, washed out our sinks and returned to the room that was shared with three

other fellows. Next, you made your bedding into a neat bedroll, folded your mattress three times, placed it at the head of your bed and placed on it your neatly folded bedroll. The next item on your agenda was dress and go to breakfast which was served at six-thirty. After a half-hour for breakfast, you returned to your room to do the dusting, clean your rifle, tidy up your locker, sweep the floor and shine your cap badge. At seven twenty-five we were called out for parade by our Platoon Leaders or Section Leaders, who were senior Apprentice Soldiers appointed to their rank by the Major. We were paraded and inspected from seven-thirty until eight o'clock. After that we did drill or whatever was scheduled for us. At ten-fifteen we were given a fifteen-minute canteen break. We worked until twelve o'clock and the lunch hour was from twelve o'clock until one-fifteen. From one-fifteen until four-fifteen we worked some more. Supper was at five o'clock until five-thirty. After supper our work really began: there were uniforms to iron, boots to shine, military training to study. We had to make our beds and if we wore shoes after supper they had to be shined before going to bed. As for passes, we had none until our Depot Training was over, then we were allowed out four nights a week. It was rough, the hours were long, but it was great. Another point of interest is the food. It's good food and I for one gained twenty pounds in two years. If anyone had told me the Army was not fed well, I would tell them they were somewhat misinformed.

During the past two years we have made several "safaris" (as we called them) to the United States. We have a great deal of good clean fun down there and we have a great time with the American soldier. It is really quite interesting talking to them and comparing the different customs of our Armies, Air Forces and Navies.

As far as dress, drill and deportment are concerned, the Apprentices are second to none. It is usually our Company which is chosen for ceremonial parades and recruiting purposes. Perhaps I brag a little about being an Apprentice Soldier but I am sure that you will bear with me and get an idea of what my "intake" feels.

There are countless tales I could tell and I could continue writing about my Company and the RCEME Corps which it serves proudly but it would take weeks of writing. The events that have happened over the two years have been countless and the feeling of

companionship remains unequalled. Apprentices like myself have joined the band and various other unit activities. There is one trip I would like to mention though, and this is the acroplane trip to Vancouver, B.C., last year to work in the Pacific National Exhibition.

I was appointed a Section Leader last February and given a stripe; it is a great deal of responsibility plus a taste of leadership. We lose our stripe when we graduate but we gain a great deal of knowledge. There is no pay for the appointment but the experience is priceless.

I have spent the last two years chumming with fellows my own age from across the Dominion and when the band plays "Auld Lang Syne" as we slow march through the ranks of our successors, we will feel somewhat sad as we think back over the happy time we've had.

Two years ago we came here as boys and probably thought along the same line. When we graduate we shall do so not only as trained soldiers but as our superiors hope and have worked for—mature young men, willing and able to do their duty whenever called upon. Speaking for the boys themselves, we can say that this will be so. The going has been rough at times but because of the way the Army taught us to think, we buckled down, worked hard and came through successfully. Not all of those who originally started, finished. The course was too tough or for some other reason they were not able to make the grade.

The staff of our Company, in our estimation, deserve a great deal of credit. At various times, we wanted to leave the Army becausc we thought of a better vocation, little realizing we had a present task to accomplish. Somcone always talked us out of it and thankful we are now, for it must have taken a great deal of patience and understanding. We have had our likes and dislikes, our good times, our bad times, our whims and our fancies, but we would not trade the two years of Apprentice Training for any number of years as a Regular Soldier. We hope that those who follow us as Apprentice Soldiers will learn what we have learned, soldier as we have soldiered (if not better) and graduate as we shall graduate, mature young men, a credit to Canada, the Army, the Corps and last of all but not least, the Apprentice Training Company.

I hope that what I have written will be of somc interest and encouragement to those boys who are wearing, or hope to wear, the shoulder flashes of the RCEME.

CAMOUFLAGE—AN EFFECTIVE WEAPON OF WAR

Camouflage is an effective weapon of war which can be used by the commander both in offence and defence. In offence, camouflage aims at operational deception, a classic example of which is available in the Battle of El Alamein. In defence, camouflage mainly aims at concealment and disguise and is used in a protective role. Examples of camouflage in defence are available in the defence of Tobruk in the Desert campaign, in the defences of the Winter Line, Gothic Line and Hitler Line in the Italian campaigns, and in the defences of the Atlantic Wall and the Siegfried Line in the European campaign of the last war. More recently, the war in Korea has proved beyond doubt the value of camouflage for defensive operations.

