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Military Training



TOWN CLEARING

This is an extract from a report on the 21 Army Group Operation "Veritable" which cleared the area between the Rhine and the Maas from Feb. 8 to Mar. 10, 1945. The report was compiled by the Directorate of Military Training, The (British) War Office, and CATM. reprints the extract from The War Office Infantry Bulletin.— Editor.

These notes are written on the experiences of a Battalion which has taken part in clearing two large towns, Gennep and Goch, against a determined and organized enemy. One town had been heavily bombed, but the other had not; civilians were evacuated from both. The lessons learnt show that the principles as laid down in Infantry Training, Part VIII, are sound so far as they go.

1. Planning:

(a) More than in any other operation, very careful and detailed planning is necessary before launching any unit or sub-unit into a defended town. Large scale maps, enlarged air photographs and particularly low obliques, are necessary so as to determine the key buildings upon which it is likely the enemy will base his defence. He does

not hold every house or factory but those from where he can obtain a good field of fire and particularly those from where he can stop any encircling movement to his rear.

(b) The ideal is for each section to be able to see exactly which buildings it is to clear before crossing the start line.

2. Principles:

(a) It is essential that each sub-unit starts from a very firm base, has a small compact objective, usually a "key" building, of which the Commander has made a personal visual reconnaissance before starting.

(b) Within the rifle company, it has been proved that it is unwise to have more than one sub-unit working at one time and that the Commander of the succeeding unit or sub-unit must be right forward with the attacking Commander to see the results and carry out his reconnaissance. As always, too, a reserve must be kept to deal with the unexpected posts which suddenly come to life.

(c) The noise and echoes of street clearing are disconcerting and men must always be on the "qui vive" to try and locate the enemy—the most difficult factor of all. It is essential that they fight lightly clad and without the small pack and pick and shovel, which catch in window frames, cellar doors, etc.

A rifle and bayonet, the Bren, a liberal supply of grenades, stout hearts and a very high standard of leadership are all that are required. The degree of control that leaders must keep in these operations must be great. Individuals and sections must be kept to their objectives and not allowed to chase the odd German.

(d) It has indeed been learnt by bitter experience that town clearing is a tedious and most tiring operation which cannot be hurried.

3. Day or Night: It has been proved that even in complete darkness Infantry can seize a limited objective in a town and completely clear that area, provided it is kept small. Perhaps the best way to get a footing in a defended area is to rush it immediately the artillery concentrations lift in the darkness and catch the enemy whilst he is still below the ground. Large scale clearing operations are not possible in the dark as it is impossible not to bypass enemy—a principle—who come to life with daylight and cause damage and confusion out of all proportion to their numbers. Searchlights are not of any great assistance in a town.

4. Supporting Fire:

(a) Before zero the greatest weight of artillery is required, but at zero and afterwards it should lift from the objectives to the far outskirts of the town, as it is disconcerting to troops clearing to hear explosions in front of them; it also drowns the noise of snipers if fired in close support.

However well trained, in a street it is impossible to say with accuracy whose shell it was and the effect of a 25-pounder on a house is not sufficient to warrant its use in the close support of troops clearing a town. 4.2-inch mortars, on the other hand, are valuable, as the bombs reach the ground floor; they, because of their danger area,

naturally are best used on the back end of the town.

(b) Fire and movement by the Infantry remain as important as ever, and the 77 Grenade has proved its great usefulness to cover street crossings.

5. To Bomb or Not to Bomb:

(a) From the Infantryman's point of view, heavy bombing has every disadvantage and no advantage, unless carried out immediately before his assault. Then air photographs lose some of their value and the danger area for heavy bombs precludes the immediate rushing of the objectives as the last bomb falls.

Craters and rubble preclude the use of tanks, Crocodiles or Wasps and make the evacuation of casualties even more difficult; it makes the drill of clearing through the back gardens impracticable, and clearing houses from the top impossible. It also makes the enemy's tasks of hiding and camouflaging himself many times easier; his snipers always preclude the use of a bulldozer till very late in the operations.

(b) From our experience in clearing a town not bombed as against one that has been heavily bombed, there is little doubt the Infantryman would ask the airman to go elsewhere, particularly as he does not kill or even frighten the defenders the Infantryman is going to meet.



6. Enemy Methods: We have found that the Germans we have met, mostly paratroopers, have concentrated in, and fought from, the key buildings and then from the ground floors; only the odd Spandau and snipers have been up a storey or two. Booby traps were not met with in any large numbers; mines were, however, laid in and about all their demolitions, key road junctions and in some gardens, but the latter were usually marked.

7. The Results of Experience: Thinking back on our experiences, the points that we especially noted are perhaps:

(a) How slow an operation it is, and how quickly troops get tired.

(b) **The smallness of the objective a platoon can take for certainty.**

(c) The immediate effect of "flame-warfare"—this was no surprise, but the speed with which the enemy reacted was.

(d) The great additional difficulties which the after effect of heavy bombs makes for the Infantryman.

8. Principles for Town Clearing:

(a) Always plan to the last detail and brief each soldier visually if possible. Each man must know his particular role in the platoon "Drill".

(b) Start each operation from a very firm base.

(c) Never operate more than one platoon at a time within a company area.

(d) Keep your reserve ready, but don't keep troops hanging about waiting their turn under fire. Once down they are sometimes difficult to get up again.

(e) Limit your objectives severely and base your operations on the "key" buildings.

(f) Never, never by-pass an enemy post—this does not apply to "cut-off" troops if sent wide round the whole objective.

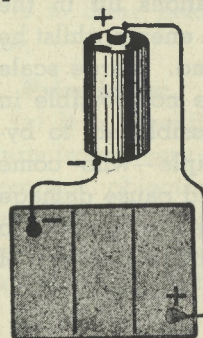
(g) Fire and movement applies as much as ever—use flame where possible.

(h) **Don't overload the soldier.**

(i) Pray that the troops are in great heart, eager to destroy the enemy in yet another German stronghold, for without the highest fighting spirit the best plans made by the leaders will be of no avail.

HERE'S A TIP

If the batteries in a flashlight burn out and new cells aren't available, it's possible to recharge them two or three times.

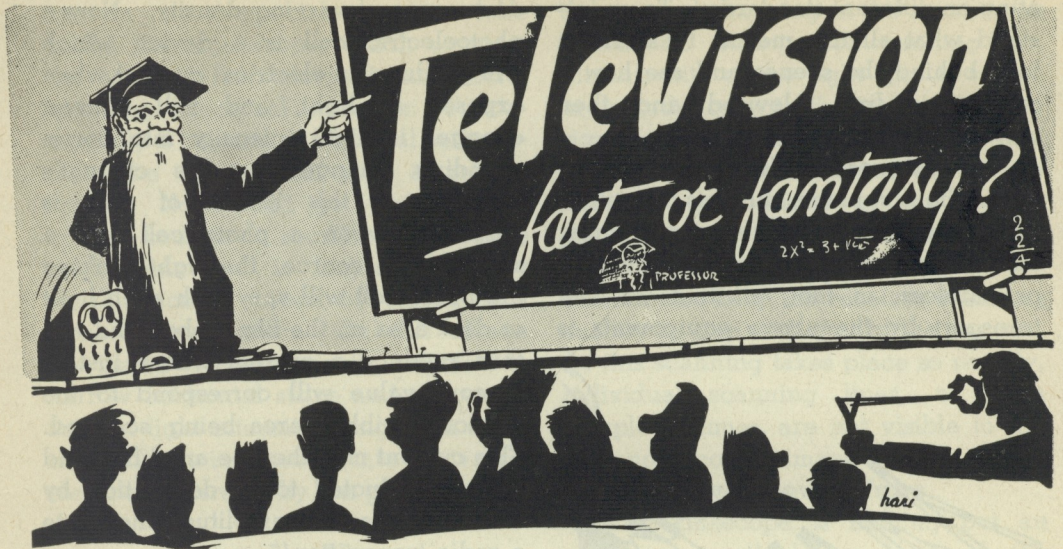


Ground the negative end of the cell to the negative post of a 6-volt battery or half of a 12-volt battery. Place the negative end of the cell directly on the negative post of the battery, or connect them with a piece

of wire; then connect the positive terminal of the battery to the carbon in the centre of the cell with a piece of wire. Time required for charging is about half a minute. The cell is good for about one hour's steady use.—

U.S. Field Artillery Journal.

Twice in World Wars, we gained the time to prepare from the fighting of our allies. Almost certainly we will never again get the same chance.
—Hon. R. P. Patterson, U.S. Secretary of War.



"Our subject for today will be Television," muttered the professor into his long, grey beard as he thrust his spectacles into his pocket and attempted to hook the case over his nose, pince-nez fashion.

"Television!" gasped the class; and half of them promptly fainted, while the remainder developed the screaming-meemies and proceeded to chew off their finger-nails, right up close to the elbow. Wildly fanning ears tried in vain to cool down super-heated brains below the fusing point.

"Tut tut!" said the Prof., as he climbed into his straight-jacket, "You lame-brains have been listening to malicious slander spread by anti-social technicians to prevent trade-secrets from becoming common knowledge. However, jealousy will get them nowhere; come with me and I'll show

you how de woiks woik! Er, uh, that is to say. . . !"

With that, he cast a loving glance at his pet oscilloscope, crouched faithfully by his side. The 'scope gazed back with its big, round, soulful eye and wagged its power cord contentedly. Thus reassured, he continued:

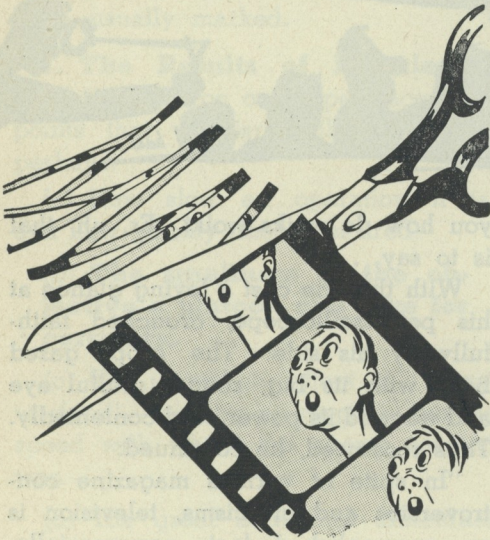
"In spite of various magazine controversies and criticisms, television is an accomplished fact, commercially, and is definitely here to stay. Certain essential technical requirements have been standardized so that receivers produced today will not become obsolete by next year. This is particularly important because, unlike ordinary radio reception, a television receiver must be specifically designed to receive signals from a particular type of 'camera' and will not function on signals produced by a camera oper-

The unlimited possibilities of television are scanned for the layman in this article prepared exclusively for CATM by the Directorate of Mechanical Engineering, NDHQ. In his concluding remarks, the writer deals particularly with the military applications of this science, including radio-controlled missiles and fighter planes equipped with television transmitters which pass the information on to a remote operator.—Editor.

ating on different standards. To understand what all this means, let's take a look behind the scenes and see how a subject is first televised and then viewed at the receiver.

Convert to Current

"In the first place, subjects or scenes, being somewhat large and lumpy, cannot be transmitted as such by wire or wireless; in fact, all that we can transport by the above equipments is



an electrical current. Hence, it becomes necessary to take our scene and convert it into an equivalent electrical current which will bear a direct relationship to the visual scene. Having once done this successfully, the current may be sent anywhere by wire or wireless and from it the scene may be reproduced where desired.

"The method of accomplishing this is called scanning and here, by analogy, is how it works. If the photo film is cut into very narrow, horizontal strips, it will be seen that each narrow strip ceases to be a picture and becomes merely a series of light and dark patches. If, when cutting the picture, we also fasten the right end of strip No. 1 to the left end of strip No. 2, etc., we can convert the picture into a long ribbon consisting of consecutive light and

dark areas of varying density. Now a photoelectric cell is a device which will produce an electrical current when exposed to light, and will convert changes in light intensity into corresponding changes in this current's strength. If this ribbon of ours is passed between a photo cell and a strong light source, the light striking the photo cell will vary with each light or dark area on the film ribbon and will thus produce a current whose instantaneous value will correspond to the particular ribbon area being scanned. This current may then be amplified and either conducted to its destination by a wire, or used to amplitude modulate a radio transmitter."

It's Easy

As usual, a heckler chose this embarrassing moment to leap to his feet and shout: "Yeah! So what! I can't see an electric current. How do we get the picture back?"

"That's easy," said the Prof., as he threw an aspirin into the waste-basket and munched thoughtfully on the carton.

"At the receiver end we could use this varying current to power a light source before which a similar narrow ribbon of sensitized photo film is being passed at the same speed as at the scanner. Then, when this film is developed, it will contain consecutive light and dark areas corresponding to the video signal current. If this ribbon is cut into sections the same length as those in the original picture, and if these strips are cemented together consecutively, one below the other, we will have our picture rebuilt. That's what they call doing it the hard way, but so far, no one has been able to cook up any easier method. However, the above system can be speeded up considerably by the modern equipment used in actual television, so let's examine it.

"The heart of a modern television

camera is a special vacuum tube called the iconoscope, which converts the scene to be televised into corresponding electrical currents. Fundamentally it consists of a normal cathode-ray tube mechanism plus a mosaic screen. Now don't get nervous, it's not as bad as it sounds. The scene to be televised is focussed sharply on the mosaic screen by means of a camera lens system. On this screen the image is electronically scanned in narrow horizontal strips and the variations in light intensity along each scanning line are interpreted into equivalent electrical currents by the photo-electric mosaic.

Scanning Lines

"The image is sliced into 525 scanning lines in order to show sufficiently fine detail and the process of scanning is carried out so rapidly that even a moving image is 'caught' in a stationary position, as if snapped by a high speed camera. This is necessary or the legs of a moving person would appear in a different position than the top of the body which was previously scanned. To create the illusion of motion, thirty 'frames' are scanned each second; the moving image being caught in a slightly different position each frame. This follows standard motion picture practice but is even better as sound pictures are projected at a rate of only 24 frames per second which is sufficiently fast to remove all noticeable flicker. The retentivity of vision of the human eye is actually what creates the illusion of motion.

"The video current output of the iconoscope is amplified and sent to its destination by either wire or wireless. At the receiving end, this current is again amplified and the picture is reproduced on the fluorescent screen of a kinescope vacuum tube (picture tube) by a reversal of the scanning process. A tiny spot of light scans the screen of the tube in synchronism with

the original scanning at the iconoscope or camera. Along each scanning line, the intensity of the light spot is varied in accordance with the incoming video signal so that all original light and dark areas of the camera image are faithfully reproduced in the proper position along each scanning line. Synchronising signals sent out by the camera also keep the receiver scanning exactly in step with that of the camera. As this scanning takes place so rapidly, individual scanning lines, or even complete frames, are not visible to the eye and a moving image appears.

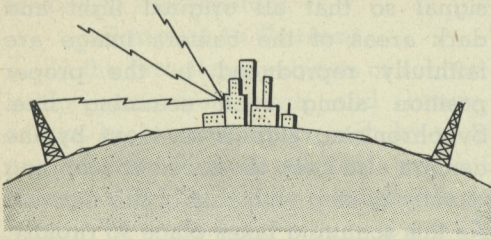
Overgrown Tube

"The kinescope is nothing but an overgrown cathode-ray tube of the same general type as is found in an ordinary oscilloscope, except that the screen is of a special material which outlines the image in white fluorescence instead of green. The screen diameters available vary from 5 to 20 inches, 12 inches being the most common. Indirect viewing is also available by using special magnifying mirrors which project the image onto a ground glass screen of dimensions comparable to the screens used for home movies. In either case the viewing room need not be darkened but the results will be much more satisfactory if this is done."

"Say, Prof.," said a student, "that's all very well, but the silent picture era is dead and gone. When I see the Jive Jumper's Jamboree televised I want to get hep to the beat; make with the music!"

