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NEW CHIEF OF GENERAL STAFF



Lt. Gen. Charles Foulkes, C.B., C.B.E., D.S.O.

Former Commander of the First Canadian Corps in Italy and Holland where he won distinction as a commander, Lt. Gen. Foulkes is the newly-appointed Chief of the General Staff at NDHQ. He succeeds Lt. Gen. J. C. Murchie, C.B., C.B.E., who has been appointed Chief of Staff at Canadian Military Headquarters, London, Eng. (See CATM No. 49, April 1945, for biographical sketch of Lt. Gen. Foulkes).

A MESSAGE FROM THE DIRECTOR

When I was first asked to write a short message for CATM I had a great scope for such a message, as we were still at war with Japan, and there was much to do in regard to training of replacements and the Force itself.

Since then, peace has come, and we are all somewhat in the same boat as a Cockney private who, after the "Cease Fire" sounded in World War I, shoved his tin hat on to the back of his head, wiped his perspiring brow and exclaimed, "Wot the 'ell do I do now?"

There will be a period of reorganization and readjustment for the Army. During that period, many men, both officers and other ranks, will be impatiently awaiting their discharge. It will be a difficult time for us all.

I want to appeal to the young officers to meet this situation with wisdom and common sense. On your shoulders rests the burden of keeping your men occupied and in a tractable frame of mind. During the stress of battle and the strenuous days of training, this was not so difficult. There was a job of work to do. Now it will not be so easy; many will irk at the delay, think there is too much red tape and chafe at being held in training battalions or training centres.

The problem is there—the solution of it is largely yours. You must give wise counsel, you must think of ways and means to keep your men content, you must explain the reasons for delays and deal with many compassionate pleas for early release.

Never, in the history of this war, has the task of man management been more important, nor required sounder judgment in its handling.

There are many aids available to you to help you in your task. I refer to sports equipment, skill-at-arms contests, physical training aids, educational facilities, and a host of others. But it's up to you to use them wisely and well, and through them to give your men interesting, intelligent and useful training which will improve their morale, physical and mental fitness and help them to bridge the gap between uniform and blue suit.

You were willing and eager to accept grave responsibilities during war; now you must, as officers, accept even greater responsibilities during the transition from war to peace.



Col. E. F. Schmidlin, M.B.E., E.D., newly-appointed Director of Military Training, NDHQ.

E. F. Schmidlin

YOU STILL CAN'T TALK!

This is as good a time and place as any to warn all ranks that the advent of peace isn't to be taken as automatically removing all restrictions on the communication of military information. Quite true, some of the matters that were hush-hush up to V-J Day, don't matter very much now. But whether you're going to be in the Army for some time yet or whether you are headed for civvy street in the very near future, you still have to keep a tight rein on your tongue.

For one thing, your responsibilities are even greater now. Peace brought an end to censorship of all types in Canada. No longer are there alert press censors, for example, to overtake newspaper items which contain information of value to a foreign power or information which might be prejudicial to the interests of Canada if it were to be published. Anything you say may end up in print—and it may not look as good in print as it sounded in a casual conversation!

The Regulations

Remember, while you're in the Army your dealings with newspaper reporters, radio broadcasters or the general public insofar as communication of military information is concerned are governed by King's Regulations and Orders (Canada), Paragraphs 432, 433, and 434. These paragraphs state quite clearly that an officer or OR **is forbidden** to communicate any military information to any person who is not authorized to receive it, or to publish or communicate either directly or indirectly to the press any military information, or his views on any military subject without special permission of National Defence Headquarters.

Once you are out of the Army, "KR (Can)" doesn't apply to you. But

the Official Secrets Act does, and the Act makes it an offence to obtain or communicate to any other person any information which might be or is intended to be useful to a foreign power or to use any information lawfully or unlawfully obtained or which has been entrusted officially to an officer or soldier in confidence, for the benefit of any foreign power or in any other manner prejudicial to the interest of the State.

So, we'd suggest you play it safe and just don't talk. Whatever information you may have about military weapons and their performance, radar or anything else, may or may not be of value to a foreign power. Let the experts judge that. Just sit on it and you won't get into trouble on **that** count anyway.

THE M69 INCENDIARY BOMB

(U.S. Army Ordnance)

The fire bomb which has wrought such havoc on the industrial cities of Japan is the M69. It is 19 inches long, weighs 6½ pounds, and carries a charge of newly developed jellied gasoline in a cheesecloth sack. Trailing tail streamers slow the bomb's fall to about 250 feet a second which prevents damage to the mechanism on impact. A 3 to 5 second delay-action fuze allows the bomb to fall on its side before shooting its incendiary charge as far as 100 feet where the jellied gasoline makes a sticky, flaming "pancake" ¼-inch thick and 3 feet across.

ARMY SCIENCE



(The following article was written by Lt. Col. P. D. Baird of the Directorate of Operational Research, NDHQ. It explains briefly the progress in Scientific Research in the Army—Editor.)

Operational Research as a separate Directorate of the General Staff Branch was organized in 1943. It was, however, by no means a new event for scientific advice and research to be made available to the Army—this has been done for a long time by various organizations. But it was found desirable to centralize Army science under and around a SA/CGS (Scientific Adviser to the Chief of General Staff) who controls a group of scientists, both civilian and military, and studies problems which normal development organizations could not conveniently consider.

Parallel to the Scientific Adviser and his Canadian Army Operational Research Group are the Director of Operational Research and his purely military administrative organization responsible for liaison between the SA/CGS and the remainder of the staff and Army generally.

Must Keep To Fore

The recent revelation of astounding German technical achievements has drawn attention to the need for us to keep continually in the forefront with techniques. It is of value, too, for the soldier to know that the scientific potential of the country is behind him,

and its advice is available to, and in fact is sought by, the Higher Command.

In warfare, although it is seldom that a really startling new weapon or technique arises, the great surprise value it may have encourages continual striving after such an innovation. The swift countering of enemy developments is essential too. The task of Operational Research has frequently been to extend the application and co-relation of new developments, e.g., to tie radar and mortar fire together. It also works in the less showy field of battle analysis — determination of the comparative lethal effects of different weapons, and study of methods of saving time, fuel or manpower in operations.

Canadian Operational Research has had a wide range of subjects to study in different parts of the world. Quite a large proportion of its work has been done by small detachments at various training centres in Canada. This has included the psychological approach to selection of specialist personnel and mathematical analysis of tests and scores in training so as to arrive at really comparable results from individual soldiers.

At A33 CACTE, Camp Borden, a detachment has been working for many months on tank gunnery training and associated problems. At A7 CSTC, Barriefield, another group has been analysing and producing methods of selection of signals operators and improving the retention of skill by these men. In each case valuable additions and amendments to training methods at these centres have resulted from the research work done by the scientists.

The scientific personnel at NDHQ has a variety of problems to study. This group includes the physicist who knows the properties of all kinds of materials, the mathematician with his calculating machine, and the "bug hunter". A soldier returning from Italy or the Pacific may have malaria. What chance is there of this disease spreading at home? Operational Research has co-operated with the Medicals in surveying Canada for the anopheles mosquito population, and has developed insect repellents that really **repel**. They have also developed new methods of water-proofing paper materials and are testing paper strengths, so that your map or artillery board paper will not dissolve in the floods of Holland or in the jungle.

Some Examples

Some of the queries the Scientific Adviser has to answer in a few days; others result in projects taking a year or more and leading from one problem to another. Some examples of the first type are given here:

What is known about the military operation of aerial cableways?

Why is a neutral country importing 20 times its peace time amount of a certain commodity?

What do we know in Canada about the thickness of ice required to carry army vehicles?

What proportion of soldiers are left-handed shots?

The larger problems have included answers to the following:

How can radar assist aircraft to fly around storms? (See article elsewhere in this number.)

How far off can the enemy hear a soldier speaking into a mike in night operations?

Which is the more effective, HE or CW munitions, in causing casualties and what are the administrative problems in CW?

The latter project resulted in a TEWT held at RMC and in the founding of an inter-allied committee to discuss Operational Research findings on this subject.

Small teams of officers have served in O.R. sections on the various fronts in Italy, North-West Europe, Burma and New Guinea, where they have mainly been co-operating with British research workers on battle analyses under the direction of the local Army commander. A larger section was scheduled to accompany the 6th Division to the Pacific fight, where Gen. MacArthur, faced with many new problems in this difficult area, had called for a huge staff of scientists to assist him.

The Directorate has taken a share in larger trials undertaken by the Army at home. In the summer of 1944 when the transcontinental C.N.R. was halted near Wainwright, Alta., by a huge pall of smoke, it was not caused by a prairie fire but by a smoke blanket laid down by the troops engaged in a new research scheme which yielded results later used in the 21st Army Group's crossing of the Rhine.

Last winter Operational Research had a hand in the extensive winter trials which for the first time really tried out Canadian troops in extended operations in their own snowy country. These trials, which were attended by many observers from the U.K. and U.S., have resulted in a great extension



of our knowledge as to what the Canadian soldier and his military organization are capable of doing in our own mountains, northern bush, and barren grounds.

Exercise Polar Bear

Exercise Polar Bear was initiated by Directorate of Research but conducted by Pacific Command in the Cariboo and coastal area of B.C. Exercise Lemming was directed entirely by D. Research and has resulted in a new conception of what oversnow vehicles can do in Arctic Canada, beyond the tree line.



The trafficability of vehicles in mud and snow is still being investigated. The problems of research may change but the need continues. The co-ordination of data on Japanese airborne balloons has fallen to the lot of the Directorate. This curious effort of the enemy was worth watching and we kept tab on it.

When the European war ended, Operational Research was prepared to swing into a new series of projects designed to assist the war effort to overwhelm Japan.

The Directorate is also examining the conditions found in Germany after V-E Day.

WATCH THESE THREE!

Weapon training, sanitation and personal hygiene all need continual stressing. Officers should ensure that personal cleanliness is enforced, and that clothes are washed whenever possible.

DISCIPLINE

(Condensed from "The Anatomy of Courage" by Lord Moran. Extracted from the War Office Infantry Bulletin.)

Health and discipline, that is how soldiers have been made through history. The discipline of the English Army in the early days of the Peninsular War was modelled on the methods of Frederick the Great. It was control from without in its crudest, most brutal shape; men did their job because the fear of flogging was greater than the fear of death.

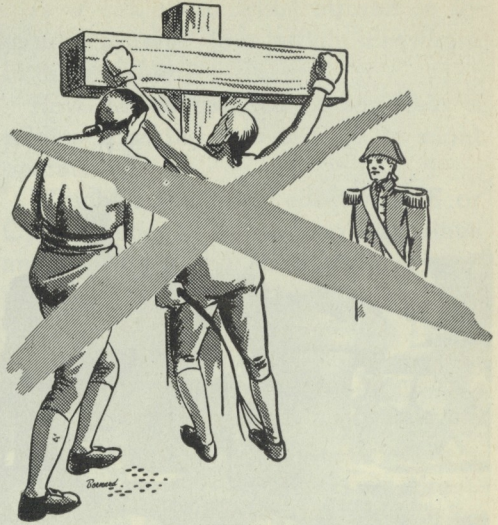
Sir John Moore, though he had to handle men of whom Wellington had said "they were the biggest scamps unhung," swept away Frederick's influence, creating in the camp at Shorncliffe a nursery which maintained a steady supply of leaders to Wellington. He left a creed in which the English Army still believes, a creed supported by a faith in human nature. He insisted that men be treated as human beings.

Persuasion Vs Punishment

Officers learnt to prevent crime by winning the affection of their men. Control from without had been replaced by control from within. When I compare the discipline of persuasion and the discipline of punishment I shall not say that one is right and the other wrong, only that the discipline of punishment is out of place in the national armies of to-day.

The discipline of our army of to-day—I am concerned only with the form of discipline most suitable for a nation in arms—is open to criticism of another kind. Everywhere men are asking whether a system of discipline and training designed for the illiterate has been modified to meet the needs of an educated rank and file.

They agree that discipline is necessary, but hold that it should be a means to an end and not an end in itself. They



complain that the soldier's conception of discipline has hardly altered as men's minds have changed. It is still a discipline of the body and not of the mind, the perfect and polished co-ordination of certain formal movements. They ask—and they are open to correction—if a certain relaxation of discipline is necessarily injurious to the efficiency of an army.

A man under discipline does things at the instigation of someone in authority, and if he doesn't he is punished. A man with a high morale does things because in his own mind he has decided to do them without any suggestion from outside sources.

Discipline, control from without, can only be relaxed safely when it is replaced by something higher and better, control from within.

Men rebel against discipline when they know in their hearts that it is not necessary. This they can only know with any assurance in the presence of danger which is the acid test of their morale. It is therefore not wise to tamper with discipline in any way when men are not in danger; it can only be relaxed with impunity as a spontaneous act of some hard fighting unit in whose experience the more rigid forms of

discipline have been found to be superfluous.

If discipline is relaxed when it has not been replaced by a high morale, you get a mob who will obey their own primitive instincts like animals. For the soldiers in England, who are suffering from years of inaction and boredom, more, not less, discipline is necessary.

Not Revolutionary

There is nothing revolutionary in this conception of discipline. I do not question that it is essential to the control of armies, but I do affirm that its influence on the soldier's mind has been exaggerated. And this distrust of coercive measures has been strengthened by experience in war.

Officers in France, the pick of them, seemed instinctively to realize, as time passed, that to get the best results out of their men they must appeal to the best that was in them. The crack of the whip was of no avail.

This discipline of kindness has won converts in strange places. Von der Goltz, speaking for the Germans, asks if a martinet has ever made a good soldier on active service. His whole thoughts are absorbed in the minutiae of discipline; his ideas soar no higher than pipeclay and buttons.

He tells us that the secret of the strength of the German Army is to be found in the interest the officers take in their men. But others of his race were not so sure; they had become aware in the war of the gap which yawned between officers and men in their Army, a gap which was closed when they were bundled off together to a labour camp for six months. That began about the time when the slogan "Back to 1914," with its implied elimination of the rankers who had won commissions during the war, went round the regimental messes of our regular army. Prussian discipline had become a pattern of severity. We sometimes forget they have been sensible enough to see

that it doesn't always work. The instructions which their High Command issues to officers to guide their relations with their men are undiluted Moore.

I do not pretend that everyone in our Army is equally enlightened. If there are some who have no faith in measures of coercion, holding that whatever disappointments may await us we must put our trust in human nature, there are others who in their hearts admit no more than that flogging is no longer expedient.

There is a cleavage of opinion, I think, because some soldiers when confronted by difficulties in the management of men can see only man in the mass, while others are instinctively dealing with individuals, with whose trials and hopes they are in sympathy.

Man is made one way or the other. When Octavia Hill, at the age of fourteen, was put in charge of a workroom of rough and undisciplined school children, she began by tearing down from the wall a list of punishments invented by her predecessor. She was able to do this because she did not regard the children as a class, but simply as Louisa and Clara and Elizabeth.

I gave this chapter to General Marshall to read. "This," he said, "is written for the professional soldier. Go away and tackle the disciplining of the citizen soldier. That is the problem of this war." This citizen soldier conforms to no single type; in a national army there are many who will only respond to the rigid discipline of the past, but there are others who find this hourly bludgeoning irksome. *They must have a reason for what they do.* They are alert, but they are casual; they are quick to see that an order could be carried out in another and more sensible way, but they awake only slowly to the consequences if orders are not obeyed to the letter:

MILITARY DICTIONARY

The Army Language Bureau of the General Staff, Canada, (M.T. 5), under the direction of Colonel J. H. Chaballe, Chief of the Bureau, and Major Pierre Daviault, Chief Revisor, has just published a military dictionary, French-English, English-French, accessible not only to military personnel but also to the general public.

Due to its length and set-up, this work is unique in its field. Former dictionaries of this type were far from complete, and all dated back to periods that preceded the present war, during the course of which so many new weapons and tactical methods have been developed. On the other hand, they were prepared either in France or Great Britain and were, therefore, unable to meet the needs particular to Canada.

Simple to Consult

The new dictionary, which embraces Army, Navy and Air Force terms is a large volume and contains more than 1,000 pages printed in three columns in highly legible type. It is elegantly and solidly bound. It is very simple to consult due to the typographical arrangement of expressions in separate paragraphs and in strictly alphabetical order, under key-words.

The basic material of the work consists of an aggregate of terms current during the Second World War in the various branches of an army

much different in organization from the armies of the past. The authors sought to list under one cover a vocabulary as complete and accurate as possible of this military language which has invaded the field of art—camouflage, photography, and of science—chemistry, physics, mechanics, with the object of producing an easily consultable book, useful even beyond Army scope.