The false belief that the scope of camouflage necessarily does restrict itself to mountainous and jungle terrain has been disproved by the results achieved by camouflage in the desert during the last war. Effective camouflage in the initial stages of a war will save valuable equipment and give the breathing space necessary for the production of new and more equipment with which to turn defence into offence.—*From an article by Major G. Narayanan in "The Journal of the Institution of Military Engineers" (India).*

Giant Auger

Two huge earth augers are currently under test by [U.S.] Army engineers. The smaller of the augers can dig a hole six feet in diameter and 20 feet deep at a rate of one-half foot per minute in ordinary unfrozen earth. The larger, a trailer-mounted machine, is capable of digging a hole nine feet in diameter to a depth of 70 feet. In other tests, holes 18, 24 and 30 inches in diameter have been drilled four feet deep in frozen earth.

The teeth of the augers are made of high-grade alloy faced with tungsten carbide. Possible military use of the augers includes the construction of field fortifications and emplacements, shallow wells, waste disposal pits and underground storage facilities.—*From an official report.*

NEW RCASC TRADE—TRANSPORT OPERATOR

(*Continued from page 138*)

By the end of January 1958 remustering was virtually completed. Special arrangements are in progress to assess any remaining eligible candidates as they become available for assessment and conversion training. Generally, courses conducted after 1st February 1958 have been normal upgrading courses, e.g. to train Transport Operators holding the trade qualification in a lower trade group.

Future Training Plans

Group 4 courses will be conducted at The RCASC School commencing in the 1958-59 course year.

The RCASC School will continue to conduct sufficient Group 2 and Group 3 courses annually to train the required numbers in each group and to give personnel in each group an opportunity for trade advancement in accordance with their abilities in this new trades field.

Conclusion

The RCASC has developed a trade which is designed to fit Corps personnel to perform any of the major functions required of the RCASC in operations, and is now producing a Corps tradesman more versatile than any in the past. Whether or not the trade will fulfil all that is expected of it, time alone will tell.

New Method of Surveying

Scientists of the [U.S.] Army Map Service, located on certain Pacific islands, will introduce a new method of surveying during the International Geophysical Year by using radio data received from the earth satellite to pin-point these islands on maps and navigation charts, heretofore in error as much as a mile.

Colonel Julian D. Abell, USA, Commanding Officer of the Army Map Service, a unit of the Army Corps of Engineers, pointed out that the new method provides a rapid and relatively inexpensive means of obtaining island positions that are expected to be about ten times as accurate as the astronomical positions now being used. —*Army-Navy-Air Force Journal* (*U.S.*).

Army Engineers Develop Multi-Purpose Heater

(*Continued from page 126*)

carrying vehicles and tests have been made with this heater in a 2½ ton Cargo Truck and in the Wannigan. In these trials not only was the capacity of the heater proved to be adequate but the ruggedness and ability to withstand the shock and vibration of cross-country travel was also established.

When small detachments of troops are living in such accommodation as 5-man tents they need some means of preparing hot meals as well as a space heater to keep their tent warm. This small heater has a cooking surface of approximately one square foot and will accommodate four standard mess tins. No. 2 and No. 5 suppers and No. 2 breakfasts can be heated in sixteen to eighteen minutes. A standard pressure cooker can be brought to the boil in six minutes, and a jerrican of four gallons of water was brought from 58°F to boiling in an hour and a half.

The reports on these performances and trials have created interest in the heater, not only in Canada but also in the United Kingdom and the United States where the heater is now undergoing further tests. The Department of Northern Affairs has taken a number of the heaters for use in small detachment tents in the Yukon where road reconnaissance and survey parties will be working.

The heater is not made commercially but if it were there is no doubt but that it would be in great demand by sportsmen and hunters for such uses as heating huts on the ice and small cabins. Its simplicity and ability to burn any type of fuel makes it an ideal piece of equipment for isolated and northern areas where supplies may run short and the repair service man is much more than two blocks away.