"Well," said the Prof., "there you have two schools of thought. The American system is to use a second radio transmitter to handle the sound only. Frequency modulation is usually employed on account of its noise-free properties and its startling fidelity of reproduction. Of course, this also requires two receivers; one for sound (audio) and one for the picture (video). However, these two receivers are built

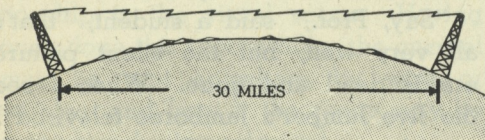
into one unit and use a common aerial and tuning dial so it isn't difficult. The British, on the contrary, use a tricky little idea whereby they can send



both sound and picture over the same channel. Of course, the sound quality doesn't compare with F. M., but is equal to present day broadcast reception and certainly minimizes the amount of equipment required at the television transmitter or receiver.

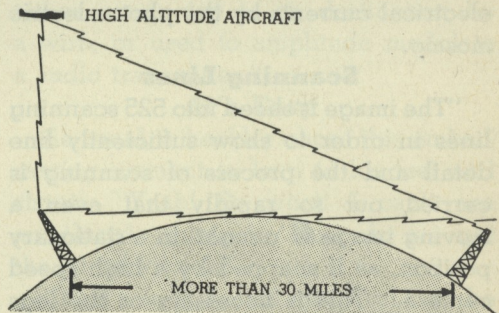
Good Image

"Modern commercial television produces an image that compares very favourably with a good quality photograph reproduction as printed in a modern magazine. It is not quite as clear as a good modern motion picture but is comparable to movies of about 12 years ago. For entertainment purposes, several cameras will be viewing the scene from different angles and the director can fade out one camera and fade in another in typical movie style.



The output from two or more cameras may also be mixed to produce a double exposure effect. Motion pictures may also be televised directly off the film through special cameras. Full colour television has been developed but there is still some controversy as to the best method of producing this effect so that it may not be offered to the public for several years yet. Three dimensional, stereoscopic television is also in the experimental stage.

"However, don't dash out and buy yourself a television receiver today in hopes of seeing programs from New York or Los Angeles; there are a few limiting factors to be overcome. Certain insurmountable technical problems make it necessary for television transmitters to use the very high frequency radio spectrum. Unfortunately, these high frequency waves, unlike ordinary radio, will not reach any appreciable distance beyond the visual horizon, so one must be almost within sight of the transmitting aerial before a television station can be received; the average



range being about 30 miles maximum with no interfering hills or structures blocking a line-of-sight path. Increasing the altitude of the aerials, though, will increase the distance to the visual horizon.

"One suggested solution is to have powerful television relay stations mounted in high altitude aircraft whose height would allow their relayed signals to be picked up over a greatly extended range. Another firm proposes to beam powerful television signals at the moon, with the assurance that the reflected signal will effectively cover an entire hemisphere"

"There is also a limiting factor to the wired distribution of television programs. The peculiar character of the video currents is such that they cannot be carried any appreciable distance by ordinary telegraph or telephone wires,

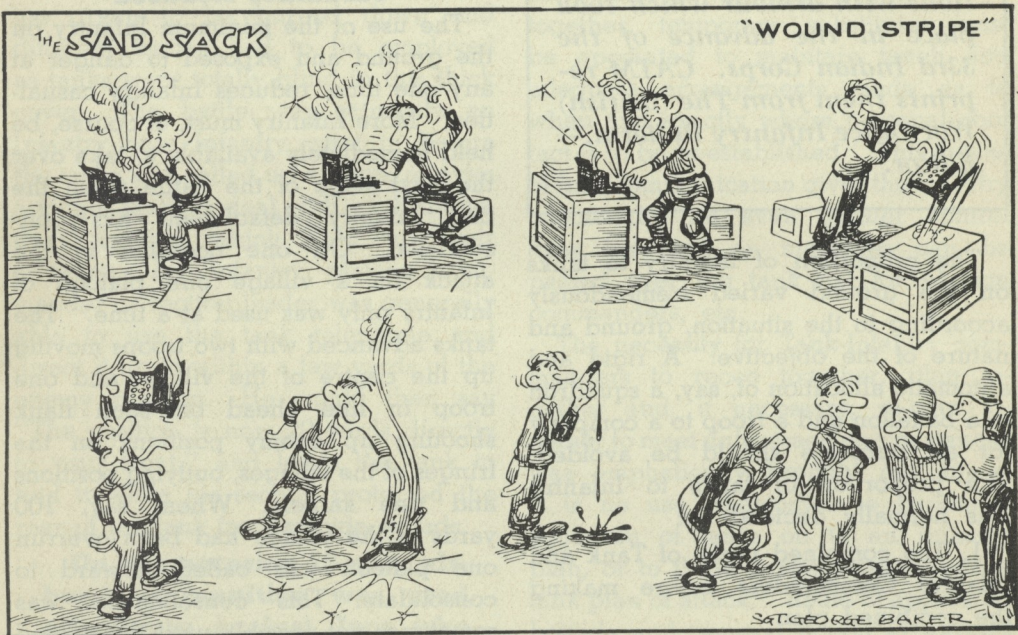
but must use a special form of coaxial cable which is extremely expensive. In fact it would be probably cheaper to build an automatic relay station every 30 miles than to lay cable. However, decisive action is being taken already to spread the distribution of television programs.

Unlimited Possibilities

"Apart from its entertainment or educational value, the military applications of television, present and future, are almost unlimited. During the late war, radio-controlled missiles were developed, capable of being guided to their targets with unerring accuracy as they were equipped with a small television transmitter so that a remote operator could see exactly what lay in the missile's path and could make the necessary corrections in course. This eliminated the need of having the

operator within sight of both the missile and target. Radio-controlled fighter planes have been sent aloft experimentally and have strafed targets viewed solely by a small television transmitter which passed the information on to a remote operator. Observation planes flying over a given area are able to televise back to field headquarters any scenes of interest. The actual possibilities of this amazing science equal anything that has appeared as flights of fancy in science fiction, and this is only the beginning. Television is only yet in a stage comparative of a model T Ford to a modern car."

With that, the professor tip-toed quietly from the room so as not to waken the class and hurried home to avidly devour the latest doings of Buck Rogers.



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

INFANTRY AND TANKS IN BURMA



Here is a summary of the lessons of Infantry-Tank co-operation learned during the Burma campaign and taken from an account of the operations with armour which took place in the advance of the 33rd Indian Corps. CATM reprints them from The (British) War Office Infantry Bulletin.— Editor.

The proportion of Infantry to tanks on the ground varied tremendously according to the situation, ground and nature of the objective. A rigid and automatic allocation of, say, a squadron to a battalion and a troop to a company for all purposes should be avoided. The proportion of tanks to Infantry was normally decided by:

1. The combined recce of Tank and Infantry Commanders before making the combined plan.
2. The ground factor affecting the possibility of deploying the number of tanks and/or Infantry.
3. The number of tanks available.

It was generally found best whenever possible to concentrate the maximum effort on one objective and postpone the second until the first had been dealt with.

Casualties Reduced

The use of the minimum Infantry on the ground and exposed to danger at any one time, reduces Infantry casualties. More Infantry must, of course, be held immediately available to take over the next stage of the battle when the first Infantry detachment has consolidated. On one occasion in the attack on a village one platoon of Infantry only was used at a time. The tanks advanced with two troops moving up the centre of the village and one troop in line ahead on each flank shooting up enemy positions on the fringes of the villages, outlying positions and tree snipers. When, say, 100 yards of the village had been overrun one platoon was called forward to consolidate. This consolidation was sometimes not possible until the second or even third attempt. If not successful the first time, the tanks had to neutralize the fire holding up our Infantry, and then asked the Infantry to make another

attempt. When one platoon had consolidated, the next platoon was called forward to take over the next sector of the village. On another occasion only one platoon of Infantry moved up in immediate support of two squadrons of tanks.

Whenever there was sufficient visibility, even in thick villages, tanks led the advance. Infantry kept close enough behind to cover the rear elements of the tanks with fire and the distance was varied according to the degree of visibility. Tanks must always cover each other with fire against tank-hunting parties. It was often proved worthwhile for the tanks to move up very close to artillery support and air strafing even at the risk of direct hits from 25-pounder shells.

Tanks Blind

After being killed in large numbers in defended village localities, the Japs started taking up positions in long grass outside village areas. The grass was too green to be burned down and different tactics had to be employed as tanks were totally blind in this thick cover. The battle was primarily an Infantry one; Infantry went in before the tanks and called up a troop, or even a single tank, to deal with each individual position which held up their advance. An Infantry platoon commander or section leader was generally able to use the tank telephone and direct it up to within a few yards of the enemy position. He would then say "The position is now 20 yards directly to your front," and leave the tank to find it while his section protected the rear of the tank from suicide squads.

On one occasion 75-mm. air-burst ammunition was used effectively against Japs who had run into long elephant grass for cover.

Infantry must not be held up by the slowness of the tank advance over

obstacles and difficult country. The following (intercepted in the "air") is an example of "teething" troubles between tanks and Infantry:

Infantry commander to higher formation: "I am sorry I am slow, but I am being held up by the tanks, who are very slow over this country."

Exasperated commander of tanks butting in: "Hell!—Am I your friend or your enemy?"

Infantry Commander: "My friend, I hope".

Tank Commander: "Then for the love of Glory don't say I am holding you up—get on without me until you bump strong enemy who do hold you up. I will find a way and catch you up somehow."

Personal Contact

Personal contact must be maintained between the Infantry commander and the tank force commander. In the event of either commander going off on a personal recce, if both do not go together, temporary substitutes must be appointed to maintain touch and adequate arrangements made as to when and exactly where personal contact is to be re-established. This means of intercommunication gives the Infantry commander an even greater control over his men as messages can be passed over the tank net for platoon commanders, etc.

The necessity for Tank-Infantry commanders to recce together, plan together and, if necessary, re-plan together to meet unforeseen circumstances was emphatically brought out again. It is no use whatsoever to impose a squadron of tanks on to an Infantry plan, or to throw a few Infantry into a tank plan of attack. Route of approach, bounds and general action at various stages of the attack must be mutually discussed and decided on if the maximum co-operative effort is to be achieved.

Nothing is more dangerous than inaccurate information, given in a confidential tone of voice by an officer who should be in a position to know. Officers must be converted to a religious principle that any information given as fact must be such that they could take an oath on it. Information drawn from other sources must be handed on as such.

Even information contained in official sitreps was generally verified by personal observation if it affected the immediate operation. The knowledge of the actual and accurate truth, even though scanty and incomplete, was found far more useful and safer than conclusions drawn even from official intelligence reports. Every effort must be made to gain such knowledge.

Armour in the Shan States: Both roads were mostly cut out of the hillside with a sheer drop of from 20-100 feet on one side and steep rising ground on the other and, almost invariably, with thick jungle on either side. It was seldom possible to turn a tank. Hence the use of armour was very limited, but the presence of tanks was a very important morale factor for our own troops, and helped to demoralize the enemy.

Again the Japs fought strong rear-guard action, siting many road blocks. These generally consisted of felled trees and large logs reinforced with sacks of rice, and they were surrounded by mines and 105-mm. shells with grenades tied round them and covered by a gun, either 37-mm., 47-mm., 75-mm., or 105-mm. Quarter-inch steel rope was sometimes tied across the road at turret-top level which in one case removed the wireless aerial of the leading tank.

The tanks normally advanced in line ahead formation echeloned if the width of the road permitted it. The

leading tank was responsible for destroyed road blocks and the remaining two tanks of the troop sprayed the trees with machine gun fire, one tank being responsible for one side and one the other.

The distance between the tanks whs usually 30-40 yards and the Infantry moved alongside the tanks, ten to twenty yards inside the jungle. Liaison was maintained by use of the tank telephone and verey lights were used to indicate targets. Observation of targets was extremely difficult in the very dense country; it was almost impossible to see where fire was coming from, and tanks had to be closed down as much as possible owing to snipers.

Forward Tank Officer: In these particular operations in very thick country forward tank officers proved invaluable. In many of the engagements the close, accurate and quick fire which supported the Infantry right on to their objectives could not have been provided without a forward tank officer. As a result of the presence of a forward tank officer with the leading company, there was not a single instance of a round falling amongst the Infantry, although the overhead covering fire was at times extremely close.

Planning: The necessity for careful and detailed planning was often brought out. It is better to delay "H" hour in order to complete plans than to put in an attack without the various supporting arms having their roles clearly defined. Time spent in planning is never wasted.

Victory in the War of 1939-45 was won not only on the battlefield, on sea and in the air, but in the workshops and factories of the Allied Nations.

—Rt. Hon. Oliver Lyttelton, Great Britain.

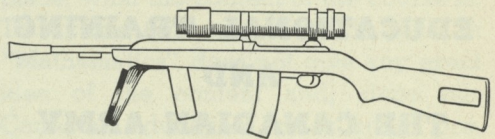
THE AMAZING SNIPERSCOPE!

(Reprinted from *The American Rifleman*)

The heavy blanket of night has been a source of friendly concealment for thousands of fighting men since the beginning of time. Ancient man developed the technique used by the hair-hunting Iroquois, who snaked their way to a besieged stockade while its night-blinded defenders vainly tried for a glimpse of the enemy before dawn's attack. An approach without sound remained as the only problem of such bloody-minded and body-painted tacticians.

This typical use of night's veil in black-out warfare remained unchanged until early in 1944 when, on the Island of Okinawa, the Nip caught the full force of our foot-soldier's new tool, the Sniperscope. Pictured on this page is the weird instrument, developed and completed late in 1943 by the Engineer Board at Fort Belvoir, Virginia. Its outward appearance is that of a swollen telescope sightmounted on a .30 M2

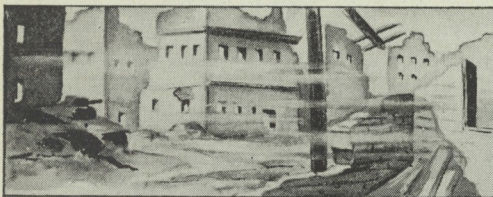
Carbine, which is also rigged with a low-slung spotlight. A heavy-duty cable passes from the scope to the rifleman's back, where it enters a power supply carried in a neat back-pack.



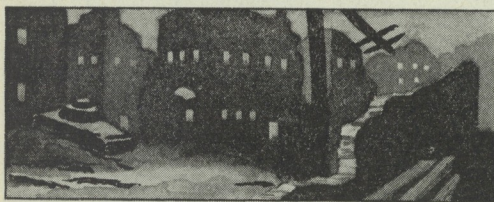
Sniperscope attached to weapon.

From the light source, or black "spotlight", infra-red light is projected on the enemy personnel and the reflected infra-red rays are picked up by the mechanism contained in the scope, to form an eerie, bright green image. In this manner the enemy is visible only to the man who peers into the scope. The enemy who is in plain view, and is using the naked eye, has no knowledge of the light's presence. At this stage, the rifleman is left only with the task of bringing his aiming point to bear on the particular bit of anatomy he wishes to perforate, and squeezing off his first "shot for record." If he is rushed and desires more action for his squeeze, a switch of a lever gives him full automatic fire.

The well-known and unpopular Japanese game of night infiltration was thrown for a serious loss when the numbers of 110-grain carbine pills mysteriously finding their way into yellow hide skyrocketed past old records. Approximately thirty percent of the Japanese small arms casualties in the first seven days of the Okinawa campaign are attributed to this weapon. Those figures make a nice citation for the Engineers of Fort Belvoir, who were able to confine such a deadly instrument to a total weight of about 28 pounds. Additional weight of this kind was welcomed by the already burdened infantryman.



Sniper's eye-view of street scene in daylight.



