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The Cover
A heavy anti-aircraft gun in action.

CANADIAN Army JOURNAL

The object of the Canadian Army Journal, which is published by the Directorate of Military Training under authority of the Chief of the General Staff, is to provide officers of the Active, Reserve and Supplementary Reserve Forces with information designed to keep them abreast of current military trends and topics, and to stimulate interest in current military affairs.

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THE PERSONNEL PROBLEM IN AA DEFENCE

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In the event of war Canada will have a problem to find the manpower required for the fighting services as well as for industry. This will be aggravated by the urgent need of an anti-aircraft defence such as has not previously been required on this continent.

That we must expect air attack is fairly obvious because of our industrial importance and because we will be the dumping ground for raids directed at, but failing to reach, the United States. To defend ourselves will require a sizable force. If we are to pull our full weight in world affairs it is essential that this force detract as little as possible from our offensive services. As Churchill put it in 1941, "We must be careful that our precautions against them (air raids) do not unduly weaken our Mobile Field Army and other forms of our offensive effort." Much can be done in this respect by a proper use of the other resources available.

It is impossible to achieve perfect AA defence; every area must be prepared to accept a certain amount of bombing. In the Second World War the only danger to Canada from air attack was confined to such raids as could be mounted from commerce raiders or the odd Japanese aircraft carrier. Japan could hardly have mounted any serious attack from Kiska, and from Japan and Germany it was impossible. The biggest raids we might have had were probably less than the minimum which had to be accepted in Europe. In other words, according to European standards, we required no defence. Yet we deployed, in Canada, some 12,000 persons in the AA defences. That is a very considerable force.

The need for protection is certainly greater now than formerly but it is unlikely ever to reach the tremendous

proportions of Europe. This means our AA defences will have less to do, from day to day, and will be much more difficult to maintain at operational efficiency. Yet it is essential that we avoid doing too much, in defence, even as it is necessary not to do too little. Possibly three or four times as many persons will be required as were deployed in 1945. If we accept that as a measure to work from we have a force of from 36,000 to 48,000 persons. To achieve this *without draining manpower from the field army* will be extremely difficult.

By technical and other improvements, we may, at a later date, save a great deal of manpower in AA. For the moment we must use the weapons to hand. These require men and/or women in very large numbers. To find these, within our limitation, we must look to men of low category, men too old for overseas service, women and youths. It is believed possible to form, from among these classes and within the frame-work of the Reserve Army, a force which can be brought to a point of efficiency and held in that state over an extended period. It will not be easy but success is so very important it is certainly worth trying. Efficiency such as is required can only be achieved if we can maintain a high morale over an unlimited period of time. Few jobs in the Army can be more soul destroying than sitting on the AA gun sites looking into an empty sky. And yet it is essential that troops be keen, peppy and on their toes if fire is to be brought accurately to bear upon the target — inaccurate fire is completely valueless: it does not even frighten the attacker. The problem, then, is to find the people for this defence army and maintain it as an efficient organization.

Material Available

The obvious pool of manpower, for the AA Defence Army, is the large body of old soldiers still available. There are plenty of them to do the job, yet it is likely they will provide but a small proportion of the whole. Large numbers will go in only if the air attack reaches exciting proportions.

The manning of AA gun sites, etc., month after month and year after year, is a prospect anything but appealing to normal Old Soldiers. There are some, old Artillerymen, who can be trained to AA procedures and will do a reasonable job. It is probable that the majority would be better employed in industry.

If we, in Canada, can interest 10,000 old soldiers for AA Command, and keep them on the job, we will be doing well. Of these the Senior NCOs are essential if soldierly discipline is to be maintained. The rest

can be used on the guns and on ammunition supply. It is extremely difficult to train them in the more modern developments of AA such as Visual Instruments, Radar, Plotting and Signals, and also in the much more technical matters covered by RCEME.

These remarks apply equally to men of low category as to men beyond the age of overseas service.

The largest, and most promising, group of persons available for AA is the women of Canada.

In Great Britain, during the Second World War, it was proved conclusively that women could be successfully trained in all the complexities of Heavy Anti-Aircraft (HAA), Radar and Plotting. It is apparent that in future great numbers of women will have to be used in the AA defence of every country, Canada included. Women are very suitable for this form of employment. They always are anxious and ready to serve and get great pleasure out of being able to do a "man's job" in the fighting forces. They are better able to stand the long periods of comparative inactivity of the AA defences and are extremely quick to learn the various procedures required to operate much of the AA equipment.

Of the very greatest importance is the manner in which their presence, on a gun site, sustains the morale of the older men. It is not an overstatement to say that old men are made young in the presence of younger women, and because of this are undoubtedly better able to do their job in the service and put up with an otherwise boring employment.

"Plotting" in the Anti-Aircraft Operations Rooms is so obviously a job for women it is hard to see why we ever waste time in trying to train men.

The last class available for employment is boys, of cadet age, too young for the Army proper. These boys would be very keen to be "operationally employed", are quick to learn, smart as paint and extremely good at aircraft recognition. (Experience in Korea should be sufficient to warn us that A/R, as understood in Second World War, is likely to be of great importance for some time to come).

It would be difficult, and likely not worth while, to train boys in the more technical fire control procedures of HAA and one doubts if they would be of use in action on these intruments. As they reach the age of 19 they should be transferred to Field Units and we would lose the value of their training in any event. There appears to be a natural field for them, however, in Light Anti-Aircraft (LAA). Here their excellence in aircraft recognition, their

good eye sight, keen, young and alert intelligence and good hearing would be invaluable. Whether this has been tried before, operationally, is unknown but there does seem to be an opportunity of using them and the possibility should not be overlooked. It is a field where women are of little or no value and in which older men are at a definite disadvantage.

The concept of the AA Command Army, here proposed, is based upon the employment of a large group of "Old Soldiers" supported in HAA, Plotting, Signals and Radar Watch by women and in the LAA by boys of cadet age. In RCEME and Practice Camps also large numbers of women can be usefully employed.

Need for Availability

To be effective this Defence Army will have to be ready. If we are to be bombed then we must expect it on the first day of war. Our Anti-Aircraft defences must be ready to shoot and to shoot straight! This is something entirely new for us to consider.

On the outbreak of past wars, Canada has found time in which to recruit and train such armies as have been required. This cannot apply to the Anti-Aircraft Army. Here readiness to shoot on the outbreak of hostilities is essential. If this is to be achieved, then the personnel must be organized and training begun months, or even years, before they are required to shoot in earnest. The methods of organization and of training will have to be different, perhaps we should say "better", than anything done before. It is a challenge to the intelligence and imagination of those charged with the responsibility of providing the defence. They must be supported by a strong political belief.

Under existing Reserve Force conditions, the numbers required to man the AA defences in peace time never will be achieved. If war was to take us by surprise and we were attacked from the air, it is probable the majority of existing Reservists would be transferred into the AA Army temporarily, if only to make some puffs in the sky and put up a show of defence. The consequences of such measures upon the whole Army would be serious in the extreme. It is submitted that the only alternative, capable of being made operational in Canada, is to organize immediately on the basis of using the older men, women and boys recommended in this paper.

Territorial AA Militia

To be workable in peace as well as in war this AA Army must be truly "territorial". The personnel should be recruited and organized

into sub-units of the Reserve Army designated for the defence of their immediate neighbourhood. Recruitment to full strength would be unlikely unless great stress were placed upon "immediate need of the immediate area". This in itself would constitute a new approach to the recruiting problem. We don't have to get people excited about it, it is a normal development, in defence, of a country faced by war-like neighbours. Realism and success in this effort might pay dividends in other directions — is it not probable that far greater numbers of lads would find themselves quite naturally joining the Reserve Forces generally? One is reminded of the slogan "Never under-estimate the power of a woman".

The matter of accommodation, always a difficult problem in Reserve Army, might frequently be solved on the basis of the local unit being accommodated, even in very temporary quarters, on the actual gun site they are to occupy. It is suggested that secrecy in the matter of such locations is quite unnecessary. The variety of arrangements possible are extremely interesting. The system proposed could be made to work in the defence of outlying airfields, such as the Alaska Staging Route, as well as in the more heavily populated areas. Exactly like the Civil Defence forces, this AA Territorial Militia should be recruited from among the men and boys and girls of the neighbourhood. It is essential, however, that the atmosphere of "defending one's hearth and home" be achieved, rather than the normal Army approach of being a small cog in a big machine which some day will do something. These units should become a power house of community effort wherever they are established.

General Considerations of the Employment of Women, etc.

In Great Britain, the women, employed in the Army, were enlisted into the Auxiliary Territorial Service, a service separate from the Army proper. Apparently Queen Mary was largely responsible for the decision to maintain separate Women's Services. This may have been suitable for the employment of Cooks, Batwomen, etc., but from the point of view of the AA Artillery this arrangement did not achieve the greatest possible efficiency. There is no doubt that the women who worked with the Artillery were delighted to wear any sort of badge to denote their employment and felt, quite naturally, that they should have been a part of the Regiment. It is submitted that *esprit-de-corps* is as important in this matter as in any other and that girls should be enlisted into the ranks of the Royal Canadian Artillery, RCEME

Ordnance, Service, Catering, etc., if the greatest efficiency is to be achieved.

It has been thought that the enlistment of women into the services in peace time would be very poorly received. At the time of the "Munich Crisis" large numbers of women in Vancouver offered themselves for service in an unofficial corps and went on demanding recognition until the CWAC was formed. That incident would seem clearly to indicate the attitude of the women themselves.

It is suggested that approaching defence on the realistic basis here proposed might, indeed, create an entirely new attitude in the people of Canada towards defence and the defence services. No reasonable person would oppose the formation of close territorial units for the defence of their own city and once these are underway, *providing fit young men are excluded*, the build-up of the Field Force units will follow automatically. The men and women in these mixed units have proved in Britain that they can serve together as naturally as they do in industry. This will show the entire populace that people can join the Army without breaking down the moral fibre of the race.

From a world point of view Canada would show herself to be clearing the decks in such a way as to use her strength to the best advantage. This is a gesture long awaited by her friends and to be feared by her enemies.

Recommendations

It is submitted that in view of the continuing world crises and the great air power of our potential enemies it is desirable than an AA Defence Army be built up to full strength forthwith, and that every endeavour be made to develop training to the point where effective shooting can be delivered in the sky; it is further submitted that to avoid tieing up in this AA Defence Army too many fit men of combat age, action be taken now to open the ranks of the Reserve Force AA Units to enlistment, and commissioning, of women, and for the enlistment of such boys as are physically capable but too young for the Feld Army; and it is further submitted that such persons, women or boys, should be commissioned or enlisted into the Regiments or Corps of the Army they are to service.

Skidding Along

A B-26 landing at 100 miles per hour skids approximately 150 feet per second when brakes are applied suddenly.

CANADA
AND THE SOUTH AFRICAN WAR

By
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IV: The War in Canadian and Commonwealth History

I spoke last week about the fighting the Canadians did in South Africa. Today I want to say something about the significance of the war there as an incident in the history of Canada and the Commonwealth.

The war finally ended in the spring of 1902, when the Boers simply had no means of going on fighting. Here and there one of their forces was still doing well. In the British territory of Cape Colony a young general named Jan Christiaan Smuts was using captured British equipment and supplies to plague their former owners. But most of the commandos were at the end of their rope. The report of a Canadian officer[1] who was present at the final surrender of the Johannesburg commando strikes a note of admiration for this foe who had fought until he could fight no more:

> . . . Of the Stadts Artillery, [the Transvaal's professional artillery corps] there were but one officer, one corporal and 12 men remaining; whilst of that once magnificent regiment, the Zarps, [the South African Republic Police] only 12 stood up to swear allegiance to the King.
>
> The ages given by members of the commandos were truly astonishing, the finished list ranging from 13 to 75 . . . Of the rifles piled in our wagons, about one-half were Lee-Enfield, captured at one time or another from our forces; and the ammunition, when counted, only totalled about twelve rounds to each rifle.

The Treaty of Vereeniging, which ended the war, was a unique document—unique because of its generosity. True, the Boer republics were annexed—but they were promised full self-government at an early date. It's been common for the winning side in war to make the loser pay an indemnity. This time it was the other way round: the British Government undertook to provide £3 million to restore the devastated farms of the Transvaal and the Orange River Colony. And the promise of self-government was redeemed in more than full measure: after a change of ministries in England, the two former republics were given full responsible government in 1906—four years after the war ended. In

This is the last of four scripts written by Colonel Stacey for a series of broadcasts which he delivered over a Canadian Broadcasting Corporation network earlier this year to commemorate the 50th anniversary of the South African War. The Journal was privileged to publish the series by permission of the author and the CBC.—*Editor.*

[1] *Lieutenant R. H. Ryan.*

1910 they became parts of a new British Dominion—the Union of South Africa. From the beginning, the Boers were politically dominant in the Union: the first Prime Minister and the first Minister of Defence were both Boer generals—Botha and Smuts. These formerly implacable enemies of British rule were recognized as pillars of the Empire within a very few years of the Treaty. And of course they weren't alone.