Jeep Mine Detector

A jeep-mounted mine detector which automatically stops the vehicle when it locates a landmine has been developed. The detector covers a path six feet wide in front of the jeep and is operated from controls mounted on the dashboard of the vehicle. A search coil, which is kept at constant height above the ground by skid caster-type wheels, operates a hydraulic mechanism that disengages the clutch and sets the brakes when a mine is discovered. In addition, lights on the indicator panel change from green to red and an audible signal is produced. The detector and its carriage assembly weigh about 700 pounds.—*An official report in the "Military Review" (U.S.).*

THE ROYAL CANADIAN ARMY CADETS

ROYAL CANADIAN ARMY CADETS SHOOTING PROGRAMME

WRITTEN FOR THE *Journal* BY THE DIRECTORATE OF MILITIA AND CADETS, ARMY HEADQUARTERS, OTTAWA

This article deals with the results obtained by the Royal Canadian Army Cadets in small bore (.22-inch) and large bore (.303-inch) rifle competitions and meetings held in 1955, 1956 and 1957.*

The standard of shooting with the .22-inch rifle has again shown an improvement over previous years. Based on the results of the Youth of the Empire competition the average, for two thousand cadet firers, was 86.27 per cent in 1955 and 86.95 per cent in 1956.

Army Cadets can participate in several small and large bore rifle competitions in any one year. These competitions are:

SMALL BORE

Youth of the Empire, Miniature Rifle Matches, sponsored by the National Rifle Association (NRA) of England.

The DCRA (Winter Series), sponsored by the Dominion of Canada Rifle Association.

Galer Hagarty Memorial Prize Competition, sponsored by the Imperial Cadet Association (ICA) of England.

Royal Military College Club (RMCC) Inter-Schools Competition, sponsored by the RMCC.

LARGE BORE

The Earl Roberts Imperial Cadet Trophy Competition, sponsored by the City of London Schoolboys Rifle Club.

The Cadet Hundred Roll, sponsored by the DCRA.

YOUTH OF THE EMPIRE

The Youth of the Empire, Miniature Rifle Matches, provide various awards to teams and individuals. The details of these awards are:

King George V Trophy: This trophy is for competition "between teams which shall be as far as possible representative of the full strength of the Youth of the Mother Country and each of the Great Dominions". The national representative teams, of not less than 2000 firers, are selected from the best teams after all have fired.

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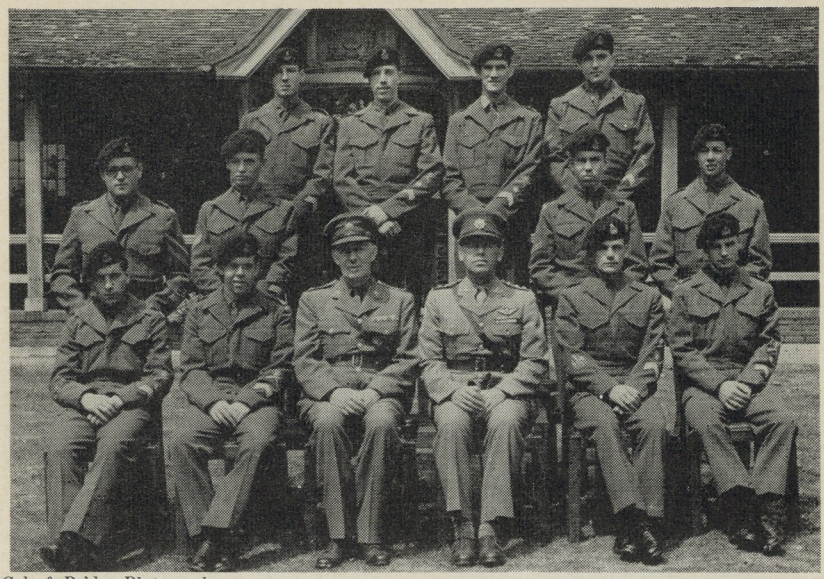
* *Readers interested in more information about the various Cups, Trophies and Shields are referred to the article entitled "Shooting Programme for Royal Canadian Army Cadets" published in the April 1957 issue of the Journal.*—Editor.