First, in order of importance, were the description of weapons and their handling, tactics and military administration. But there is much else in the soldier's life. Medical, legal, supply and other services are important to him. The dictionary therefore contains a large number of medical, legal and cooking terms in their military connotations.

The special characteristics of snow warfare necessitated a fairly complete inclusion of ski terms.

Naval terms have not been neglected, and particular attention has been given to the vocabulary of air warfare.

Because of its military importance resulting from the mechanization of modern armies, the subject of mechanics has been extensively covered. Its various aspects have provided the dictionary with a considerable number of entries. The motor vehicle and its parts have received particular attention. Thus, there will be found a fairly complete nomenclature of the internal combustion engine. *(Continued on next page)*

DISCIPLINE

(Continued from Page 9)

What is the remedy? If the men are devoted to their officers the problem vanishes. But often an officer who had won popularity before coming under fire by his leniency and softness in

letting his men down too lightly loses their regard under fire, while the officer who had been unpopular under peace conditions on account of his severity, comes into his own in battle.

This dictionary's usefulness to the translator therefore extends beyond the purely military sphere. Its scope is general, at least in the technical field.

The authors have solved the problem resulting from the absence of equivalence between French and English, as regards ranks for instance. In France, brigadier is the lowest grade in mounted units; the holder thereof (like the corporal, his opposite number in the infantry) is not even a non-commissioned officer. In British army organization the brigadier, midway between a colonel and a general, commands a brigade. The terms had the same meaning in the old French army. The same occurs in the case of lance-corporal, adjutant, major, etc.

A further difficulty was the difference existing between the English and the American vocabulary. The authors have taken both into account. They have also included slang words so widely used in the Army as to cause the original terms to be forgotten and sometimes supplanted—the word **jeep**, for instance.

Another problem cropped up, that of neologisms necessitated by the development of new weapons and new methods. For the determination of the military vocabulary existing prior to June, 1940, there were the publications of the French Army. Where equivalence was not complete, the authors proceeded by way of analogy as indicated above. With regard to terms coined subsequently or undetermined before the fall of France, they searched for acceptable renderings by a process of deduction and comparison with related words. Such was the case for **piat, bazooka, radar, cartwheel sight, V-weapon, buzz-bomb** and many other terms.

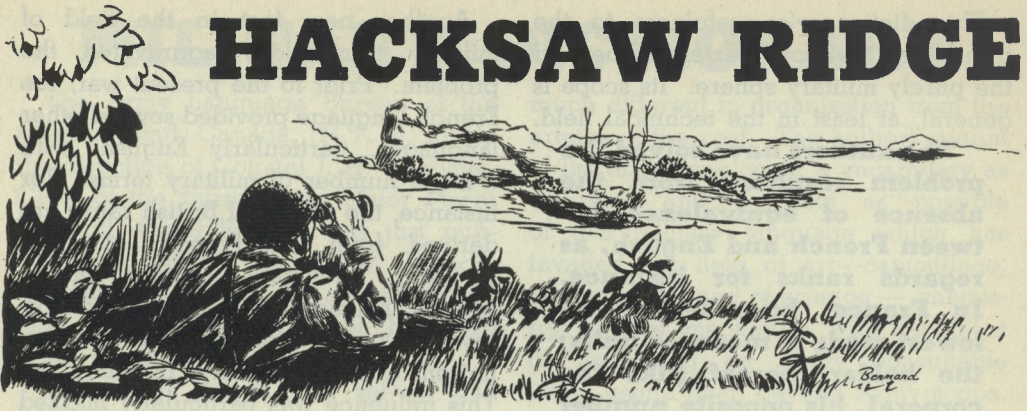
Another new fact in the field of military terminology aggravated the problem. Prior to the present war, the French language provided several other languages, particularly English, with a large number of military terms. For instance, the names of British ranks are derived from the French: corporal, sergeant, lieutenant, captain, major, colonel, brigadier, general. Such borrowings are frequent in other spheres: liaison, artillery, cavalry, infantry, etc. This influence was particularly marked in the field of the organization of modern establishments created by Louvois and in the field of fortifications which Vauban carried to such a degree of perfection.

Little Change

Terms connected with this art are often found with little or no change in English: fort, fortress, fortification, gabion, glacis, caponnier, parapet, case-mate, trace, flank, bastion, counter-scarp, embrasure, cavalier, rampart, salient, demilune, redoubt, gorge, etc. During the second World War this French influence was non-existent, **maquis** being about the only new term to come out of it. The authors of the dictionary were thus deprived of a valuable source of military vocabulary.

Such is this dictionary, crowning-piece of the work accomplished during this war by the Army Language Bureau which translated more than 500 military manuals. The authors present it less as a work of scholarship than as a practical vocabulary, that is, a list of terms and phrases currently used in a sphere where the needs of the moment leave little leisure for literary or scientific research. Appendices complete it usefully, for instance the list of army trade names and the abbreviations so numerous in the Army, and also the essentials of English and French grammar prepared for the purpose of facilitating the work of translation.

HACKSAW RIDGE



(Condensed from an article by Capt. L. K. Soth, in *U.S. Infantry Journal*).

The General Staff and the Regimental Commanders called it the escarpment, but the GI took one look and named it "Hack Saw Ridge."

After Hack Saw was taken and its cost measured, private and general alike wondered, "Is this a sample of what we'll find on Honshu and the other Jap home islands? Will the infantryman be slugging his way over a hundred other Hack Saws?"

On the morning of April 25, Brig. Gen. C. M. Easley, assistant commander of the 96th Infantry Division (who was killed in later Okinawa fighting), raised his field glasses over the rim of a hilltop foxhole. He whistled to himself as he studied the sharp, craggy precipice rising out of the Okinawa landscape 1,000 yards to the south.

"Mike," he said to Col. Michael E. Halloran, whose men of the 381st Infantry were picking their way carefully down the long slope in front, "there's no sense trying to assault that baby today. Let's roll up the tanks and M7s and hammer every machine-gun position we've spotted on that cliff."

Tanks Go To Work

Sherman tanks rumbled around the nose of the hill from which Gen. Easley and Col. Halloran were watching. The day before, when half a dozen tanks or so had got out into the open,

Jap anti-tank guns began to spout from the face of Hack Saw Ridge. And before the tankers could get into defilade, they had lost three medium tanks. Today an artillery observer near the regimental OP had located the Jap 47mm gun position and the artillery was putting on a precision registration.

Under cover of the artillery fire, M7 self-propelled 105mm howitzers of the Cannon Company also moved up to where they could put direct fire on Hack Saw but couldn't be hit by the Jap anti-tank gun.

All day the tanks, M7s and field artillery poured 75, 105 and 155mm rounds into the escarpment. And in the afternoon Navy planes, armed with bombs and rockets, struck at the cliff top and its rear side.

381st Jumps Off

By the next morning the 381st was ready. With the 1st Battalion on the left and the 2nd on the right, green-clad riflemen worked their way up the terraces on the lower slope, crawled around great coral rocks, and helped each other up slippery clay banks, finally reaching the top in two places. Not the top of the escarpment itself, but the top of the bridge that lay on both sides of the escarpment.

Hack Saw Ridge stretches 1,000 yards from northwest to southeast. In the center of it a coral rock "hack saw" sticks up 40 feet above the rest

of the ridge. This rocky escarpment is about 400 yards long and is nearly straight up and down except on the northwest corner.

Early in the morning of April 27 Capt. W. G. Bollinger, commanding Company F, moved his men to a rocky enclosure just to the east of the escarpment, and then pushed off down the south slope. His leading elements had not gone fifty paces before they were caught in machine-gun cross fire coming from the cliff and from a cave on the reverse slope to their left. The men who got back reported that the Japs had a pillbox on the south side of the cliff built into the coral rock.

Men of the 1st Battalion on the clay ridge east of the escarpment located and knocked out a machine-gun nest below them. But Company F still couldn't move because of fire coming from the cliff itself.

In the meantime, Company G, commanded by Capt. L. Reuter, Jr., trying to get up the escarpment at the northwest corner, received heavy machine-gun fire from the top of the hack saw. Men of Company G reported a pillbox up there, too. And the 3rd battalion on the right of Company G couldn't move because still another pillbox in the cliff held machine guns which swept their own front.

Col. Halloran decided to get tanks around to the south side of Hack Saw Ridge to reduce the pillboxes holding up his riflemen.

Fire 75s

The tanks worked around the southeast corner of the ridge, through a small Okinawan village, and eventually came out into the open where they could fire their 75s at the cliff positions. But as they reached the edge of the village a Jap 47mm anti-tank gun opened fire on them from the hack saw. Before any tank was hit, however, the tankers

got their Shermans back out of the fire.

While this was happening, a raiding party of 35 or 40 Japs suddenly appeared in the rocky enclosure where Company F was resting up and waiting for the tanks to pave their way for their advance. Taken by surprise, Capt. Bollinger and his men were forced back down the hill.

Down the hill about 50 yards, Capt. Bollinger reorganized his company, got his 60mm mortars firing, assaulted the crags again, and threw the Japs out.

The next morning Company G made another attempt to get on top of the cliff from the northwest corner. 2/Lieut. J. J. Ruth led his platoon up the escarpment and to within 10 feet of the pillbox, his men keeping behind rocks and hugging the ground. They tried to knock out the pillbox with satchel charges and grenades, but it was too strongly built.

Try, Try Again

Capt. Bollinger on this day took another crack at the pillbox on the south side, the one that had caused him so many casualties the day before. Early in the morning he sent a small patrol out to locate the slits of the Jap position and to determine from which port the anti-tank gun was firing.

The Japs let the patrol get into the open and within 30 yards of the pillbox before opening up and then wounded several more Company F men with their machine-gun fire. But the patrol was successful. It found the anti-tank gun and pin pointed two machine-gun slits.

Again the tanks came around the ridge and through the town. This time they worked slowly up and found a spot where they could fire at the anti-tank gun but they couldn't traverse enough to hit them. After a few rounds one tank knocked out the Jap 47 and then the tankers drove boldly out into the meadow below the escarpment

and began pouring rounds of 75mm. HE into the pillbox.

After an hour or so, Company F tried again to move down the south slope but again received heavy machine - gun fire—this time from new positions in the escarpment.

While the tanks and Company F were busy with the reverse side of Hack Saw, Capt. Reuter and Company G, less Lieut. Ruth's platoon which had climbed to the top, were patrolling and exploring the caves on the northern side.

Capt. Reuter leaned against a large, jagged rock as he directed a group of men who were prowling into a cave smashed open by artillery fire. A loud explosion almost in his ear sent him instinctively to the ground. As he looked up again he saw a wisp of smoke coming from a slit a few feet above his head. A Jap had apparently fired at him with a pistol at a range of 12 feet and missed.

Either that pillbox had escaped destruction in the artillery preparation or the cliff was tunneled so that the enemy could get down inside the hill during the shelling and come back to the openings later.

Capt. Reuter immediately had satchel charges placed in the slit from which he had been fired on. When the smoke cleared he looked inside but found no Japs there. However, he could see through to an opening at the rear of the pillbox.

Into the Cliff

Taking two men with him, Capt. Reuter entered another cave entrance nearby. In that cave he found a passage leading straight into the cliff. The three men cautiously crept in farther. From far down the passage they could see a beam of light. Tiptoeing in that direction, they came upon a shaft running vertically down into the bowels

of the escarpment. Capt. Reuter noticed that there were three levels below him. He could hear Jap voices.

The men made their way back and found another passage shooting off to the right from the one they were in. Following this a few feet they came on a rock room fitted up as an observation post. Peering out of the slits, Reuter discovered that the Japs had been able to see all our landing beaches, all the roads we had been using up to this point—in fact, all the ground we had been fighting over since the landing on April 1.

Officers of the 381st now realized that far from being an ordinary hill defended from caves and pillboxes, like the others, Hack Saw was a virtual Maginot-line type of fort. They now figured that the whole escarpment had probably been tunneled out. Perhaps the Japs could house as much as a battalion in the fort. Possibly they even had hospitals, cooking and other barrack facilities there.

Pillbox Blasted

Since the pillbox on top had resisted all attempts, Regiment decided to bring up M7s again in order to fire on it from the north side. Tanks on the south side were to fire from that direction. For three hours on the afternoon of April 28 the pillbox was blasted with tank guns and 105mm howitzers, using both HE anti-tank ammunition and HE with the anti-concrete fuze.

That night nothing happened except for the usual grenade fighting and a couple of small Jap patrols.

But the next morning, about 0600, Japs again attacked Company F's position among the rocks to the left of the escarpment. This time about a company assaulted Capt. Bollinger's weary, reduced strength outfit, and again the company was forced back

down the ridge. But Capt. Bollinger again directed mortar fire among the rocks and, with his 30 remaining men, threw out the Nips once more. By 0830 Company F was back where it had been three days earlier.

The 307th Infantry of the 77th then took over the 381st's positions on Hack Saw Ridge.

The Marines were on the right of the 77th, and the 7th Infantry Division was on the left of it. And the whole Tenth Army was held up by the Jap defences centered around Hack Saw Ridge. Col. S. F. Hamilton, commanding the 307th, had a job cut out for him.

Phosphorus Shells

The first thing the 307th did was to continue the hammering of the pillbox on top with direct-fire weapons. Finally the whole top of the box came off. Then the M7s placed a few phosphorus shells into the hole. Smoke was seen to come out from twenty-seven places in the side of the cliff.

But the riflemen of the 307th still couldn't move around the escarpment. Fire in undiminished volume poured into their flanks whenever they tried it.

On the morning of April 30 a patrol was sent up on top of the escarpment with gasoline, oil, and explosives. They poured the gas and oil into the open pillbox, which had a shaft running down into the cliff, dropped in some explosives, and then set it off. The whole cliff trembled. Yet heavy machine-gun fire still continued to prevent advance around the flanks.

Dig in This Time

On May 1 a whole company of the 307th worked itself on top of the Hack Saw, using cargo nets, ladders, and knotted ropes. That night Japs poured out of the openings on the south side and drove them off. Next day

the riflemen of the 307th came back again. And again the Japs counter-attacked and drove them off. A third time our troops crawled up, after a mortar preparation, and this time they stayed, "digging in" by piling up rocks to form breastworks. All night of May 2-3 these troops held the cliff.

Early in the morning of May 3 demolition teams planted TNT charges in every opening they could find on top and blasted them shut. Into one hole they dropped 500 pounds of explosive and washed it down with two barrels of gasoline.

Again on May 4 the Japs tried to retake the top of Hack Saw, and this time they used Okinawan civilians to carry demolition charges. After a sharp grenade, "kneemortar," rifle, and machine-gun battle, the Jap attackers were pushed back. They never again counter-attacked on Hack Saw.

Gradually men of the 307th sealed up caves and openings. Finally either all the Japs were buried in their fortress or were killed off in counter-attacks.

The pillboxes were, in most cases, simply hollowed out of the rock, built up with timbers, and covered over with dirt and more rock. The pillbox on top, apparently the most formidable of all, had thick concrete walls, reinforced with steel and then faced with coral so that it blended perfectly with the rest of the cliff.

No Other Way

Before he was killed in the June Okinawa battle, Lt. Gen. S. B. Buckner who commanded the Tenth Army, said, "The only way to get 'em out of places like that is with corkscrew and blowtorch." In other words, the individual foot soldier must go in with explosive charges, grenades, and flame throwers. It takes time and it takes lives—but there's no other way.

RIFLE GRENADE EQUIPMENT

(War Office Infantry Bulletin No. 23)

In Infantry Bulletin No. 13 . . . an account was given of the range of rifle grenades intended for the Far Eastern war. Much development has since taken place, and it is thought that a summary of the present position will be of interest.

(a) **Launcher (Fig. 1):** The Launcher, which is a light barrel extension to the rifle, is clipped to the muzzle of the rifle and acts as a spigot for the tail tube of the grenade which slides over it. A photograph of the projector or launcher fitted to the No. 5 rifle is shown at Fig. 1. The launcher for the No. 5 rifle is now in production.

(b) **Sight (Fig. 2):** An open sight suitable for high or low angle firing incorporating a levelling bubble and graduated in yards is in production. The "V" of the backsight can be moved laterally to permit zeroing for line. The sight is rapidly fixed to the barrel of the rifle by means of a cable and screw nut. The sight weighs slightly more than 1/2 lb.

New Cartridge

(c) **Cartridge:** Some difficulty has been experienced in providing a cart-



Fig. 1: Projector or Launcher fitted to the No. 5 Rifle.