There's no case more striking than that of Denys Reitz, the author of *Commando*. In 1902 he went into exile in Madagascar rather than submit to the conqueror; but the wife of his old friend and commander, Smuts, prevailed upon him to come back and work for South Africa. He found the new regime so much to his liking that this particular Boer's military career, which had begun with sniping at the British around Ladysmith in 1899, ended in 1918 with his marching across the River Rhine in command of a regular battalion of the Royal Scots Fusiliers! All this was a very queer sequel to an imperialistic war: but then everybody admits the British Commonwealth is a very queer institution.

* * *

Looking at the war in the perspective of fifty years as an episode in Commonwealth history, its origins are hardly something to remember with pride; but its results are a rather different matter. For from it there emerged, at long last, a united South Africa—a country still with great problems to solve (as we all have), but a powerful, prosperous and free community within the British family. And she found herself one of a group of Dominions whose other members had won a new importance on her battlefields. New Zealand, for instance, had sent almost as many fighters as the United Kingdom in proportion to her population. Britannia looked at her helpful children with a new interest, and suddenly saw that they were children no longer. In 1907, five years after the war, the decision was taken to re-name the family meeting that had always been called the Colonial Conference. Now it was labelled the *Imperial Conference*. These communities were ceasing to be *colonies* and becoming *nations*.

The British Army itself collected the largest dividend of all. The South African War gave it perhaps the worst jolt in its history, and this went a long way to transform the "red little, dead little Army" of 1899 into the efficient Expeditionary Force of 1914. In particular, it taught the British Army to shoot—fast and straight. The Germans are said to have reported in the days of the Mons Retreat that the British riflemen were armed with automatic weapons—which of course they weren't. That report was an unconscious tribute to

those great teachers of skill at arms, the Boer commandos.

And now, coming home to Canada, let's look at what this old war meant to our own country.

The balance sheet of the Canadian effort in the war looks strange to modern eyes. For the fact is that—even including a garrison battalion which she raised to relieve the Imperial troops at Halifax—Canada only provided about 8,000 men. And most of them were recruited for Lord Strathcona or for the British Government, and didn't cost Canada a cent. Even the official Contingents were paid by Britain after they got to South Africa, except that Canada made up to the difference between the Imperial rates and her own. The whole war cost her only three million dollars! Nor was the loss in men heavy as we think of losses today. Fewer than a hundred men killed by bullets, a rather larger number killed by enteric fever, or other such causes. Compare this with the 100,000 Canadian dead of the two World Wars, the many hundreds of thousands of men and women who wore our uniform, the billions of dollars we spent—and the South African War seems like a pretty small affair. And yet, look back at it across the fifty years, and think: was it really so very insignificant?

The fact is that, though Canada's part in this war was so small, it marked an epoch in our national life: it was the beginning of a development that was to transform our position in the world completely. Henri Bourassa was quite right when he said that sending Canadians to fight in Africa was a precedent—and of course from an isolationist point of view it was a dangerous precedent. But I think Bourassa was mistaken when he interpreted it as a backward step, a return to a colonial status that Canada had outgrown. It was something different: something new. On one side, it was a reflection of Canada's new strength and new confidence,—of her people's feeling that their country was now ready to play a part on the stage of world affairs. At the same time, it was a response to a new world situation. At the end of the nineteenth century, dangerous international rivalries were appearing which in due course would produce the two World Wars. The stronger Canada of that era was not going to be able to avoid involvement in the results of those rivalries. Her small intervention in South Africa was in fact her first halting venture into world politics.

Canada's participation in the war thus can't be considered merely the result of "colonial" thinking—although of course her ancestral ties and loyalties were influential, as such things always are in a time of crisis. Her decision to go into the war

was a *national act.* Laurier said with pride, "What we have done, we have done . . . in the plenitude, in the majesty of our colonial legislative independence . . . I claim for Canada this, that, in future, Canada shall be at liberty to act or not to act, to interfere or not interfere, to do just as she pleases, and that she shall reserve to herself the right to judge whether or not there is cause for her to act." And let me read what Laurier said after Paardeberg of the performance of the Canadians in South Africa. "When we heard that they had justified fully the confidence placed in them, that they had charged like veterans, that their conduct was heroic and had won for them the encomiums of the Commander-in-Chief and the unstinted admiration of their comrades . . . , is there a man whose bosom did not swell with pride, that noblest of all pride, that pride of pure patriotism, the pride of the consciousness of our rising strength, the pride of the consciousness that on that day it had been revealed to the world that a new power had arisen in the West?" When you think that Sir Wilfrid was basing all this upon the work of just one battalion, it may seem a little bit overdone; but that battalion was the precursor of the great Canadian forces of the two World Wars.

Before the Royal Canadian Regiment sailed for South Africa, it heard a sermon from the Reverend F. G. Scott, who was later to be the beloved padre of the 1st Division of the 1914 war. He said: "We are taking a step today, on the threshold of a new century, from which there can be no recession and which will one day give to Canada a voice in the councils of the British Empire." That utterance surely entitles Canon Scott to a place among the prophets.

* * *

Early in this year 1950 we were all subjected to a great deal of discussion over the question of who were the great Canadians of the first half of the century. People nominated statesmen and scientists and even athletes; but nobody, so far as I know, even mentioned the man who has done far more than anyone else to raise Canada's position in the world. Perhaps that wasn't surprising, for the man I mean isn't an individual but a composite of hundreds of thousands of individuals. He is *the Canadian fighting man.*

Today Canada is an independent state within the Commonwealth and a not unimportant member of the United Nations. She has her own foreign policy and her own ambassadors abroad. There isn't the slightest doubt that these things wouldn't have come to pass when they did if it hadn't been for what the Canadian fighting man has done on the battlefields of three wars. Sometimes all this progress is

(*Continued on page 46*)

Canadian Army Photos

South African War veterans march past Field-Marshal Viscount Alexander, Governor General of Canada, at a ceremony held in Ottawa on 7 November to commemorate the 50th anniversary of the action of Leliefontein in which three Canadians won the Victoria Cross for their heroic efforts in defending two field guns. At this ceremony the Governor General unveiled a memorial plaque in front of one of the ancient 12-pounder guns which the Canadians saved in the face of overwhelming odds on 7 November 1900. The author of the accompanying series made reference to this engagement in the preceding instalment.

The Governor General is photographed with Lt. Gen. Sir Richard Turner, VC, KCB, KCMG, DSO, the only survivor of the three members of the Royal Canadian Dragoons who were awarded the Victoria Cross for their heroism in this battle. The muzzle of the historic gun may be seen between the two distinguished soldiers.

Lt. Col. G. J. H. Wattsford, Commanding Officer of the Royal Canadian Dragoons (1st Armoured Regt.), delivers an address at the ceremony.

A COMPARISON

FIELD ARMIES
RUSSIAN—AMERICAN—BRITISH

MAJOR S. J. WATSON, RE,
IN THE ARMY QUARTERLY (GREAT BRITAIN)

PART 1

INTRODUCTION

The Second World War reduced the Great Powers of the world to two in number — the USA and Russia. Though the world was once big enough for many Great Powers to live peaceably together, it is now too small for two to do so when their social and political outlooks are radically divergent. There is no compromise possible between communism and democracy. Lying between, Britain cannot escape being drawn in the orbit of one or the other when war begins. It is therefore opportune to compare the armed forces of the three nations.

It is proposed to examine this subject under three main headings:

(a) The background to military policy in Britain, the USA and Russia, as affected by:

(i) Geographical position.
(ii) Historical traditions.
(iii) Racial characteristics.
(iv) Economic and industrial resources.
(v) Responsibilities toward Allies or Empire.

(b) Features of the manpower and equipment of British, American and Russian field armies.

(c) Against the above background, the probable handling of these armed forces in relation to the principles of war.

THE BACKGROUND

Britain

"*Utterly unwarlike, they outlast everybody else when war comes.*"—*American Ambassador in London, 1916.*

Britain's traditional strategy dates from when the discovery of the New World shifted the economic and therefore the political axis of Europe to the Atlantic coastline. Geographically, she was then at the centre of gravity of the civilized world.

For the next four hundred years Britain's strength lay in her sea power, which enabled her to:—

(a) Exert economic pressure against her rivals by piracy and blockade.

(b) Colonize an overseas empire.

(c) Preserve her island as a firm base secure from invasion.

(d) Transport and maintain her armies in overseas theatres of war, and switch them at will to diversionary operations elsewhere.

Unlike Continental powers, whose long land frontiers called for large and often cumbersome land forces to defend them, Britain kept her army small and flexible. By itself this force had no pretensions of rivalling Continental armies by weight of numbers, but aimed rather at swaying the balance of power to the side of Britain's chosen allies by the use of mobility and surprise. Through sea power Britain was assured of the overall initiative, since any tactical defeats on land were sure to be redressed by the fleet's strategic pressure against the economy of her enemies.

There was thus engendered a confidence in ultimate victory which has enabled the British soldier to:—

(a) Sustain setbacks and hardships with a peculiar equanimity and sense of humour.

(b) Refuse obstinately to envisage the consequence of defeat.

(c) Outlast his enemies by sheer tenacity of purpose.

Britain is by tradition an unmilitary nation, insofar as war came to be regarded not as a struggle for survival, but rather as a science which offered all the excitement of fox-hunting and only five-and-seventy per cent. more of the danger.

This attitude perhaps explains:—

(a) Britain's emphasis on the "rules of the game" as promulgated by the Hague Convention.

(b) The Englishman's humane regard for the lives and welfare of his own soldiers, and reluctance to foster personal enmity towards his enemies.

(c) The eagerness for "de-militarization" once war is over.

(d) The unpopularity of conscription in peace-time, though it is cheerfully accepted as a war-time necessity.

Such sentiments appear strange in modern war against totalitarian states. They were more appropriate to the role of policing the Empire.

Imperial policing has, from the time of the East India Company, enabled Britain to combine in a worthy and constructive cause:—

(a) The training of her leaders and the exercise of her soldiers.

(b) Long experience of overseas campaigns in varying climates.

(c) Knowledge of conducting sea-borne operations.

But the very success of these expeditions has probably led to undue conservatism in military development. It is only after exhaustive trials and prolonged deliberation that new weapons or new techniques in war are finally adopted; there is thus a danger that some foreign power may meanwhile have put the same ideas into practice on a formidable

scale.

Another deterrent to military development is the need for economy. In striking the balance between the two extremes of having an industry with no fighting services to defend it or having fighting services with nothing worth defending the following factors weigh against the armed forces:—

(a) Impoverished by the wholesale contribution of industry to the last war, Britain must now concentrate on the return to peace-time production in order to get overseas markets for her goods.

(b) The cost of the armed forces, including their allocations of manpower and industrial resources, is an insurance premium which in peace-time the average citizen is loath to pay.

(c) Because the votes of the peace-time forces are unlikely to sway election results, politicians in a democratic country often pay undue attention to the more popular peace-time suggestions of disarmament and appeasement.

Britain has entered the last two wars with inadequate fighting services under-equipped, and it has taken many months to convert peace-time industry to war-time needs. The equipping of these services therefore presents a most difficult problem to the planning staffs, since they are seldom sure where they stand in regard to public opinion—and, in a democracy, public opinion elects the Government which controls the purse-strings.

Britain is not self-supporting. The Empire has hitherto provided, in whole or in part:—

(a) Raw materials from which are manufactured the equipment economically necessary in peace-time and the weapons militarily vital in war.

(b) Foodstuffs which British agriculture does not produce in quantities sufficient to support the population.

(c) Oil, which, with the development of the internal combustion engine, has become more vital to Britain than her native coal.

The delivery of these commodities depends on Britain's ability to keep open her lines of communication with the Empire.

The problem of Empire security is complex. The Empire is widely dispersed, but largely lacks the industrial capacity to equip its armed forces and is open to defeat in detail. Britain has so concentrated her industry and population as to present a most vulnerable target to weapons of mass destruction. No equivalent problem confronts either the USA or Russia. Each Dominion of the Empire has its own policy, and these various policies may not favour a prearranged defence scheme or a centralized defence organization. No Dominion is bound to enter a war

in which Britain is engaged, still less to dispose its military forces in accordance with the wishes of Whitehall. No such latitude is desired by any of the United States of America, nor is it likely to be granted to any member of the Union of Soviet Socialist Republics. As Cyril Falls has written in "The Question of Defence": "Russia is strategically interested in Rumania, not for the sake of Rumania, but because she looks upon that country as a buffer state or outpost of her own . . . But into England's relations with New Zealand there enters another element, far from purely strategic. Britain desires to provide security for New Zealand for its own sake; New Zealand is part of the Empire."

The USA

"*Our country has become so democratic that the mere popular opinion of any town or village runs above the law.*"—*General Sherman.*

The USA is a young nation, founded by European peoples fleeing from seventeenth-century tyranny and persecutions, which is specifically — and uniquely — dedicated to the proposition that all men are created equal. Separated from Europe and Asia by thousands of miles of ocean, the Government has always had the time to frame its policies on the basis of argued reasoning within the framework of a written constitution. Thus, historical tradition has evolved the theory of democracy and geographical position has enabled this theory to be put into practice.