Gale & Polden Photograph

The Royal Canadian Army Cadet Rifle Team which competed at the National Rifle Association Meet at Bisley in 1957. *Front row, left to right:* Cadet B. Lebire, Cadet W. A. Darlington, Major A. B. Coulter (Team Commandant), Captain A. P. Rankine (Team Adjutant), Cadet S. C. Bell, Cadet C. M. Waddell. *Centre row, left to right:* Cadets G. Savoie, A. Hebert, M. Flynn, N. Graff. *Back row, left to right:* Cadets M. A. Rothwell, K. B. MacDonald, D. W. P. Thomson, J. E. Grandfield.

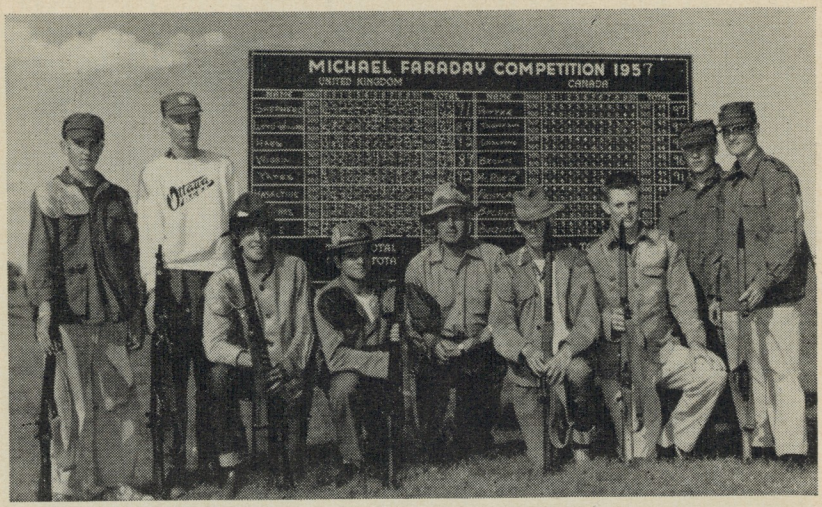
Since this trophy was inaugurated in 1925 Canada has won it six times and South Africa twenty-five times.

Imperial Shield (Senior): This is awarded to the corps in which senior cadets predominate and which obtains the highest average in the Commonwealth.

Medals of Honour: A silver medal is presented by the NRA to each cadet scoring 100 points, and a bronze medal to each cadet scoring 99 points.

King George V Cup: This Cup was presented for competition by the Duke of Devonshire when he was Governor-General of Canada. It is presented to the military command in Canada which has the greatest percentage of firers, in the Youth of the Empire Competition, in relation to the cadet strength in the Command. The trophy is held for one year by the cadet corps, in the winning Command, which has the highest score.

Canadian National Exhibition



Canadian Army Photograph

The Royal Canadian Army Cadet Rifle Team which competed in the Michael Faraday Imperial Cadet Trophy match against a team from the British Imperial Cadet Association during the Dominion of Canada Rifle Association Annual Prize Meeting in 1957. *Left to right:* Cadets J. Thompson, B. Gascoyne, G. Pentland, V. Bolduc, Major Joseph Wrinch (team captain and coach), Cadets R. Potter, D. Brown, J. Buczinsky, D. McRorie.

Medals: These medals are in silver or bronze, and are awarded in connection with the King George V Cup. Each member of the cadet corps team with the highest score gets a silver medal; a bronze medal is issued to each member of the runner-up cadet team.

Badges: The NRA issues these badges on the following basis—a competitor scoring 90 points and over (including individual handicap) is awarded an "Empire Marksman" badge of a rifle and star. A competitor scoring 85-89 points (including individual handicap) is awarded an "Empire First Class Shot" badge of a rifle. If a unit obtains "mass efficiency" these badges are in White, otherwise they are in Red.

Those awards of the Youth of the Empire Competition in which Canadian cadets and cadet teams were successful in 1955 are listed below with the results obtained:

King George V Trophy: Canada for the sixth time.

Imperial Shield (Senior): No. 2307 St. Cœur de Marie Cadet Corps, Shediac, N.B., with an average score of 99.733%. Second place went to No. 80 Mont St. Louis Cadet Corps, Montreal, P.Q.

with an average score of 97.215%.

Medals of Honour: The NRA awarded 77 Canadian cadets with silver medals, and 104 Canadian cadets with bronze medals.