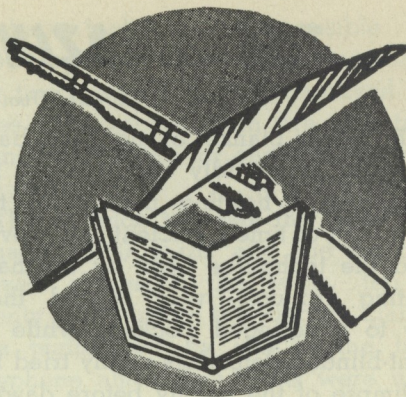
Same street at night without sniperscope.



After-dark view through sniperscope.

CANADIAN ARMY EDUCATION

EDUCATIONAL TRAINING AND THE CANADIAN ARMY



This article was written by Lt. Col. O. B. Rexford, former GSO-1 in the Directorate of Military Training, NDHQ, who was in charge of Educational Training for the Canadian Army. Since this article was written, Lt. Col. Rexford has returned to civilian life.

—Editor.

During the war, Education began to play a part in the life of the Canadian Army. With the cessation of hostilities, educational training in the period before discharge was an important factor in maintaining morale. Now that the educational programme preparing army personnel for demobilization has served its purpose, and education enters a new phase so far as the Canadian Army is concerned, what can educational training do for the Canadian Army in peacetime?

What education has to offer the Army depends to a large extent on just what goes to make up our Army. At the present time the Army is made up entirely of personnel with war service. Many of them hurried through their schooling or dropped out early to get into the Forces. Many of them, also, have been out of school for periods

varying up to six years or even more and have thus become "rusty" so far as a good deal of their formal education is concerned. That is the natural consequence of the war situation and it is a major factor in deciding what educational training can do for the Army.

Exacting Demands

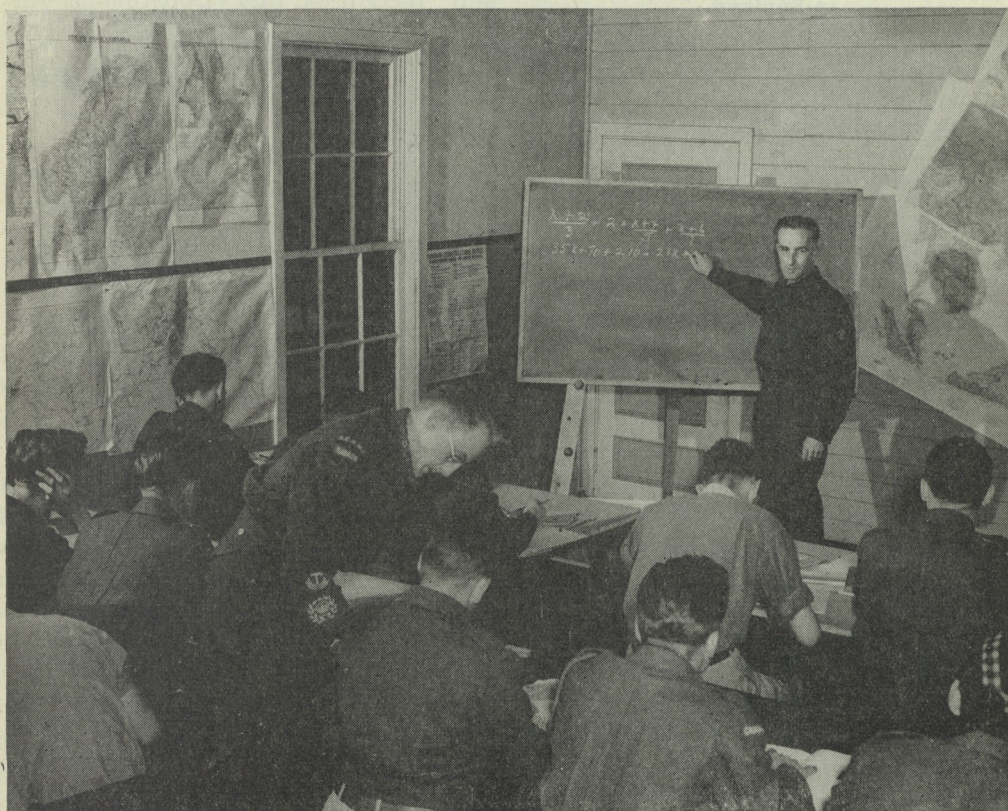
While Army personnel have grown somewhat "rusty" in this way, it is also probably true that the demands, which will be made upon the academic education of Army personnel as they perform their duty or undergo their training in the peacetime Army, have become more exacting. The Active Force will be a nucleus capable of rapid expansion in an emergency. That means that personnel of the Force must be expert in their Army job and many of them must understand their job sufficiently well to instruct in it. Whether it is Trades Training, Military Training or qualifying for NCO promotion, Education will have a job to do in providing necessary background so that the military job may be more efficiently done.

The problem of arranging this educational training is far from being a simple one. There is a good deal in educational training which is essentially civilian and quite out of line with other phases of military training.

Up to 1939 education in the Canadian Army was based on the British Army courses and was arranged to meet Army requirements only. The attempt to relate the various Army Certificates to civilian standards was a very difficult one and the result of this attempt not very satisfactory.

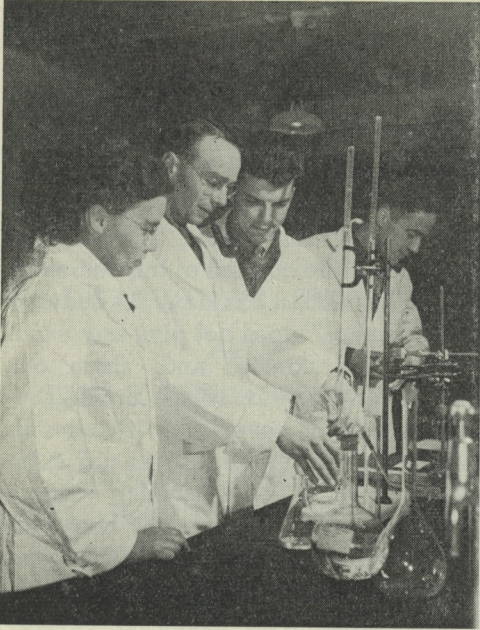
Now, however, the principle has been laid down that the educational work done in the Army shall be of a quality to warrant credit by civilian Departments of Education in Canada. This decision has the double advantage of setting an accepted standard for educational training in the Army and also of making it possible for men to go on from their educational work in the Army to civilian courses which

they may need for their Army work. But if a civilian Department of Education is to be asked to recognize educational work done in the Army as equivalent to one or other of their courses, there are several points on which they must have exact information. They must know, in the first place, what the content of the course is. To say that a man has done 30 hours in "Mathematics" does not give any exact idea of the content and, since our Canadian education comes under provincial control, even the expression "Mathematics, Grade IX" is not sufficiently exact. The Canadian Legion Educational Services courses, however, have a definite content and have been recognized for credit by Departments of Education. This group of courses will continue to be available to the



Canadian Army Photo

Medical Corps men take a lesson in mathematics.



Canadian Army Overseas Photo

Army students at work in a physics laboratory at Canada's Khaki University in England.

Army but any departure from this group of courses aggravates materially the problem of recognition by civilian authorities.

When the Department of Education has definite information on the content of the courses they still have other questions to ask. They have to know, for instance, the skill, qualifications and experience of the instructor. They have also to know the experience of the examiner and the conditions under which the papers have been written and marked.

CLES Courses

Experience has shown that the difficulties in the way of securing any general credit for classroom courses is so great that the solution seems to lie in the direction of using correspondence course service already set up by Canadian Legion Educational Services and recognized by Departments of



Canadian Army Photo

An instructor takes an army class in German.



Canadian Army Photo

An informal discussion group hold a session. These groups were sponsored by Army Education.

Education. Then classes organized on a tutorial basis can proceed at a rapid rate with the person in charge of the class assisting the individual candidate if he encounters difficulties but with the various papers and tests being sent to the correspondence examiner for correction.

An educational programme in the Army faces many difficulties in addition to this problem of civilian credit. As has been stated above, there is much in educational training which is essentially civilian and, therefore, not too well understood by the Army. This needs emphasis again in connection with the various supplies and materials which are necessary for a successful programme. Textbooklets, supplementary reading and reference books will be needed. This involves

the provision of a good educational library. Of course, other arrangements are also necessary, such as classroom accommodation, study room space with good lighting, etc. As soon as we get into the problem of study of the sciences, laboratory facilities become an essential part of the work. Maps, graphic charts and educational films are needed to round out the programme. The men working on these courses will, from time to time, need educational guidance as they go on with their studies. In other words, the educational programme requires, in its direction and administration, personnel with educational experience and a good deal of administrative ability.

A new development during World War II was the important place assumed

INFANTRY AND FREEDOM

This article discusses the supremacy of Infantry in battle through the centuries. It was written by Lt. Col. Stewart Blacker, inventor of some of the Infantry weapons in use today, and reprinted from the Infantry Bulletin published by the British War Office.—Editor.

During the last twenty-two centuries there have been three epochs during which the supremacy of Infantry on the battlefield has been challenged and even overthrown. In each case the instrument which has done this has been mobile armour.

Disregarding, for technical reasons, those "chariots of iron" which won the victory of Kadesh, we find that the first great menace to Infantry took the form of armoured fighting elephants.

These were the weapons of a totalitarian despotism, certainly oligarchic, with which Carthage beat the adolescent

Roman state to her knees and almost into the grave.

Rome was saved by the Roman Infantry handled by the tactical genius of Scipio Africanus. The decision came in Tunisia, at Zama, which by tradition is not far from Pont-du-Fahs.

Wide Intervals

Here Scipio, who possessed only a negligible cavalry, drew up his Infantry with wide intervals between their forward maniples. This forward body was composed of the Triarii, that is to say, of the steady older soldiers. Behind these intervals he posted bodies of Velites, which we may compare to the light companies of our Wellingtonian armies, and of native, presumably North African, auxiliaries.

When the Punic enemy set in motion his terrifying armoured attack, the hardened Triarii stood their ground, inducing the elephants to pass through their intervals, because animals usually avoid treading on men, except when themselves hunted. Upon this the

EDUCATION

(Continued from previous page)

in the various armies by discussion of current affairs and "Why We Fight". Though this discussion is best done by the Platoon Officer, yet the preparation of the material and the briefing of the Platoon Officer is a job for an expert. Education personnel have, as a general rule, carried out this work. In the Army in peacetime there will be a need for this discussion which will be at least as great as the need was in wartime. It is essential that Army personnel should have some understanding of the trend of affairs in their own country and of relations with other countries. It is also very important

that they should always keep in mind that they are citizens and have responsibilities of citizens.

What can educational training do for the Canadian Army in peacetime? In wartime education had the two-fold function—bringing every facility of education to the task of producing the efficient soldier, and the secondary function of providing spare time educational facilities. The functions, as I see them, have not changed with the coming of peace. Educational training still has a function to perform in the production of the better soldier and the better citizen.

Velites and auxiliaries shot at them broadside on with flaming arrows. It may be assumed that their flanks were practically unarmoured, vulnerable and indeed tender.

The elephants stampeded to the rear and never again do we hear of this arm in serious battle, except on a derisory scale, as at Plassey and under Claudius in Britain. It may be that a century earlier, Alexander used an analogous tactic to defeat the elephants of Porus on the Jhelum.

So Rome overthrew Carthage, and during six hundred years Roman Infantry made her the mistress of the known world.

This Infantry owed very little to their single squadron, that is Turma, of divisional Cavalry, and hardly any more to their artillery or engineers.

The matchless Roman Infantry was founded on personal freedom

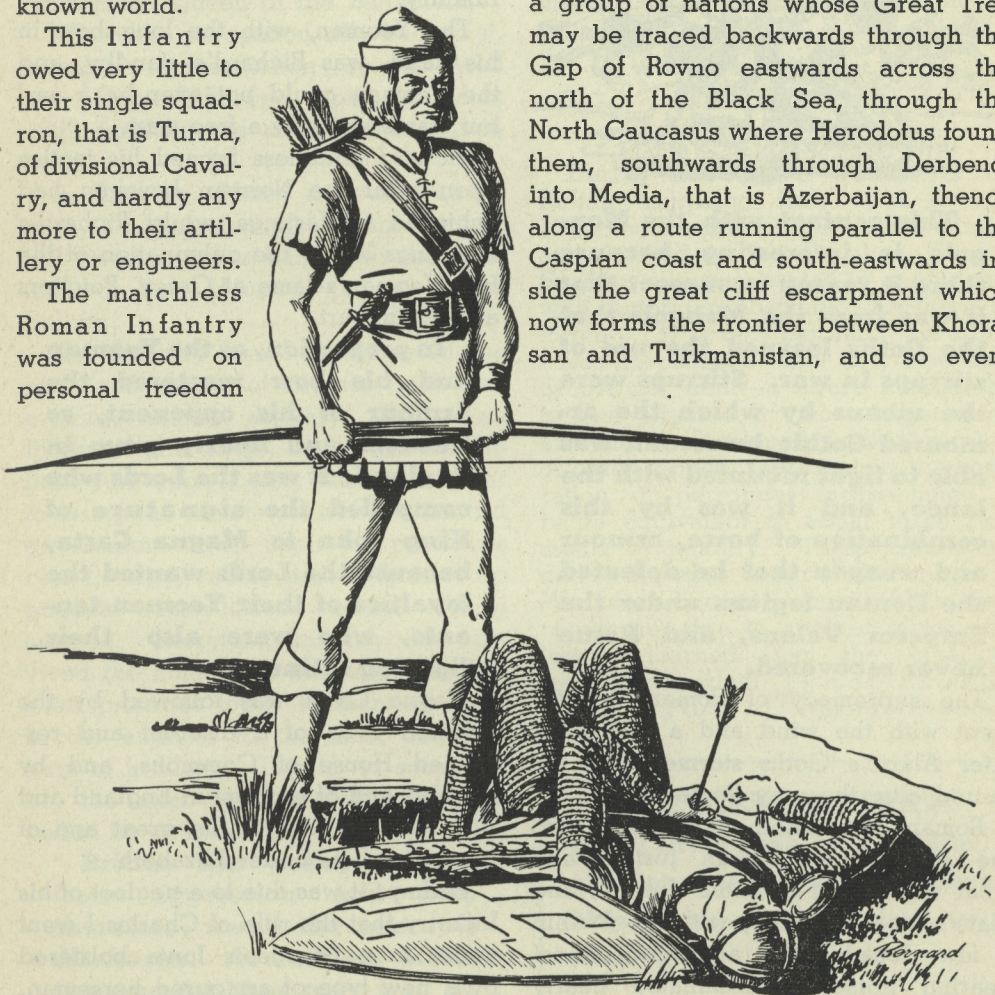
and on that individual liberty which came from Roman law and justice. No slave could become a legionary nor were the young men of the landed gentry, who provided the legates and tribunes, in any way backward in leading their yeomen in battle.

During these six centuries of the supremacy of free Roman Infantry, Rome remained, despite Spartacus and Marius, a pattern of justice and of real disciplined liberty.

Zama was fought in 202 B.C. and five hundred and eighty years later the crash came at Adrianople.

Destroyers of Rome

The destroyers of Rome were the Goths and the Visigoths. These were a group of nations whose Great Trek may be traced backwards through the Gap of Rovno eastwards across the north of the Black Sea, through the North Caucasus where Herodotus found them, southwards through Derbend, into Media, that is Azerbaijan, thence along a route running parallel to the Caspian coast and south-eastwards inside the great cliff escarpment which now forms the frontier between Khorsan and Turkmanistan, and so even-



tually to Herat, which is the Greek Ariana, and to Balkh, which the Pathan claims as the oldest city in the world.

These Goths, or Royal Scythians, were, it may be guessed, "covered waggon" folk, and this circumstance prevented them from crossing the Oxus, which river in those days flowed not into the Aral Sea, as at present, but into the Caspian.

The River Oxus acted as a frontier between the Goths and their enemies the Mongols, until the two races clashed first in the North Caucasus region and again at Chalons-sur-Marne, where Aetius with Roderic beat Attila.