Like Britain, the USA is not a military nation. The two main reasons are:—

(a) Geographical isolation together with economic self-sufficiency have hitherto dispensed with the need for formulating an international strategy. The young American nation is, as a whole, more likely to react to an affront to national dignity than to a threat to national security.

(b) The regular armed forces have never fought to bring wealth or empire to the nation, nor before 1941 did they stand between the nation and unconditional defeat. In the eyes of a young democracy, accustomed to judge by results, the glamour of West Point has taken second place to the glamour of Wall Street.

This outlook does not favour an aggressive military policy or conscription in peace-time; nor is the rigid constitution suited to deploy the nation quickly for war.

American military traditions do not go back beyond the Civil War, which took place within living memory. But from that remarkable campaign, at the start of which soldiers fought with muzzle-loading muskets and generals returned to the colours from civilian life, emerge four basic lessons:—

(a) The importance of what Liddell Hart calls the "indirect approach" by mobile forces vindicated by:

(i) Grant's thrust against the enemy lines of communication at Vicksburg.

(ii) Sherman's operations against Confederate industry and communications on his "march to the sea."

(b) The vital influence of logistics on strategy, demonstrated by Haupt and MacCallum—the founders of "movements and transportation."

(c) The need for a mutual understanding between the politicians and the commanders — emphasized all too late by Jackson's resignation.

(d) The increased efficiency achieved by decentralization to subordinate commanders. One of Grant's directives to Sherman reads: "I do not propose to lay down for you a plan of campaign, but simply to lay down the work it is desirable to have done, and leave you to execute it in your own way."

All these lessons are equally applicable today, and an army with traditions founded on this teaching is fundamentally sound in its approach to the problems of modern war.

The USA is a self-sufficing land mass enjoying the following advantages:—

(a) Rich natural resources (though, like Russia, the USA looks to the Middle East for supplementary oil supplies).

(b) An agriculture which can support the population.

(c) A population which could support strong armed forces in peacetime without serious dislocation of the national economy.

(d) A comprehensive system of road and rail communications.

(e) An industrial potential which:

(i) Is undamaged by war-time enemy action.

(ii) Was never completely converted to war-time production.

(iii) Does not offer such concentrated targets as the industrial centres of England.

Not only can the USA afford to have her armed forces fully equipped before the next war starts, but any inferior or obsolescent items of equipment could quickly be replaced. The only military disadvantage of American labour-saving and mass-production methods is that the average soldier may become too "gadget-minded" and find difficulty in improvising if deprived of mechanical aids.

As compared with an Englishman, an American shows only a few, but significant differences:—

(a) He is emotionally more volatile, due to:—

(i) The mixture of races from which he is recently descended.

(ii) His higher nervous tension,

resulting from the faster tempo of American daily life.

(b) He is more likely to regard his war-time enemies as personal enemies, due to the influence of the personal—and often unscrupulous—rivalries in American "big business."

(c) As a citizen of a young nation, he is likely to prefer to make his own mistakes and to learn from them, rather than to accept advice based on other people's experience.

Russia

"*Everybody has always underrated the Russians. They keep their own secrets alike from foe and friends.*" —*Churchill: 23 April, 1943.*

Like the USA, Russia is inhabited by peoples of different racial origins who share a common citizenship. Russia's national characteristics and military traditions have two main sources:—

(a) The Turco-Mongols from Asia, who swept into Europe in the twelfth century.

(b) The true Russians from Eurasia, who, from the fifteenth century onwards, pushed their way back into Asia.

These are the two predominant races among the 200 million inhabitants of the USSR today.

The Mongols are nomads, because of their constant search for pasturage in a territory which imposes few restrictions on mobility; they are also a warlike race, because their migrations have brought them into frequent conflict with other tribes and peoples. The true Russians have fought continuously for 500 years, pushing out the boundaries of their frontierless principality until they reached some line of natural defence. Operating on interior lines, whenever they were checked in one direction they could stop and try again elsewhere. Thus the traditional policy of Russia is in the following sequence:—

(a) Expansion on the following lines:—

(i) Geographical, to the next natural frontier.

(ii) Racial, through the Pan-Slav movement.

(iii) Ideological, by means of the Comintern.

(b) A check, for example, from German land-power or from Japanese sea-power.

(c) A change of direction or of policy, as when Molotov made the pact with Germany on 24 August, 1939.

Long years of war have bred in the Russians a profound distrust of their neighbours, particularly of those whose superior standard of living and industrial tradition appear as a constant menace to Russia's more primitive organizations. The Russians are a warlike and not an industrial race. All Russians readily accept the teaching that it was the Red Army

which saved their country and at the same time won the war for the English and Americans; it is therefore an honour to be a soldier.

History and environment give the Russian soldier the following characteristics:—

(a) Self-reliance and resource in improvisation.

(b) A standard of fieldcraft, by night especially, which is far superior to that of British and American townsmen.

(c) Physical toughness and bravery, which enable him to survive the worst conditions of battle and climate with the minimum of food, clothing and shelter.

(d) Ready acceptance of death both for himself and his enemies, for whom he is taught to foster a ruthless and personal hatred undiluted by Christian scruples.

(e) An overall patriotism and loyalty to Stalin reaching religious fervour.

(f) A lack of experience of overseas operations.

Russia has no convenient anti-tank obstacle like the Atlantic Ocean or the English Channel, and has therefore no time to formulate policy, on democratic lines, in the face of real or supposed aggression. The Russians are used to authoritarian government backed by secret police. The Czars and the Okhrana found it necessary because the people had no education; the Politburo and the MVD find it necessary to ensure that the people's education follows the "party line." The government of the State and the command of the armed forces are therefore rigidly centralized and carefully screened at all levels by the MVD; local initiative is neither trusted nor encouraged. Thus the keynote of military discipline is the unquestioning obedience of orders, even though subordinates are seldom briefed sufficiently to understand the reason for any particular incident in a campaign. Officers display a high standard of leadership, but the low level of their education does not fit them easily for the intricacies of staff work and administration.

Russia resembles the USA in the following:—

(a) Russia is a self-supporting land mass rich in natural resources.

(b) Russia's agriculture can support the population.

(c) Russia's industrial centres are widely dispersed and not so vulnerable as those in England.

(d) Russia's industrial potential is capable of equipping the present armed forces to 1945 scales.

Russia differs from the USA and from Britain in that:—

(e) Russia has no industrial tradition and lacks trained technicians.

(f) Russia's present road and rail communications are not adequate to link industrial output with the

armed forces deployed for war. In Russia there are only 0.7 miles of railway per 100 square miles of territory, compared with 8.3 miles in the USA and 21.5 miles in Great Britain.

Like Britain, Russia's factories and communications were extensively damaged during the last war, though the effect of this was reduced by transferring the main industries to beyond the Urals and by importing lease-lend and satellite plant and machinery.

Unlike Britain or America, Russia appears to show little interest in overseas markets. The Government is able at any time to allocate industrial resources to the armed forces and to ensure that the people accept any consequent shortage of consumer goods.

During the next ten years the strategic policy in Russian industry is likely to aim at:—

(a) The build-up of a reserve of warlike equipment sufficient to cover the general mobilization of the Red Army.

(b) The extension and improvement of road and rail communications linking industrial centres with probable zones of operations.

(c) The training of competent technicians, particularly in radar and nuclear physics.

Meanwhile the Russians will concentrate on:—

(d) Serviceability of equipment achieved through standardization of design and simplicity of construction.

(e) Improvisation, based on ruthless exploitation of local resources and the manual dexterity of the Russian soldier.

(To be continued)

The Soul of War

Movement is the soul of war, says Major-General F. C. Fuller, the internationally recognized authority on military affairs . . . He advocates tank break-throughs at night to cause maximum confusion and ensure maximum security for the tanks. Exploitation must be uninterrupted; it must be continued during the night. Supply vehicles must be fully tracked and supply aircraft must be used: in this way tanks will become truly roadless. Two echelons of tanks will be necessary, each with duplicate crews. Pointing out that once armies went into winter quarters, thereby halving the operational period, and that in the last war they went into night quarters halving the operational day, he maintains that the side which can obviate this by establishing round-the-clock movement will double its mobility.—*Irish Defence Journal.*

MAKE SHOOTING A PLEASURE

By
Major R. C. W. Hooper, RCA,
Administrative Officer, Camp Shilo, Man.

Often overlooked by a commander are the opportunities for furthering his unit training by means of a unit rifle association. The procedure is simple and the rewards are many.

Many of us forget the trouble we had during the last war in establishing the soldier's faith in his rifle, the personal weapon of every soldier: the more complex weapons pushed the rifle into the background.

Recent reports from the world's trouble spots indicate that good rifle marksmen are still needed in war. Such official comments as the following serve to illustrate this point: "Our greatest weakness is poor marksmanship, and a large number of bandits have escaped our clutches on this account." "The soldier and the young officer seem to lack confidence in the rifle as a means of killing the enemy." "Accurate small-arms fire will certainly play an important part in modern battle."

The rifle is the simplest weapon used by our Army, and it is therefore a good starting point in the teaching of weapon training. If a man knows the theory and mechanism of his rifle he is off to a good start in the handling and firing of any weapon, be it the PIAT, MMG, mortar or artillery piece. Consistency and accuracy must be employed in firing any weapon; the theory of the trajectory applies to all weapons.

During GMT and the firing of the annual range courses a soldier gains but a nodding acquaintance with his rifle. If he is to develop his skill he will need lots of practice. Training hours are too few to produce the marksman required, but we can use a man's spare time to carry out training in the guise of recreation. Competitive rifle shooting can be used in this way, and here is where the unit rifle association can assist. If the unit already has an association, a little attention to the social side will do much to increase attendance. Tea and a chance to chat at the range will make the competitor's wife feel more kindly towards his

participation in this sport. An occasional informal dance after the day's shooting will help, too.

If the unit has no rifle association, the procedure for forming one is contained in CAO 240–1. Your Command or Area Headquarters can produce the two forms required on application.

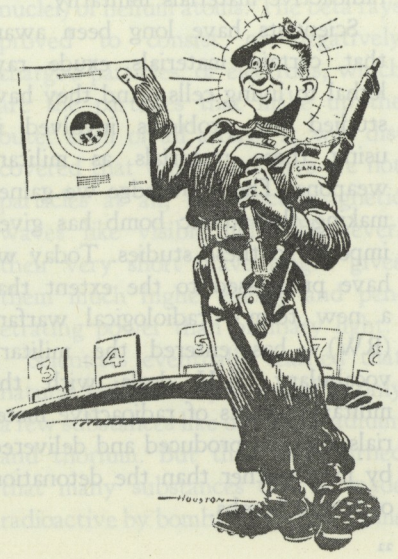
You will note that, in addition to members of the unit, you may enroll honorary members providing they fulfil certain qualifications. The role of these honorary members is to provide experienced "coaches"—please remember they are "coaches", NOT "instructors", who must come from the unit.

Officially authorized rifle associations may draw an ammunition allotment of 200 rounds per member per year.

After practice in the unit association, where he may have been encouraged by the winning of prizes in the form of trophies or cash, the man may wish to have a chance to compete against more experienced shots; if so, he may enter the annual Provincial Association prize meeting. Here he has a good opportunity to win some of the many cash prizes, and may win a place on the provincial team. If he qualifies as a team member he will be given a free trip to Ottawa to shoot in the Dominion of Canada Rifle Association matches, where he may be one of the lucky eighteen to qualify as a member of the Canadian Bisley Team. This is the goal of all marksmen.

From the foregoing you can see that there are many opportunities to promote the training of marksmen. The organization is there; all that is required is the energy and imagination to take advantage of it.

Enthusiasm can be maintained during the winter months by means of the Canadian Army Recreational Shooting programme and the Dominion of Canada Rifle Association Indoor Winter Competitions. Full details are available from your Command or Area Headquarters.



RADIOLOGICAL WARFARE

Reprinted from Officers' Call (U.S. Dept. of the Army)

Part 1

Foreword

One result of an atomic bomb explosion is the release of radioactive materials whose rays are capable of killing or injuring people in the target area. These materials, however, are essentially by-products of the atomic bomb which relies primarily on its blast and heat effects to destroy an enemy. In fact — as this discussion will point out — the atomic bomb is an uncontrolled and highly inefficient means of employing radioactive materials militarily.

Scientists have long been aware that certain materials exude rays lethal to living cells. And they have studied the problems involved in using these materials as military weapons. The knowledge we gained making the atomic bomb has given impetus to these studies. Today we have progressed to the extent that a new term — radiological warfare (RW) — has entered the military vocabulary. RW deals with the military aspects of radioactive materials that are produced and delivered by means other than the detonation of atomic bombs.