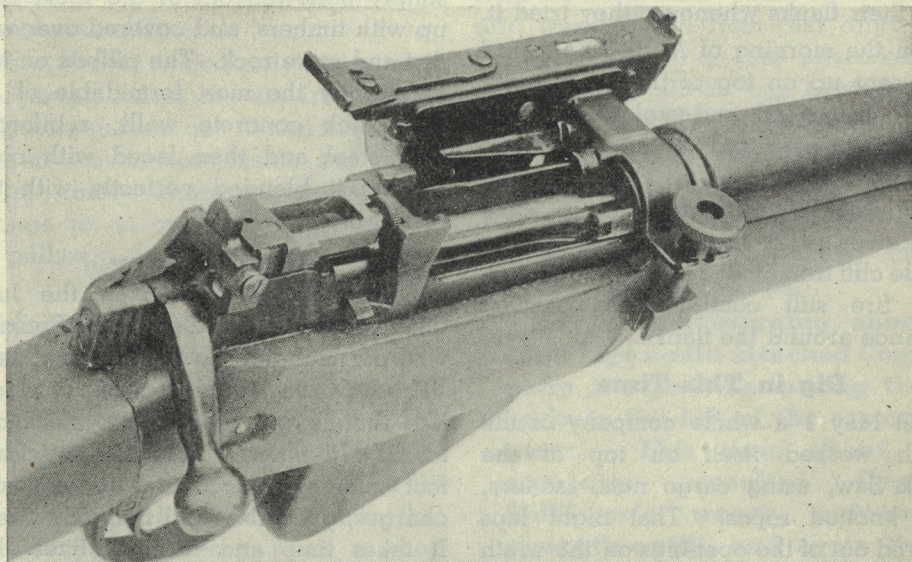


Fig. 2: Sight for use with Rifle Grenade Projector.

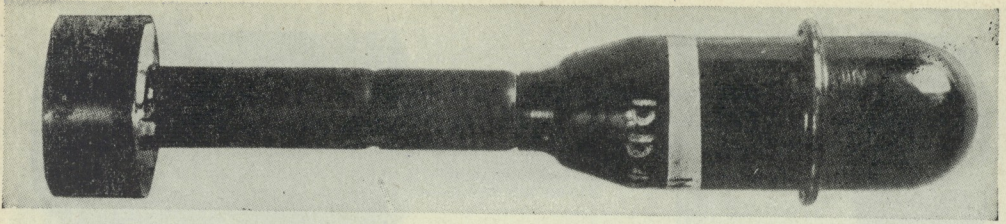


Fig. 3: Grenade Rifle, No. 85, Anti-Tank.

ridge which would not be too severe on the No. 5 rifle or the user, and which, at the same time, would give a satisfactory ranging performance. An H. Mk. IV cartridge (filled with 34 grains of cordite M.D.T. 4 $\frac{1}{2}$ -2) has now been approved and its production is about to commence. Trials have established that this cartridge, in conjunction with the No. 5 rifle, will project the No. 85 anti-tank grenade to a maximum average range of 230 yards, and that the user, in shirt sleeves, can fire 5-10 grenades from the shoulder without discomfort.

Grenades

(d) **No. 85 Anti-tank Rifle Grenade (Fig. 3):** This grenade, designed to replace the U.S. M. 9.A.1, is a hollow charge grenade and will penetrate 90-100 mm. of homo hard armour at normal. It has a new graze fuse, No. 430, which will function satisfactorily up to 45° from the normal. There is no safety pin to withdraw (as in the case of the U.S. grenade), and the fuse does not arm until the grenade is fired. It weighs 1 lb 4 $\frac{1}{2}$ oz.

No. 86 Anti-Personnel Hand/Rifle Grenade:

(1) The requirement is for an anti-personnel time grenade which can be thrown by hand (less its tail) in addition to being projected from the rifle. Difficulty has been experienced in meeting this requirement, and the first pilot (in which time delay initiation was by means of a fly-off lever) was rejected owing to the short range obtained and to its unstable flight. A complete new design has been called for, but development is likely to take some time.

Dual Purpose

(2) Another development which is likely to come forward more rapidly than (1) is a Mk. 2 No. 85 grenade, which would be a dual purpose anti-tank/anti-personnel rifle grenade. (Fig. 4). As it stands the existing No. 85 grenade and the M.9.A.1. have poor anti-personnel performance owing to their thin casings. The Mk. 2 design calls for a wire-wound body to increase

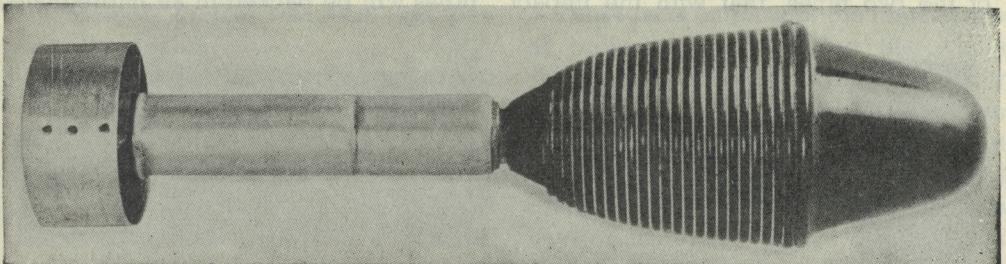


Fig. 4: Grenade Rifle, Combined Anti-Tank and A/Personnel, No. 85, Mark 2.

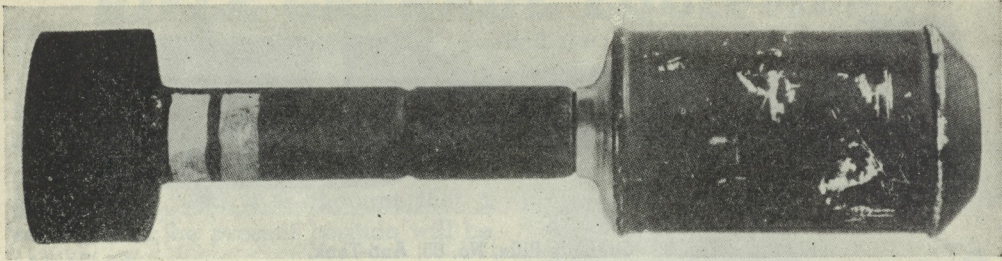


Fig. 5: Grenade Rifle, No. 87, W.P.

the anti-personnel effect, and it is hoped to achieve this without adding to the weight of the grenade or decreasing its anti-tank performance.

No. 87 Smoke Rifle Grenade (Fig. 5): (1) The body of this grenade is a shortened No. 80 smoke hand grenade holding 9 oz. of white phosphorus as against 11 oz. Its screening capacity should be midway between the Nos. 77 and 80 grenades. It is fused with the instantaneous fuse of the No. 85 grenade (No. 430). It is hoped that this grenade, in addition to its screening capabilities, will prove efficacious in neutralizing field works. Clear fields of fire will be essential, however, as the fuse will premature if the grenade passes through dense vegetation. It weighs 1 lb. 4 $\frac{3}{4}$ ozs. Acceptance trials are pending.

Has Time Fuse

(2) The same grenade fitted with a time fuse to overcome risk of foliage prematures is under initial development. It is unlikely, however, to become a firm service requirement since it is clearly desirable to keep the range of grenades down to the minimum and of the two types, that with the impact

fuse appears to offer the most general application at present.

No. 88 Signal Rifle Grenade (Fig. 6): This grenade is intended as a ground to ground, or ground to air signal. When fired vertically a smoke candle is ejected at about 200 feet, and this is supported by a parachute. Colours are red, blue, green and yellow, and the time of ignition is approximately 20 to 25 seconds. Acceptance trials are pending. It weighs 1 lb. 4 ozs.

No. 89 Illuminating Rifle Grenade (Fig. 7): This grenade incorporates the body of the trip flare Mk. I. After a four second delay the star is blown clear, and falling to the ground burns for approximately one minute with a 22,000 candlepower. This is sufficient to illuminate a 100-yard radius. It weighs 1 lb. 3 $\frac{3}{4}$ ozs. Acceptance trials are pending.

(e) **Packages:** Individual grenades will be packed in a waterproof board tube. The tail tube of each bomb will have an H.Mk. IV cartridge attached to it in a sealed container. The weight of a filled tube will be 2 $\frac{1}{2}$ lbs. Ten tubes will be packed in an impregnated

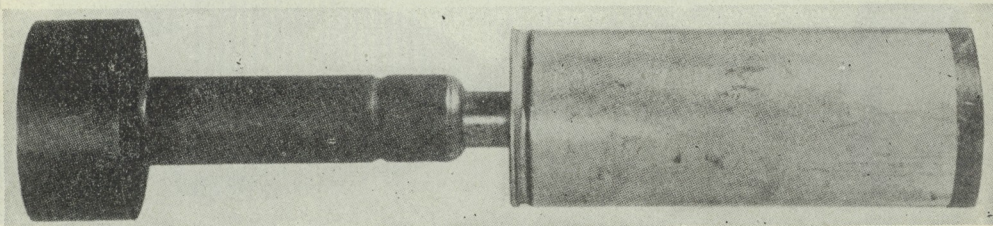


Fig. 6: Grenade Rifle, No. 88, Coloured Smoke Parachute.

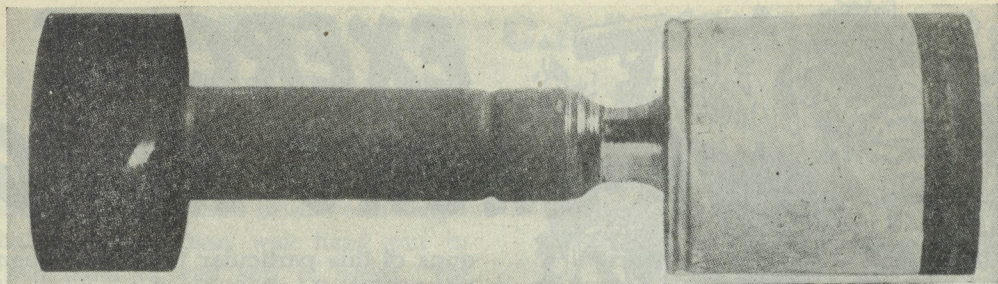


Fig. 7: Grenade Rifle, No. 83, Flare Illuminating.

plywood box measuring 17.8" x 7.4" x 13.8". The weight of a filled plywood box will be 34½ lbs. Three of these boxes will go into a transit crate.

TEMPORARY DEAFNESS

(Royal Artillery Notes)

From Australia comes the following advice which, it is considered should be given the widest possible publicity:

Although it is laid down that commanders will ensure that ear protectors are worn during firing by gun detachments, firers of projectors, and crews of mortars, yet many of such personnel are not fully aware of the importance of protecting hearing during artillery and mortar fire.

It is recognized by gunners that, without protection, a ringing in the ears or temporary deafness may be produced, but the serious nature of this is not generally impressed upon him. This kind of deafness is most noticeable with faintly audible sounds; it is not so obvious (depending on its severity) at the level of ordinary speech, and for this reason it tends to be ignored. Many men express the view that they are "too tough" to wear ear protectors or that they have become accustomed to the weapons and can do without them.

Experiments carried out recently have shown that temporary deafness lasting from a few hours up to seven days was experienced with the 17-pounder anti-tank gun with muzzle brake, the short 25-pounder, the 25-pounder Mark 2, the 3.7-inch anti-aircraft and the 6-inch Coast Defence Gun. This was most

marked with the 17-pounder, the short 25-pounder and the 3.7-inch anti-aircraft gun.

It should be pointed out that in all of the experiments the exposures were mild compared with what occurs in action. Nevertheless, deafness sufficiently serious to impair the efficiency of men as sentries was produced. In conditions of quiet, when an enemy may betray his presence by the least noise, threshold hearing loss becomes of the greatest importance. It means that the distance at which a sentry may just hear voices, footfalls, or vehicles will be considerably reduced. Moreover, usually one ear is more affected than the other; this means that not only will such a man have a threshold hearing loss but his ability to determine from which direction the sound comes may be seriously impaired. The importance of this is obvious.

These facts emphasize the importance of protecting ears during the whole period of action. A piece of clean, dry cotton-wool is a readily obtainable means of protection. It is important to impress upon gun detachments and crews of mortars that it is not, as some have remarked, "sissy" to wear ear plugs but that the care of their ears is an important military duty.



EXERCISE HONG KONG

guns of this particular troop had been lost. With the two remaining guns it was necessary at any cost to bring down fire in support of the infantry.

The entire scheme was conducted as realistically as possible and as though an enemy were in the immediate vicinity. The training area was laid out to represent a Japanese - held island under invasion by our forces. A trace of the area was produced with Japanese names for the various features.

Eleven positions were taken up during the five days and in each case slit trenches, gun pits, etc., were dug. The positions were wired in with booby traps and mines. Listening posts were organized. Road blocks were constructed. Mines were improvised by attaching a pull igniter to a thunder-flash.

On The Alert

In order to impress everyone with the constant necessity of being on the

(While the surrender of Japan has changed the training picture, it is considered the Exercise outlined in the following article is of sufficient interest to warrant publication at this time. It contains good ideas for training.—Editor).

The capitulation of Germany made necessary certain definite changes in the training program to prepare the Canadian Army Pacific Force for service in the Far East. With this in view, Al CATC, Petawawa, initiated Exercise Hong Kong.

This Exercise consisted of double man-handling QF 25-pounders, complete with gun stores and ammunition, over a 12-mile route. This route was shell-pocked and was selected for its similarity to conditions likely to be met with in the war against Japan. The man-handling was spread over five days, culminating in a night occupation and a fire plan laid down at dawn.

Fire For Support

Before commencing the exercise the men were put "in the picture." They were told that they were supporting an Infantry Division which had established a beach-head. During the landing operations, all vehicles and two



alert, small raiding groups were organized to represent Japanese patrols attempting infiltration. Smoking and talking were prohibited during the night hours. Since it was possible to

E.M.E.R.s and C.A.L.E.M.E.I.s

Once upon a time there lived a Corporal whose job it was to take care of the Instruction Books used by the Maintenance Men of his unit. These books were so varied in size and shape that the poor man was hard put to keep them in any sort of order. He generally piled them one atop of the other, with the result that when he was asked for any particular instruction book, he was compelled to unload the one-hundred-and-one different manuals in order to find the one he wanted.

Another worry of his was amendments. These were little slips of paper received from time to time which he had to paste very carefully into the appropriate places, so that in the course of time the book assumed the appearance of a dog-eared telephone directory.

The New Order

One day his Commanding Officer informed him that he would soon be able to throw out his Instruction Books as a wonderful new system known as E.M.E.R.s and C.A.L.E.M.E.I.s was to be introduced. This system would supersede all his odd size, dog-eared Instruction Books and he would have instead a series of uniform expandable loose-leaf binders, which would contain all the information required by the Unit Maintenance Men.

One of the first C.A.L.E.M.E.I.s received by the Corporal was GENERAL



A 003. In this he read all about the new system; amongst other things he found the definition of E.M.E.R.s and C.A.L.E.M.E.I.s. The first represented Electrical and Mechanical Engineering Regulations which were of world-wide application, whilst C.A.L.E.M.E.I.s were Canadian Army Local Electrical and Mechanical Engineering Instructions which were applicable in Canada only. Presently the E.M.E.R.s and C.A.L.E.M.E.I.s began to arrive in large quantities and were dutifully filed away by the Corporal according to the instructions given him in C.A.L.E.M.E.I. GENERAL A 003, so that eventually he was able to dispose of his old Instruction Books, one by one, and thus lived happily ever after. . . .

(Continued on Page 22)

HONG KONG

(Continued from Page 20)

allow only four or five hours sleep during the night, the men were encouraged to snatch opportunities for rest during the day. Fire orders were sent down without regard to meal or rest periods.

During the first four days, the men were fed entirely on mess tin rations.

Raw rations were issued on the fifth day. An unlimited supply of water was made available at 0630 hours and at 1800 hours. Between these periods each recruit had to manage on one full water bottle, including preparation of his lunch.



Application and Authority

Whilst the foregoing may appear to be somewhat of a fairy story, such a change-over from the old type instruction manual to the improved form, viz., Electrical and Mechanical Engineering Regulations and Canadian Army Local Electrical and Mechanical Engineering Instructions has been progressing steadily for the past 18 months. Both classes of instruction are issued by the Director of Mechanical Engineering under the authority of Routine Orders, and are intended not only for the use of R.C.E.M.E. Workshop personnel but by all User Units of equipments concerned. This last application does not seem, generally, to be fully appreciated. Numerous instances have been reported of non-compliance with instructions issued in this new form and it should therefore be noted that, quoting from C.A.L.E.M.E.I. GENERAL A 003, "E.M.E.R.s and C.A.L.E.M.E.I.s are issued under authority of Canadian Army Routine Orders and will be complied with by all Corps and Units concerned. Any E.M.E.R. or C.A.L.E.M.E.I. requiring action will be sufficient authority for the action specified and for demanding the necessary stores."