This contact with the Mongols is interesting because there is reason to suspect that it was from the Mongols that the Goths learned the use of stirrups in war. Stirrups were the means by which the armoured Gothic horseman was able to fight mounted with the lance, and it was by this combination of horse, armour and weapon that he defeated the Roman legions under the Emperor Valens, and Rome never recovered.

The supremacy of Roman Infantry went with the wind and a few years later Alaric's Goths stormed into the sacred city, the very Rome.

Roman civilization went down into the abyss, with Roman justice and what was left of Hellenic culture, and Plato's idea of liberty, with it. Within a few decades the armoured lance-bearing horseman dominated nearly

all Europe and much of Asia, and with him the Dark Ages set in, tempered a little by the romanticism that came with chivalry.

Everywhere schools, universities and libraries were destroyed and the common man was reduced to serfdom and villeinage. Ireland, or as it was then, Scotia Magna, remained an exception, the Isle of Saints and Scholars, until 1172.

Restores Infantry

The Dark Ages and their total despotism and serfdom lasted until the great days of King Richard the First when, almost overnight, in 1191, at Arsuf and Askalon, he broke the armoured man's dominance and restored the credit of Infantry.

The Yeoman, with the long bow in his hand, was Richard's standby, and the Yeoman could not ever be a serf but was essentially a free man.

Richard doubtless formed his tactics upon what the Norman bowmen had achieved at Hastings, whilst Richard's teachings led to the culmination of the free Yeoman's fame at Crecy, Poitiers and Agincourt.

In proportion, as the Yeoman and his bow mastered the armour of his opponent, so freedom and liberty grew in England. It was the Lords who compelled the signature of King John to Magna Carta, because the Lords wanted the loyalties of their Yeomen tenants, who were also their fighting retinues.

Magna Carta was followed by the creation even of a discreet and retrained House of Commons, and by the abolition of serfdom in England and it paved the way to the great age of free enterprise under Elizabeth.

Perhaps it was due to a neglect of his Infantry that the rule of Charles I went under to a bourgeois Junta bolstered by a new type of armoured horseman.

However, after a few years the new flintlock musket, highly developed in England, restored the balance, and then the musket derived fresh power from the bayonet which, after Killiecrankie, was fixed outside, instead of inside the barrel.

The opposing horseman rapidly discarded his armour, the English Regiments of Horse became converted to Dragoon Guards and in step with this, liberal institutions such as Habeas Corpus and the Bill of Rights grew and flourished.

Queen Once More

After Waterloo, where the armoured brigades of Messieurs Keller, Mann and Milhaud fell before it, Infantry became once more Queen of the Battlefield.

When the percussion rifle backed it, popular representation spread well over Central Europe, until finally in 1865 serfdom was abolished in Russia itself.

In America, Cortes' armoured horse-men brought tyranny behind them, but freedom came back with the rifle-men of Sam Houston and of Simon Bolivar.

The Infantry arm has witnessed the birth and growth of another rival than armour, namely artillery. The effect firstly of the siege, and later of the field gun, upon society has been rather to clamp the remote control of a central government down upon the provinces of a country, rather than to bolster up political camarillas or judicial torture systems. Therefore, Infantry has survived the coming of the new arm, but even promises today to manifest itself as the antidote to the most powerful form of artillery. This is, or soon will be, the atom splitting war-head propelled by stratospheric rocket.

British war policy shrinks from aggression and will, therefore, await the enemy's discharge. As matters stand the counter-blow may well be

that from airborne Infantry. Not only can a staunch and disciplined Infantryman now kill a tank with his own weapon, but he can be carried by air to overrrun rocket sites to better effect than anything else.

Therefore Infantry must stay. It is not without significance that in three thousand years the essential weapon of the foot soldier, that is the pike or the bayonet, has hardly altered since the material changed from bronze to steel. If King Richard could lay the foundations of civil liberty on the weapons and discipline of a free Yeoman Infantry, cannot we emulate him, and so dispel the new Dark Age which the last thirty years have brought upon us?

BRAZILIAN MEDICAL WORK

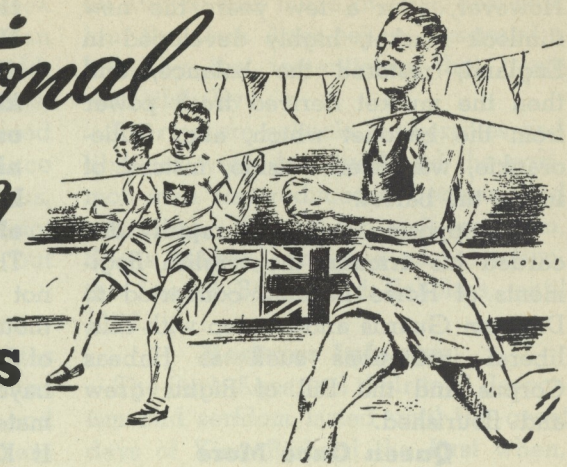
During the eleven months of the Italian campaign (July 1944 to May 1945), we admitted 10,534 sick, wounded and injured to the Brazilian Hospital Section, which operated in conjunction with American hospitals. Of these we cured 9,137 or 86.7 per cent. Of all the cases hospitalized, only forty-nine died, or 0.4 per cent—a figure comparable to that attained by more experienced and highly developed medical services of other armies, representing the restoration of personnel incapacitated in battle equivalent to about three regiments of infantry. These results are due to the work of our skilled surgeons. We must honestly confess that these results are due to another factor—the lessons learned from the American medical personnel. — *Col. Emanuel Marques Porto in "Nacao Armada," Brazil.*

OBEDIENCE FIRST

Of all the duties of a soldier, obedience is the first and most important.— *Guardia Nacional, Nicaragua.*

Recreational Training

ARMY SPORTS IN THE COMMUNITY



Canadian Army Order No. 141,
30 May 46

Physical Standards, Reserve Force — Pulhems Profiles.

The Reserve Force is the element from which will be raised the main components of any Field Force that requires to be mobilized in a future emergency. Such a Field Force can be an effective military instrument only to the extent that its officers and men are physically fit for Active Service.

An Organized Sports Programme involving all ranks is the most logical and plausible means to assist in keeping personnel physically fit. This programme should extend to competition with civilian teams, whereby creating a dual purpose in arousing community interest in the unit.

Social Significance

A wide participation by people in a variety of athletic games and sports has large social significance. A National



Canadian Army Overseas Photo

Here's the end of a 20-mile marathon race. Army training gave these men the stamina it takes to engage in this gruelling test.

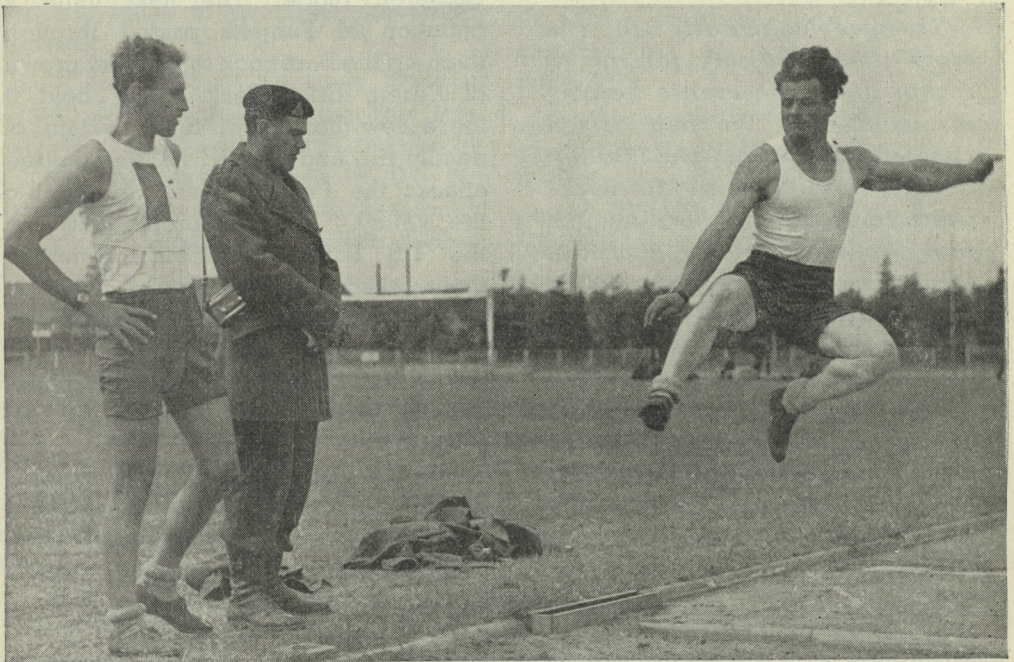
Culture reflects the interests of people; when people live an outdoor life, engage in athletic contests, and manifest an interest in wholesome play for leisure hours, the cultural outcomes can be predicted. Applied to the army, it is almost an axiom that "a soldier will fight as he trains".

Effect on the Man

As man is prepared by nature to engage in athletic sports, we conclude that engaging in sports naturally effects man's motor and organic abilities, his emotionalized attitudes and appreciations.

This conviction forces us to affirm that the conduct of sports is tremendously important in a vigorous national life. Since the conduct of sports presents many problems, the organization, administration and control of them are a matter of great importance.

The old conception of physical training as a disciplinary physical drill does not fit into the streamlined methods of training demanded today. If sports are conducted properly in the Canadian Army, they will reflect great social value in the community as a whole.



Canadian Army Overseas Photo

The camera catches a soldier in the air as he does the running broad jump. Sports such as this keep men in good physical condition.



THE CONQUEST OF ITALIAN EAST AFRICA

Synopsis of First Instalment

To give continuity to the story it is necessary for me to recapitulate the events leading up to Keren. We had driven the enemy from the Sudan border, forcing him to withdraw to Agordat where lay his first main defensive position. By the co-ordinated attacks of the 4th and 5th Indian Divisions we penetrated this position and compelled him to withdraw his battered forces into the fortress of Keren. Here, aided by incredible natural obstacles and preponderant forces, he planned to defend his East African Empire.

Part 2: KEREN

(See tip-in maps facing page 48, July 1946 issue)

The British commander did not hesitate to drive forward in the attempt to secure Keren before the enemy had time to consolidate. The Camerons were immediately sent up the mountain side of Sanchil, whose capture would dominate all else. They established themselves below the peak on a narrow bridge which neither they nor their name abandoned; it became known as

Cameron Ridge. The next night a battalion of Punjabs passed through them up the bare rock to the very crown of Keren, Brigs Peak. They held it for a few hours but in a curtain of deadly fire and massed Italian counter-attacks the Punjabs were driven into the valley. The Camerons held on; the 1/6 Rajputana Rifles reinforced their naked ledge. We had failed in the first attempt to gain Keren but we were still on the ridge.

The 5th Brigade of the 4th Indian Division had now arrived from Agordat.

How the British blasted open the door to Keren in the East African Campaign is told in the second instalment of an article by Capt. J. C. Gardner, of the Directorate of the Royal Canadian Armoured Corps, NDHQ. A Canadian officer, the writer joined the Royal Tank Regiment and was posted to the 4th Battalion of that Regiment, which was one of the British units fighting in this campaign. The first instalment of this article was published in the July 1946 issue of CATM.—Editor.

Within two days a new offensive from a different angle was mounted. The fresh brigade, led by the 4/6 Rajputana Rifles, was to go up to Happy Valley at night, carrying its machine guns, ammunition, equipment and three days' rations, turn left beyond Dologorodoc and capture Acqua Ridge. From here it would capture Falestoh and exploit to the plain of Keren.

Same Answer

The Italians had the same answer as before. They waited in their rock fortress until our barrage lifted and then came out to throw countless grenades, mortar bombs and mountain artillery shells into the Indian Infantry. The attack was stopped and once again we had failed to penetrate the Italian fortress.

On the 10th of February the 4th Indian Division tried again, this time with one brigade on Sanchil and one on Acqua with one brigade of the 5th Indian Division ready to exploit through Acqua to Keren if the attack looked successful.

All our available artillery was turned on Brigs Peak and the 3/1 Punjab stormed it on 11th February. By the time the Punjabs had gained the mountain there were scarcely two platoons left to fight—the rest were pushing up ammunition, hauling down the wounded or were casualties. Brigs Peak could not be held and once more it was abandoned, and on the same day, 12th of February, it was known that the second attack on Acqua had also failed. The brigade from the 5th Indian Division was therefore not committed.

The Pause Before Keren: The British Army, much smaller now than its nominal roll would suggest, sat back to plan a new offensive. There was no way around Keren. The fortress must be taken by a frontal attack. The casualties would be high and the

only hope for success lay in the concentration of all available resources.

It was estimated that four weeks would be required to bring the necessary supplies and material forward for the grand offensive.

Meanwhile Cameron Ridge, that tiny window-ledge under the eyes of every Italian, had to be held at all cost. Through the latter half of February and the first half of March two battalions hung on by their eyebrows. The casualties were high, a steady 20-30 or 50 per cent during the month.

We were drastically short of lorries for the dumping programme. To overcome this difficulty the 5th Indian Division was withdrawn and many of its lorries used for the daily concentration of ammunition and material.

In this type of warfare our one squadron of tanks was of little value. Our 2-pounders were useless as supporting weapons and the ground made manœuvring impossible. We did, however, keep one troop forward in Happy Valley to support the forward Infantry while the remainder of the squadron was back in harbour doing maintenance. All our spares had been sunk in transit and to keep our tanks on the road we had to cannibalize the one tank which had been damaged at Agordat and when this didn't cover the situation we improvised the best we could.

The tour of duty in Happy Valley was one of constant action. The Italians continually shelled our positions and at night infiltrated through the mountain passes. Meanwhile in harbour our greatest problem was the baboons. They continually invaded our lines and though not openly dangerous they were far from pleasant.

The movement of supplies along the one mountain road was a dangerous and costly undertaking. The enemy overlooked every foot of the road and could see all our movements in the valley below. Our vehicle casualties were such as to force us to move by night all vehicles carrying ammunition, water, and personnel. The casualties on Cameron Ridge mounted daily but despite constant enemy attempts to dislodge us we still retained this vital jumping-off place.

During the planning stages it became one of our tasks to take the Engineer reconnaissance parties as far along the road as possible so they could work on plans for clearing the road block. On one occasion we had worked two tanks to within a short distance of the actual blow in the road. To move this far forward was dangerous as we were out of support of our forces down below on the lower ridges. It was deemed necessary to take this chance as the information was vital to the Engineer plan.

Tank Is Saved

Once this vantage point had been reached it was impossible to dismount as the Italians had the road completely laced with small arms and mountain artillery fire. We could not turn around without a great deal of difficulty. The Italians, quick to see this, worked close to the ledge above us and began to throw Molotov cocktails. Before we managed to pull back under cover of a turn in the road, one cocktail had landed on the hatch of the second tank, badly burning the crew. The driver, unhurt, managed to get the tank safely back and the party returned to Happy Valley with no further trouble.

This period of long tedious days and anxious nights began to tell on the troops. The days were extremely hot, over the 100° mark, and the nights offered little change save an increase of pests and strange animals.

The Royal Air Force had by now become a striking force and were continually destroying enemy air-dromes and installations behind Keren. We were still being bombed by the Italians but the air situation was fast turning to our advantage.

To ease the supply situation, two Cypriot mule companies and several camel companies were now operating in the forward area where it was impossible for motor transport to move. This gave valuable aid to the Infantry as previous to this time each battalion had been using one or two companies as porter companies.

To make our artillery fire more effective several batteries of mountain artillery had arrived and were deployed well forward in Happy Valley. Reinforcements had arrived to bring our Infantry battalions up to about 70% strength. A battalion of the Foreign Legion had arrived and were sent around to the left flank of our position. This battalion had been issued with the Australian slouch cap and it is rather interesting to note that their effectiveness was such that in Italian intelligence reports, later captured in Keren, this force was estimated to be an Australian Brigade.