King George V Cup: Eastern Command with 19.51% of its cadet strength competing received the cup, which is held by No. 2307 St. Coeur de Marie Cadet Corps, Shediac, N.B. Western Command were second with 16.30% of its cadet strength participating.

Canadian National Exhibition Medals: No. 2307 St. Cœur de Marie Cadet Corps, Shediac, N.B., received ten silver medals. As runners-up, No. 2320 Prince of Wales College Cadet Corps, Charlottetown, P.E.I., received ten bronze medals.

NRA Badges: White and red NRA badges were awarded to the following numbers of Canadian cadets:

"Empire Marksman" (Rifle & Star), White, 713.

"Empire First Class Shot" (Rifle), White, 373.

"Empire Marksman" (Rifle & Star), Red, 368.

"Empire First Class" (Rifle), Red, 318.

DCRA (Winter Series)—1957

In 1957, 556 teams participated which represents an even larger entry than the previous year. The BSA Shield, the trophy awarded for this competition, was won by No. 1494 Westdale Secondary School, Hamilton, Ont., with an average of 99.388%.

The Galer Hagarty Memorial Prize Competitions—1957

This award is made to the cadet in each military area having the highest aggregate score in the Youth of the Empire and the DCRA Small Bore Winter Series Competitions.

The results this year were based on the Youth of the Empire 1956 and the DCRA Winter Series 1957. The awards were made to the following:

Western Command: Cadet D. Fisher, No. 1727 Edgerton School Cadet Corps; Cadet C. Bolton, No. 2577 St. Georges, Lytton Cadet Corps.

Prairie Command: Cadet R. Brophy, No. 323 Provencher School Cadet Corps; Cadet N. Graff, No. 1999 St. Thomas College Cadet Corps.

Central Command: Cadet G. Coulter, No. 1494 Westdale Secondary School Cadet Corps; Cadet D. Donald, No. 2097 Forest District High School Cadet Corps; Cadet R. Paquin, No. 47 Kingston Collegiate Institute and Vocational School Cadet Corps.

Quebec Command: Cadet P.

Camirand, No. 977 Ecole Secondaire Louis Hebert Cadet Corps.

Eastern Command: Cadet C. Rafter, No. 219 New Glasgow High School Cadet Corps; Cadet A. Williams, No. 1775 Notre Dame Dalhousie High School Cadet Corps; Cadet R. Martin, No. 2357 St. James School Cadet Corps.

Royal Military College Club Inter-School Competition—1957

In 1957, 177 teams participated in this competition. The Challenge Shield and an individual medal for each team member was won by 1494 Westdale Secondary School, Hamilton, Ontario with a score of 997 out of a possible 1000.

The Earl Roberts Imperial Cadet Trophy Competition, 1956-1957

The competition was won by Canada in 1956 and 1957 by No. 1195 Ecole Secondaire St. Stanislas Cadet Corps, Montreal, P.Q., and No. 1494 Westdale Secondary School Cadet Corps, Hamilton, Ont., respectively.

Cadet Hundred Roll—1957

This competition is fired with a .303-inch service rifle. A cadet must achieve 80 per cent or better of the HPS (56) which is fired at 200 and 500 yards, respectively. In 1957, 261 Royal Canadian Army Cadets and Four Royal Canadian Sea Cadets entered the competition with results as follows:

Command	No. of Score Cards Submitted	Score Cards Selected
Western	13	2
Prairie	83	11
Central	133	59
Quebec	NIL	NIL
Eastern	29	24
RC Sea Cadets	6	4
TOTALS	264	100

The National Rifle Association Annual Meeting, Bisley 1957

On the 2 July 1957, the Royal Canadian Army Cadet Bisley team, consisting of twelve cadets, the team commandant and the adjutant, sailed from Montreal for England in the Empress of England. The team disembarked at Liverpool on 8 July and arrived at Bisley Camp that evening. The next day the team started firing

practice shoots which were made possible through the assistance of the NRA.

The majority of the cadets participated in the individual matches. The team won prize money totalling approximately ninety dollars. Cadet Stephen Bell from Kitimat, B.C., brought the team honours by qualifying for the final stage of the Queen's and placing 19 points below the winner.