Read Your General A 003

In the limited space available here it is not possible to give a detailed description of the system. Such information is readily obtained from C.A.L.E.M.E.I. General A 003, which has already been issued to all Units. However, the essential points to note are:

(a) Information issued in this service covers all Army technical equipments for which the ultimate responsibility for maintenance rests with R.C.E.M.E.

(b) The information is released as available on standard loose-leaf sheets, 8½" x 11", 3-hole punched, in a lettered and numbered series under the headings:

- General
- Small Arms and Machine Guns
- Workshops
- Instruments and Searchlights
- Recovery
- Telecommunications
- Vehicles
- Power
- Armaments
- Miscellaneous

Binders are available for these sheets and should be requisitioned as instructed in C.A.L.E.M.E.I. General A 060.

(c) A summary of all E.M.E.R.s and C.A.L.E.M.E.I.s issued in any one month is published the following month in C.A.R.O.s. User units will normally receive E.M.E.R.s and C.A.L.E.M.E.I.s covering descriptive material, first echelon maintenance information and modification instructions on those equipments employed by them, plus certain information relating to maintenance in general. They will NOT normally receive E.M.E.R.s and C.A.L.E.M.E.I.s dealing with second to fourth echelon maintenance; these will be issued only to R.C.E.M.E. Workshops.

(d) Distribution to Units is automatic and is the responsibility of the D.D.M.E., D.E.M.E. or C.E.M.E. of the

REPLACEMENT TRAINING FOR 6th CANADIAN DIVISION (CAPF)

(This article, written by Lt. Col. P. R. Bingham, Directorate of Military Training, NDHQ, may be obsolete before it is read because of the rapidly changing events. However, it will still be of interest in any event.)—Editor.

It is conceivable that at the time of writing there are many who are **NOT** in the picture as to the system that has been laid down for the training of CAPF replacements. This article is designed to enlighten those people. In order to put the plan before you clearly, it will be divided into three parts:

Part I: Training required.

Part II: Organization.

Part III: Training Areas in Canada.

Part I: Training Required

The soldier is required to go through two definite phases of training, which are outlined below, to achieve the standard required to take his place in the Force.

(a) **Phase I** will be similar to the basic training required prior to VE day and will be carried out in Canada. For personnel enlisting off the streets into the Army, this training will be of 8 weeks duration and will be performed by Canadian instructors using American methods, weapons and equipment. For personnel who have already completed

Canadian basic training, Phase I will consist of an Orientation Course of 4 weeks duration to enable the soldier to enter Phase II and carry on the continuity of American training.

(b) **Phase II** is similar to the Corps training that was required of all troops prior to being sent overseas, but will be carried out in the United States and will cover a period of 11 weeks. Training will be handled entirely by American officers and NCOs, with the exception of bilingual instructors to instruct French-speaking soldiers. Canadian administrative personnel will be located at each Training Centre to handle records and discipline.

On the completion of Phase II, the soldier, in accordance with the US standards, is ready for immediate combat.

Part II—Organization

Everyone is familiar with the Canadian setup of Basic and Advanced Training Centres. The Canadian establishment for the CAPF, however, is being set up on a similar basis to the American establishment, and training is carried out within Training Battalions. These Training Battalions, known as Pacific Training Battalions, will number

E.M.E.R.s

(Continued from Page 22)

Command, District or Camp concerned, to whom Units should address all correspondence relating thereto.

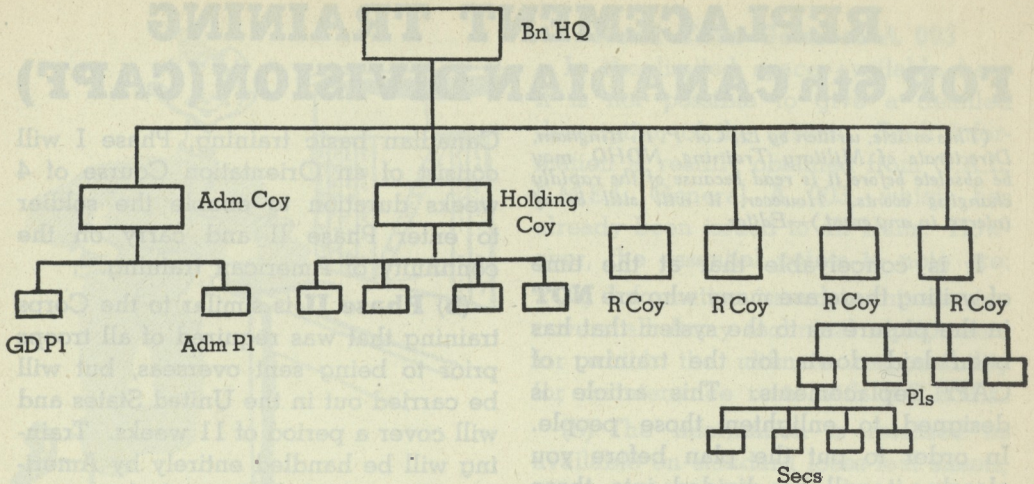
Unit "Musts"

Finally, Unit personnel responsible for the filing of E.M.E.R.s and C.A.L.E. M.E.I.s as received from Headquarters should observe the following rules:

(a) Ensure that each instruction is

filed in the correct manner in the correct binder, as outlined in C.A.L.E. M.E.I. General A 003. They must not be placed loose in a folder or drawer.

(b) Examine each instruction carefully as to context and ensure that all Unit personnel concerned with the subject covered are advised that the instruction is available for use.



from 1 to 8 and each will be capable of handling 950 soldiers. The designation of the HQ of these Battalions is Pacific Training Brigade.

A chart showing the composition of a battalion appears above.

The Administrative Company handles all administrative and fatigue duties, thus leaving the trainee free to do nothing but training. The Holding Company is designed to take care of the holdovers that occur during training and to carry out normal training as may be required on the same basis as is done by the Rifle Companys.

The following points will be of interest in the new organization:

(a) A Demonstration Company of four platoons is being carried on the Brigade Headquarters strength to take care of demonstrations which form a part of the training.

(b) On the strength of each Battalion are carried a Major who is employed at Battalion Headquarters and four Lieutenants, one assigned to each Rifle Company, who are known as training officers. These officers form a pool for any of the extra training duties that always occur.

In order to set up this organization within Canada, certain American officers have been loaned from Training

Centres in the United States who have given assistance in bringing the new Canadian organization up to the required standard.

Let us trace one individual through this organization until he reaches the Force: Pte. J. Canuck, after volunteering for the CAPF, would be despatched from his District Depot to one of the Battalions of the Pacific Training Brigade. There, after completing 8 weeks basic training Common to all Arms, he would be despatched to the Training Centre in the United States where he would complete his training. On completion of training, he would be granted disembarkation leave, despatched to the Replacement Depot of the CAPF and from there to a Unit in the Field.

Part III: Training Areas in Canada

At the present time, HQ Pacific Training Brigade and four Battalions are operating in Vernon, B.C. In the very near future, however, a further four Battalions will be raised and these will be situated at Petawawa, New Market and Orillia. After the Force has left for its training in the United States, Pacific Training Brigades and Battalions in B.C. will move to Petawawa and at some future date the complete training for the CAPF replacement will take place in Petawawa.

MORE JAP BOOBY TRAPS

(U.S. Ordnance Sergeant)

In any discussion of booby traps, it is well to remember that the enemy not only constantly improved his booby trap fuses and devised new ones, but the number of methods of catching the unwary soldier was limited only by the enemy's ingenuity.

A hand grenade and a piece of wire are all that is necessary to booby trap an obstacle (Fig. 3), an item of equipment (Fig. 4) or a corpse (Fig. 1). The purpose of a booby trap is to make an apparently harmless act on the part of one of our soldiers a death trap, and to thus shatter morale and slow up our advance.

Everything from pipes (Fig. 5) to parasols, from fruit to flashlights (Fig. 2) may contain an explosive or be attached to a charge. In fact, it is impossible to

enumerate all the different types of traps which the Japs have left behind.

To understand the Japanese booby trap fuses, it is only necessary to remember how the standard U.S. firing devices operate. Pull, pressure and chemical delay types were employed by the enemy in the same general manner as we employed ours. Besides the chemical delay type, the Japs used their demolition clock (normally employed in demolition work) as a booby trap left behind to go off about the time they thought we would enter an area or building. The clock has delays up to eight days. To set it, the base is turned counter-clockwise, and a small window near

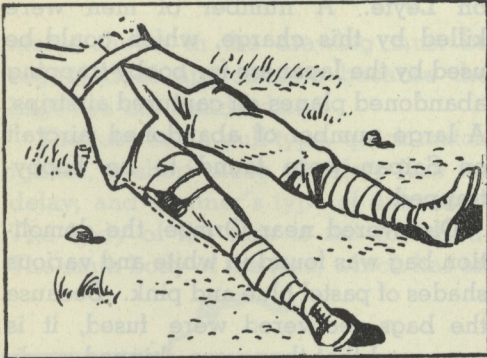


Fig. 1—On a Corpse

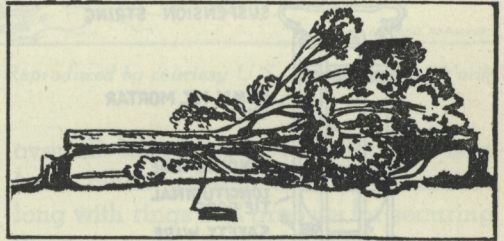


Fig. 3—In Obstacles

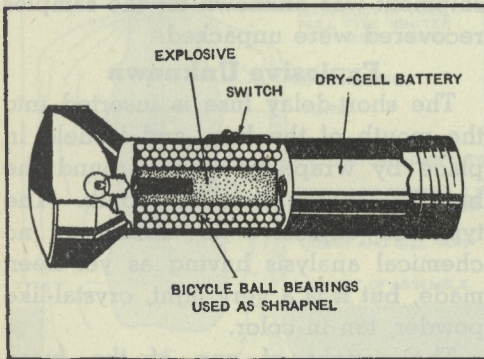


Fig. 2—Flashlight Device

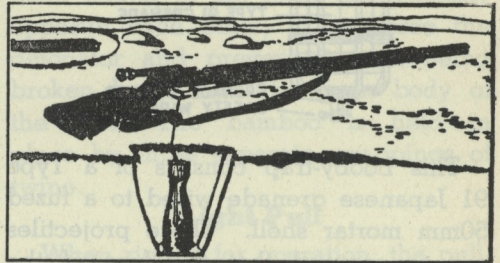


Fig. 4—In Equipment

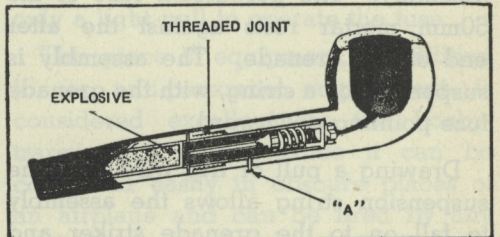


Fig. 5—Pipe Device

the top shows the number of days' delay, while graduations around the base indicate hours. Slightly less than four inches long, it can be easily camouflaged.

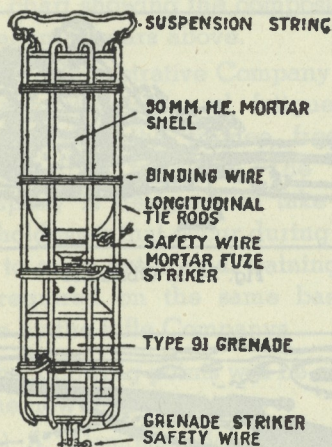
No discussion of Japanese mines and booby traps would be complete without mention of electrical hookups. Any piece of equipment, any building, containing an electrical circuit was suspected. The unwary G.I. could complete an electrical circuit and fire an explosive charge when he flicked a light switch or turned on the ignition of a vehicle. By the same token, mines

such as the beach mine (see July 1945 issue of CATM) could be hooked up to fire electrically either by some action on our part or through remote control by destruction squads left behind.

An improvised mine could be laid such as was employed on one airstrip. Thirty-one 50 kg. bombs surrounding a picric acid charge and covered by a piece of sheet iron were buried under the turf. The mine was hooked up electrically in such a manner that depressing or lifting the sheet iron would close the circuit and fire the charge.

Grenade-Mortar Shell Booby Trap

(ATM—Australia)



This booby-trap consists of a Type 91 Japanese grenade wired to a fused 50mm mortar shell. These projectiles are so secured that the fuze of the grenade projects from one end of the assembly. The percussion fuze of the 50mm mortar rests against the after end of the grenade. The assembly is suspended by a string, with the grenade fuze pointing downward.

Drawing a pull or trip wire from the suspension string allows the assembly to fall on to the grenade striker and initiates the explosion.

Cloth-Bag Demolition Has Double Use

(U.S. Tactical and Technical Trends)

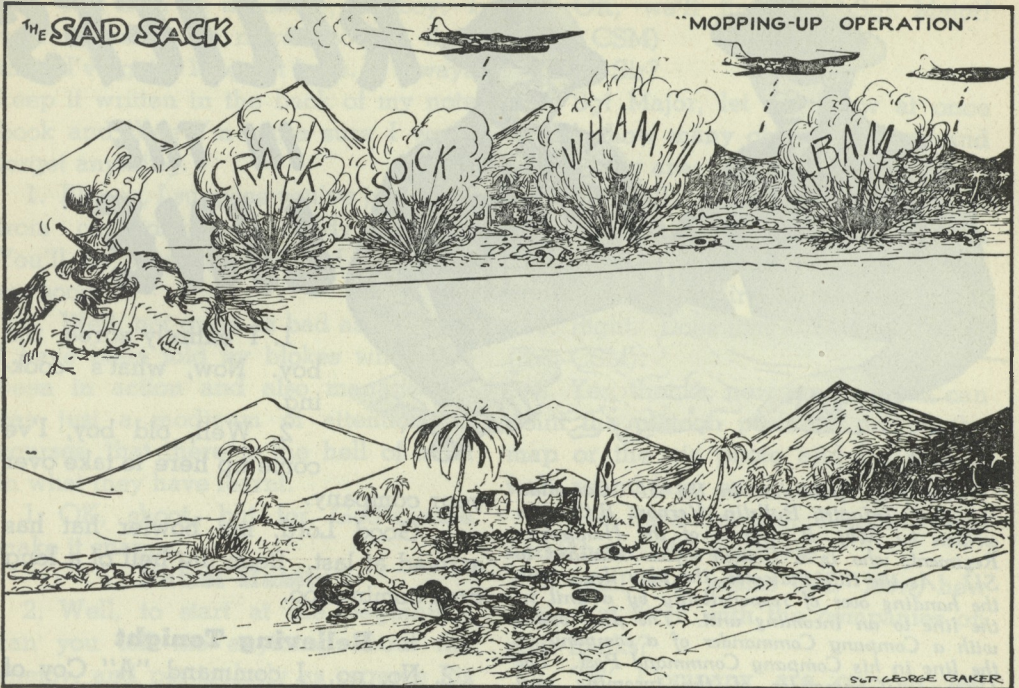
A new type of Japanese anti-personnel cloth-bag demolition and booby-trap assembly was discovered during combat on Leyte. A number of men were killed by this charge, which could be used by the Japanese for booby-trapping abandoned planes on captured airstrips. A large number of abandoned aircraft on Saipan were found to be booby-trapped.

Discovered near Ormoe, the demolition bag was found in white and various shades of pastel blue and pink. Because the bags recovered were fused, it is presumed that they were shipped ready for use. The method of packing for shipment was unknown for the samples recovered were unpacked.

Explosive Unknown

The short-delay fuse is inserted into the mouth of the bag, and is held in place by wrapping twine around the bag 1½ inches from its mouth. The type of explosive is unknown, no chemical analysis having as yet been made, but it is a very light, crystal-like powder, tan in color.

The weight of one of the fused assemblies was 8 ounces. The measure-



Reproduced by courtesy U.S. Army Weekly "Yank"

ments shown in the drawing must be regarded as approximate because the bags are not standardized.