Move From North

During this period of waiting there was movement from the north. Two battalions of the 7th Indian Brigade, for some time detached from the 4th Indian Division, grouped with a Free-French force, the Chad battalions and a battalion of Foreign Legion, crossed the frontier on the Red Sea coast and drove south. They broke through the smaller mountain ranges and drove to a position within 15 miles north-east of Keren. This action drew a considerable force away from the Keren garrison facing our positions. This force also threatened Massawa, the last



This aerial photo of the cliffs of Keren graphically depicts the rugged terrain encountered in this campaign. The Italians blew down 200 yards of cliff to seal the gorge, and honey-combed the rocks with artillery and machine gun posts.

Italian port on the Red Sea, forcing the Italians to maintain a reserve on the coast that eventually was destroyed in detail.

The 5th Indian Division had completed a month of intensive mountain training and were moved up to join us for the last gruelling assault on the Italian mountain stronghold.

Assault and Victory: The 15th of March was chosen as the day to open

the final assault on Keren. On the eve of battle the Royal Air Force struck a devastating blow at the defenders of Keren. An ammunition train carrying 30,000 shells was blown up on the Asmara-Keren road.

At 7 a.m. on the hottest and most still and sultry day of the entire campaign, the 4th Division once more went up Sanchil. A part of the mountain was soon theirs but at the end of the day

they had not yet mastered Sanchil. Behind Cameron Ridge the 5th Division was lined up and waiting to cross the fierce fire belt, which the enemy laid across the plain from his position on Sanchil and the neighbouring peaks. Their role was the scaling and conquest of Fort Dologorodoc. They waited throughout the day but the assault battalion, The Highland Light Infantry, could not cross the open country.

Only as the evening approached were the 3/5 Mahrattas able to gain a footing on the other side and seized an important outpost below the Fort, called Pinnacle.

"Wavell Moon"

In the early hours of the 16th under a "Wavell Moon",* the 9th Brigade of the 5th Division led by the 2nd West Yorkshires were ordered up Dologorodoc from a new direction, the west. The surprise overwhelmed the Italians and by dawn the West Yorks and the brigade were in the Fort. Next morning the 29th Brigade were through them and under the forward slopes of Falestoh and Zeban. For the ten more days that the battle lasted, exposed on three sides to Italian fire, the 5th Division held their ground to form a wedge in the enemy line which later was to be used as the key to Keren.

They ran out of food and ammunition and it had to be packed in by hand or mule, and dropped on the rocks from old Vincent and Wellesly aircraft. They were bitterly counter-attacked eight times by yet another newly arrived brigade, by battalions rushed from Addis Ababa, by the Alpini and by the staunchest of the Eritrean bat-

*"Wavell Moon": So named for Field Marshal Wavell who had a penchant for launching attacks on clear, moonlight nights. As those who fought in the desert know, the full moon made the desert almost as bright as day.—Editor.

talions. Every thrust was driven back by close artillery support and stubborn resistance of the forward Infantry. Every gun in the artillery of both divisions was switched on to a single hostile concentration and one simultaneous round fired at a given minute. Lorenzini, the Italian commander, was killed by one of these concentrations. As a result of this tenacious resistance Fort Dologorodoc remained in our hands.

The 4th Division meanwhile had tried once more to capture the razor peaks of Sanchil. Here the 3/18 Garwhal suffered terrible casualties. All the British officers except one was killed or wounded. Once more the troops were pulled back off Sanchil but the division clung to its slight gains in the north sector of our assault.

General Platt laid a new plan for the final phase: A short rest for the mangled 4th Division and then a thrust with all available fresh Infantry up the pass itself to clear the road block. This plan was made possible by the 5th Division holding the salient in the enemy position at Dologorodoc.

The Italians had suffered heavily in casualties, prisoners and native deserters. Some of their units were down to 30 per cent of their normal strength. The Eritrians were mutinous and the Italians appeared to be on their last legs.

Before dawn on the 25th of March the 10th Brigade drove along the railway north of the road leading into the gorge. By midday they had cleared everything in front of them and were past the road block on the north side.

Simultaneously, the 9th Brigade advanced down the slopes from Fort Dologorodoc and with murderous fire cleared the defences to the south of the road block. Under the heavy Italian fire from Falestoh they could not hold

all their gains, but they held enough for the Engineers to start work on the road block.

Door Blown Open

This was our squadron's signal to move. Our tanks had been loaded with explosives and the operator was left out of the crew for work on the road block. We were the only means of transport, as the road was still under the Italians' guns. Closely following us the Engineers moved forward to prepare the block for the charges that we carried. We were able to move right to the edge of the block as the enemy had been cleared from the area by the Infantry attack on both sides of the gorge. By the evening of the 26th the charges had been inserted and, once blown, opened the door to Keren. The Italian commander ordered a withdrawal and their mountain positions were vacated that night.

At dawn on the 27th of March white flags were seen on impregnable Sanchil. Our squadron of tanks was over the road block and into Keren with the Central Indian Horse racing ahead to gain contact. The 7th Brigade came through the last northern pass and the Foreign Legion after a march across the mountains to the east of Keren, cut the Keren-Asmara road. Four thousand prisoners dribbled into our lines from the enemy positions on Sanchil. In this most bloody and decisive battle of the East African war, where success was measured by yards gained in the vertical rocks, the two Indian divisions had lost 5,000 men.

The road to the Asmara plain was now open to us and in the next article I will describe our drive to Asmara and then on down to the Red Sea port of Massawa where the Italian forces were

completely destroyed and the conquest of Eritrea completed.

ARTIFICIAL MOONLIGHT

(British Information Service. Reprinted from U.S. Cavalry Journal for CATM)

About three years before the war a new special searchlight was accepted by Britain's War Office. It was later mounted into a tank turret and, for security reasons, called the Canal Defence Light.

There was nothing new about the principle of this particular invention, but it had certain distinct advantages over previous models. The inventors had succeeded in mounting inside the limited space of a tank turret a power unit capable of producing a light of several million candlepower. This could be projected through a narrow slot to produce a flat beam, roughly fantail in shape, and later known as "artificial moonlight," which would cover a frontage of about 350 yards at a range of 1,000 yards. The light could not be extinguished by small arms fire, although it was vulnerable to anti-tank weapons. It also had a flicker device, which, it was claimed, would dazzle onlookers and might induce temporary blindness.

Various American units were trained and equipped and went with the British-trained groups to the Continent. The Normandy bridgehead break out went so fast that it was impossible to use CDL. At a later stage, however, one squadron joined the 79th Armoured Division and by protecting the bridges and ferries from floating mines and saboteurs played a very useful role in the Rhine and Elbe crossings.

The CDL has never been used in a mobile role against the enemy, although had the special CDL tanks been available, definite opportunities for their use were presented in a number of operations.

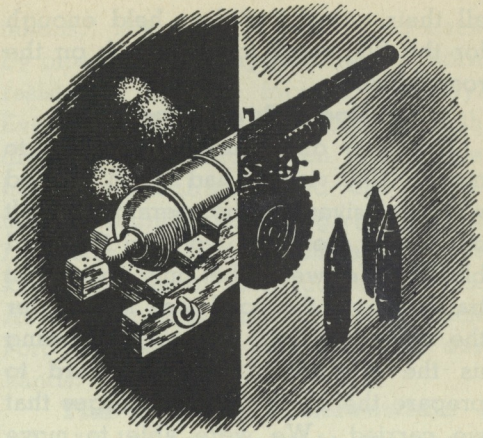
THE STORY OF THE GUN

Part IV: 1854 to 1899

Part IV of this interesting series on the development of artillery deals with the invention of the rifled breech-loading gun, the sudden about-face in favor of the muzzle-loader and finally the return to the breech-loader. Written by Lt. A. W. Wilson, Royal Artillery, who is also the illustrator, this series is reprinted from The Journal of the Royal Artillery.—Editor.

The Awakening: The years 1859-60 can be said to mark the greatest step forward in artillery equipment, for these two years saw our adoption of wrought-iron built up rifled breech-loading guns discharging cylindrical projectiles instead of the old cast iron or bronze, smooth bore, muzzle-loading ordnance discharging round shot or shell.

Rifled Guns: Rifling the piece had been experimented with on the Continent as far back as the 17th century, and was forecast by Benjamin Robbins in a book published in 1742, in which he suggested that a rotating projectile remains true in its flight, with consequent greater accuracy at the target end, but the backward state of metallurgy and lack of suitable materials had made realization impossible. In 1841 the Prussians introduced a rifled musket, the "needle gun," which was very successful, but the rifling of ordnance was not seriously considered until the French attempt to make them in 1846,

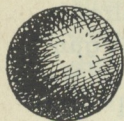


and in the Crimean War, 1854, when we converted cast iron, muzzle-loading smooth bore 68-pounders and 8-inch guns into rifled ordnance on the Lancaster principle.

Oval Bore

In this principle the rotation of the shell was achieved not by grooves in the bore of the gun but by the shape of the bore, which was oval and made one turn in 360 inches. The projectile was of course oval and of elongated type. Though the comparatively great range of 2,600 yards of these guns and increased accuracy made the bombardment of Sevastopol a "very hideous thing," for some reason the gun did not come up to expectations and its use was discontinued.

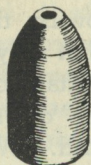
Mr. Wm. Armstrong: In this year (1854) Mr. Armstrong, a Tyneside civil engineer, brought out a 3-pounder breech-loading rifled gun which was built on an entirely new principle. Instead of cast iron he had used thin wrought iron coils or layers shrunk on to an inner tube, giving increased strength to the bore. After several tests had been made he was asked to produce a 9-pounder and 12-pounder on the same lines. In 1859 these two guns, the 12-pounder for the Field artillery and 9-pounder for Horse artillery, were accepted for issue and England took the lead in furnishing



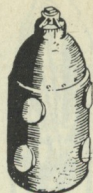
Solid shot
stone & iron
1346 — 1781



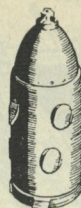
Explosive and
shrapnel shell
1784—1854



Armstrong lead
coated shell B.L
1854



Studded shell
with gas-check
(Woolwich) M.L
1869



Studded shell
with gas-check
1869 — 1878



Stream-line shell
with driving band
1913

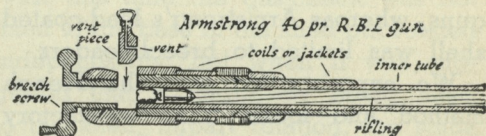
her mobile artillery with a first-class weapon.

Armstrong used the poly-groove system (as we know it today) for his rifling, which consisted of a number of shallow grooves in the bore of the gun. The elongated projectile was coated with lead and made slightly larger than the bore so that the whole of the shell acted as a driving band. The bore at the breech end was slightly larger to enable the shell to be loaded into the chamber.

The breech was closed by means of a "vent-piece" (nowadays the breech-block), which was dropped into place from above and pressed against the chamber by a breech screw. This was bored to allow the charge and shell to be loaded. Due to the great weight of the vent-piece this arrangement could be used only on our lighter pieces, but two years later a side closing device was invented for use on 40-pounders and 64-pounders. The tangent scale, introduced at the end of the 18th

century, was another feature of this gun, the principle being the same as that of rifle sights of the present day.

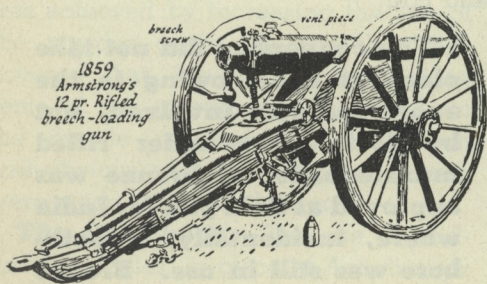
Mr. J. Whitworth: At the same time that Armstrong brought out his new equipment, the scientist and inventor Mr. J. Whitworth introduced a gun which, though differing in construction from Armstrong's, was also breech-loading and rifled. This was



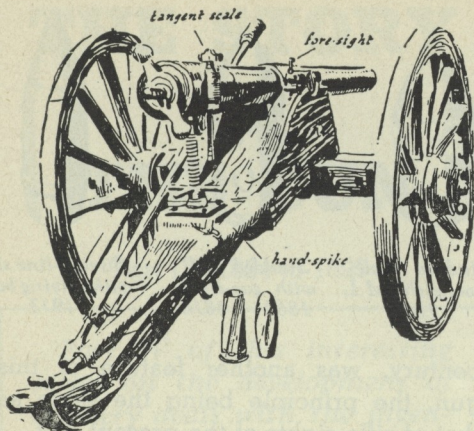
not quite so successful as Armstrong's, the breech being closed by a screw which had to be removed when loading the gun. The bore was hexagonal in section and the projectile so shaped that it fitted the bore mechanically. Some trouble was experienced with these projectiles, for they had a tendency to jam in the bore. Though this gun represented an interesting experiment in rifling it did not come up to expectations and never became part of the British armament.

Startling About Face

Within ten years of the introduction of breech-loading guns, a movement had begun to revert to muzzle-loading. Such a complete about face is so startling that some explanation is necessary in order to understand it, but the real reason was, of course, the manufacturing methods still lagged behind the work of the scientist and inventor.



1859
Armstrong's
12 pr. Rifled
breech-loading
gun

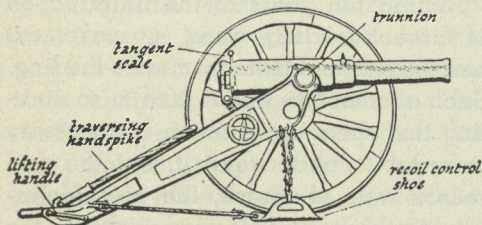


Whitworth 12 pr. R.B.L. gun

The French plan for rifling consisted of shallow grooves in the bore of the gun with corresponding studs let into the side of the projectile. The advantage of this method was that the projectile could be used with muzzle-loading guns, whereas Armstrong's lead-coated shell was limited to breech-loaders.

We experimented with the French method and found it so satisfactory that even before we had equipped the whole of the horse and field artillery with the new 9-pounder and 12-pounder breech-loading Armstrong guns, the system of wrought iron, built-up muzzle-loading rifled guns heavier than 4-pounders was finding favor. This was increased when it was found that the Armstrong 7-inch rifled breech-loader was a failure and that the breech action even on the lighter pieces was cumbersome and sometimes insecure.

On another occasion Sir A. Noble, an advocate of rifled guns, trying to convince an eminent artillery officer

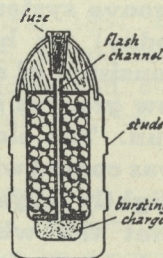


Recoil control shoe on 12 pr. B. L. 6 cwt.

that rifled guns were more accurate than smooth-bore, drew a diagram showing that shot from a rifled bore. "That only proves what I have already maintained," replied the eminent gunner, "our smooth-bore is the best in the world. With your newfangled gun firing at me I have only to keep outside that small area and I shan't be touched. But with the smooth-bore firing at me I'm not safe anywhere." This argument apparently completely defeated Sir Andrew.



French System



Boxer's modified shrapnel

A new committee was set up in 1866 to make further investigations and reported "that the balance of advantages is in favor of muzzle-loading field guns" and then recommended their adoption. It is difficult to understand that at a time when the rest of Europe were beginning to realize that breech-loading was a great step forward in the manufacture of guns, we were to revert to muzzle loading, but the trials had been conducted fairly and muzzle-loaders had held their own in range, accuracy and rapidity of fire, and finally, not least important, simplicity and cost.

The conversion did not take place at once, owing to the enormous cost involved, but by 1869 a 9-pounder rifled muzzle-loader of bronze was approved as field gun for India where, incidentally, smooth-bore was still in use. Bronze

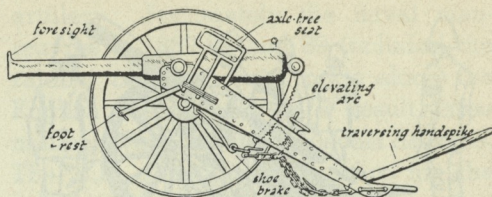
was used on this occasion because it was intended that India should make her own guns, the casting of bronze guns being more simple than the manufacture of wrought-iron built-up guns.