In the event of a future war it's possible that we will be prepared to use RW against an enemy. Conversely, an enemy may use it against us. It's therefore of high importance that Army officers gain some familiarity with what RW can and (perhaps even more important) cannot do. For the mass terror which RW might inspire among peoples ignorant of its capabilities is not its least important effect.

Informed people, however, will know that RW can be easily detected by simple instruments, that it can kill or injure only under certain conditions, and that they can readily defend themselves against it. In short, they will regard it as an acceptable hazard of war.*

Radioactivity Before the Atomic Bomb

The French chemist, Becquerel, was the first (1896) to observe the phenomenon of radioactivity. He had placed some uranium minerals

* *Attention of all officers especially invited to the broader and more detailed treatment of atomic matters in the recently published* The Effects of Atomic Weapons.

in a dark drawer near a photographic plate which was wrapped in light-proof paper. When he unwrapped the plate he discovered that its emulsion had become fogged, as if by exposure to light. He reasoned that the uranium minerals had emitted some form of radiation capable of penetrating darkness and the paper wrapping. He experimented with several other minerals and found that only those containing uranium seemed to have this strange property. Moreover, the amount of radiation appeared to be in proportion to the amount of uranium in the mineral.

Not long afterward, the substance known as pitchblende was found to have similar radioactivity, and its radiation was much stronger than could be accounted for by the uranium content of pitchblende. The Curies succeeded in isolating the radioactive component of pitchblende, which they called radium.

Scientists continued step by step to increase their knowledge of radioactivity. One early study is particularly interesting because it established facts that bear directly upon the military usefulness of certain radiological agents. In this experiment a small piece of radium was enclosed in a heavy lead box, through one side of which a small hole had been cut. The lead sides stopped radiation except through this hole, so that a single straight stream of radiation could be studied. A magnetic field of force was applied to the stream, which immediately separated into three smaller streams. One stream continued in a straight line, unaffected by the magnetic force, indicating the absence of any electrical charge in the stream. The other two streams, by bending respectively to the left and right, revealed the presence in one of a positive charge and in the other of a negative charge. The radium was thus shown to be giving off three distinct kinds of rays. They were given identifying names corresponding to the first three letters of the Greek alphabet—alpha, beta, and gamma.

The alpha rays were found to be particles carrying a positive charge and were exactly like the cores (or nuclei) of helium atoms. The beta rays proved to consist of negatively charged particles, or electrons, which are the particles that make up the outer shell of all atoms. It was discovered that the gamma rays are not particles at all, but electromagnetic waves like visible light. However, their very short wave length gives them much higher energy and penetrating power than ordinary light.

Scientists eventually learned that natural radioactivity is found in only a few substances like uranium, radium, and thorium. But they also learned that many substances can be made radioactive by bombarding their atoms

with particles such as the alphas and betas of radium. When a carbon atom, for example, is bombarded with these particles, the carbon nucleus may capture one or more of them. The carbon nucleus then becomes unstable and emits radiations like those of radium itself. Normally stable atoms that have been made artificially radioactive are called radioisotopes. Several hundred kinds of radioisotopes have thus far been produced by this means.

The power of radioactivity to injure living cells was recognized very soon after Becquerel's discovery in 1896. This inevitably led to some speculation concerning possible military uses for radioactivity. Several obstacles to such use became apparent and for many years the military possibilities of radioactivity were more theoretical than practical.

Radium and other naturally radioactive elements are extremely rare and therefore very expensive. Up to 1945, for example, the total world production of radium was less than 10 pounds at a cost of more than 7 million dollars per pound.

The development of artificial radioactivity did little to improve the military possibilities. The cyclotrons and other elaborate machines by which radioisotopes were produced were quite limited in their output. It has been estimated that all such machines together could not have produced enough radioactive materials for even one small-scale military operation.

Even before Becquerel's discovery of radioactivity, the harmful effects of X-rays on living cells had promoted some study of their military possibilities. The obstacles were obvious. The X-ray producing apparatus, besides its great bulk and complexity (which confined it largely to the laboratory), could not produce rays of sufficient range to be militarily useful.

For almost a half-century, therefore, the application of radioactivity to military needs was discouraged by several practical problems whose solution, until 1942, seemed unlikely. Out of the vast project which created atomic bombs came new knowledge and processes concerning radio activity. Not all the practical obstacles have been overcome, as we shall see, but radiological warfare, once a favorite subject for writers of "science fiction", has quickly passed into the realm of sober possibility.

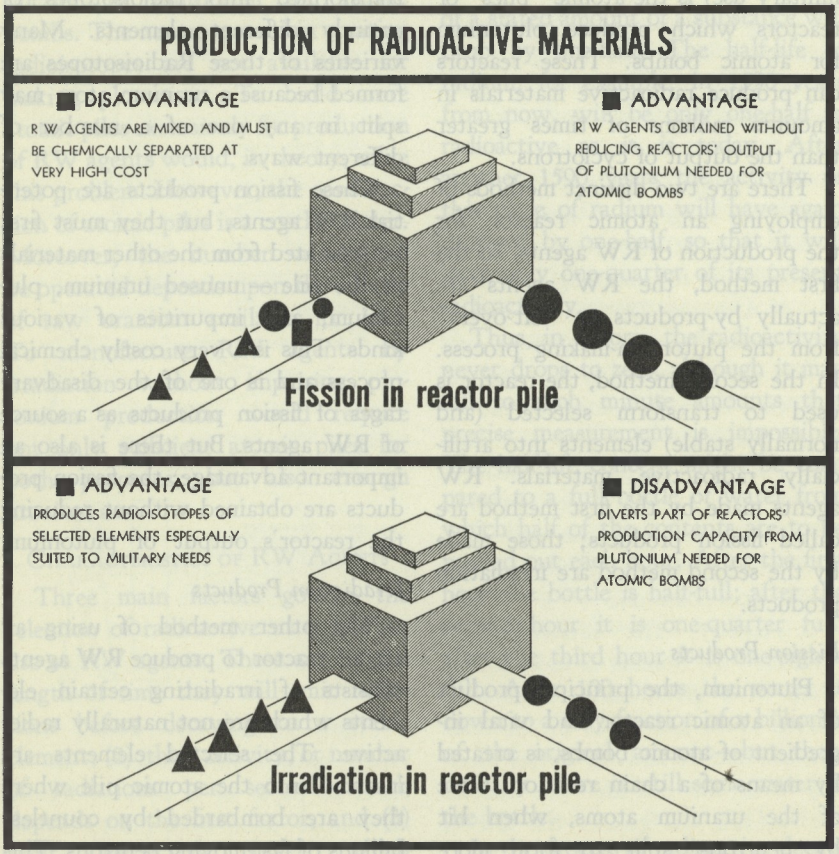
Radiological Warfare Defined

Both in making and in exploding an atomic bomb, radiological phenomena are present. Nevertheless, atomic bombs are not necessarily included in the meaning of radiological warfare. Radiological warfare is generally understood to be the contamination of a target area with radioactive

materials *by means other than an atomic explosion.* For convenience of discussion, radiological warfare will henceforth be referred to as RW; the contaminating materials will be called RW agents.

Production of RW Agents

One method of creating substantial mounts of radioactive materials is to explode an atomic bomb. Such an explosion releases fragments or remains of uranium or plutonium atoms which form more than a hundred varieties of radioactive materials. Some are strongly radioactive, others weak; some are long-lived, others decay in a few seconds or less. In the blast, these materials are spread over a wide area and (except



when the detonation occurs under water or underground, which traps the radioactive fragments) dissipated harmlessly into the atmosphere. Thus the radioactive materials created in an atomic blast in the open air, while plentiful, are largely wasted in the military sense.

The other source of radioactive materials (in quantities sufficient for military use) is the atomic "piles" or reactors which produce plutonium for atomic bombs. These reactors can produce radioactive materials in amounts millions of times greater than the output of cyclotrons.

There are two distinct methods of employing an atomic reactor for the production of RW agents. In the first method, the RW agents are actually by-products or "left-overs" from the plutonium-making process. In the second method, the reactor is used to transform selected (and normally stable) elements into artificially radioactive materials. RW agents made by the first method are called fission products; those made by the second method are irradiation products.

Fission Products

Plutonium, the principal product of an atomic reactor and vital ingredient of atomic bombs, is created by means of a chain reaction: some of the uranium atoms, when hit by neutrons, split to form more neutrons which split more atoms to form more neutrons, and so on. More neutrons are released than are needed to maintain the chain reaction, and some of these "extra" neutrons are captured by nonsplitting uranium atoms, which are thus transformed into the synthetic element-plutonium. The uranium atoms which have split (or fissioned) are transformed into radioisotopes of entirely different elements. Many varieties of these Radioisotopes are formed because a uranium atom may split in any one of a number of different ways.

These fission products are potential RW agents, but they must first be separated from the other materials in the pile — unused uranium, plutonium, and impurities of various kinds. This is a very costly chemical process and is one of the disadvantages of fission products as a source of RW agents. But there is also an important advantage: the fission products are obtained without reducing the reactor's output of plutonium.

Irradiation Products

The other method of using an atomic reactor to produce RW agents consists of irradiating certain elements which are not naturally radioactive. The selected elements are inserted into the atomic pile where they are bombarded by countless billions of fast-moving neutrons. This

transforms the selected elements into radioisotopes of various kinds.

By the irradiation method it is possible to produce RW agents having characteristics best suited to particular military needs. These characteristics will be considered a little later. But this advantage conflicts to some extent with another vital aspect of our security — production of plutonium for atomic bombs. The neutrons used in creating radioisotopes are not available for making plutonium. To build more atomic piles exclusively for production of RW agents would, in theory, solve this problem. However, the construction of atomic piles is a costly matter. Moreover, the number which can be operated depends upon the supply of raw uranium available for fuel. To manufacture RW agents by irradiation without impairing plutonium production would require not only sufficient atomic piles for both purposes, but also enough uranium ore.

Characteristics of RW Agents

Three main factors govern the selection of radioactive materials for use as RW agents. These are (1) the length of time they will emit radiations before decaying to a stable element; (2) their activity, or number of radiations per second—which depends on the first factor, and (3) their destructive power, which depends on the type of radiation emitted and its energy.

1. *Radiation Life:* All radioactive materials are constantly undergoing a decrease in the amount of radiation they emit. This decaying process, for every radioactive substance, occurs at a fixed rate peculiar to that substance. This distinctive rate of decay is called "half-life", or the amount of time during which the radioactivity of a stated amount of a substance will drop by one-half. The half-life of radium, for example, in 1590 years from now, will be only one-half as radioactive as it is today. After another 1590 years the activity of this piece of radium will have again dropped by one-half, so that it will have only one-quarter of its present radioactivity.

Thus, in theory, the radioactivity never drops to zero, although it may fall to such minute amounts that precise measurement is impossible. The half-life concept might be compared to a full bottle of water from which half of the contents are to be poured out each hour. After the first hour the bottle is half-full; after the second hour it is one-quarter full; after the third hour it is one-eighth full. After 100 hours the water is down to a tiny fraction of a billionth of the original amount—but theoretically there is still some water in the bottle.

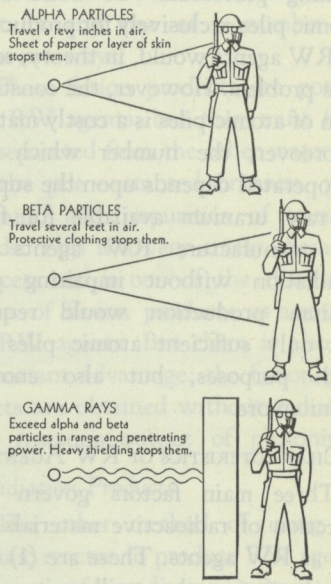
In the process of radioactive decay,

the total number of atoms in the radioactive agent does not change. Instead, the atoms change into different types of atoms until they become stable or nonradiation atoms. Sometimes this involves a whole series of changes. In the case of radium, for example, the atoms change into radon (a gas), then into polonium, and through several more transformations until they become lead—a nonradiating substance. Some radioactive agents, on the other hand, become stable after only one of these transformations from one element to another.

The range between materials having the longest and shortest half-lives is so great that the mind grasps vainly for its full meaning. The half-life of Uranium-235 is 4½ billion years; that of some polonium isotopes is less than a millionth of a second. Between these extremes are to be found materials of almost any half-life. For RW purposes, as will be shown later, the most desirable materials would be those with half-lives far shorter than uranium and far longer than polonium.

2. *Activity:* The activity of a material—the number of radiations it emits in a given time—is directly related to the half-life of the material. The amount of activity varies *inversely* with the half-life—the shorter the half-life, the greater the rate of radiation.

3. *Destructive Power:* This refers to the ability of radioactive emissions to penetrate and destroy cell life. These qualities depend both on the kind of radiation emitted and on the energy or force with which the radiation occurs. The three types of radiation (alpha, beta, and gamma rays) have varying degrees of destructive power within their range, and this fact is of primary importance in determining the most suitable materials for use as RW agents.