The fuse has a pull-type, quick-match igniter, a short piece of safety fuse for delay, and a miner's type of detonator. The body of the fuse is not threaded. The main body of the fuse, which has an

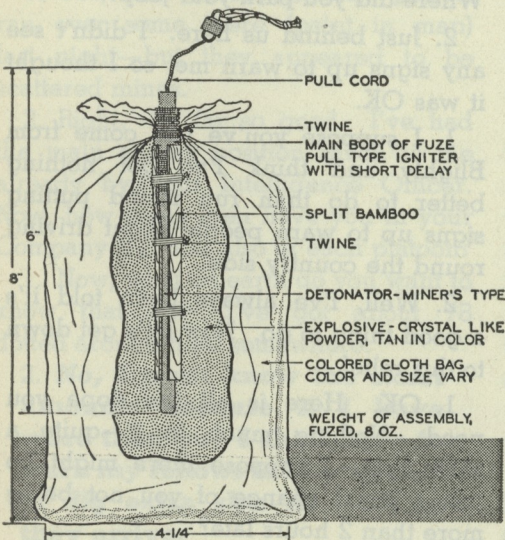
over-all length of $6 \frac{1}{16}$ inches, is a hard block substance $1 \frac{15}{16}$ inches long with rings and grooves for securing the fuse to the bag of explosives.

Two small strips of split bamboo have been added to the fuse, diametrically opposite each other, to reinforce the detonator and prevent it from being broken loose from the main body of the fuse. The bamboo is held in place by three separate wrappings of twine.

Light Pull

When rigged for operation, the pull-type igniter ignites the delay, which in turn ignites the detonator. It takes only a light pull to operate the fuse.

This piece of equipment, in addition to its anti-personnel employment is considered excellent for the booby-trapping of planes, since it can be concealed easily in obscure places of an airplane and can be fired by any movable part of an aircraft which is accessible for attaching the bag.





RELIEFS IN THE LINE

(This play, published in the S17 Canadian School of Infantry Bulletin, Vernon, B.C., was written by Maj. R. Carver of the Hampshire Regiment, who is a British officer attached to S17. As the title indicates, the play deals with the handing over of responsibility by a unit in the line to an incoming unit. The play opens with a Company Commander of a company in the line in his Company Command Post. The Company Commander of the incoming unit arrives with a "Sapper bang." At the end of this script will be found some pointers for junior commanders carrying out such an operation. It is emphasized that in teaching this subject, this play must be preceded by a lecture; it is not intended as a substitute.—Editor.)

Cast: Company Commander of Company in Line.

Relieving Company Commander

CSM of Company in Line.

Time: 1100 hrs. Relief to be completed by 2359 hrs.

Object: To demonstrate a practical "Relief in the Line."

1. How do you do? My name is Frost—Can I do anything for you?

2. Good morning. My name is Edward Rees from the Queens Own Hampshire Scottish—you know Carver's Horse?

1. Good heavens! What a peculiar regimental name. I don't know what the army's coming to.

2. No, it does seem odd, but as my old Dad used to say—"you certainly don't seem to need to come from Scotland to wear a kilt"—you hear the most incredible Scottish accents these days.

1. I entirely agree, old boy. Now, what's cooking.

2. Well, old boy, I've come up here to take over

your company.

1. Good Lord, my bowler hat has arrived at last. Been the hell of a long time comin', too.

Relieving Tonight

2. No, no. I command "A" Coy of the 1st QOHS and we are relieving you tonight. Don't you know anything about it?

1. No, but that is not unusual in this bloody outfit. My line has been US for two days now and the wireless only works if I stand over the Signal Corporal with a gun in my hand. Look out! (Sapper bang). That always happens when people move around up here. Where did you park your jeep?

2. Just behind us here. I didn't see any signs up to warn me, so I thought it was OK.

1. I suppose you've just come from Blighty and think I've got nothing better to do than run round putting signs up to warn people about driving round the country side.

2. Well, I've always been told it's a good thing to do. Now let's get down to this relief.

1. OK. Here is all the dope you need. Nothing much to it—quite a snug spot. I suppose there might be just a slight chance of you not being more than 2 hours late?

2. Just hold on a minute, old boy. I want to know far more about it than this. I've got a long list here. I always keep it written in the back of my note book and then I'm quite sure I won't forget anything.

1. Blimey, I suppose you've just come from one of these ruddy courses. You'll be spouting a list of objects at me soon.

2. Well, not quite as bad as that, but I have been told by blokes who have been in action and also managed to pay just a modicum of attention on courses, that there is the hell of a lot in what they have learnt.

1. OK, shoot, but for God's sake make it snappy.

Patrol Habits

2. Well, to start at the beginning, can you tell me anything about the enemy, and particularly as regards his patrol habits and his reaction to movement.

1. Well, dealing with the last part of your question first—as you have just heard, he hates to see us moving about—just jealousy, I suppose. Then with regard to the first part, so far we haven't actually had a patrol in here, but we've heard movement at night.

2. Has he got any minefields?

1. Yes, our reconnaissance patrols ran over some there (point in map) last night—but they appeared to be scattered mines.

2. Right. So far so good. I've had the main enemy position given to me already by your Intelligence Officer. Now, how many men have you in your Company HQ and also in each platoon?

1. Now, what on earth do you want to know that for? I've got about 78 dotted around here somewhere.

2. No, I must know the exact amounts because if I have more than you I shall have to warn my fellows to be prepared to dig extra slits as soon as they arrive.

1. OK, we'll find out. Sgt. Major! (Enter CSM)

CSM: Sir?

1. Sgt Major, let me know at once exactly how many chaps we have and where they are.

CSM: Well, in Company we have 11. 7 Platoon 21, 8 Platoon 26 and 9 Platoon 22. That doesn't include any of the cooks or CQMS, Sir.

1. Right. Does that answer that one? (Exit CSM).

2. Yes, thanks, now perhaps you can point the platoon positions out on the map or the air photo and I'll take a walk round later on.

1. Yes, here they are. 7 here, 8 here and 9 here. We are there.

2. Well, that seems OK. Now, how does that fit in with the companies on your flanks?

1. "B" Company are on our left with their right platoon there and Company HQ straight down this track running down there and "C" Company are on the right with their left platoon here and Company HQ in the corner of that field over there.

Fire Plan

2. Have you got a Company fire plan, and, if so, do these flanking companies link up with you?

1. Of course I've got a company fire plan. Here it is. I spent hours arguing with the other company commanders getting it tidy. You will have to learn that you must liaise with the chaps on both flanks.

2. Now, with regard to Artillery and your defensive fire and defensive fire/SOS tasks—just where are these and how do you call for them?

1. All marked on that ruddy map—together with wireless code names and a light signal for the defensive fire/SOS.

2. What sort of communications have you?

1. Well, we have line—at least it's laid and that's about all you can say for it. I've also got an 18 set and, pro-

vided it's cleaned properly, it works. I've got also a 38 set to 8 Platoon. I suppose you will be taking over our line, but will be supplying your own instruments?

2. Yes, that's quite normal, I believe, and saves a lot of time with line parties in the dark. Now, what communications have you got to your Observation Posts?

1. Oh, yes, I'd forgotten them. Well, I've got my own Observation Post in 8 Platoon area which is always manned by day and they use a 38 set. Also, I've got a gunner Observation Post over on the left which again is manned by day only and, of course, I can get him on my 18 set and I've also got a line to him.

2. Now, what's the form at night—not too many bloody patrols or anything fancy, I hope?

1. No, it's fairly simple. We have one standing patrol out on that bridge you see marked there, and the remainder of the company are on normal night manning. Both the flanking companies have standing patrols out too where you see them marked on the maps. I've got mine on the phone which they take out at last light with them and bring in again in the morning, of course.

2. What about reconnaissance or fighting patrols?

1. Well, we did have a couple of heavy nights of it. The Brigadier was sweating on getting a Division, so we tried to get some dope to lay on the Divisional Commander's breakfast table. However, we achieved nothing except the few mines I mentioned earlier; someone else got the Division and so it's pretty quiet now.

2. Oh, I see. Good. Now, have you got a bearing board?

1. Bearing board? What the hell's that? Sounds like something to do with

saluting?

2. No, it's a board or sheet of paper on which you keep all bearings of enemy dispositions, gun flashes, etc. You ought to keep one, you know.

1. Yes, I suppose I should, but I've always thought it ruddy nonsense. However, if you want one I'll get it made up by my 2IC at once. Like all 2ICs, he has got nothing at all to do.

2. I take it your company fire plan here has got the positions and tasks of the PIATs and 2-inch mortars on it?

1. Funnily, enough, it has. The PIATs, of course, have been sighted to tie up as much as possible with the anti-tank guns.

2. Well, that seems fairly tidy. One point I forgot about—when we were on communications. How are the runner routes from platoons to here and from here to Battalion HQ?

1. Not too bad at all—only 8 Platoon is a bit tricky, hence the 38 set. It's a piece of cake from here to Battalion HQ and only a matter of 500 yards.

2. Now what about anti-tank guns and mortars? It looks to me as though the ground in most places is damn near tank proof.

Guns and Mortars

1. Yes, it is, except over by 9 Platoon in that gully there and we've got a section of our own 6-pounders in that area—there is also a section with B Company on the left and a 17-pounder troop with C Company on the right. The mortars are working as a platoon and have a static Observation Post in B Company area. I can always get Mortar Platoon HQ, of course, on my 18 set.

2. Now, after my rather unfriendly treatment by the enemy on arrival, I suppose you are pretty careful about vehicles in your area?

1. Of course, that is about one thing the CO is really hot on and the only vehicle I've got up here at all is my jeep.

2. OK, that's quite plain. Now, before we get down to the actual relief itself, the last point I have is the most important—the men's food and how do you work it?

1. Well, we are doing it under battalion arrangements and a hot meal comes up each night—also they get breakfast before first light. The middle day meal is cold, of course, and comes up and is issued with supper. The men manage to make themselves a brew in the middle of the day, but you must warn them about movement and smoke.

2. Oh, well, that's all quite normal. Now, what about latrines?

1. Latrines? Oh, God, I suppose you want to relieve yourself now? Have you been on a hygiene course as well—four sheets, both sides and all that?

2. No, I haven't, but we must look after chaps—if you haven't got decent ones I must ask you to fill in those you have and we will dig new ones when we arrive.

1. Right. I'll see that's done and the old areas properly marked.

2. I don't think there are any other points—now for the actual relief. All guides are being arranged for by Battalion HQ, who are also seeing to lighting and taping the route, so we have nothing to worry about until my chaps arrive here. Then our party really starts and it must be our object to get as out quickly and as quietly as possible and let your chaps get out the same.

1. All sounds very nice, but it never bloody well worked out.

How It Is Done

2. Well, I know it can work and this is how we will do it. When my fellows arrive at this Company HQ, I want you to supply guides here from each platoon, then they can be lead straight off—my company will take over 7 Platoon from 7, 8 from 8, etc. As my Platoon Sergeant will already be here

and know the platoon positions, all they have to do when my chaps arrive is to make sure that all my section commanders take over in detail from yours. Then your chaps can get out of their slits and mine get in.

1. That seems to be OK so far. What next?

2. Well, as soon as the Platoon Commander is satisfied, he can release your platoons who come in here and report their relief complete. My fellows will, of course, stand to 100% until you are right clear—in the same way that yours will be standing to when we arrive.

1. Yes, of course, that's quite normal—now what about my standing patrol?

2. Well, I shall want them to be in position as usual and as soon as my fellows are in I will send out a patrol to relieve yours who can then come in. I'll want a guide here, of course, for them too—and the NCO who will be on there tonight from my company will be on the advance party too, this afternoon.

1. Yes, that looks pretty easy, but there is one thing which is worrying me—what happens if Jerry attacks whilst this relief is taking place. I mean, who is going to command the show? Remember, both your company and mine will be in the area.

2. Well, I think it had better be you—you see, you know the area so much better and this sector remains your responsibility until relief is complete.

1. OK, but we must have something laid on just in case, so we'll definitely say, "I take command." I'll get my CO to confirm it with yours. Now, is there anything else?

2. Yes, one point—a big one. I don't want any transport moving about in the area whilst the men are moving about and I therefore suggest that until my men are in their trenches

and your men clear, that no transport comes up. It's the easiest way of avoiding useless casualties.

1. Right, I can easily fix that with Battalion HQ. We'll say no transport forward of there until I get through Battalion check point on my way out.

2. Good, well just one last thing—all these points I discussed with you I shall pass on to my Platoon Commanders in detail, but naturally there are still a few more things they still want to know on the platoon level. Would you therefore make quite certain that your fellows have all the answers ready for them when they come up? Of course, I expect the men in the

advance parties will have found out most things. Now, if you'll excuse me I'll take a quick look round.

1. OK, but what about a cup of tea before you go?

2. No, thanks, I only drink "cawfee."

Points to Bear in Mind Are:

1. As incoming Command in whatever level, insist on a proper take over—don't let the other fellow throw the job at you.

2. Always keep on you a written list of the things you want to find out about. Don't rely on your memory when on such an important reconnaissance.

3. Have a sound, workable system for the actual relief—nothing laid down.

NEW SECRET WEAPONS

(U.S. Army Ordnance)

The Army recently disclosed a number of its ultra-new weapons to a gathering of newsmen at Fort Myer, Va. Some of the items are so new that they have not yet gone into production. Among the material shown were:

1. The Army's largest mobile anti-aircraft gun using fixed ammunition, the 105-mm weapon. It weighs 46,000 pounds, has a muzzle velocity of 3,000 feet a second and can send its shell to 46,000 feet. The gun can be controlled manually or by the T38 anti-aircraft director.

5-Mile Range

2. A 10-inch mortar with a range of more than five miles and a firing rate of a round every two minutes.

3. The 8-inch, 41-ton howitzer with a range of 18,500 yards mounted on an M4 tank chassis.

4. The 155-mm. "Long Tom" gun tube mounted on an M4 tank chassis. This weapon fires a 95-pound shell to a range of 25,400 yards and is operated

by a crew of 8 men.

5. The new 43-ton M26 General Pershing tank with a long-barreled 90-mm gun firing a shell with a muzzle velocity of 3,750 feet a second which can penetrate 14 inches of armor at 300 yards.

6. A 90-mm anti-tank gun that can defeat armor 8 inches thick and destroy a Panther-type tank at 6¼ miles.

7. Radar aircraft-detection sets that can spot an airplane 120 miles away.

8. A radio detonator that will fire mines by remote control as far as 20 miles away, on land or sea, by dialing a combination as in making a telephone call.

9. A new type floating bridge of hollow aluminum beams so light they can be placed by hand and so strong they will support 50 tons.

10. An electronically - operated locator for keeping anti-aircraft searchlights automatically trained on enemy planes.

THE ART OF MINE WARFARE



(By Brig. B. K. Young, C.B.E., M.C.,
in *Army Quarterly*).

A Comparison: Breaching a minefield and forcing a river are two comparable military operations; both entail the most careful planning and co-ordination by the staff; co-operation must be real not only amongst all arms and the Air Force but also between the staffs and technical advisers at the headquarters of the commander of the operation. The part of the Air Force throughout preparation, planning and execution is of vital importance.

Minefields and rivers are both obstacles of varying degree to men, wheels and tracks; the common factor is width. For mines the comparable details are: the density and the types, i.e. the proportion of anti-personnel and anti-tank; for rivers: the depth, the rate of flow, the type of river bed and banks.

Obstacle to Infantry

Thickly strewn anti-personnel mines, like deep or swiftly running water, are an efficient obstacle to infantrymen on their feet; a river or more than fordable depth and a belt of anti-tank mines are equally obstacles to tanks. A fordable river is like a minefield which has a limited number of both types of mines. In a river hidden rocks or boulders, unsuspected mud, shell craters or deep pools will cause casualties to infantry and tanks, just as will the anti-personnel and anti-tank mines of a minefield.

The worst obstacle is the deep wide river, which can be likened to the fortress type of defence where there has been time to lay minefields of all kinds and description in great depth and profusion; again, just as assault boats must be provided, so a gap must be cleared to allow the infantry to form a bridgehead in order to cover the more difficult task of making a way across for wheels and tracks. Minefields, like rivers, cannot be allowed to halt an advance; anti-personnel mines must be in considerable profusion before they will stop determined infantry.

Before he can decide on his plan a commander faced with an obstacle — water or minefields — must assess the probable number of casualties that the forcing of such an obstacle will cause and balance it against the advantage he will gain from a successful assault. To make this mental balance sheet complete, he must also know the degree and type of obstacle.

The British Army has much past experience of river crossing on which to draw and the system of intelligence, reconnaissance and patrol for this operation is well established; the casualty-causing value of mines has been

learnt by bitter experience during the progress of this war, as has the method of finding out about enemy mines and minefields. The latter demands of the individual a very high standard of knowledge of enemy mine technique and types of enemy mines.