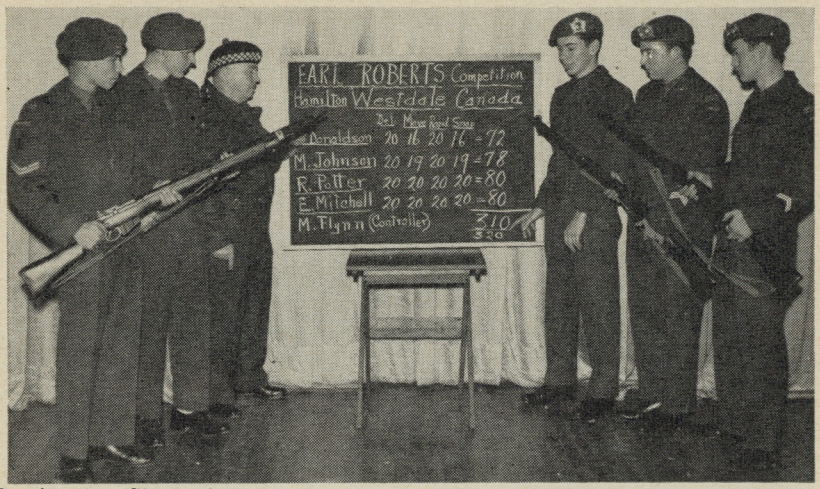
The last match to be fired was the Alexander Graham Bell Challenge Trophy, which corresponds to the Michael Faraday Imperial Cadet Trophy fired during the DCRA Annual Meet. The results of this match are listed on page 156.

At the conclusion of the Meeting the team was flown to Germany to visit units of the 2nd Canadian Infantry Brigade. While in Germany the team saw Canadian troops in training, visited the famous Mohensee Dam, shopped in German stores in Soest and participated in many other activities in the interesting programme arranged for them. On the return to England, and safely accommodated in the Tower of London, the team found that another programme of activities had been arranged for them by the Imperial Cadet Association. It included a reception by the Lord Mayor of London, viewing the Changing of

Canadian Army Photograph

Members of "The Athelings" who competed in the Michael Faraday Imperial Cadet Trophy match against a team of Royal Canadian Army Cadets during the Dominion of Canada Rifle Association Annual Prize Meeting in 1957. *Left to right:* Cadets R. Haes, A. Luke, I. Shepherd, H. Wiggin, R. Haseltine, S. Lloyd, I. Yates, N. Hollings.

CANADIAN CADET TEAM				BRITISH CADET TEAM			
Name	200 Yds.	500 Yds.	Total	Name	200 Yds.	500 Yds.	Total
Savoie, G.	47	49	96	De Potron, T. J.	47	49	96
Bell, S. C.	46	49	95	Murphy, R. J. B.	48	48	96
Flynn, M.	48	45	93	Hill, P. R.	46	48	94
Rothwell, M. A.	46	46	92	Symons, R. T.	47	47	94
Waddell, C. M.	47	45	92	Bolam, P.	47	47	94
Graff, N.	44	47	91	Wiggin, H. Q.	44	49	93
Grandfield, J.	46	45	91	Hardy, G. J. A.	47	43	90
Thomson, D. N.	46	43	89	Fitzgerald	44	43	87
Average.....91.12		Total.....739		Average.....93.0		Total.....744	



Canadian Army Photograph

The Royal Canadian Army Cadet Rifle Team representing the Westdale Secondary School Cadet Corps of Hamilton, Ont., who won The Earl Roberts Imperial Cadet Trophy Competition in 1957. *Left to right:* Cadet/Cpl. M. Johnson, Cadet/Cpl. R. Potter, Major Herbert Inman (Chief Instructor and Coach), Cadet/Cpl. M. Flynn (Controller), Cadet/Cpl. D. Donaldson, Cadet/Lieut. E. Mitchell.

the Guard at Buckingham Palace and conducted tours in and around the City of London.

On 2 August the team left London by train and, on arrival at Liverpool, embarked on the Empress of England for a pleasant voyage home to Canada. The return journey was made more enjoyable because the Canadian cadets had an opportunity to meet cadets of the Imperial Cadet Association Rifle Team "The Athelings" who were visiting Canada to shoot in the Dominion of Canada Rifle Association (DCRA) Meeting at Ottawa.