By 1870 smooth-bore had disappeared except in India, and rifled muzzle-loading types established both for land and sea. All this time controversy had raged as to the merits of muzzle-loading, and when force was added to their report by a statement by the Director of Artillery that "the majority of R.A. officers were convinced that no system of breech-loading was necessary in the field", Armstrong's breech-loading equipment was doomed. In 1871 a 9-pounder rifled muzzle-loader with a wrought-iron carriage was adopted for horse artillery and a 16-pounder R.M.L. for field; the decision was felt to be justified when it was found that 200 Krupps guns (all breech-loaders) had failed owing to crude mechanism.

New Type of Powder

Within ten years the great improvements made in propellants and the adoption of the gas-check had caused considerable modification in gun design. Ordinary black gunpowder had served its purpose well during the years of smooth-bore, the spherical shell being very light considering the size of the bore of the gun. When rifling and elongated projectiles were introduced, a slower burning powder was required in order to achieve maximum velocity with the heavier projectile, and this was achieved by increasing the size of the powder grain. It was then discovered that due to the short piece some of this powder was ejected from the muzzle unburned. The solution was obvious and from this time pieces were made relatively longer.

The Gas-Check: The use of studded projectiles, in place of Armstrong's lead-coated shells, proved to have one



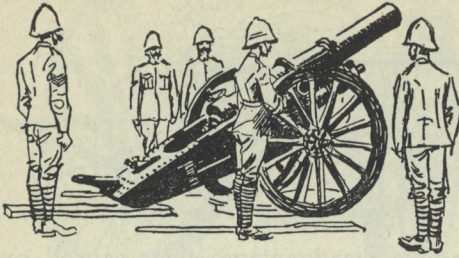
Elevating Arc on 13 pr. R.M.L. 1879

serious disadvantage; they caused excessive erosion in the bore of the gun due to windage. Some means had, therefore, to be derived to prevent the forward escape of gases when the gun was fired, and this was provided by a papier mache cup placed between the base of the shell and the cartridge, called a gas-check. After several experiments it was found that copper formed the best check and was adopted in 1878.

At this time the gas-check was not fixed to the base of the shell but rotated independently, but when it was suggested that it might, by being fixed to the shell, impart rotation, the studs on the shell were dispensed with and the gas-check became the driving band. A short time later the copper driving band had been introduced as a component part of the shell and was essentially the same as the driving band of today.

It is interesting to consider that a device intended primarily to eliminate windage and therefore erosion in the bore, ended by considerably increasing the range of the shell, imparting rotation to it, and also resulting in a reversion to poly-groove rifling.

In 1878 it was realized that our 9-pounder and 16-pounder R.M.L. guns were out of date compared with foreign armament and in order to make good our deficiency a 13-pounder R.M.L. gun was designed for both horse and field, while at the same time a 2.5-inch R.M.L. was designed for mountain artillery. Both these guns represented



6" Howitzer, 1884-99

a great advance in design, being the first to possess the greater length of barrel brought about by slow burning powder. The 2.5-inch possessed the novel feature of being in two parts which screwed together and it thereby became famous as the "screw" gun, remaining the armament of the mountain artillery until after the South African War.

The 13-pounder, on the other hand became unpopular, due to excessive recoil, and was superseded before rearmament with it had been completed. A feature of this gun was an elevating arc in place of the old elevating screw. It was also fitted with axletree seats, this idea having been introduced in 1870, following a desire to give increased facilities to the field gunner. It was now possible for two members of the gun detachment, in addition to the No. 1, to remain with their gun and, if necessary, work it alone while waiting for the remainder of the detachment.

Return to Breech-Loading: By the '80s the improvements in breech construction and the difficulties attending the loading of muzzle-loading guns due to longer barrels had profoundly altered the situation with regard to M.L. and B.L. guns. Experts were beginning to realize that muzzle-loading was obsolete and quite suddenly a movement was begun to revert to breech-loading. By 1885 the horse and field artillery had been issued with a 12-pounder B.L. gun of 7-cwt., but this proved to be too heavy for the R.H.A. and a new 12-pounder B.L.

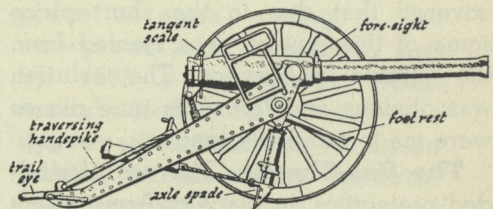
gun of 6-cwt, with a simple and light carriage was introduced in 1894. At the same time experience was showing that the common shell of the 12-pounder of 7-cwt. had little or no effect on earthworks and a cry arose for "one shell and one fuze." It was held also that a field gun ought to fire a projectile heavier than 12 lbs.

A committee was assembled in 1892 to consider the question, shortly after cordite had been adopted. This new smokeless propellant was much more powerful than gunpowder and provided an opportunity of adding to the weight of the shell, without such increase demanding any very important alteration in the actual gun.

The committee therefore recommended that the 12-pounder of 7-cwt. should be converted into a 15-pounder. The recommendation was adopted and the field artillery was issued with the converted gun with shrapnel as its only shell, common shell having been abolished for field artillery.

The 12-pounder of 6-cwt, and the 15-pounder constituted the armament of the horse and field artillery (apart from field howitzer batteries) when the forces were mobilized for the South African war in 1899.

Howitzers: Abolition of common shell for field guns brought to a head the demand for some form of artillery which would give greater shell power in the field. In the smooth-bore days of limited range and "happy-go-lucky"

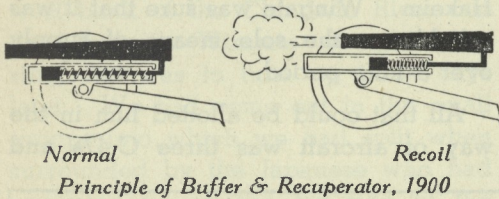


Axle-spade recoil control on 15 pr. B.L. 1899

control, all batteries had worked with both guns and howitzers, but following the introduction of rifled guns howitzers had dropped out of use.

The attempt to employ guns for curved fire by the use of reduced charges had failed. The need was met by the formation of field howitzer batteries, the first being organized in 1896 and armed with a 5-inch B.L. howitzer, firing a 50-lb. shell. For siege artillery a 6-inch B.L. howitzer took the place of the muzzle-loading guns and howitzers, and became practically the sole weapon of the siege train.

Coast Defence: From the time of the introduction of the first breech-loading guns in field and horse equipment the rearmament of our coast defences had made very slow progress. Due mainly to the fact that funds for this purpose were not available, a plan was proposed in 1863 by Captain Palliser to line the old cast-iron S.B. guns with wrought-iron rifled tubes, and during the next five years several guns were experimented with.



By 1870 many of the more important batteries in our coast fortresses had been armed with these improvised pieces. S.B. 32-pounders and 8-inch guns became R.M.L. 64-pounders, and S.B. 68-pounders (10-inch) became R.M.L. 80-pounders. In this way hundreds of obsolete guns were given a new lease of life and could perform useful service.

Nevertheless these pieces, mounted upon every description of carriage and slide—common standing, casemate, dwarf, etc.—could not compare with the up-to-date equipment of the land

artillery. Fortunately the naval manœuvres of 1887-88 and 89 included the raiding of commercial ports along the English coasts, and as a result three millions were devoted for coast defence. The B.L. guns provided were for the most part 6-inch and 9.2-inch, but some were 10-inch.

INDIA'S AIR FORCE

(Indian Information)

The pre-war strength of the Royal Indian Air Force was one squadron only. The Force was steadily expanded during the war. The Government of India has now announced that it is its intention to maintain the Royal Indian Air Force at an initial strength of not less than ten squadrons plus the necessary training and other ancillary units required to provide a fully balanced force and to insure adequate scope for a career to the permanent personnel of all ranks.

This is only an initial minimum strength which will be expanded as rapidly as conditions permit and as personnel becomes available.

NOT OBSOLETE YET

Throughout the history of the world any ship ever built can be sunk by one means or another. The atomic bomb will undoubtedly sink more ships with one explosion than any previous weapon; it will undoubtedly force dispersion of fleets and marked modifications of tactical and cruising dispositions. But because armed ships can be sunk it does not necessarily follow that they are obsolete. As long as surface vessels carry the bulk cargoes of the world, there will be need of armed ships to help protect them. It may well be that small, fast, lightly-armed surface vessels—and especially submarines—will be important rocket carriers and atomic-bomb launchers in tomorrow's navy.—*Hanson W. Baldwin, in U.S. Military Review.*

TWO YEARS UNDER WINGATE

Some hours after dark, during a thunderstorm on March 24, 1944, a B-25 crashed into a remote hillside in southeast Asia. Four Americans and four Britons were killed. A week later, the Japanese burst into Rangoon jail, chattering in exultation, to tell the Allied prisoners that Major General Wingate was dead.

At the moment the catastrophe happened his brigades were poised to close in on their objective of Indaw, a small town in Upper Burma, 140 miles down the railway from Myitkyina. Only the day before, Wingate had flown in to discuss plans for the assault with me. He had landed on a light plane strip, located 25 miles short of Indaw, that I had constructed for the purpose. Deployed in the surrounding jungles were nearly 2,000 of my men; 11 months earlier, in the same area, I had been sneaking out to India with 30 men, some wounded, most of them sick, and all near to starvation.

What was the difference between the campaign of 1943 and that of 1944? What lessons had been learned in the first, and how were they exploited in the second? What was the object in each year, and what was the gain?

Two years after Wingate's death, it should be possible to view his two greatest campaigns in perspective, and to make some assessment of his own worth, unswayed by the emotions of the moment and undazzled by his almost hypnotic personality.

The 1943 campaign was no more than a demonstration; its aim was no higher than sabotage. Wingate's purpose was to penetrate far behind the Japanese lines, to play havoc with the Japanese supply system, to tie up Japanese troops on unprofitable guard duties, and thus to help the main armies in their grand advance. He proclaimed that two modern aids to war had not been fully exploited by the Infantry: the first was air supply, the second radio.

Hitherto, air supply had been used only in emergency—when troops had found themselves surrounded. The Australians had used it in New Guinea, and Koenig's Fighting French at Bir Hakeim. Wingate was sure that it was reliable as the sole means of supply over a long period.

All that could be allotted him in the way of aircraft was three C-47s and

“Before leaving India, we all had realized that any man who was too sick or badly wounded to keep up our pace must drop out. . . . The first party I left consisted of five wounded. All fell into Japanese hands and only one survived. My adjutant and his orderly also were captured. . . . The Japanese shot them both. . . .”
In these words the writer tells of some of the fearful hardships and suffering endured during the 1943 campaign in Burma. He is Brig. B. Ferguson, D.S.C., of the Black Watch, who was on the staff of the Combined Operations Headquarters and who fought under the late Maj. Gen. Wingate, British commander in Burma during 1943-44. The author deals with Wingate's strategy in the campaigns, which was finally based on the excellent air support provided by the American forces. This article was extracted from the U.S. Cavalry Journal for CATM.—Editor.

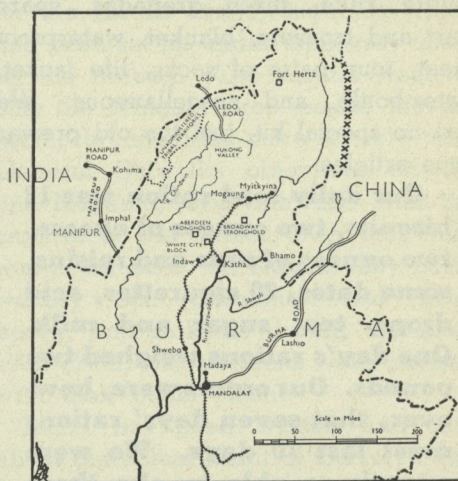
two Hudsons. The Hudsons flew so fast that the canopies were stripped from the parachutes as soon as they opened, so we had to fall back on the three C-47s. Yet the system worked, and the greatest direct result of the expedition was the confidence which it engendered in air supply—a material contribution to the winning of the war in the East.

The offensive which the expedition was planned to help had to be postponed, and as a result the expedition itself came within an ace of being cancelled. But we were all keyed up to go. Wingate wanted to demonstrate that he could do what he claimed; all of us wanted to confound the skeptics. General Wavell acceded to his request, and on February 5, 1943, accompanied by the American General Somervell, General Wavell wished us good luck at Imphal.

I next saw Imphal on April 26. I had reached the first British post on the west bank of the Chindwin River two days before. Wingate was still missing, but was to turn up three days later. We had come out in the small groups into which we had split when surrounded by the Japanese who had encircled us on the far side of the Irrawaddy during the last week of March, just after we had turned for home. Most of us had had a bad time. We had been forced to jettison all our mule-loads, including wireless sets, with the result that we no longer could get food dropped from our faithful allies of the RAF. In my own small party a number of men had been lost from starvation: we had had one period of 11 days on three mugfuls of rice and two malted milk tablets per man. The losses over the whole force finally came out at 35 per cent., of whom some were recovered two years later,

when Rangoon was recaptured.

On the asset side, apart from demonstrating the possibilities of air supply, we had killed a fair number of Japanese; learned a lot about tactics and topography; given the enemy a great deal of irritating exercise in marching and countermarching; damaged their main railway, though not lastingly; and learned much about their defensive layout in the area. We had established also the temper of the inhabitants of the country, who had proven strongly pro-British and anti-Japanese. For every one that had double-crossed us



from motives of fear or greed, a hundred had helped us at the risk of their lives, particularly when we were stumbling out hungry, sick and wounded. I know of one in particular who was mutilated and then tortured to death and yet did not divulge the hiding place of one of my wounded officers whom I had had to leave behind.

Moral Suffering

Of our sufferings, the worse were moral. Before leaving India, we all had realized that any man who was too sick or badly wounded to keep up our pace must drop out. Of all those whom I had to leave, not one complained or made it more difficult to leave him than it already was. The first party I left consisted of five wounded. All

fell into Japanese hands and only one survived. My adjutant and his orderly also were captured. He was an Australian officer of my own regiment, the Black Watch, who had been in the Tobruk siege with me. The Japanese shot them both. Altogether, out of my own column of 318, 95 reached safety; and of the 80 who were taken by the Japanese to Rangoon, only 28 survived the two years of imprisonment.

A word about our loads and our food might be of interest. Every man carried 72 pounds of kit, which included seven days' rations, rifle and bayonet, jungle knife, three grenades, spare shirt and trousers, blanket, waterproof sheet, four pairs of socks, life jacket, water-bottle, and miscellaneous. We had no special kit, just the old prewar issue articles.

Our daily food ration was 12 biscuits, two ounces of cheese, two ounces of nuts and raisins, some dates, 20 cigarettes, acid drops, tea, sugar and milk. One day's rations weighed two pounds. Our orders were, however, that seven days' rations must last 10 days. We were sometimes able to eke them out with meat off a mule killed or a buffalo bought for the purpose, or rice, until the Japanese got wise to us and garrisoned all the villages to stop our foraging.

The most welcome meal I remember was of raw buffalo meat—after being without food for three days we had come upon three buffaloes and could not wait to cook them. I recall another meal of 12 loose grains of rice which I found, black and dirty, in the bottom of my pack. My normal weight of 175 pounds had shrunk to 128 by the time I reached the British lines. Two ounces of that was a chunk of metal in my posterior off a grenade, which had joined up with me 350 miles short of home.