The similarity between river and minefield extends beyond the actual dispositions of the forward troops; it covers the whole machinery of control and organization of all supporting weapons and the traffic problems that arise when these weapons must eventually move forward through the defiles formed by bridges over rivers or lanes through minefields.

Initially, traffic has to be limited, given priorities and harboured suitably with a view to its eventual forward movement. Signal communications from bridge or minefield lane to the headquarters controlling this movement are essential. Air or anti-aircraft cover may be required for these artificial defiles; arrangements for dealing with casualties to wheels and tracks that may block the defile are vital; maintenance of the defile must be planned. The whole business is a complicated staff problem which repays rehearsal and upon which the final success of the attack will depend.

Some Lessons: How can the mine nuisance be abated and the delay and casualties which mines impose be reduced? Obviously where minefields have been extensively used it may be necessary to plan, rehearse and launch a full-scale attack with all its attendant machinery for minefield breaching. But what about the more open fighting in the follow-up, the pursuit or the approach to a major defensive position? Mines, both anti-tank and anti-personnel, will be met with for an absolute certainty. Some very definite lessons can be drawn from the experiences gained to date.

"Mine Sense"

The slogan "Dig or Die" was the outcome of casualties caused by bombs, shells and bullets. Similarly, where mines are concerned, the cry must be for "Mine Sense." This must be the slogan: "What to do and what not to do with mines." All ranks must have a real knowledge of the A.B.C. of the various mines—what they are, how to recognize them, likely places where they will be found and the few essential Do's and Don'ts. Ignorance is inexcusable; in war there is but rarely a second chance.

Picture the most forward Infantry Section advancing up a hedgerow, a favourite place for the enemy to site anti-personnel mines; add up the probable total number of such forward sections all moving forward on an Army front. Can each such section have a Sapper or two with it to deal with mines? Obviously not, or the Divisional Engineers would be so dispersed that concentration for some essential task such as a major bridging operation would be totally impossible without grievous loss of time. The answer is that every man must deal with his own mine in the same way as he has to wade or jump a small stream. Mine warfare is an all arms, indeed each man's responsibility.

Two Principles

Never forget the two immutable principles governing the use of mines: lay them where that which they are to stop may and can come; lay them under fire and observation, otherwise they will be picked up more or less at leisure. Add to these two principles the invariable rule that whoever lays mines must either record and report all that he has laid, or alternatively, when he advances pick them all up again.

Never leave an uncharted and unmarked minefield of

ONE FOR THE BOOK!

You think it can't happen? Read this! It's an extract from a report received from a Canadian central training school on two candidates who were sent to a course at this school:

"The standard of candidates still left something to be desired, as is shown by the results of 12 failures. The two classic examples on this course were Cpl.— and Cpl. —. These two unfortunate soldiers arrived here without any money so that they could not get their long hair cut, and in order that they might shave before going on parade the School had to supply them with razor blades.

"One of them was such a poor physical specimen that every time he stamped his foot on the Parade Square his equipment fell off. He managed to get 7 out of 100 marks and although they both went back looking smarter and cleaner than when they arrived here, we do not feel that they derived any great benefit from the Course—and they nearly drove the instructors mental."

The names of the candidates and the unit are withheld, as it would serve no good purpose to reveal them. But this extract contains a lesson for all units sending candidates on courses. Too often units send personnel they can spare, and not necessarily personnel likely to get the most good out of the course.

Prospective candidates should possess a good grounding in the course they are going to take. And it goes without saying that they should have a decent standard of physical fitness. If they do not possess these two basic qualifications, their time and the time of the instructors is too often wasted.

your own behind you without making sure that you have done all you can do prevent friends from being caught by it. If you have laid 100 mines and mean to pick them up, don't be content with picking up 99. It is the hundredth that will cause a casualty. We have lost many men, tanks and vehicles on our own mines through failure to carry out these precautions.

Lastly, to be forewarned is forearmed. As for every other form of intelligence work make sure that the

machinery exists. If all troops are to get the earliest possible news of new enemy methods or mines then such information must be broadcast; to enable that to be done the finder who is in the forefront of the battle must report back his find at once, and this report must be helped on at each and every stage of its journey back; new mines, fuses, etc., should be sent back at once for examination, but one caution — see that such exhibits have been rendered safe first! Intelligence and Research are essential to defeat enemy mines and devices.

RADAR STORM DETECTION

(This article was written for CATM by Dr. J. S. Marshall, of the Canadian Army Operational Research Group.—Editor.)

Weathermen have a weakness for cartoons about weathermen. There is one such that shows a group of forecasters huddled over their synoptic map. But one independent soul is off by himself, looking out the window and informing any who care to hear that "in case it interests any of you, it's raining like hell."

A very real point is involved. The forecaster depends on a limited set of samples: observations of half-dozen-odd weather variables made hourly at stations a hundred or several hundred miles apart. Radio sondes (transmitting weather balloons) and radar-followed wind balloons provide valuable information about the weather aloft, but at still fewer stations and less frequently.

Finer Pattern

All the data is precise enough, and from the large-scale synoptic map so produced the forecaster does an amazingly good job of forecasting on a similar scale. But he can hope for detail only on that scale, and storms occur on a much finer pattern. "Scattered thunderstorms" — yes. But just where? With bad luck, right on the airways; there's no sure telling, and so aircraft must be grounded just in case.

Comes Radar Storm Detection, and the situation with regard to detail is quite changed. Radar sees rain, sees it to ranges of over 100 miles. It sees big drops best, and the big drops denote strong updrafts and so bad flying. Thus the radar display serves as a storm map, constantly up-to-date, of an area extending out 100 miles in all directions from the set. Strictly speaking, one should say "rain map" rather than "storm map," for it is rain, not cloud or electrical activity, that reflects

the radar waves. But turbulent conditions dangerous to flight produce heavy rain and large drops, and so the signals from such regions are the strongest.

The radar display shows aircraft locations, of course, as well as storms. One can picture the flight controller of the very near future with such a display in front of him, showing the exact locations and motions of storm areas AND aircraft. Add static-free communication by VHF or FM radio to that arrangement and it becomes attractive in the extreme.

Remote Radar displays are not yet numerous, but radar storm charts are already in use, transmitted by code over special telephone circuits from a small number of "Stormy Weather" stations to all major air stations close enough to be interested, i.e., within about 300 miles.

Coding and decoding each takes two or three minutes, so that the charts as seen by the weathermen and controllers at these stations are between five and ten minutes out of date. Further, the precise detail of the storm structure shown by the radar is lost in this type of transmission. A good picture of the distribution and development of storm activity is provided, however—a picture which, by comparison with other charts, is detailed indeed.

Precision Method

So that's Radar Storm Detection: a precision method of locating storms and following their development. It is not a forecasting method nor is it primarily a forecaster's tool. Like the man looking out the window, but with long-range X-ray eyes, it tells exactly what's happening at the moment by way of rain storms.

NIGHT TRAINING

(This article was extracted from a U.S. Army precis. The lessons it teaches are so good and are carried out in such a graphic manner that CATM is passing along the ideas for the information of Canadian Army officers.—Editor.)

The Battalion marches in by Companies 15 minutes after dark and the Companies are seated two platoons abreast. Left to right (facing down range) are A.B.C. and D.

When all are seated the Lecturer begins:

"Good Evening, men." (Good evening, Sir!)

"Before we start tonight's instruction, I am going to ask you an honest question and I expect an honest answer. Would you prefer, instead of being right here on this beautiful and starry night, to be seated somewhere on the New England seashore with your arms around a beautiful girl?"

(Chorus of "Yes, Sir").

"I'm glad to hear that response. It shows you have already been giving considerable thought to our subject of instruction, which is Night Operations.

"Although you can't see it, we are overlooking (Defendam) Field Firing Range, where various demonstrations will be given in just a few minutes. Before we go any farther, let me warn you that the success of the demonstration depends on your absolute silence.

"We are going to present to you a show that we hope will be always interesting, sometimes sensational and dramatic, and at all times instructional. It is a show that civilians couldn't get into for love or money—and you can't get out of for love or money.

"At night you are living in another world. Objects familiar in daylight take on strange and grotesque shapes. Distances are deceiving. It is a world in which terrifying sounds may represent no danger whatever and in which seemingly innocent sounds may be death creeping up on you.

"There will come a time, not many weeks from now perhaps, when you will be on a hillside such as this, actually in the face of the enemy under night-time conditions. You may be an output observer or a member of a listening post trying to detect enemy movements by means of sound. You may be part of a reconnaissance or combat patrol moving into the enemies' own territory. You may be in a foxhole on a defensive line. In any of these instances your life will depend on your ability to hear night sounds and, having heard them, to interpret them, to attach the correct meaning to them.

"So tonight we are presenting a series of demonstrations we hope will

RADAR STORM DETECTION

(Continued from Page 36)

What will happen a few hours later remains as the forecaster's problem. The radar charts help him with this, and in a way peculiarly different from his other observations: instead of sample data at a point, the radar charts give rain data complete over an area. For data on his other variables, temperature, humidity, pressure, wind, he

must rely on his scattered ground observers and his more widely scattered upper-air stations. He needs many more—can't have too many. But in giving a briefing about existing conditions, he can be precise: "In case it interests you, it's raining like hell, exactly there, and there, and over there!"

help you in your future interpretations of night sounds and sights. Well, to begin with, is this business of interpretation a strange and difficult task? Is it something strange and new to you?

"No, certainly not! You've been doing it all your life—the bang of the paper against the front door means that you have only one more hour to sleep. The clop-clop of the milkman's horse means that breakfast will be ready in 30 minutes. Or late at night the meshing of gears of the late bus tells you that it isn't midnight yet.

"To cite a more specific example of the interpretation of night noises: You are lying in bed half asleep, when suddenly from half way down the block, about Bill Smith's house, you hear the sound of an auto fender scraping the side of a stone wall, at the side of a drive way. Do you say to yourself, 'Hmm, metal scraping stone?' Of course not! You instantly and automatically **interpret** that sound. You say to yourself, 'Well, Bill had one drink too many at the Country Club tonight.'

"Or still another case in which you are able to make an accurate estimate of a situation by interpreting sound. You are seated on a lounge with the girl friend and are rather . . . er, at close quarters. Suddenly you hear coming down the hall some firm and determined footsteps. Oh, Oh! You know what **that** is, it's the girl's mother on a night reconnaissance patrol. What do **you** do? You retreat hastily to a previously prepared position at the other end of the lounge until the danger has passed, at which time you return to your original position and resume your operations.

"So you have already developed your ability to interpret sounds to a

great degree in civilian life. Now we'll transfer it to your present occupation of being a soldier.

More Night Training

"How important this particular skill is from a military standpoint has been emphasized over and over again in the messages sent back by commanding officers in combat zones. 'Give the men more night training,' these messages warn, 'teach them to find their way around and fight efficiently at night.'

"The men of this Battalion have already some night training. You have been on bivouac and learned to locate your own area for occupation under cover of darkness. You have practised marching in formation in the dark.

"Now you will be shown how to observe night sounds and sights, how to judge and most important of all—to interpret their meaning.

"In front of us at 100 yard ranges from 100 to 1000 yards, inclusive, are men who will now transmit to you the familiar sound of the working of the bolt on an M1917 rifle. Remember that your enemy will be using a bolt operated rifle. After operating the bolt each man will light a match to show you where he is.

"First, listen for the sound at 100 yards."

Demonstration

(On this cue, the officer operating the phone orders a bolt to be struck and a match struck at 100 yards. The lecturer now says, "Now 200" & with the orders being transmitted by phone each time, through 1000 yards.)

"Now to get an idea of night distances, let's have each man on the 1000 yard range hold up a lighted candle."

(At this time, by phone order, 10 lighted candles at 100-yard intervals are simultaneously held aloft.)

"There they are, and at night that string of candles stands out like the

great white way.

(Candles are extinguished.)

"So, now you can see how the tiny flame of a candle shines brightly at the distances of half a mile or more at night. But a light even smaller than that can give away your position in a bivouac area at night—a cigarette light for example. Let's have the glow of a cigarette appear in the darkness."

(This order is transmitted by phone and a lighted cigarette is held aloft at each 100-yard interval.)

Smoking Forbidden

"You can't see all of them, but you will observe that the one that appears to be 700 or 800 yards away shines clearly. **Now** do you understand why cigarette smoking is forbidden in tactical situations and bivouac areas?"

(Cigarettes are extinguished.)

"At night you will hear the fire of various enemy weapons and after which you will see the muzzle blast, revealing their position. And by little experience in calibrating your ears you can tell almost exactly the distance at which the weapon is located. Remember these two facts! Light travels at the rate of 386,000 miles per second, which is to say instantaneously. Therefore you see the muzzle blast the second the weapon is fired. But sound comes lumbering along at only 1100 feet per second and the sound does not reach your ears until later. How **much** later tells you the distance of the weapon from you. For example, at 2200 feet you see the muzzle blast of a rifle instantly, but it is two seconds before you hear the sound of the shot. Or, if that man were to fire his rifle at 1000 yards, how long would it take the sound to reach you? That's right. About three seconds.

"Well, let's watch the muzzle blast and listen for the sound now while the ten rifles out there are fired one after the other at ranges of 100

through 1000 yards. Remember that for the first two or three hundred yards the flash and the sound will be almost simultaneous because of the short distance, but after that there will be more and more noticeable intervals between flash and sound."

(The order is transmitted and one after the other the men from 100 to 1000 yards fire a blank round.)

"All the sounds we have studied up to this time have been the well known click of the bolt and the obvious report of a blank round going off. But in combat you must accustom your ears to the sounds of various types of military equipment or activities. By means of a thorough knowledge of these various noises you can tell pretty well **where** the enemy is in the darkness in front of you and what he is up to.

"Let's test our skill at identifying a few sounds common to military operations. We'll all remain silent, so we can pick up the sounds. You decide in your own mind **what** the noises are and how far away it is, then I'll call on a few trainees to give their opinions and we'll see how well we agree. All right, here's the first sound."

(At the phone operator's command, two assistants at 250 yards begin work with entrenching tools.)

"Now, let's see what the sound was. Private Smith of A Company—how did you identify it and at what range?"

"Private Jones of B Company, do you agree with that identification?"

"What do you say about it, Private Murphy of C Company?"

"Well, you were all pretty close. That was two men using entrenching tools at 250 yards."

Process Repeated

(This same process repeated in the identification of the following sounds in their order.)

USE OF ARTILLERY

(From an article by Lt. Gen. A. W. Allfrey in "Aim," army magazine of the British Middle East Command.)

The following are ten points which we should all remember when considering the use of artillery:

1. Never report that you are being shelled by your own guns until you are absolutely sure beyond all doubt that it is so.

2. It has been found that when information is scanty about the enemy, the best method of getting our own infantry on to the objective is usually to fire a barrage. This has little killing effect, but enables our own infantry to get up to the objective without being heavily shot at.

3. Many people will tell you that a barrage gives away surprise. This is quite true, but even so it is better to have one rather than to launch an attack with inadequate support, as this will invariably fail. The loss of surprise can be overcome to a certain extent by guile.

Use of Smoke

For example, if the gunpower permits, barrages can be run where no attack is taking place, or smoke can be used in order to deceive the enemy as to the actual direction of attack. Or again, before an attack starts in earnest

a barrage can be run on to the objective with no one following it, and then can be lifted off the objective to encourage the enemy to man his defences.

After a short pause a crash can then be brought down on the enemy defences to inflict casualties on him. If this is done several times the enemy will not know whether a barrage does in fact herald an attack or not.

4. In order to save ammunition, the start time for the infantry has sometimes been selected in No Man's Land. This always leads to trouble, as the forming-up of our infantry is liable to be interfered with. It is far better to select a start line well inside the country we control and ensure a tidy start.

5. The barrage should be moved forward at such a speed that the infantry can easily keep pace with it. The object is to place the infantry within assaulting distance of the objective fresh enough to cover the last hundred yards or so as fast as conditions permit. In order to do this it may be necessary to have a pause, or pauses, short of the objective to allow time for the infantry to get their breath.

NIGHT TRAINING

(Continued from Page 39)

Chopping wood at 300 yards.

Rattling mess gear at 200 yards.

Cough at 300 yards.

Single shots, on command, at 500 and 800 yards to test calibration.

Clicking of M-1 sights at 50 yards.

"Now you have heard the faint sounds of the M-1 sights, you realize that it is often necessary to attune your ears very delicately to pick up minute

sounds. Let's have silence while we all listen for the next sound. Hold your breath if you can."

(After a breathless wait of one minute, two sticks of dynamite are set off about 50 yards in front of the class.)

"That was a pin dropping at 1000 yards—a couple of pins. Take a break."

(A ten minute break is taken in place.)