Alpha particles have a very short range—only a few inches in air. A sheet of paper or a layer of human skin stops them completely. Consequently, alpha particles are dangerous

to human beings only if the emitting agent gets inside the body by breathing or through a skin opening of some kind. Once inside the body, alpha particles are quite effective killers of cells within their range.

Beta particles have a range of several feet in air and can penetrate a few layers of human skin. Beta emitters can therefore cause skin burns if touched, but the radiations are easily stopped by protective clothing and gas masks. If beta emitters get inside the body, they can destroy in the same way as alpha particles, although they are not as potent, particle for particle.

Gamma rays, besides having considerable range in air, have much greater penetrating power than alpha and beta particles. They can easily penetrate clothing and similar light shields. Some gamma rays of particularly high energy, such as those given off by an atomic bomb explosion, can penetrate several feet of concrete or steel.

Within their respective ranges, both alpha and beta particles are more effective cell killers than the gamma rays. For RW purposes, however, the much greater penetrating power of gamma rays more than offsets their lower rate of destructive ability per inch of travel. In fact, only materials that emit gamma rays are thought to have much promise as RW agents. There are several reasons for this. Gamma emitters do not need to get inside the body to be effective. Protective clothing that would be thick enough to stop them would completely immobilize the wearer. Because of the longer range of gamma rays in the open air, persons in gamma-contaminated areas would be imperilled from all sides, though they remained at some distance from more heavily contaminated objects in the area. In areas contaminated by alpha or beta emitters, these hazards would be much less serious or non-existent.

All three types of radiation have similar damaging or destructive effects on cell life. The whole story of how this takes place is not yet known. What is known is that the radiations cause the atoms in the cell structure to become ionized, or electrically charged particles, causing serious damage to the cell life or its complete destruction. The effect on the whole organism is much like that of chemical poisoning.

Radiation causes various degrees of illness in the person exposed to it, depending on the amount of ionization that takes place. When the damaged cells exceed a certain proportion of the person's entire cell structure, he dies.

Radiation quantity is usually expressed in units called *roentgen* (abbreviated R or rr). Much has been learned about the amount of radia-

tion a person can receive without permanent injury, and how much will cause illness or death.

There is a wide range of individual resistance to radiation. Some persons can safely absorb more than others, and the degree of resistance does not remain constant in the individual. Consequently, the estimated "safe" and "lethal" amounts should be regarded as general averages.

It is generally considered that 600 to 800 Roentgens (600—800 R) absorbed in a short period of time, would be a fatal dosage in all cases. If a number of people absorbed 450 R in a short time, about half of them would die if no medical aid were given. A quick dosage of 200 R would make about half of the individuals so exposed ill. It is expected that none, or a very small percentage at most, would die.

The 600—800 Roentgens, it must be remembered, is fatal only when received within an hour or so. There is an important difference between the effectiveness of acute and chronic (or gradual) doses. A person who absorbed one R per day for 600 days would accumulate 600 R, but the total exposure would not be fatal — during the 600 days his body would exhibit certain recuperative powers that would reduce the radiation effects. Doctors estimate that a one R per day exposure would not be fatal until an exposure of several thousand R had been obtained. The greater the daily exposure, the less chance there is for the body's recuperative powers to battle the radiation damage.

The symptoms of radiation injury, unlike those that accompany burns and other conventional injuries, are quite slow to manifest themselves. Even a person exposed to a lethal dose of radiation does not die (or even become ill) immediately. Several Japanese soldiers at Hiroshima, who had received lethal doses of radiation in the explosion, marched 20 miles with full packs the following day. A few days later they developed weakness, nausea, diarrhea, and other symptoms of radiation injury. Within 6 weeks all of them were dead. It is noteworthy that these soldiers did not receive adequate care.

The first symptoms to appear in a person who has received a lethal dose is likely to be nausea an hour or so after the exposure. The nausea disappears in a short time and as much as 3 days may elapse before other symptoms of injury may develop. To cause immediate death by radiation a really tremendous dose of several thousand R would probably be necessary.

Everyone, all the time, is being exposed to small amounts of radiation without suffering any ill effects. We accumulate during a lifetime from 10 to 15 R. Most of it comes from outer

(*Continued on page 50*)

PURSUIT
THE CROWN OF VICTORY

By
Lieut. D. J. Goodspeed, Royal Canadian Ordnance Corps School, Montreal

A question which is often debated is whether war is more dangerous to the individual soldier today than it used to be in the past. On one side it is urged that the casualties are much heavier in modern war, but this in turn is countered by the indisputable fact that armies are also much larger. There is probably no final answer to the argument, for military history demonstrates no definite trend one way or the other. The Roman civil war between Marius and Sulla was a bloody affair, but no more so, surely, than was the Spanish Civil War of 1936. Cæsar's victory at Ilerda, on the other hand, was a bloodless one, but very recently Mao Tse's Communist army drove Chiang-Kai-Chek's Nationalists from the mainland of China without serious fighting. So it will be seen that there are examples enough to support either side, and for that very reason no general conclusion is possible.

One thing, however, can be said with certainty. In the past it was undoubtedly more dangerous to belong to a *defeated* army than it is at the present time. The old Roman slogan of *Vae Victis* — woe to the conquered — was not so much an expression of ruthless determination as a simple statement of military fact.

At the battle of Marathon in 490 B.C., for instance, ten thousand Greeks met and defeated a force of about a hundred thousand Persians. The casualties were about even on both sides until the Persian line of battle broke, but along the line of flight the Asiatics were killed in their thousands. Six thousand and four hundred Persians were slaughtered at Marathon, while the Greeks lost only one hundred and ninety-two. At Cannæ, one of the most disastrous defeats in history, the Romans lost no more than the Carthaginians until their centre gave way, but, in the massacre and pursuit which followed, the Romans left seventy thousand dead upon the field. Only fifteen thousand Roman soldiers escaped the killing; Hannibal's casualties were six thousand.

There was some hard fighting at the battle of Cynosceplanæ when the Macedonian phalanx was opposed to the Roman legion, and the Romans only gradually got the best of it. Yet when the Macedonians took to flight

the Romans pursued to such good effect that the Macedonians lost eighty thousand in dead as opposed to a paltry Roman loss of seven hundred. Cæsar's victory over the forces of Pompey at the battle of Pharsalus is another example of the efficiency of ancient pursuits. In the battle itself Cæsar's casualties were nearly as heavy as Pompey's, but Pompey's army broke, and before the day was over thirty-nine thousand of his soldiers had been killed or captured. When the dead were counted in Cæsar's legions, they numbered no more than two hundred.

Nor was it only in the ancient world that military pursuit was pushed to such sinister perfection. At the battle of Leuthen, Frederick the Great defeated the Austrians on the field, but both sides lost about six thousand men. During the ensuing pursuit, however, the Austrian casualties mounted to over twenty thousand men. As recently as Waterloo, in 1815, a pursuing army was still able to kill its fleeing enemy almost at will. The *Grande Armée* of Napoleon gave way late in the afternoon under the combined impact of Wellington and Blücher, but not even the swift approach of night saved the retreating French. There was a bright moon over Belgium that night and the Prussian cavalry gave chase all the way to the Sambre River, sabring and lancing the scattered remnants of the beaten army. It was merciless, butcher's work, and it ended only when the pursuing cavalrymen were too tired to lift their arms for another fatal stroke and when their horses were too worn out to gallop farther. The French dead lay in little heaps all the way from the field of Waterloo to the banks of the Sambre, and of the one hundred and twenty-four thousand men who had marched against Wellington the day before only a few thousands survived.

There have, of course, been decisive battles since Waterloo, but no modern victory has been exploited as successfully as was the case in these examples from the past. In 1940 the beaten British Army escaped at Dunkirk, a feat which has been variously ascribed to a miracle of Heaven, to the luck of the British, and to the amateurish strategy of Hitler. Any one of these diverse verdicts might have been acceptable had the same phenomenon not been repeated later in the war. But when the *Afrika Korps* of Marshal Rommel was decisively beaten at El Alamein the Germans still managed to make good their escape with little loss. Montgomery's chief of staff, Major-General de Guingand, has since described the failure of the British pursuit as "very disappointing".[1] He felt that Rommel's retreat should have been turned into a complete route and that the *Afrika Korps* should have been an-

nihilated. We now know that Rommel himself completely shared this conviction.[2]

In early August of 1944 British and American forces decisively defeated the German Army in France and a very great victory was won. The German counter-attack towards Mortain was stopped dead and a vast Nazi force was virtually encircled in the Falaise pocket. Field Marshal Montgomery remarks that "by 16 August the enemy lost almost all cohesion; divisions were hopelessly jumbled up and commanders were able to control no more than their own battle groups. The Allied Air Forces were presented with targets probably unparalled in this war; aircraft formations were engaging endless columns of enemy transport, packed bumper to bumper and rendered immobile by the appalling congestion."[3] It looked for a time as though the war in the West was as good as won. Yet such was not the case. History was provided instead with another modern example of a defeated army which was pursued but not destroyed. Tremendous damage was certainly inflicted upon the *Wehrmacht*, but for all that, as General Eisenhower readily admits, "the German forces succeeded, in spite of defeat and disorder, in withdrawing significant numbers of their troops across the Seine."[4]

What is the reason, then, for this sharply altered trend in military history? A hundred years or so ago it was still possible to annihilate an army along its line of flight, to exploit victory to the utmost and gain the full reward due to a successful engagement. This no longer seems to be the case. Yet now as formerly, the desire of every commander is certainly to kill the enemy in as wholesale a manner as possible. Nowhere, as history clearly shows, can this be done as easily, as completely, or as cheaply as during a pursuit to destruction. A ruthless pursuit is undoubtedly the final fruit of victory. Indeed it is often the only tangible and lasting benefit to be derived from a won battle, for an enemy who is merely beaten and not destroyed can frequently reorganize and fight again. Only a successful pursuit makes victory complete, for victory is, in the last analysis, measured in the corpses of the enemy. It is bought with blood.

If we analyse the successful pursuits of the past we find that they all had these factors in common: They were, first of all, massacres rather than fights; the killing was accomplished with little loss to the pursuers. Secondly, one of the causes of this was that an organized force was pitted against a disorganized one. Thirdly, confusion and panic spread among the ranks of the beaten army. (This was a reciprocal action, for the more bloody the pursuit the more the panic spread.) Lastly, and most important

from our point of view, the victorious army always possessed a tactical weapon which was suited to this killing role. At Marathon the Athenian hoplite, trained in the gymnasiums of Greece and armed with a short, stabbing sword, was able to accomplish the work of butchery. At Leuthen and at Waterloo it was the cavalryman who could ride down this fleeing enemy and dispose of him with a sabre-cut or stick him with a lance. It will be noted that, in each case, the weapon of the pursuer was an individual weapon.

Each of these factors — the massacring, the disorganization of the enemy, the spreading panic, and the suitable pursuit weapon — were present in all previous pursuits to destruction. The first three factors have all been present in modern war, but the lack of a suitable pursuit weapon has nullified their value. We seem to have nothing today which can play the role of cavalry, which can ride down a retreating enemy and kill him by his thousands. The delaying power of modern weapons is too great.

It was hoped originally that armour could perform the pursuit role, but so far such expectations have not been realized on any large scale. Tanks are, indeed, most useful in the pursuit, but there is no case on record of tanks achieving a pursuit to the limits of destruction. This is because there is ground across which tanks cannot travel; because they are vulnerable to anti-tank guns and to opposing armour. Still less have modern infantry been able to pursue successfully; their limitations in this regard are obvious. At El Alamein and at Caen-Falaise we relied upon the aeroplane as a pursuit weapon, and the air forces did, indeed, do great damage to the enemy. Yet vehicles rather than men were knocked out, and in our greatest opportunity of the war the Germans were successful in withdrawing "significant numbers" beyond the Seine.

Paratroopers have often been suggested as pursuit troops, and perhaps great swarms of lightly armoured vehicles such as Bren carriers might achieve some result. Perhaps something entirely new is required — a flying tank which could travel with equal ease upon the ground or in the air is not too fantastic a suggestion for the fantastic century in which we live. Perhaps on the other hand only a new technique is required, some novel way of employing existing weapons. This article, certainly, makes no attempt to arrive at a solution of the problem.

Yet the problem remains, and it undoubtedly is one of the most important which confronts the present-day soldier. Certainly any nation or group of nations likely to be involved in a war against a manpower superior to their own would profit greatly if they could be sure of

BARBS, BULLETS AND BAYONETS

MAJOR J. T. ASHENHURST, RET., IN THE AUSTRALIAN ARMY JOURNAL
ILLUSTRATED BY WARRANT OFFICER K. A. CAPP

The First "Horror Weapon"

In this age of atom bombs, long-range rockets and other unpleasant methods devised by man to destroy his fellows, it is interesting to know that the cross-bow was condemned by the Church in 1139 as "hateful to God and man", when used by christians fighting among themselves. This was because its steel bolt would penetrate a coat of mail.