That was the 1943 campaign. There were several reasons why 1944 was different. One was that the first show had been adjudged worth while, and Wingate had won widespread attention to his case, as well as interest in what he was likely to propose next. The second was the vast strides which his quick mind had made through his latest experience. On the way back to India he had lain doggo for a fortnight to let the hue and cry pass him by, and had sorted out the lessons of the campaign in his mind while he waited for the coast to clear. The third reason was the powerful backing which he won for himself from Mr. Churchill and President Roosevelt, and their advisers, at the Quebec Conference in August, 1943. The fourth was the devotion and enthusiasm of the American airmen of No. 1 Air Commando, under Colonel Philip Cochran, who, as a result of Quebec, now came into the game with us and joined our family.

Wingate was not prepared to be content any longer with mere raids and sabotage. He was aiming higher. His plan now was to capture an enclave right in Burma—an all-round bridgehead far beyond the enemy's lines. Let the Japanese stew as they might in the hot, valueless jungles; we would overleap them, land from the air at some strategic point where we could build and hold our own airfields, and then fly in new formations to exploit from there. We knew the country now, and we had learned which were the key roads, the key garrisons, and the reinforcement routes between each. If we set up near Indaw we could at the same time starve out the Japanese facing General Stilwell's Chinese, who were advancing painfully over the Ledo-Hukawng Valley route, and exploit our enclave.

This plan failed only because, with the Japanese thrust across the Chindwin in March, 1944, all of the troops which Wingate had hoped would be available to exploit out of the enclave were eaten up in the need to defend Imphal. If Imphal went, the Japanese could reach the Assam railway, which maintained not only the British-Indian forces round Imphal, but also General Stilwell's forces based on Ledo.

The plan has been criticized on the grounds that it failed to affect the "main battle." This has the elements of truth, although it is less generous than it might be. General Stilwell's advance was materially helped; quantities of Japanese were killed, and most of their reserves engaged—all, in fact, except those who were committed to the defence of the seacoast for fear of a seaborne invasion. But the real point is that the plan was devised to assist in an offensive battle, whereas, as things turned out, the main battle that season was defensive, through no fault of the plan. It became defensive largely because the decisions made at the Quebec Conference could not be translated into reality for some little time, although they were hurried on at record speed. Cochran's air forces could not complete their assembly or deployment until February, and few if any other men could have completed these processes by then.

My own brigade was unlucky, in that, unlike the others, it was to march in again, in the old-fashioned style. We left Ledo at the beginning of February. The first of the flying brigades, Brigadier Mike Calvert's, was put down some 70 miles from Indaw between March 5 and 8; and the second, Brigadier Joe Lentaigne's, followed immediately after Calvert's. Mine

reached the same area about March 22, after some hair-raising marching over much new country. (We marched 360 miles of the distance in single file). But by this time the Japanese were pouring across the River Chindwin, subsisting on ration dumps which they had been piling up busily for many months past; they had not even any line of communications vulnerable to us. And then, Wingate was killed.

Task At An End

All April the fighting went on round about Indaw. The angry Japanese formations battered themselves to pieces on the blocks and strongholds which had been set up under their very noses on the railway. The second week in May the Wingate force began moving north, to integrate more closely with General Stilwell's objectives on the line Mogaung-Myitkyina; and after the capture of the former town their task was at an end. In August they came wearily out. Casualties had been heavy, and sickness during the monsoon cruel, but all ranks were pleased with their achievement.

Much has been written and said about the actual airlift of Calvert's and Lentaigne's brigades, and rightly so. The technique of putting down gliders with bulldozers in unprotected country far behind the enemy's lines was new, and Lieut. Colonel Taylor's glider pilots did a wonderful job. But there was far more new stuff than that. The integration between the pilots and the men on the ground was the closest the war had seen, and all done by a nice mixture of radio, comradeship and mutual confidence. Allison and Oleson of the fighters, Mahony of the bombers, Rebori and his boys of the light planes—these American officers were far more than names to our men, but their names were known all through the Infantry none the less. My own special ally was Colonel Clinton B. Gaty, who built my airfield, and lived on it with

me for six weeks—a close and trusted comrade whose death occurred over Shwebo a year later.

I have said already how the most cruel feature of the first year was leaving behind the sick and wounded. In 1944 that was almost unknown, thanks to the L-1s and the L-5s of Cochran's force. They landed around villages on perilous strips which had been hastily smoothed in the paddy fields, then took off again with their emaciated wounded, and flew them back to the big strip, where British or American C-47s would come in at night to lift them back to India.

Broadway and Aberdeen

We had two principal bases in the heart of Burma. One was Broadway, the scene of the original glider landing; the other my own at Aberdeen. Broadway was in an area scantily inhabited even by natives; Aberdeen lay in a valley half a mile wide, with villages upstream and downstream, and a pleasant river, two or three feet deep, running through it. The C-47 strip, 1,200 yards long, ran due north and south. We were landing aircraft on it within three days after Colonel Gaty began work there. Our light aircraft lay tucked into the side of a hill up a little re-entrant, and their pilots lived beside them. Two defended hills covered the strip, each designed to hold one battalion in defence.

To please the villagers, and to induce them to work for us, we started a shop. In it we sold clothing, kerosene, and matches, and all the necessities of which they had been deprived under the Japanese. We paid them for working for us and then they could go and spend their earnings in the store.

Two brigades besides my own were based on Aberdeen. I was given two extra battalions to defend it, and seven AA guns. In point of fact we managed to keep the Japanese so busy covering

himself from our punches that he never had leisure to try conclusions with Aberdeen except by air. Minor air raids occurred continually, but our barrage was good, and the Jap never got to close quarters. He caught us slightly once or twice, as when he shot down a C-47 just coming in to land (the pilot got her down without casualties), and again when he induced us to switch on our flare path and then dropped a bomb on the runway.

In 1944 we also fared much better in the way of food than in 1943. We never went hungry, and we had three pounds of food per man per day. I gather that the K ration is not popular with the GI. We thought it paradise, and lived on it for three and a half months, varying it only on the occasion of a supply drop when we got the addition of bully beef and dehydrated potatoes. We also got what the British soldier cannot do without—tea, sugar and milk.

A month under Wingate was worth two years in college. 1943 was pretty good hell. 1944 was all right. That second year 500 American airmen and several thousand British soldiers got to know each other inside out. If any of those 500 see these words, let them know that two Chindits cannot meet and gossip in Britain today without thinking of No. 1 Air Commando, and raising a glass.

As for Wingate (who, unlike so many of his men, was found and buried), none who served him, British or American, will ever wholly free themselves from the influence of his character. Announcing his death in the British House of Commons, Mr. Churchill described him as "a man of genius who might have been a man of destiny."

ETHICS OF SURRENDER

This article was reprinted from the U.S. Infantry Journal and represents the view of the author, Capt. W. C. Rowe, a U.S. soldier. There may be some readers who will gather the impression that the author is inclined to believe that as soon as a soldier is captured he is "washed up" and is no longer of any help to his own forces. Many Canadian officers will no doubt express a somewhat different view; they will contend that, even though a prisoner, a soldier may still fight for his country. Weight is given this argument by the amount of sabotage accomplished by Allied prisoners in both Germany and Japan.—Editor.

I stood, arms upraised, in the street of a flaming village while a German soldier searched my pockets. I felt an indescribable mixture of relief and shame that the war, for me, was over for a while. I hadn't given the order to surrender—my battalion commander had—but I felt a certain responsibility just the same. During those last moments, when grenades were crashing around the cellar door and men began



whispering "surrender," something inside me rebelled. I could have yelled for

them to follow and rushed out into the street. They might have followed. But I waited too long and the battalion commander passed the word to surrender. Then it was too late. The will to fight was gone.

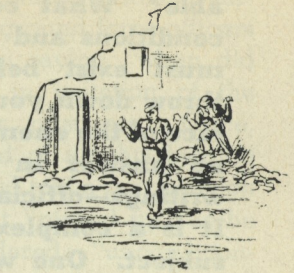
True, further resistance probably would have been useless (the Krauts had a burp gun trained on the door) but still, there was a chance—and we had let it pass. Standing in the darkness my face burned with shame and disgust. I hated my CO and hated myself.

Resentment Vanished

Later, while shivering and starving in Germany, I thought the whole thing over. My resentment toward the battalion commander vanished. He had fought well and bravely while he thought there was any chance for success. Surrounded and overrun, with wounded men lying unattended, it had appeared to him that continued resistance could only result in our deaths without a chance to inflict further casualties on the enemy. So he surrendered—as simply as that.

But had it been that simple? As we marched out of the gutted village in the gray dawn, I had heard American machine guns firing in the far end of the town. Some of those kids, who hadn't thought of surrendering, were still holding out—selling their lives dearly, while, unknown to them, the surviving remnants of their outfit were marching off to captivity.

**Here, then, is my question.
When is surrender honour-**



able? What combination of conditions and circumstances must exist before you can throw down your arms in the face of the enemy? I can find no answer in any military writings—official or otherwise. It is a complex and delicate subject. One who has never faced the problem of surrender cannot speak truthfully and freely on the matter. Few of those who have surrendered have talked about it. Many of those who didn't surrender failed to live to see a day when they could talk.

But history provides many examples of men who refused to quit. There was the "lost battalion" of 1918, the beleaguered forces at Bastogne, the defenders of the Alamo, Little Big Horn, and Thermopylae, the British at Arnhem. We honour their courage and sacrificial spirit; yet because Japs preferred death to surrender we call them fanatics, because they were our enemies.

However, we have highly honoured some troops who surrendered: the defenders of Wake and Corregidor. We even awarded the nation's highest medal for valour to a commander who surrendered. How can we simultaneously honour those who surrendered and those who refused? And how do we reconcile this with the act of those machine gunners, who died alone and unrecognized because honourable surrender didn't occur to them? We never discussed surrender in training. Our troops were never told when a soldier might properly and honourably give up and save his life. The only hint of the possibility of honourable surrender was in training films which showed how to act if captured. We were even taught that (according to the manual) a position is defended "at all costs."

I maintain either that we who surrendered were cowards or that those

who died at their posts when surrounded and outnumbered were murdered through omissions in their training.

We went into combat with the attitude that we would never surrender and that we would take damn few prisoners. We usually looked on German prisoners with hostility and contempt. Germans who surrendered without a fight were spared, although we despised them. Those who fought to the end were usually killed, especially if they had killed any of us.

The Germans, on the other hand, treated us courteously after we surrendered, even though we stepped over their own dead and wounded as we came out of our cellar. They even displayed a certain camaraderie toward us as fellow front-line sufferers. Some British prisoners, captured early in the war, told me that at that time the Germans often behaved much like our troops. Others said that the Germans sometimes went to absurd lengths to spare the lives of men who they thought might be persuaded to give up. This brings up another question, also apparently never thoroughly considered. When is it proper to allow an enemy to surrender?

These problems usually apply only to infantry. And it is difficult to expect suicidal last stands of infantrymen when some civilians and rear echelon troops regard the infantry as men who are too stupid for more important "technician's" assignments. It is also difficult when higher echelons surrender entire commands when their position is "tactically hopeless."

Again, front-line soldiers hardly can be expected to spare the lives of enemies who, they have been taught to believe, are little better than beasts or when they have just seen friends killed or maimed or narrowly missed death themselves.

The only argument that makes much sense to front-line fighters is that taking prisoners saves lives by averting last-ditch stands. The argument that mercy toward the enemy may save their own lives if they are ever caught in a similar position usually doesn't mean much. If they are good troops, they usually do not contemplate surrender until the situation actually exists.

Civilians are shocked at the idea of killing enemy soldiers after they have surrendered. Yet, how can anyone judge who has never seen his buddies mangled or been shot at himself? I myself hate to see rear area troops mistreat prisoners. The front-line soldier considers prisoners his property and believes that noncombatants have no business either fraternizing with or mistreating them.

Both English and German civilians felt a bitter hatred of enemy fliers who had to bail out during a bombing mission and there were many instances on both sides of such airmen being lynched or beaten by civilians. Only the intervention of the military saved many of them.

Can We Censure Him?

But how can we censure a man, who has just seen his child blinded or his wife crippled, if he seeks vengeance against the individuals whom he feels to be responsible? Is the argument that these individuals are only instruments performing their duty to their state sufficient under the circumstances? And what of the sons of these same civilians who may be similarly shot down in enemy country?

The general attitude toward our own men who surrendered is vague and indefinite. Everyone, including the ex-captives themselves, studiously avoids the word "surrender." Instead they were captured, caught, picked up, bagged, and so on, as though it were

possible to be captured without surrendering. Many ground force officers in Germany began saying "when did you go down?" in imitation of the Air Forces officer prisoners. Once, in Paris, I wearied of all this beating around the bush and told a rear echelon major that I wasn't "picked up" as he put it. I surrendered—"unconditionally!"

An English girl is the only person who ever made any insinuating remarks to me about my capture but I notice odd looks of appraisal from most people when they hear that I was a prisoner. The bolder ask how it happened, in an embarrassed sort of way, but most persons just keep their mouths shut and wonder—but you can see them wondering.

May Be No Choice

Is surrender, then, shameful or is it not? If it depends on circumstances then what are these circumstances? There are some instances where there seems to be no choice. These might be: when a man is wounded and defenceless; when he is surrounded, unarmed and outnumbered; when an airman is shot down in enemy territory; when a seaman's ship is sunk in hostile waters. Perhaps surrender might be justified when a position is untenable and there is no possibility of accomplishing the mission or when further resistance can only mean casualties without opportunity to inflict appreciable loss upon the enemy. However, these are vague generalities and offer little solace to the individual.

As a specific example let us take the case of a rifleman defending a position. He crouches in his foxhole, shells bursting all around him. The shelling stops and he peers over the rim of his hole. Enemy soldiers are rushing his position—rifles and machine guns blazing, bayonets fixed, grenades in hand. He looks around. The other men in his

squad have been killed or wounded. There is no leader. He thinks of escape but there are enemy soldiers in his rear. Up to now he hasn't fired a shot—only occupied a hole for the enemy to shoot at. What should he do? What is he expected to do? He has never been told. If he fires on the advancing enemy they surely will have no mercy on him.

. Different Reactions

One man might fire on the enemy—even meet them with the bayonet—in which case his parents get a telegram. Another might throw down his arms and

surrender—in which case he will probably go home eventually, alive and apparently with honour. Which man was right? Was the first man simply foolhardy? He did what he thought was his duty—what he was expected to do. Was his position "untenable" or could he have "accomplished his mission?" Could he have inflicted "appreciable loss" on the enemy? Was his position "tactically hopeless?"

I maintain that these questions should and must eventually be answered—officially and in black and white for the instruction of troops and officers.

WEATHER FOR WAR

The story of Eta—the code name for the "hush-hush" weather forecasting station that was the nerve centre of the entire British meteorological system—need no longer be kept a secret.

From the air or the main road Eta looked like a small hill in the rolling Bedfordshire Downs, and no worse. All that could be seen of its entrance was the dark opening of an apparent cave; its location was never discovered by the Germans.

Eta was indispensable to victory in Europe. It was on the strength of its 48-hour weather forecast that Eisenhower postponed D-day from 5 June to 6 June.

In three shacks standing in an open field were housed some of the most important secret inventions of British meteorologists. One of the three thunderstorm locators in existence was there, the others being at two other meteorological stations in Britain. From the three instruments it was possible to determine the position of any thunderstorm within 1,500 miles of the British Isles. Every flash of lightning occurring within this radius was recorded simultaneously by the instruments. By plotting the bearings from the three stations the exact position of the thunderstorm

could be found within a few seconds. The course of the storm could be easily followed and the time at which it would affect the British Isles predicted.

Information was obtained about conditions in the upper air by means of a "radio-sonde" apparatus. Several times a day hydrogen-filled balloons, each fitted with a tiny radio transmitter, were released from eight meteorological stations in Britain, Iceland, North Africa and the Azores.

These balloons ascend rapidly, the transmitter working all the time until they reach the height of about 10 miles, when the low atmospheric pressure bursts the balloon. The midget radio transmitter then floats down to the earth on a parachute.