The ship docked at Montreal on 8 August 57 and the team disembarked and left, either for their homes, or continued on to Ottawa, where they competed in the DCRA Meeting.

The Dominion of Canada Rifle Association Annual Prize Meeting 1957

Seventy Royal Canadian Army Cadets and the Imperial Cadet Association rifle team "The Athelings" fired in some fifty competitions. Cadets fired individually in many matches, and as members of teams in the Inter-Service Match and the Michael Faraday Imperial Cadet Trophy

BRITISH CADET TEAM				CANADIAN CADET TEAM			
Name	300 Yds.	500 Yds.	Total	Name	300 Yds.	500 Yds.	Total
1. W. Shepherd	46	45	91	Potter	49	48	97
S. M. Lloyd-Williams	44	45	89	Thompson	45	48	93
R. L. Haes	48	44	92	Gascoyne	47	44	91
H. W. Wiggin	42	47	89	Brown	48	48	96
1. R. Yates	47	45	92	McRorie	45	46	91
R. C. Haseltine	44	44	88	Pentland	45	46	91
N. H. Hollings	44	47	91	Bolduc	49	46	95
A. F. Luke	43	48	91	Buczinski	47	46	93
Average.....90.375		Total.....723		Average.....93.375		Total.....747	

Canadian Army Photograph

Members of the rifle team of No. 1195 Ecole Secondaire St. Stanislas Cadet Corps, Montreal, Que., winners of the Earl Roberts Imperial Cadet Trophy for 1956. *Left to right:* Cadet/Lieut. R. Allaire (team captain), Cadet/Sgt. A. Hebert, Cadet/Sgt. P. Faucher, Cadet M. Blais, Cadet/Sgt. C. Lamarche.

Match. The former was not fired in 1957 because of insufficient entries from the Sea or Air Cadets. The Michael Faraday Trophy results are listed on page 158.

The DCRA Meeting is used as a medium for selecting the RC Army Cadet Bisley team for the following year. The individual scores of cadets taken from a selected number of competitions are reviewed as a Bisley Aggregate and from these the Cadet Bisley team is made up.

The Peep Sight

50 Years Ago (28 Sept. 1907): Our Canadian neighbours are deeply impressed with the advantages of the peep sight as demonstrated by the American team in the recent competition for the Palma Trophy, and are already adopting it to their own weapons. It does not appear that the addition of a peep to any of the sights would make them less likely to stand the rough usage of warfare.—*From the files of the "Army - Navy - Air Force Journal" (U.S.).*

THE HIGH COMMAND—1891

General Count Alfred Von Schlieffen was a man whose whole character structure had frozen in a pattern of impersonal objectivity. After sowing wild oats during his years as a young lieutenant, he had made a very happy marriage, but lost his wife after only four years. He found consolation in the pietism of the Moravian Brethren and in the fanaticism of the specialist. A hard man himself, he wanted to raise up a generation of hard men. "Be more than you seem" and "general staff officers have no names" were the mottoes he held out for his subordinates. On Christmas Eve he would present his associates with a military problem which had to be worked out over Christmas Day. As a young man Moltke had written verse and short stories; in his social contacts showed genuine kindness. Schlieffen wrote nothing but historical studies in beautifully polished style; in society he was haughtily sarcastic. When his adjutant once pointed out a lovely view, a valley smiling in the morning sunlight, Schlieffen said cuttingly: "An insignificant obstacle for trained troops."—*From "The Lamps Went Out in Europe" by Ludwig Reiners: Pantheon Books, New York 1955. Contributed to the* Journal *by Captain F. L. Jones, late the Irish Regiment of Canada.*

Giant Electronic Computer

A giant electronic computer to account for and control the daily changing status of 150,000 items throughout the world has been put into operation at the Army Signal Supply Agency in Philadelphia. Designed by the International Business Machines Corporation, it is a key element of the electronic data processing network handling requisitions, stock control and other data pertaining to Signal supplies for the entire Army.

The new computer can make 30,000 logistical decisions per second. It can make 8400 additions or 1200 multiplications per second and can process 8000 tabulating machine cards a minute. Information made available is memorized and stored on reels of magnetic tape which is continuously available for reproduction at electronic speeds. —*Army Information Digest* (*U.S.*).

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