The cross-bow, a more powerful weapon than the long-bow, was considered in those days to be an intricate piece of mechanism, difficult to manufacture. Its string was drawn back by means of a small windlass and it projected a steel bolt known as a quarrel. Hence the significance of the phrase to fasten a quarrel on a person, a process bound to be resented.

The ban on the use of the cross-bow proved ineffective; those able to produce the weapon in quantity being reluctant to forego the advantage it conferred. It gradually replaced the long-bow as the chief weapon of offence.

Mediaeval Armaments

The bow and the bill (a blade set on the end of a shaft) were then the armament of the foot soldier. These weapons gave way to muskets, pikes and halberds. The pike and the halberd were borrowed from the Swiss who used them with great effect to repulse the attacks of heavy cavalry.

The pike was a spear of some 18

(Continued from preceding page)

exploiting each successful engagement to the limits of destruction. A completely successful pursuit is the final crown of Victory, but that winged goddess has not been so crowned in our time.

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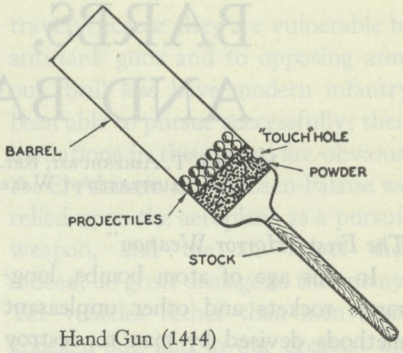
feet in length which enabled the dismounted man to thrust at a horseman from a safe distance. The halberd was less commonly used and then only by select bodies. It combined a spearhead for searching out the joints of armour, with a cutting blade on one side and on the other a hook for pulling a horseman out of his saddle. For long afterwards the halberd was carried by the sergeant as the officer carries his sword, mainly as an emblem of office. Its principal use was then for flogging, for which purpose the soldier was tied up to a triangle of halberds.

The English had long been famed for their prowess with the bow and were the last nation to discard it in favour of the musket. The last occasion when bows and arrows were used in a European battle was at Leipzig in 1813.

The Hand Gun or Musquet

The development of the musket was a natural result of the discovery of gunpowder as a propellant. Gunpowder is said to have been used in China at a very early date, but the first definite information of its actual use in battle as a propellant was at the Siege of Arras in 1414. The "Hand Gun" in which it was used consisted of a straight tube of metal with a touch-hole on top. This tube was fitted to a straight piece of wood which was placed under the arm to



Hand Gun (1414)

enable the weapon to be held for firing. Ignition of the powder inside the tube was accomplished by applying a slow match, which consisted of twisted tow or rope dipped in vinegar or winelees.

In 1445 the English improved this weapon by placing the touch-hole on the side of a small covered pan to hold the priming. Later the length of the barrel was increased and a forked rest was used to support what became known as the "Musquet".

The Matchlock

The Matchlock appeared early in the 15th century and was in extensive use by the reign of Henry VII (1485). The slow match was held by a cock fitted to the side of the gun and arranged so that, by a simple leverage system, it could be lowered into the pan to discharge the piece.

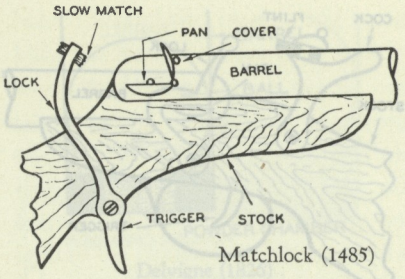
The prop, or forked stick, was still used and the musketeer had to carry this, his musket, a pouch of leaden bullets, a box of fine powder for the

priming, a flask of coarse powder for the charge and a piece of slow match.

The rate of fire with this weapon was necessarily slow, being of the order of 10 to 12 shots an hour. While juggling with his powders and shot, the musketeer was very vulnerable to attack, and it became necessary to protect him with a body-guard of two to four pikemen. The pike was considered the more honourable weapon; a gentleman would "trail the puissant pike" but would not shoulder the musket. The pike required strength to manipulate, and the pikeman was the more heavily armoured. The smaller and weaker were selected as musketeers. A shower of rain was enough to extinguish the match and altogether this firearm was not held in much esteem.

The Wheel Lock

A great disadvantage of the matchlock was the difficulty in keeping the match burning and dry. To overcome this, Nuremberg gunsmiths in 1517 produced the "Wheel Lock". In this weapon a small rasped-edged wheel protruded into the pan and bore against pyrites held in a cock. A strong spring was attached to the wheel and wound up with a key. On the trigger being pressed, the wheel rotated and sent a stream of sparks into the gun. This mechanism was mainly used in pistols and sporting weapons. Its first recorded use as a



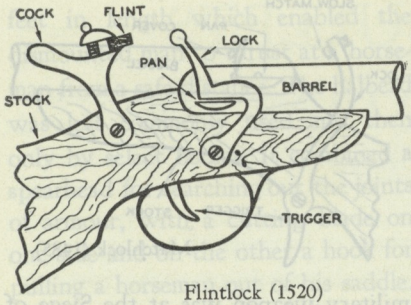
Matchlock (1485)

military weapon was at the Siege of Parma in 1521. It lasted for 150 years and was then superseded by the flintlock.

The Flintlock

Invention of the Flintlock is credited to a gang of Dutch poultry thieves who are said to have developed it to replace the matchlock, which betrayed their activities, and the wheel lock, which was too expensive. The flintlock was developed considerably during the 17th century and reached perfection when the action of the cock falling not only produced the means of ignition, but also opened the pan at the same time. Thus the priming was kept dry all the time. Flint was first used about 1600 when it replaced the pyrites used in the original weapon which was known as the "Snaphaans" or "Snaphaunce", after the Dutch poultry thieves. A good flint would fire up to 30 shots before becoming worn out.

The first regulation issue of flintlocks to the British Army was in 1700



Flintlock (1520)

and lasted until 1842. The weapon was known as "Brown Bess". It weighed 11¼-lb., its length of barrel was 3 ft. 3 in. and the calibre was .753 in.

Tactical Use of Musket

Let us digress, for a moment, from the development of infantry weapons, to study the implications of the introduction of the firearm.

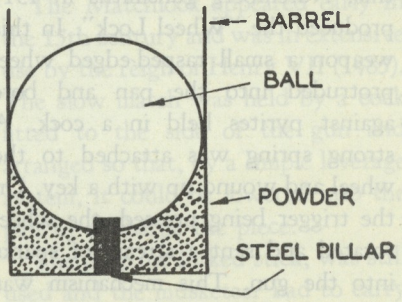
Poor though it was originally, the musket had the effect of increasing the weight of armour worn by cavalry, both horse and man, and the foot soldier himself. This led to an inevitable loss in mobility and freedom of movement. James I is reputed to have said that armour was an excellent invention, for it not only saved the life of the wearer, but prevented him from harming anyone else.

Gradually, as the efficiency of the firearm improved, so the value of armour decreased, there being a limit to the weight of armour that could be carried to ensure protection against the increasing force of the projectile. The same problem exists today with the tank and the anti-tank gun. During the Elizabethan era, horse armour was first discarded and then the complete encasement of the rider, who gained in mobility what he lost in protection.

The cavalry man was then armed with a short and light musket, originally the petronel and then the pistol, first of one barrel and then of two — a weapon that could be fired with one hand. A horseman thus had a chance of shooting down the foot soldier without venturing within reach of the pike.

Mounted infantry were first employed at the Battle of Pinkie in 1547. They were a body of foot soldiers, armed with muskets and mounted on any sort of "nag" to obtain greater mobility. They were christened dragoons after that fiery monster, the dragon.

By the end of the 16th century the musket could fire 30 or 40 rounds an hour, and the number of musketeers



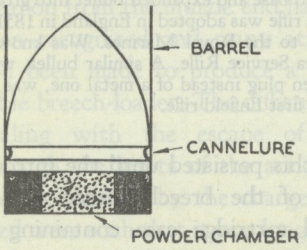
Thouvenin (1828)
Steel pillar forms an anvil on which ball is flattened by blows from ramrod.

and pikemen was about equal. Nevertheless, the musketeer was still comparatively defenceless, with all his accoutrements, though armed with a sword. For this reason a ten deep formation was used, each rank in turn filing to the rear after firing so as to keep up a continuous rate of fire. Cavalry, when employing firearms, adopted a similar formation, and worked in small bodies in place of the dense masses of the past.

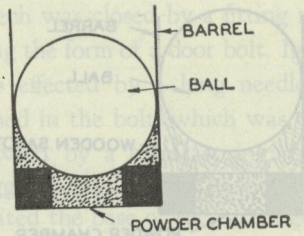
The Rifle

The next step was the development of the Rifle. "Rifling" is the term used for the system of spiral grooving cut on the inner surface of the barrel to cause the projectile to revolve during its passage through the bore. This rotation continues during flight and reduces the tendency to erratic progress and therefore improves accuracy.

Credit for the invention of rifling has been ascribed to various individuals. The pratice of spinning a spear or dart when thrown, or an arrow by



Thierry (1830)
The cylindro-conoidal bullet with a flat base. Originally suggested by Delvigne and tried in the Delvigne rifle. Ramrod is again used to expand the bullet.



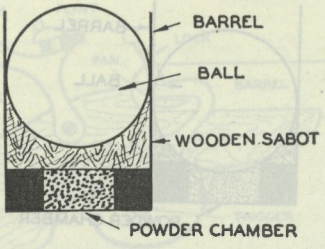
Delvigne (1826)
Diameter of powder chamber reduced. Ball is pushed down upon edge of chamber. Ball, which is of soft lead, is then struck a few blows with a heavy ramrod and is thus slightly flattened and expanded into grooving. Did not eliminate fouling, and accuracy was affected due to deformation of the ball.

spiral feathering, was well known at an early date and the application of the principle to firearms was a natural development. Nevertheless, centuries passed before a practicable rifle was evolved, and the general adoption of the rifle for military purposes does not even date back before the middle of the 19th century.

The chief obstacle to the adoption of the rifle was that a ball fully as large as the bore was required and this had to be forcibly inserted into the muzzle and rammed down. The powder left much fouling in the bore and this added to the difficulty of loading. The answer was to produce a projectile which would expand and fill the rifle grooves after it had been dropped into the barrel. Some of the methods evolved are illustrated below.

The Problem of Fouling in Rifles

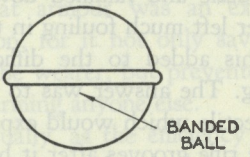
The combination of a soft-lead bullet and deep grooving into which



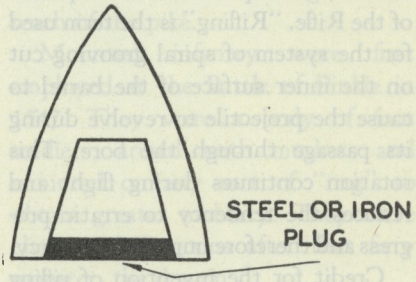
Poncharra (1833)
Development of the Delvigne principle. Ball rests on wooden sabot. This method was used in rifles issued to first company of Chasseurs-a-pied, the first of the French rifle units.

the ball was forcibly made to fit led inevitably to heavy lead fouling. Deep grooves were hitherto considered essential because, with shallow grooving, the bullet, especially when of pure lead, tended to be driven across the lands instead of following them. In 1865, Mr. Metford produced a rifle of .450 in. bore having five very shallow segmental grooves with no sharp edge to strip the lead, and firing a bullet of lead hardened with antimony and wrapped in a thin paper "patch". Expansion was effected by the blow of the explosion on the base of the bullet, which was slightly hollowed. This overcame the difficulty in loading and the loss of accuracy caused by the accumulation of fouling in rifles having deep grooves. Each shot swept out the fouling caused by the previous one. The success of the new system was immediate and it was not superseded until the introduction of cordite, referred to later.

There still remained the problem of fouling caused by the powder charge and this persisted until the introduction of the breech loader and the metal cartridge case containing the explosive charge. Elimination of serious fouling caused by the propellant was not effected until the introduction of cordite in 1892.



Brunswick (1836)
Principle used in Brunswick rifle (which also used the percussion ignition system). Rifle had two grooves, semi-circular in shape. Belt on ball fitted grooves in rifle. A notch was cut across the muzzle of the rifle to guide the ball into the grooving. Fouling again a disadvantage.

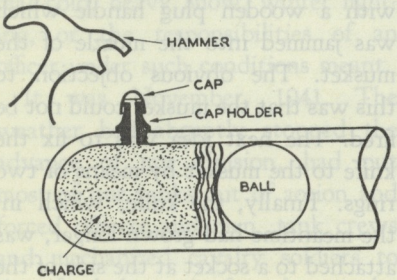


Minié (1851)
The first successful expanding bullet. Loading practically as easy with the rifle as with the musket. On explosion, plug forced into tapered base and expanded bullet into grooves. Minié rifle was adopted in England in 1851 and issued to the Royal Marines. Was known as the Sea Service Rifle. A similar bullet, with a wooden plug instead of a metal one, was used in the first Enfield rifle.