Information about upper air conditions was also supplied by a fleet of 100 reconnaissance airplanes which ascended in spirals to heights up to three and a half miles, taking observations all the way.

Reports on weather conditions in the northern hemisphere poured in by radio, telephone, and teleprinter all day and all night. From this information, Eta was able to send out by teletype 8,000 forecasts a day.



A BOUQUET!

Editor, CATM: First may I congratulate you on the very interesting material you are now producing in CATM, particularly "Military Customs and Survivals" and "The Story of the Gun." It is in connection with the latter that I write at the moment.

Regarding the introduction of cast-iron guns, p. 38 (*May 1946 issue of CATM*), I am quite prepared to see the honour leave my home town Uckfield (for it was here, according to Haydn, that the first cannon in England were cast) in favour of nearby *Buxted* (this was inadvertently spelled "*Bexsted*" in the *CATM* article.—*Editor*).

As many Canadians were in and through *Buxted* in 1940, it may give some of the troops added pleasure when recounting their experiences to identify the village.

Neither place is mentioned in the Domesday survey (completed in 1086), but two centuries later Uckfield is referred to as a "ville" or outlying portion of the parish of Buckstede. In 1291 reference is made in Pope Nicolas' Valuation to the parish of *Buxted-cum-Uckfield*. The present-day Post Office Directory gives: "*Buxted, Uckfield, Sussex.*" I mention this to show that Uckfield may at least share in the "honour."

Queen Elizabeth's Pocket Pistol (*p. 41 May 1946 issue of CATM*) barked in anger in the Civil War. This piece is said to bear "a couplet in Dutch which may be thus translated:

'O'er hill and dale I hurl my ball;
Breaker, my name, of mound and
wall.' "

Can it be that one of the translations is guess-work, or are there two pieces—or two inscriptions? It has been suggested that a "brace" of these pistols existed.

(The inscription referred to in *CATM* reads:

*"Load me well and keep me clean
I'll carry my ball to Calais Green."*
—*Editor*).

There is a lighter side to "*Mons Meg*." (*This is a large calibre piece mentioned and illustrated on pages 37 and 38 of the May 1946 issue of CATM.*—*Editor*). She is said to have been named after the gunsmith's wife "whose voice rivalled that of the gun."

When Edinburgh Castle surrendered to Cromwell in 1650 she was referred to as "the great iron murderer called 'Muckle Meg.'" She was suffering from old age by this time and thirty years later "was riven" when firing a salute on the occasion of a visit of the Duke of York. She was transferred to the Tower of London in 1754, but in 1829 was returned to Edinburgh Castle.

I believe "*Mons Meg*"—like the minute gun from Nelson's flagship "*Victory*"—was among scrap collected in 1940 to "help win the war."

All this because of a typographical error!—**Edwin Pye.**

ANOTHER LESSON

Editor, CATM: Thank you very much for publishing my last two letters on heraldry in CATM. Here's a third, and I'm sending along some illustrations that I hope you may be able to use.

No attempt will be made here to give a comprehensive listing of the various *"charges" in heraldry since there are literally thousands. However, some of the simple ones are the basis of more complicated shields, and Fig. 1 shows some of those known as "Ordinaries." There are, of course, many more but these will do for a start. Lines do not have to be straight, and Fig. 2 shows some variations.

After these charges and variations were exhausted, animate and inanimate objects began to make an appearance. Everything from birds to fish-traps were used, and a list of these

**See June 1946 issue of CATM, page 45.—Editor.*

charges alone would fill a fairly large volume. Many charges have a certain similarity. For instance, the cross may be any one of several, but its type must be named. So with animals. It is not enough to say "a lion". Its position must be stated.

There are certain additions to some shields which may at first glance appear to be a charge but are something quite different. These are known as "differences" or "marks of cadency," and are used to distinguish a son's coat-of-arms from his father's. Fig. 3 shows these marks in order of precedence.

There are other methods of showing differences. One is the use of a "bordure", or border, usually in Scottish heraldry. Another is the use of the "bend" (see Fig. 1) or baton. This is placed over all other charges. By the end of the Middle Ages the baton was commonly used to denote illegitimacy,

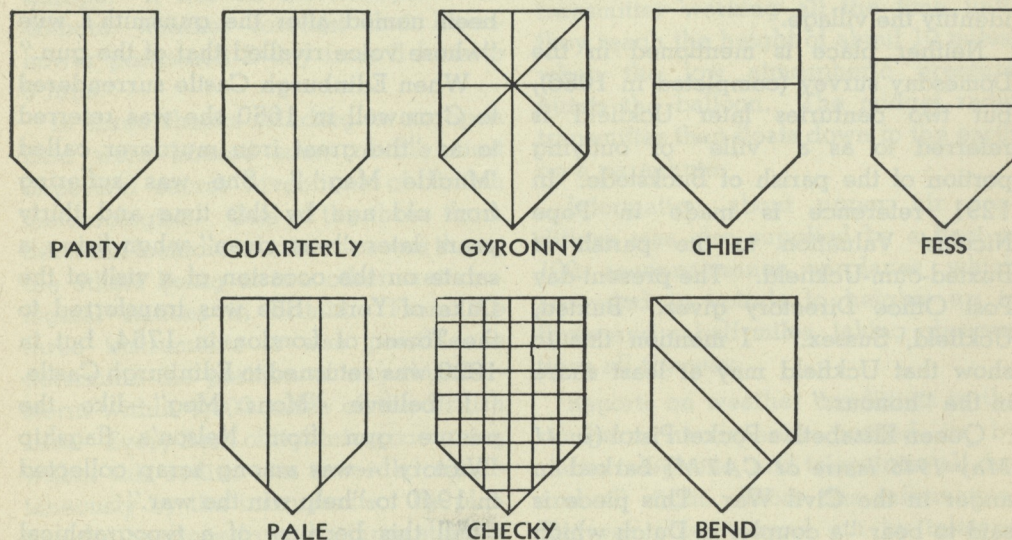


FIG. 1

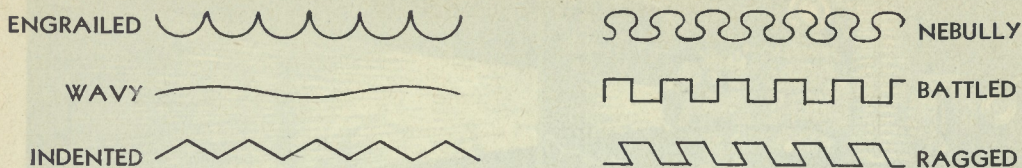


FIG. 2

but it was not reserved for this purpose. This, probably, is the origin of the "bar sinister" of the novelists. It is foolish to support than an illegitimate son was compelled to advertise the fact. In any case, a bar sinister is an impossibility: a

and not touching the edges of the shield. The use of this charge was merely to show a difference; it was not a punishment.

Another phrase used frequently by novelists—"a blot on the escutcheon"—

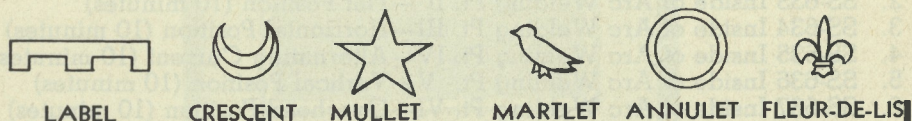


FIG. 3

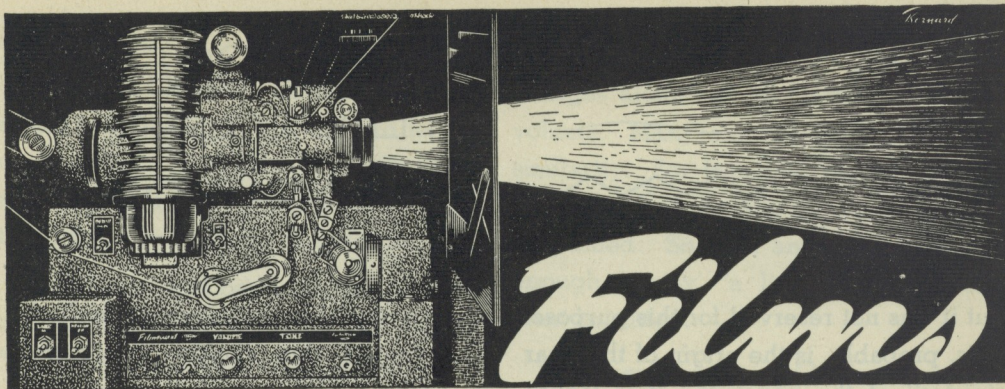
bar is a narrow horizontal band, and therefore it could be neither dexter nor sinister. The baton could be either, and as a sign of illegitimacy it was usually sinister, with the ends square

has absolutely no basis in fact. It is not logical to believe that a man would tell the world he was a liar or a coward by marking his shield with some specific mark!—*B. J. R.*

BETTER BE READY

We better be ready. We came within an ace of losing World War II. The creation of a similar situation again will result in the outright reduction of the United States to the status of a second-class power. There is no need to dwell on the technical developments that have served to re-orient our strategic situation. Even the layman can see that in modern war **surprise** has become the chief concomitant of victory. An army trained against surprise is the main toll gate on the road to security.—*Capt. L. E. Jones, Jr., in "The (U.S.) Field Artillery Journal."*

Recent conflicts in Europe, the Far East, and Africa bear witness to the fact that the individual soldier remains the controlling factor. The tactics of the future intensify, rather than diminish, the necessity for high qualities of individual leadership. The object of developing aviation, motorization, and mechanization is to attain the highest possible degree of mobility.—The late President Roosevelt.



(For your information the following films have recently been distributed)

Trade Training

1. SS-632 Inside of Arc Welding Pt. I —Fundamentals (7 minutes)
2. SS-633 Inside of Arc Welding Pt. II —Flat Position (10 minutes)
3. SS-634 Inside of Arc Welding Pt. III—Horizontal Position (10 minutes)
4. SS-635 Inside of Arc Welding Pt. IV—Alternating Current (10 minutes)
5. SS-636 Inside of Arc Welding Pt. V—Vertical Position (10 minutes)
6. SS-637 Inside of Arc Welding Pt. VI—Overhead Position (10 minutes)
 - (a) A series of six films, each part complete in itself and covering in detail a particular phase of arc welding.
 - (b) Distributed to all District Headquarters Film Libraries and A-21 CO & EMETC.

Educational

1. SS-284 Trees for Tomorrow (15 minutes)
 - (a) Describes the importance of the lumber industry in peace as well as in war and outlines the scientific developments which have resulted in a constant supply of lumber always being available.
 - (b) Distributed to all District Headquarters Film Libraries.
2. SS-613 Hitler Lives (15 minutes)
 - (a) Shows the history of Germany divided into four chapters: the Prussian Empire under Bismarck; Kaiser Wilhem and World War I; Hitler and World War II; and the fourth chapter yet to be written, which the film explains will depend on the allied nations not forgetting the lessons to be learned from previous German history.
 - (b) Distributed to all District Headquarters Film Libraries.

Vocational

1. SS-349 The Face in the Mirror (15 minutes)
 - (a) Demonstrates various aspects of good salesmanship.
 - (b) Distributed to all District Headquarters Film Libraries.

Operational

1. CA-30 Exercise Polar Bear (60 minutes)
2. CA-31 Exercise Eskimo (60 minutes)
3. CA-32 Exercise Lemming (10 minutes)
 - (a) A pictorial record of the three winter exercises "Polar Bear", "Eskimo" and "Lemming".
 - (b) Prints of these films may be obtained on loan on request to the Army Central Film Library, National Defence Headquarters.



Lt. Col. C. C. I. Merritt, V.C., E.D.
The South Saskatchewan Regiment

CATM dedicates its cover this month to Lt. Col. Charles Cecil Ingersoll Merritt, V.C., E.D., who was awarded the Victoria Cross for his gallantry and courage while commanding the South Saskatchewan Regiment at Dieppe.

Text of the official citation follows:

"For matchless gallantry and inspiring leadership whilst commanding his battalion during the Dieppe Raid 19th August, 1942. From the point of landing his unit's advance had to be made across a bridge in Pourville which was swept by very heavy machine gun, mortar and artillery fire and the first parties were mostly destroyed and the bridge thickly covered by their bodies.

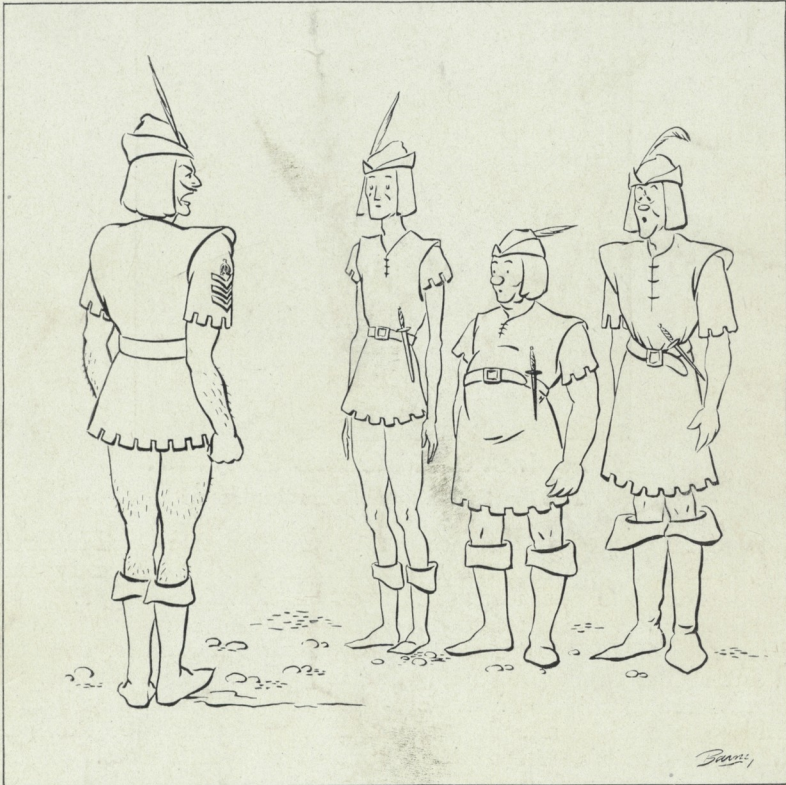
"A daring lead was required. Waving his helmet Lt. Col. Merritt rushed forward shouting 'Come on over. There is nothing to worry about here.' He thus personally led the survivors of at least 4 parties in turn across the bridge. Quickly organizing these he led them forward and when held up by enemy pill boxes he again headed rushes which succeeded in clearing them. In one case he himself destroyed the occupants of the post by throwing grenades into it.

"After several of his runners became casualties he himself kept contact with his different positions. Although twice wounded, Lt. Col. Merritt continued to direct the unit's operations with great vigour and determination and while organizing the withdrawal he stalked a sniper with a Bren Gun and silenced him. He then coolly gave orders for the departure and announced his intention to hold off and 'get even with' the enemy.

"When last seen he was collecting Bren and Tommy guns and preparing a defensive position which successfully covered the withdrawal from the beach. . . . To this commanding officer's personal daring the success of his unit's operations and the safe re-embarkation of a large portion of it were chiefly due."

(Lt. Col. Merritt went overseas with the Seaforth Highlanders in December 1939, and after holding various staff appointments was appointed officer commanding the South Saskatchewan Regiment in March, 1942, and was taken prisoner at Dieppe. After arriving back in Canada he returned to civilian life and is now a member of the House of Commons.)

IT HASN'T CHANGED A BIT!



Sergeant Instructor to New Squad of Recruits (circa 1200 A.D.): "Nowe have I seene alle things! What have I done to deserbe this? You maye have brokenne youre mother's heartes, butte you cannot breake mine, and bye St. George it looketh as iffe thinges are to be different fromme this dave forwarde . . ." etc., etc.