CLEAR THE LINE!

(ATM)

Line communications can make such a vital contribution to the battle efficiency of the units they serve that troops of all arms must be taught, in their own interests, to do everything they can to safeguard them at all times. Every officer and man must be alive to a sense of personal responsibility in the matter.

Recent reports from overseas have made it clear that the significance of line and cable communications is not always appreciated. There have been instances when damaged lines have fallen across the road and been torn to shreds by passing vehicles, while men have stood by without lifting a finger to throw the lines clear. From the point of view of training, it is just as important

that lines damaged beyond repair should be thrown clear of roads as it is that working lines should be safeguarded. Unless such action becomes second nature to every soldier, it will be impossible to make drivers understand that they must never deliberately run over signal lines.

Overhead Cables

It is equally important to protect overhead cables, and any vehicle with a high superstructure must be driven with care in order to avoid fouling them. One formation has gone so far as to issue the crews of certain vehicles with two poles, each with a hook on the end, and trained them to catch and raise lines clear of the vehicle as it passes beneath them.

USE OF ARTILLERY

(Continued from Page 40)

6. It is essential that our infantry really do understand and believe that the safest place during an attack is as close up behind our own barrage as possible. The enemy will then have little time to man his defences before our infantry arrive on the objective.

Defensive Fire

7. Before an attack starts, arrangements must be made for defensive fire and SOS tasks to protect our infantry when they arrive on the final objective. If this is left until the arrival on the objective it will never be done tidily, whereas a pre-arranged plan can be adjusted without much difficulty if the objective is only partially captured.

Enemy Mortar

8. Directly we arrive on the objective, one of our chief dangers is the enemy mortar. By study of dispositions and air photos, every effort must therefore be made to neutralize the enemy mortars, particularly during the period immediately after the arrival on the objective.

9. You can expect your gunners to use ammunition freely when it is necessary. During slack periods, however, no more guns than are necessary should be used for a task, in order to economize ammunition which is difficult to produce and move.

10. Anti-aircraft guns can often be used with great advantage to assist infantry.

To Have And To Hold!

You **CAN'T** lose by keeping your Victory Bonds because they are the safest investment in the world.

You **CAN** lose by cashing them in to "invest" in some Get-Rich-Quick scheme.

During the First Great War many thousands of persons lost their hard-earned savings through various swindling methods. Business is determined to do everything possible to prevent this happening again.

Do your part! Before you invest, investigate when you are urged to cash your Victory Bonds for "investment" in an unknown proposition.

TANK AGAINST FLAME-THROWER

(U.S. Tactical and Technical Trends)

The Japanese recognized the flame-thrower as a weapon designed primarily for assault operations against pillboxes and similar fortifications, but, fighting almost entirely on the defensive, they lacked an opportunity for this offensive employment of flame-throwing equipment. As a result the Japs stressed its use as an anti-tank weapon in defensive warfare.

An example of this tank-against-flame-thrower conflict, which usually resulted in defeat for Japanese troops, came from the only Japanese effort to use a flame thrower reported in the Leyte campaign. In this instance, elements of U.S. forces were held up by a Japanese road block during an advance along a Leyte highway. The approach to the road block was protected by groups of foxholes and machine-gun emplacements dug into the bank along the side of the road.

Two Killed

A tank was sent along the road to reduce the Japanese positions. As the tank approached the road block, a single Jap stepped out on the road with a flame-thrower. A Japanese officer, waving his sword and urging the attack forward, followed the flame-thrower operator. It was evident that the flame-

thrower operator had not been properly trained in the use of his weapon. No attempt was made to approach the tank quietly or unobserved, although the ditch along the road could have been used. Both the operator and the officer were killed before the flame-thrower was fired.

Japanese interest in flame-throwers has been evident in the amount of equipment of this type found abandoned in Burma, where they were forced, apparently by economic and technical limitations, to use inferior substitutes for their standardized flame-throwers. The standard Japanese Army flame-throwers are the Model 93 and Model 100, which are very similar in design and operation.

The standard Japanese flame-throwers do not have a constant pressure regulating valve and as a result only the first burst of flame reaches the maximum range of 30 yards. The pressure drops with each succeeding burst and forces the operator to expose himself to return fire by advancing on the target to deliver successive bursts of flame.

FRANGIBLE BULLETS

(U.S. Army Ordnance)

In a new gunnery training program, plastic frangible bullets are fired at specially armored and equipped P63 Kingcobra airplanes so that gunners in bombing planes may improve their marksmanship by shooting at "live" targets.

With gunners blazing away at them just as they would against attacking enemy fighters—pilots of these Kingcobras make daring passes from every angle. When bullets hit the plane's armor-plated skin, the plastic pellets splatter harmlessly and a large light in the nose blinks on for two seconds and then off again, like a pinball machine, telling the gunner that his aim has been accurate.

Score by Radio

Approximately 110 microphone pickups located under the dural deflector plates on the fighter transmit electrical impulses for the signal, while an additional automatic recorder in the P63's cockpit tabulates all hits so each gunner can be radioed his score.

The shatterable bullet is of lead-plastic composition molded and baked like a clay marble and is tough enough to withstand the rugged treatment of a machine gun yet so brittle that it pulverizes upon impact. It can be inserted in a caliber .30 shell casing with a minimum powder charge and, despite a muzzle velocity of 1,360 feet a second, will not puncture a piece of thick glass beyond 200 yards.

MEDICAL ORDERLIES

There is a tendency to select men at random for duty as medical orderlies. But such duties are by no means light, and medical orderlies should be absolutely fit and have a real interest in their work.

LAST IN SERIES



Here is the last poster in the series of Musketry Coaching posters prepared under direction of the Directorate of Military Training. The "Shoot to Live" caption draws the attention of the soldier the fact that unless he knows how to handle his rifle he may not come back.

This poster should be tacked up in a prominent place where it will catch the eye of all ranks. While a wide distribution of posters in this series has been made, those interested in obtaining a complete set may obtain them by forwarding a request to NHDQ, attention DMT.

Distribution of the "Shoot To Live" poster will be made shortly.

SAFE WATER

The practice of looking upon running water as being safe for drinking is a dangerous one, and all water should be treated.

PASSING IT ON

BAYONET DUMMY FAGGOTS

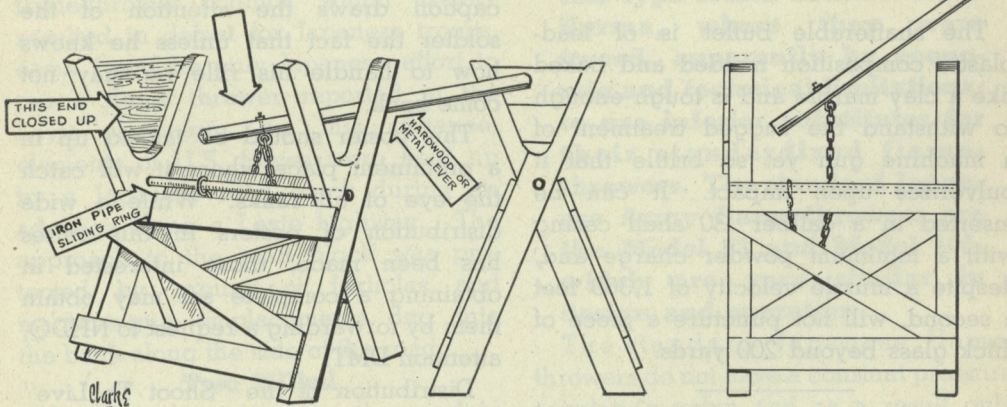
The majority of instructors have had irritating experience with bayonet dummy faggots that continually work loose and hold up the lesson until they are replaced. A14, CITC, Aldershot, N.S., has found a solution: a device built something like a saw-horse that is used to hold the faggots tight while they are being wired.

The accompanying photo and sketch show the construction and use of this device. Without it, A14 found it difficult to wire faggots tightly enough to provide adequate resistance to the bayonet thrust; furthermore, a tightly-wired bundle of faggots lasts longer than one loosely tied.

Using this expedient, two men can wire a good number of faggot bundles in a day. As the photo shows, the bar and chain are used to hold the bundle



tight while wire is bound around both ends. It's an idea worth trying.

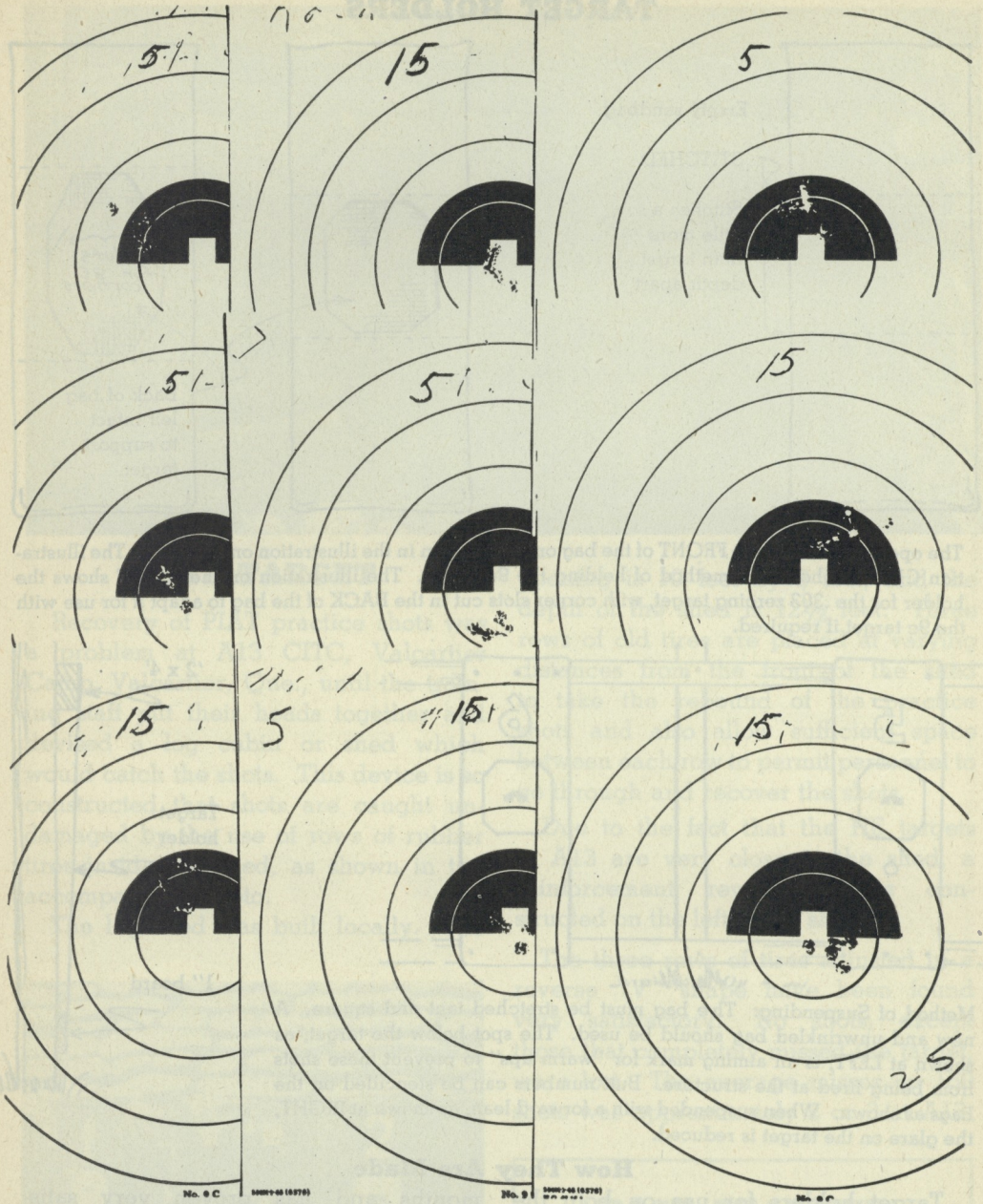


TRAINING TIP

An innovation in the training of Recce units was adopted by 4 (R) Recce Regt. (4 Princess Louise Dragoon Guards), Canadian Armoured Corps, while at camp at Connaught Ranges this summer.

This unit was seen firing Bren LMG from the turrets of armoured reconnaissance cars at moving targets. Fire control was obtained through the use of No. 19 wireless sets and fire orders were given from a control vehicle.

RIFLE SHOOTING



The accompanying layout of targets shows some of the possibles obtained this summer by No. 15 Platoon at No. 32 CI(B)TC, Peterborough, Ont., consisting of recruits in Basic Training. The "shoot" in question, part of the regular syllabus, took place during their fourth week of training and consisted of "grouping" practice with .22 rifles.

The following figures speak for them-

selves:

Platoon strength: 37 recruits.

Scores: 36 x 25 and 1 x 20.

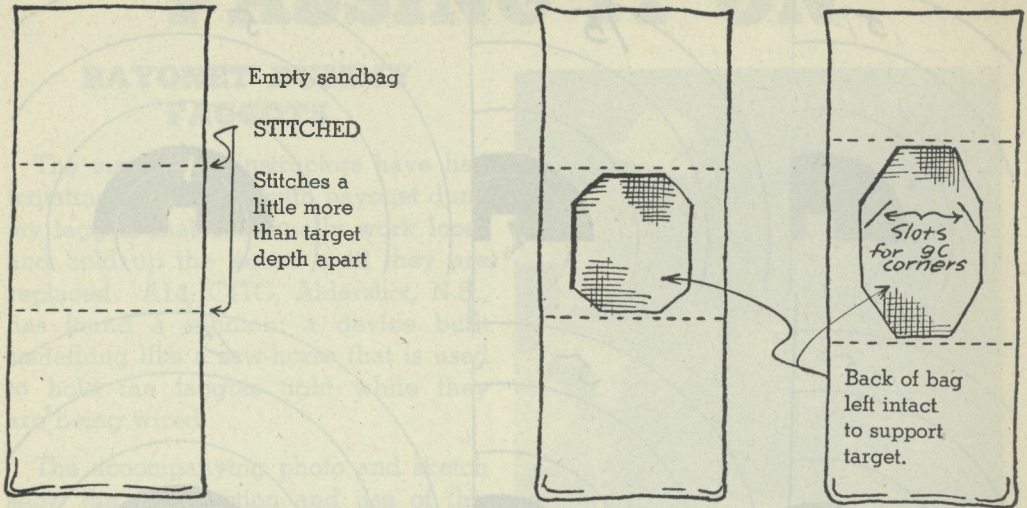
Possible score: 25.

Average: 24.86 out of 25 (point average).

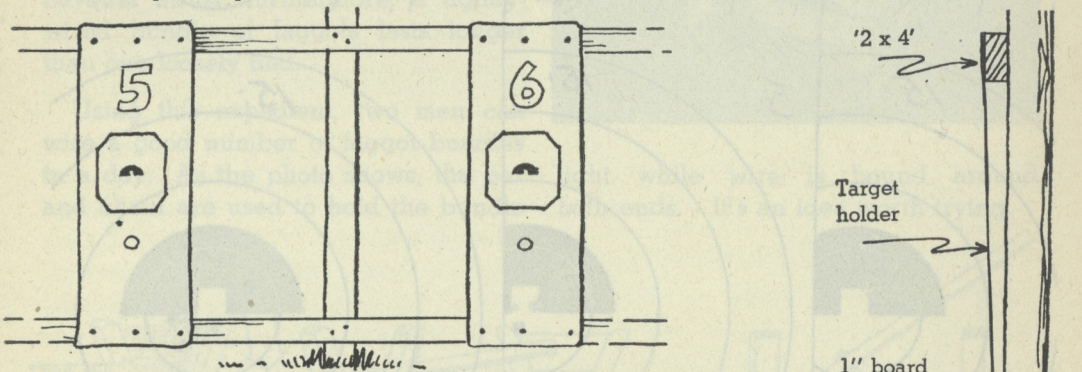
Efficiency: 99.46%.

CATM feels this record will take a lot of beating. If your men can beat it, send the facts to the Editor.

TARGET HOLDERS



The opening is cut in the FRONT of the bag only, as shown in the illustration on the LEFT. The illustration CENTRE shows the method of holding the 9c target. The illustration on the RIGHT shows the holder for the .303 zeroing target, with corner slots cut in the BACK of the bag to adapt it for use with the 9c target if required.



Method of Suspending: The bag must be stretched taut and square. A new and unwrinkled bag should be used. The spot below the target, as shown at LEFT, is an aiming mark for "warm ups" to prevent these shots from being fired at the structure. Butt numbers can be stencilled on the bags as shown. When suspended with a forward lean, as shown at RIGHT, the glare on the target is reduced.