The Percussion Cap

During the evolution of the expanding rifle bullet an even more significant development took place—the invention of the percussion system of ignition by the Reverend Alexander Forsyth, a Scottish Minister, in 1807. This revolutionary method completely ousted the flintlock and was adopted by the British Army in 1836.

This system was first used in the Brunswick rifled musket.



Percussion Cap (1807)

Breech-Loaders

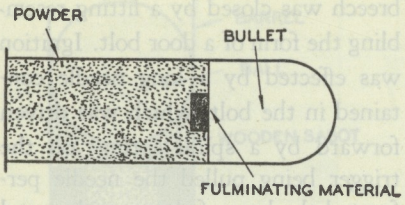
The inconvenience of loading a weapon from the muzzle end had long been recognized and many attempts had been made to produce a practicable breech-loader. The difficulties of dealing with the escape of gases through the joints of the action and the deposit left by the charge when fired were such that it was long before any nation adopted for military use a breech-loading system. In 1841 Prussia adopted the needle gun invented by Dreyse in 1838. In this rifle the breech was closed by a fitting resembling the form of a door bolt. Ignition was effected by a long needle contained in the bolt, which was driven forward by a spiral spring; on the trigger being pulled the needle perforated the base of the cartridge, and ignited the charge by striking a disc of fulminating material. This rifle had many defects but the gain in the rapidity of loading was considerable.

There were many other forms of breech-loader invented during the 19th century but real success was not attained until the adoption of the metallic cartridge, containing its own ignition and propellant charge, solved in the simplest way the problem of rendering the chamber gastight. This principle exists in the current pattern rifle and needs no elaboration.

Cordite

As already stated, this propellant was introduced in 1892. Besides eliminating fouling, cordite has a much superior ballistic performance to gunpowder, is less affected by atmospheric conditions and—a most important advantage—is virtually smokeless. The latter attribute enables the firer to remain concealed, an impossibility with the powder charge.

The new propellant, however, was found unsuitable for the Metford system of shallow segmental rifling which was too easily obliterated by



Dreyse Needle Gun
Cartridges (1838)

the erosive action of the cordite. A return was therefore made to the pattern of shallow grooving with square edges, which had been, but for fouling, successful in earlier days.

The Grenadier

The reign of James II saw the advent of the Grenadier, an individual who out-rivalled the pikeman in splendour of attire. His armament consisted of a pouch full of grenades, a musket, a sword, and a hatchet. The duties of the grenadier were to lead the assault, throw grenades and hew down palisades or other obstacles.

The grenade of those days was a hollow iron sphere, one or two inches in diameter, filled with powder. A slow-burning fuze of fine powder and charcoal dust was inserted into the touch-hole. There was also an incendiary version, made of pasteboard or wood. The match used to light the fuze was contained in a perforated tube to conceal the light.

The Bayonet

This much-dreaded weapon, put to effective use by Tommy Atkins, was the direct outcome of the deficiency we have already discussed—the vulnerability of the musketeer.

The Basques used a crude form of bayonet in a fight against the Spaniards on a spur of the mountain of La Rhune in the Pyrenees, named La Bayonette, after the town of Bayonne. The Basques, running out of ammunition, stuck the hilts of their daggers into their guns. It is certain that the earliest form of the bayonet was simply a hunting knife with a wooden plug handle which was jammed into the muzzle of the musket. The obvious objection to this was that the musket could not be fired. The next idea was to fix the knife to the musket by means of two rings. Finally, the knife, which in the meantime had grown longer, was attached to a socket at the side of the muzzle.

The advent of the bayonet resulted in the demise of the pike and the temporary effacement of the grenade, which was to appear again in later years in more varied and deadly forms. The infantry, armed with a weapon combining fire effect with that of cold steel, established its superiority as the chief fighting arm. Even in these days of long-range frightfulness, the infantry assault is still the culminating point of any battle.

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BOUGHT EXPERIENCE

By
CAPT. BERNHARD-GEORG MEITZEL*

Winter always brings back to my mind memories of the awful cold and snow of our futile campaigns in Russia.

When I arrived at divisional headquarters southwest of Leningrad, I had just graduated from officer's training school and had no idea what real cold, heavy snow, winter fighting, or the responsibilities of an officer under such conditions meant.

It was November, 1941. The weather had abruptly stopped the advance of my division, had put most of our tanks out of action and forced officers and men, tank crews and mechanized cavalry soldiers to dig fox-holes or, for those who hadn't started in time, snow-holes—something like eskimo igloos.

Mobile warfare meant everything to our division. We had been trained solely for action and had no experience with everything else. Stymied by snow and cold, the 20,000 men chafed like caged animals, tense, desperate. Tempers were honed to a razor's edge. The divisional staff racked their brains for some method of restoring even a small measure of mobility, for everyone knew that the tremendously superior numbers of the Soviet Army could only be equalized by superior mobility.

At the time of my arrival the commanding general had just approved a plan prepared by his chief of staff to form and train winter mobile infantry units equipped with skis. These forces were to be used for reconnaissance work and sabotage behind the Russian lines, to chase paratroopers dropped in territory held by our troops, and to protect our own lines of communication.

I was given command of one of these units. It had the strength of an infantry platoon, was equipped with skis, camouflage suits, rifles, tommy and machine guns, and small light sledges to be dragged by our men.

The chief of staff tried to explain his ideas of winter mobile warfare on skis to me, but was too busy to make himself understood. After the twelfth telephone call had interrupted his lecture, he cut it short and said to me: "You'll have to find out yourself anyhow. Have you got any brains?"

This article was written specially for the Journal by Capt. Meitzel, a former German staff officer. Readers will remember this author for his series entitled "Caen-Falaise" published in the April and May 1950 issues of the Journal. — Editor.

"I hope so, sir," I stammered, a bit taken aback.

"Well, use them then — use them more than anyone else in this part of the world — or in a very short time you'll no longer have any use for them."

Next day I introduced myself to my new outfit, a former platoon of our reconnaissance battalion. I pretended to know my business, whereas in fact I had only a faint, a very faint idea of what we were supposed to do and how we were going to do it.

There were no regulation books on winter warfare available at divisional headquarters, so I asked for reports on the experiences of other units. There were not many of them and I skimmed through them with very little benefit. Among the papers, however, were translations of two captured Russian reports which I took with me to my new position at the back of the left wing of our division. When I finished reading sometime in the early morning of a cold November day, I knew at least that there was no use in reading about it in books — the only way to learn the ins and outs of winter warfare was to get out into it, study the countryside, the weather, the men and myself, and our attitude toward the Russian winter and toward one another.

We had to pay dearly for our lessons. After the first week most of us had chilblains on the face, and parts of our hands and feet were frozen. We paid little attention in the beginning, but experience soon taught us that we couldn't be too careful in safeguarding our health and comfort.

The bitter cold weather and long marches through deep snow exhausted us. This brought laziness and carelessness, which was usually followed by accidents of one kind or another. The penetrating cold seemed to numb the brain, and the most difficult task was to force oneself to go on thinking under the worst conditions. I told myself and my men again and again that our first and most important duty was to keep thinking all of the time.

Aware of my own shortcomings and inexperience, I overcompensated by criticizing myself and my men as well. I had not yet learned that you can't stand severe cold and petty nagging at the same time, but an unpleasant accident was soon to teach me this important lesson. One of our first operations behind the Russian lines was the blowing up of a section of a railroad track. We had managed to slip through the Russian lines shortly after midnight and reached the railroad just before dawn. Although we were exhausted and perishing from the cold, we managed to fix the explosive

charge and were just about to explode it when one of the wires, brittle in the intense chill, broke. One of my NCOs tried to repair the damage, but his fingers were numb and stiff. Suddenly he started to weep. I was near the breaking point myself and foolishly scoffed at him: "Pull yourself together, man. Don't be so soft!" That finished him completely, and he collapsed in hysterical sobbing.

My thoughtlessness almost wrecked that operation and nearly doomed us all. We barely managed to get back to our lines the next night, pulling the sick man on one of the ammunition sledges.

Next day I discussed the operation with the men of my outfit and openly confessed my blunder. I never thought this would result in better understanding between us, but it did.

We were now ready for a major operation and this took place at the beginning of 1942 and proved again that *constant thinking and hard training are first essentials in winter warfare.*

There was a thick wood in front of the right wing of our left neighbor. Their reconnaissance units had tried in vain to get through it, and in consequence called it the "jungle". But one night the Russians cut a lane through and, with twenty tanks, attacked a railway station, the main position on this section of the front. As our neighbor division had no mobile reserves at its disposal, we were reinforced by five of our Sturmgeschutze (infantry tanks) and ordered to strengthen the position around the railway station.

When we arrived at headquarters of the neighbor combat command, the Russians had already succeeded in capturing the station. We were asked whether we thought it possible to recapture it with our five tanks and my platoon, supported by the artillery of the whole division. I considered a few moments and finally said yes.

"When do you want to attack? When will you be ready?" asked the commanding officer. It was about three o'clock in the morning and I suggested 10 a.m. for the attack.

At this point the commander of the tank platoon interrupted meekly: "Ever seen this countryside before?"

I suddenly felt sick with shame and chagrin. I had completely overlooked this important detail. But that was the only blunder I made this time, and when the commanding officer delayed the attack until the following morning, I had a chance to correct the error by carefully studying the terrain and the lines of approach, and to benefit by a good night's rest.

We advanced at dawn, accompanying the tanks from one ridge to

another until they had reached their most favorable position. It was still dark when we left them to go around the station and approach from another side.

By sheer luck we found the oil dump of the Russian tanks and, as it was guarded by only a few soldiers, we were able to capture and set fire to it. At the same moment our artillery started shelling the Russian position and line of communication, and our tanks moved forward.

By noon we had recaptured the station and destroyed half a dozen Russian tanks.

Two days later I got a phone call from our chief of staff: "What did I tell you two months ago? I've always been sure we had the right conception of winter warfare!"

CANADA AND THE SOUTH AFRICAN WAR

(*Continued from page 10*)

attributed to statesmen and under-secretaries and constitutional lawyers. They played their part; but most of these gentlemen in striped trousers would admit that their job, in the main, was simply to consolidate positions that had been won by much cruder characters in various forms of battledress.

Countries that can produce formidable armies can't be treated as colonies. The deeds of the Canadian Corps of the First World War put into Sir Robert Borden's arm the strength that enabled him to insist upon a new national status for Canada within the Empire in the days of the 1919 Peace Conference. That status was formally recognized by the Statute of Westminster in 1931. And it was the men who fought for Canada in 1939–45 who won for her the final recognition of her position as a nation among nations in the world at large.

Nevertheless, it's only right that in this year 1950 we should remember that the men of the two World Wars were not the first Canadians who won distinction and advancement for their country on foreign battlefields. The pioneers were the few thousand men who fought on the South African veldt fifty years ago. At the dawn of the twentieth century Canada was still a colonial community, but was aspiring to be something greater. At that moment came the South African War; and the soldiers who wore her uniform in that conflict did a great deal to plant her feet firmly on the road to nationhood.

(*Concluded*)

MALAYAN SCRAPS

LIVING OFF THE LAND—SAKAI FASHION

EXTRACTED FROM A BRITISH INFANTRY BATTALION'S REPORT ON ONE OF ITS ANTI-BANDIT JUNGLE PATROLS IN MALAYA

It so happened on this occasion that the Sakai guides (Malayan aborigines) had failed to bring sufficient rations with them and so decided to supplement their diet from local resources.

Escargots Petits Gris

Near the patrol base was a small stream, and one evening the Sakai were noticed groping in the river picking up small shell-fish-like objects and putting them in empty jam tins. On investigation these turned out to be river snails, which apparently infest a number of the streams in this area. They boiled the snails in water and, after adding salt, drained off the water into a separate container, the snails themselves being allowed to steam for another few minutes. The water which had been drained off was a brownish colour and had a most appetizing flavour, being something like bovril soup. The snails themselves looked rather revolting, but this did not deter a few enthusiasts from trying them. The art apparently is to place the lips into the opening in the shell and give a quick suck which draws the snail out of the shell. The scaly end is then bitten off and the delectable dish is ready. However, one must be careful not to tackle the large type of female snail as the body contains numerous young in their shells and the resultant taste is somewhat like eating a handful of sand!

A Lizard Lassoed

On another occasion a small party led by a Sakai was moving along a jungle track when there was a rustle in the undergrowth and a large lizard or iguana nearly three feet long

ran up to the top of a dead tree about twenty feet above ground level. With calm deliberation the Sakai—presumably he knew the lizard would not move from this position—cut a long stick and with a piece of ratan fashioned a running noose which he attached to the end of the stick. This process took about five minutes while all the time the lizard remained in position, apparently oblivious of the fact that his doom was near. In fact, he was so well camouflaged against the background of the dead tree as to be almost invisible at close quarters.