How They Are Made

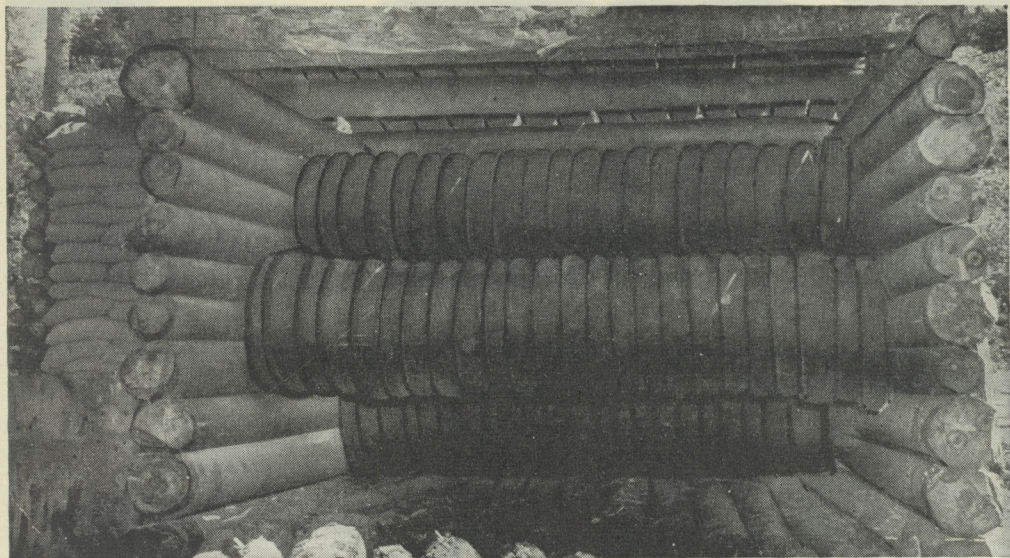
Target holders for use on both the .22 and .303 30-yard ranges have been devised by No. 26 CI(B)TC, Orillia, Ont., as shown in the accompanying photo and sketches.

Sandbags are used to make the target holders, the bags being stitched to leave openings for the targets to be slipped in.

No. 26 reports this type of target holder has been in use for several

months, and has proven very satisfactory. It eliminates the use of pins or clips to hold targets and makes it unnecessary to constantly renew target backs.

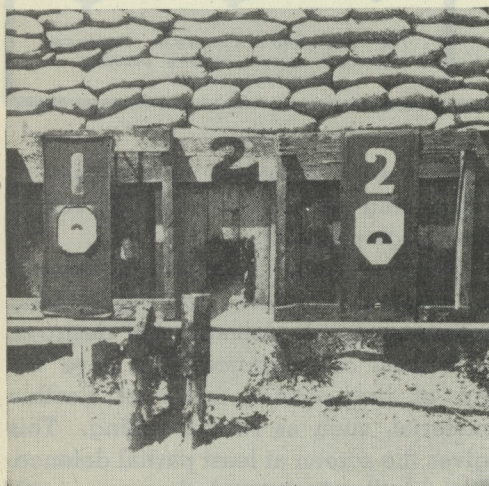
No. 48 CI(B)TC, St. Johns, Que., also uses sandbags as target holders, targets being fastened to the bags with clothes pegs. A description of this type of holder was published in CATM No. 51, June 1945.



PIAT TARGET

Recovery of PIAT practice shots was a problem at A13 CITC, Valcartier Camp, Valcartier, Que., until the training staff put their heads together and devised a log cabin or shed which would catch the shots. This device is so constructed that shots are caught undamaged by the use of rows of rubber tires inside the shed, as shown in the accompanying photo.

The log shed was built locally. The



Target holders are shown here, with the 9c target on the left and .303 zeroing target, for which a larger opening must be cut, on the right.

opening is 10 feet by 8 feet, and the depth of the shed is 12½ feet. Three rows of old tires are placed at varying distances from the front of the shed to take the rebound of the practice shots and also allow sufficient space between each row to permit personnel to go through and recover the shots.

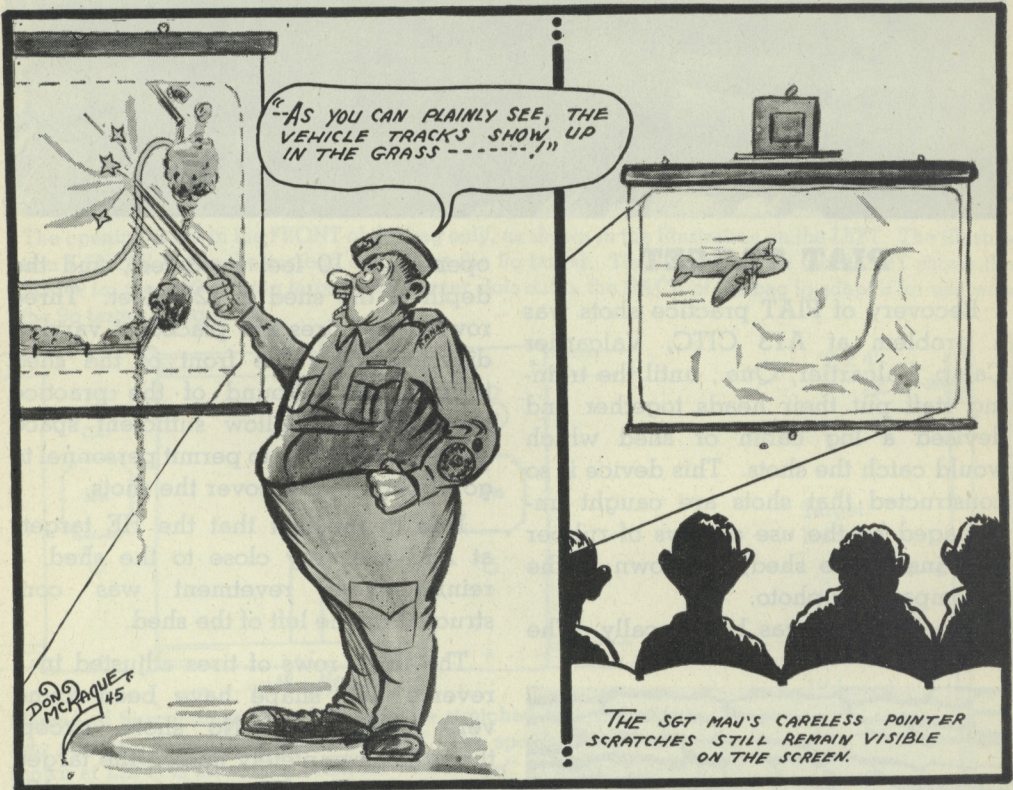
Due to the fact that the HE targets at A13 are very close to the shed, a reinforcement revetment was constructed on the left of the shed.

The three rows of tires adjusted in a reverse "V" shape have been found very satisfactory. No shots, except those that completely missed the target, were lost. The average misses on 150 shots was approximately 2 or 3 at A13.

PACK PRACTICE

*(By a British infantry officer in Burma.
Extracted from Current Reports from
Overseas.)*

Men do not carry sufficiently heavy loads during training. Reinforcements have found the loads that are carried in battle exhausting, because they were not used to them.



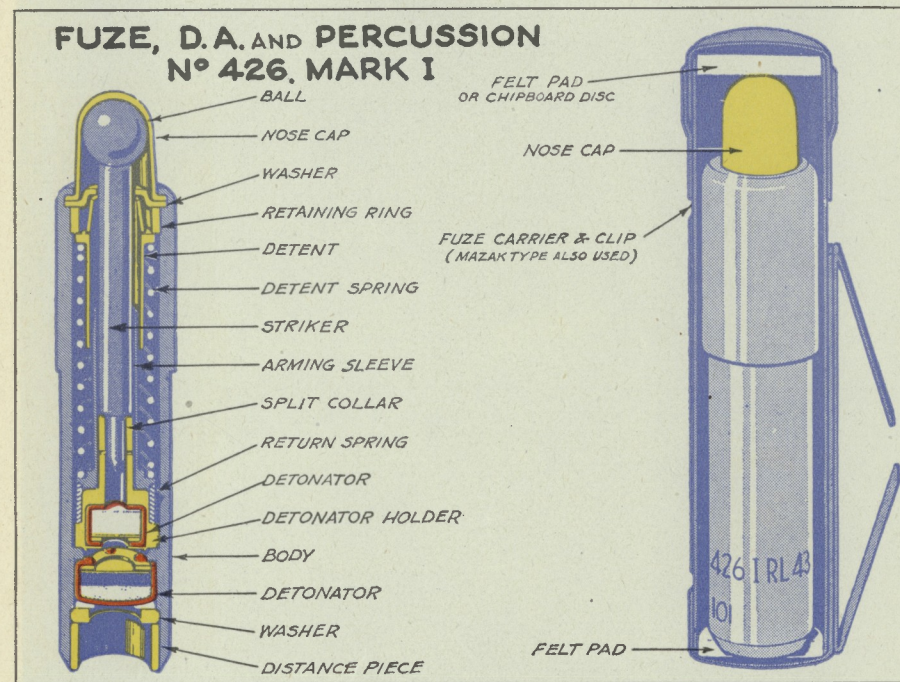
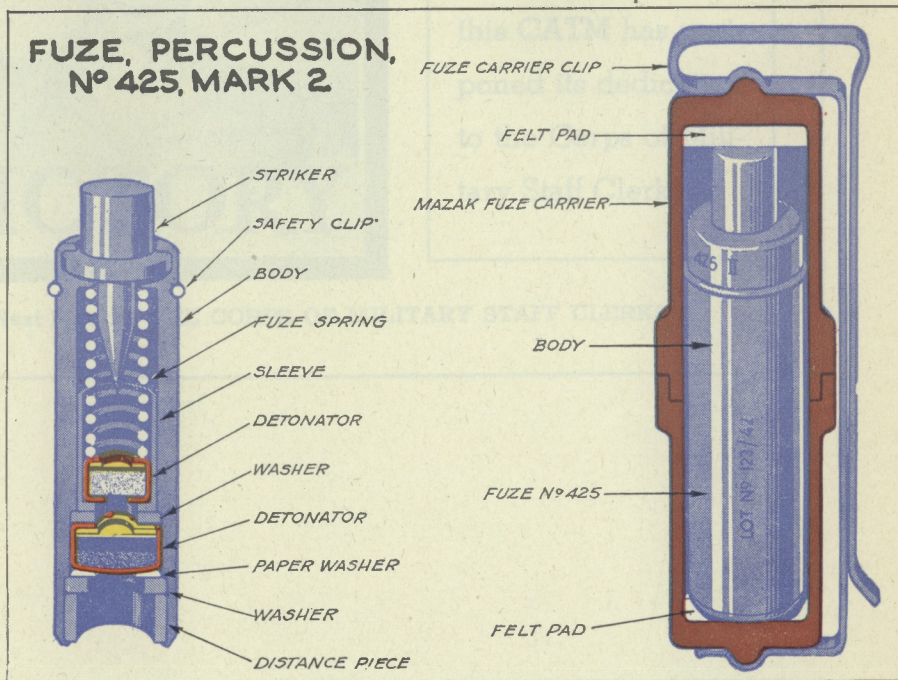
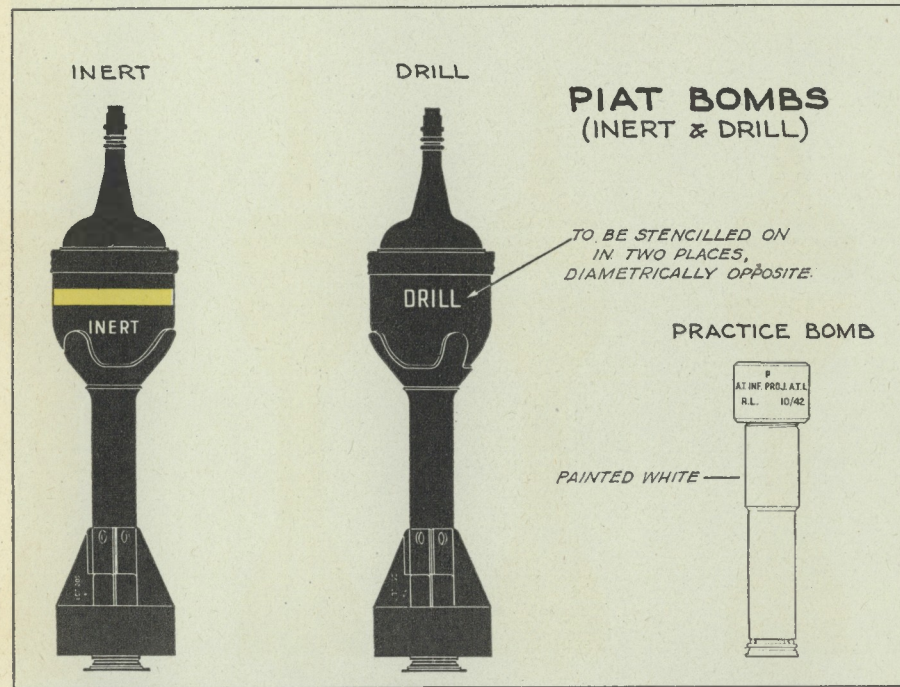
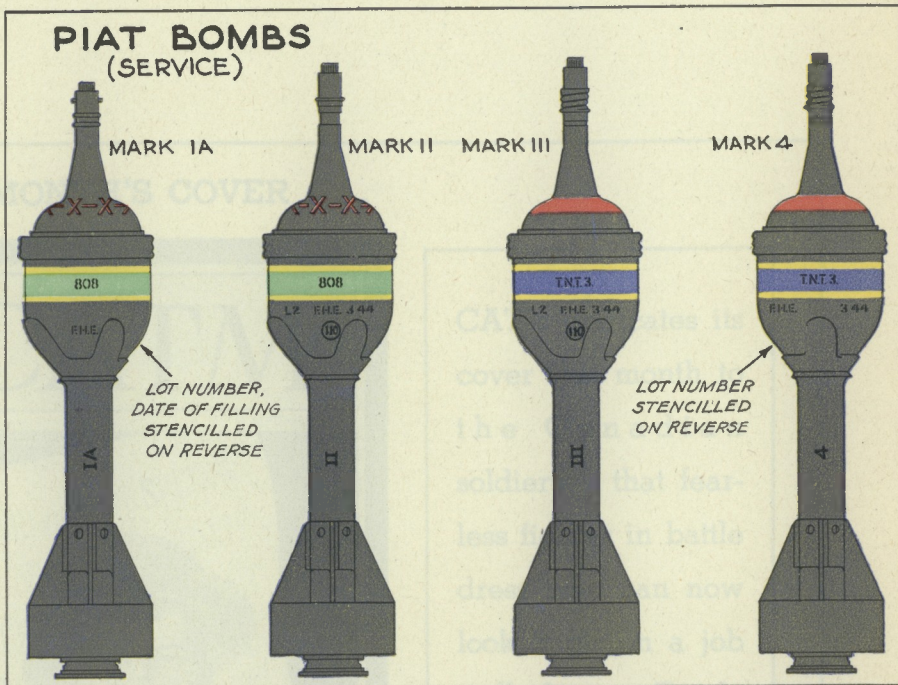
Certain lecturers apparently find it soothing to jab and poke at a beaded projection screen with a hard-tipped pointer. This may soothe the lecturer but it has the opposite effect on personnel responsible for the care and maintenance of motion picture equipment.

Every time a hard tipped pointer touches a beaded screen one or more of the tiny glass beads are almost certain to be dislodged. After a multitude of pokes and jabs, the glistening

whiteness is replaced by blotches of distracting grey which do not reflect the image properly.

Repairs cannot be made satisfactorily to beaded screens. So, the jabbing pointer not only damages but destroys.

A form of insurance is to have the tip of the pointer made of flexible material, such as rubber tubing. This gives the screen at least partial defence. Better still—don't touch the screen with a pointer!



NOTE: The above illustrations were specially designed to be cut in four sections and used separately in a reflectoscope (epidiascope.) This sheet may also be extracted and used as a poster for training work.

THIS MONTH'S COVER . . .



CATM dedicates its cover this month to the Canadian soldier — that fearless fighter in battle dress who can now look back on a job well done. To do this CATM has postponed its dedication to the Corps of Military Staff Clerks.

Next Month—THE CORPS OF MILITARY STAFF CLERKS

OTTAWA
EDMOND CLOUTIER
Printer to the King's Most Excellent Majesty
1945

21,000-9-45 (7884)
H.Q. 54-27-35-101
K.P. 42001



" NICE LITTLE KIDS , EH HERBIE ? "