As soon as preparations were completed the stick was raised and the noose carefully placed over the lizard's head. Then a jerk, the noose tightened, the lizard fell to the ground and a quick blow with the back of a parang put an end to his trouble. A slit was cut in the loose skin at the neck and the lizard's tail inserted through the hole to be fastened by a peg stuck through the tail; then with supreme nonchalance the Sakai slung the lizard over his shoulders and the party moved on.

Mock Turtle

On the way a couple of tortoises who were unlucky enough to be resting under some leaves near the side of the track were spotted by the ever watchful jungle eyes and they, too, after being wrapped up in a large leaf and tied with ratan, were added to the day's bag.

A little further on the Sakai gathered up some tuber roots, the sap of which is poisonous to fish. On arrival at a stream the tuber roots were pounded with a club and the sap run out into the stream. Almost immediately fish, albeit small ones, started to come to the surface in a semi-paralyzed condition and it was not long before fifty or sixty fish of an average of four inches were gathered on the bank.

Sakai Supper

It was now getting late in the afternoon so the party returned to camp and began preparing the evening meal. The process involved in the preparation of the "bag" is too long and disgusting to be fully described. Suffice to say that the resultant meal of roast tortoise and lizard with an *entrée* of ungutted fish was sufficient to satisfy the hungriest Sakai . . . since the flesh of the tortoise and lizard was quite sppetizing and not unlike roast mutton.

No doubt there are many other edible things in the jungle of which the Sakai on this occasion had no need, but these few sidelights on a patrol operation are sufficient to demonstrate the feasibility of existing in the jungle if all outside sources of supply fail.

AIR SUPPLY IN MALAYA DISTRICT

The support given to the troops in Malaya by the RAF is considerable. It takes the form of offensive air strikes at bandit camps and other suitable targets and also of supply by air. It is with the latter that this article is concerned, being an attempt to explain the mechanics of what has been brought to a pretty fine art.

Supply, other than by air, is quite impossible in the jungle and without it no troops could operate for longer than they could exist on the rations they actually carry when they set out from their base. Air drops, therefore, have become a normal and essential feature of any operation lasting for more than a day or so. A unit requiring an air drop sends a simple pro forma signal to District HQ, copy to Brigade HQ, saying what they want, when and where they want it, and how the DZ will be recognized.

Q branch at District HQ pass details to the G2 (Air) who briefs the RAF, and also gives the necessary order to ST, Ordnance or anyone else concerned. These services deliver the stores to the air despatch platoon who conveniently live with the RASC supply depot at Batu Caves just outside Kuala Lumpur. The air despatch platoon then pack the stores and deliver them to the RAF at Kuala Lumpur airfield.

Manna from Heaven

Two types of rations can be dropped: 24-hour ration packs or ten-man compo. Either the unit specifies which it requires or District decide for them, weighing up the balance between the

An aircraft drops supplies to troops in the jungle. In addition to rations, charging sets, wireless sets, batteries, medical supplies and jeep tires all descend from the heavens at various times.

convenience of the former and the attractiveness, but greater weight, of the latter. For three days' rations it might decide on one day's compo and two days' 24-hour packs. But, although rations are the prime necessity, everything else that a unit requires can be produced in the same way. Charging sets, wireless sets, batteries, medical supplies and jeep tires have all descended from the heavens at various times—the last, free-dropped, bounced and bounded about the DZ, mowing down their bewildered recipients. Luckily water is no problem as there are numerous streams and the troops carry purifying tablets.

There is nothing to prevent a unit, if it so wishes, delivering anything it likes to the air despatch platoon. At least one battalion has had men trained in packing duties; it keeps its own stock of containers and parachutes, and gets the ever-helpful RAF to call in at a nearby airfield and pick up mail, NAAFI rations and other comforts for their men.

G (Air) attempt to co-ordinate requests in order that the RAF can do several drops, like a milk round, with one Dakota. The weather sometimes causes delays, but is so local in Malaya that a day when no flying is possible is most unusual. The greatest difficulty is not the weather, but in finding a suitable clearing for a DZ. The troops have to do the best they can, put out fluorescent panels, probably make a fire or light a smoke cannister, and hope for the best. The RAF have then to try to drop their loads in, usually, a very restricted area. However, very nearly all their supplies are invariably recovered.

RADIOLOGICAL WARFARE

(*Continued from page 30*)

space in the form of cosmic rays (extremely short and energetic gamma rays). We also absorb minute doses from such sources as luminous dials of watches and instrument panels, and from X-ray examinations and treatments. A daily dose throughout one's life of about 0.1 R can be absorbed without harm of any kind.

These are the main facts governing the selection of materials for use as RW agents. They indicate that radioactive materials are most adaptable for RW when they:

1. are gamma emitters,
2. have a half-life not shorter than 1 week and not longer than 6 months,
3. can be laid down in concentrations sufficient to give anyone in the contaminated area a daily dose of from 10 to 100 R.

MAN MANAGEMENT

Lt.-Col. J. A. Hutchins, MBE, AA and QMG,
HQ Saskatchewan Area, Regina *

This is a vast and complicated subject. It has as many facets as there are persons within any given orbit. I shall attempt to deal with it in a way that will hold your interest as staff officers rather than as regimental officers. I shall assume that you have learned the primary tenets of leadership which the regimental officer must practise daily in the performance of his task. I shall approach the subject then, which is a difficult one since it has so many imponderables, from a slightly different angle than would be the case if you were a group of regimental officers.

Do not expect that I shall spoon feed you a capsule style formula which you can transpose to a staff officer's note book for use in the solution of future man management problems. There is no such formula.

I shall simply mention for your consideration a few points and ideas relating to this problem without attempting to lay down the law or suggesting what is right and what is wrong.

If any good can come from this lecture — it will result. from your own meditations and discussions and future studies and practise in dealing with the problem. As officers, there is no subject which is more worthy of the time and effort which such study will entail.

Notwithstanding its long use in the Services, the words or phrase "Man-Management" leave something to be desired especially on the following two scores:

1. The word "Management" as applied to men implies a degree of authoritarianism which would seem to rule out "co-operation" or "team work" in the officer-man relationship.

2. The phrase does not envisage the relationship of the officer and his fellow officer at all.

I offer a few alternative titles for the subject we are discussing, which perhaps will help you to understand what I take the expression "Man-Management" to mean:

(a) The Officer and his Military Relationships.

(b) Personal Relations for Officers.

(c) Soldier Psychology.

(d) Command Commandments.

(e) Leadership Laws.

One way to tackle the subject —

* *These notes form the basis for a lecture which Lt. Col. Hutchins delivered to students at the Canadian Army Staff College early this year.—Editor.*

the way which I have chosen for this occasion — is to attempt an appreciation of the Canadian "man" involved in the officer *vis-à-vis* man relationship, or officer *vis-à-vis* officer relationship, and then to discuss some of the main causes which lead to disharmony in these relationships.

I may offer a few suggestions or remedies for disharmony but, in the main, I shall leave this problem with you as individuals; it will be your personal responsibility to deal with these problems when they arise in your lives. As officers you will not be able to deal with them successfully unless you have done some individual practising and thinking on them.

It would be well for us to keep in mind that we have here a subject to which business and industry attaches the utmost importance and to which ever increasing time and energy is devoted in order that the most may be gotten from men and at the same time keeping them healthy and happy in the giving. It is my feeling that if the army is to develop men capable of fulfilling the supreme function of efficient military leadership, that is, to use to the full the latent capacities of every officer and soldier, that organization also will have to devote ever increasing time and effort to the task of selecting, training and developing leaders.

In attempting to appreciate, assess or evaluate the human material which we may call the soldiery — this includes all ranks but more especially the non-officer categories — there are several points, the importance of which we are apt to overlook but which should be kept in mind. These points, which are not necessarily inter-related too closely the one with the other, are:

1. The Canadian soldier, apart from the small numbers of "regulars" employed by the Government in times of peace, comes from a wide variety of non-military spheres:

(a) Industry.
(b) Trades and crafts.
(c) Business.
(d) Agriculture.
(e) Education—schools, colleges, seminaries.
(f) Civil Service.
(g) Labourers.
(h) Science.
(i) Professions.

2. The mass of the soldiery will come from the labour, industrial, agricultural, and business spheres. The great majority will be "working men" as opposed to technicians, scientists, executives, or professionals.

3. Taken as a group, the soldiery is comprised of persons having, in the aggregate, a vast amount of non-military experience and skills in comparison with former times. Most of this experience and these skills are

needed by a modern Army if it is to operate in action.

4. By reason of their diversified origins the soldiery will lack cohesion or group consciousness in the same sense as a trade union group for instance — at least at first, they are none the less, and perhaps indeed for that very reason, good material for moulding into a strong team group — the will is invariably there in the face of a real emergency — all that is needed is the guidance and training.

5. Startling changes in the thinking and improvements in the living of the working man have occurred, and are still occurring, ever since 1918 — the conclusion of World War I.

6. The working class, the main source of the future ground fighting man, is now educated — at worst partially educated. It was not so in former times.

7. Modern media of information diffusion reach everyone with remarkable effectiveness.

These are:

(a) The schools.

(b) Press.

(c) Radio.

(d) Cinema.

All these have given the masses and therefore the soldiery of any war time Army, the power of thought and criticism to a high degree — never formerly known.

8. The worker today is a "brain" as well as a "hand"—he is socially, politically, and industrially conscious; this will necessarily apply to the soldier who comes from the working element of our society.

9. The day of immunity from criticism from the subordinate is over; to a greater extent than ever before this will be true of future democratic Armed Forces.

10. You have to "appreciate" the complexity and value of the material you will manage if you are to have any success at the job.

11. The power of the individual in a highly organized society is very limited — so too in the services; nobody knows this better than the individual soldier and he is prepared to accept this position without question so long as his leadership is good, and he is quite capable of discerning whether it is good or not.

12. Just as in industry, the worker has no designs on the function of management, so in the Army I am sure it is true to say that the private soldier has no designs upon the functions of the officer.

A word of warning to those who may expect too much; no amount of preparation, experience or foresight will enable you to prevent a certain amount of "military crime" within your jurisdiction. A certain incidence of minor and even major "crime" is inevitable — it will be your respon-

sibility, however, to be on the alert for any sign that such crime is a symptom of a more serious condition, the nature of which must itself be determined and analysed, if a cure is to be found and effectively applied. I do not intend to deal with military crimes in my remarks, they may or may not be signs of poor management, but I wish to discuss just a few important conditions which may lead to crime or poor military performance, both on the part of officers and those whom they direct. The good leader will know of the dangers inherent in these conditions, he will be quick to detect them, and he will know how to deal with them.

I have discussed some of the less frequently mentioned factors which must be considered in appreciating the soldiery. I would now like to turn to the discussion of that which, in my view, is the most serious cause of disharmony in officer-man and officer-officer relations. If asked to describe the cause of this disharmony in one word, I would call it *frustration.*

Frustration: This is the inability to square one's natural aspirations with the condition of things as they are. The main causes of frustration are:

1. *A man's job does not provide full scope for his capacity,* and yet, through circumstances there is no outlet for the excess. (This is the source of the agitator — the barrack room lawyer, the organizer of discontent).

2. A man's *abilities* — which he possesses beyond the requirements of his job — *are not recognized or appreciated by his superiors.*

3. *Incompetence on the part of those who direct or supervise his activities.* Imagined or real, it makes no difference — if a man believes there is incompetence, it is the belief which must be changed. The psychological reaction arising from compulsion to do the wrong thing, or to do a thing the wrong way is dangerous.

4. *When an intelligent suggestion is refused the courtesy of an intelligent reply.* The effect of this attitude, (the "you-are-not-paid-to-think" attitude), can be destructive.

5. *The theft of ideas of subordinates submitted to superiors — who later reproduce them as their own.* The deliberate suppression of these ideas is an equally certain cause of frustration.

6. *Being merely a number in a mob is bitterly resented,* especially by the man who is master in his own home, who is "somebody" in his social relationships, etc. The good soldier will at first go to great lengths to submerge himself into the group — especially in an emergency — but to leave him there unidentified is a fatal mistake.

It is essential for us to realize that

the cure for frustration seldom lies in the provision of material things. The things which I have mentioned are not material, they are essentially of the mind or the spirit. What is wanted apart from the removal of the causes mentioned, is the recognition of man as MAN — the most deeply rooted of all human desires. What is required then is really a relationship in which the individual can feel that he is, in a fundamental sense, a FULL PARTNER in the endeavour and not the servant of a master. The establishment of a "common interest" shared equally by all is one which makes for stability. Yours is the difficult task of establishing this concept of "common interest" or "joint venture" within the framework of the military disciplinary code.

Now for some positive suggestions for success in your relations with those about you, most of these suggestions will sound like truisms and they are, but, like our prayers, they bear repeating:

1. Officers must be at least as efficient in the performance of their functions as subordinates are in the performance of their operative functions. (The soldier, knowing himself not to be faultless, is a lenient judge even of officers — except where he discovers "covering up" and then he becomes resentful, and, more serious, distrustful).

2. Officers must insist upon the maintenance of high standards of efficiency and conduct upon the part of those whose operations they are managing or directing.

3. "Getting by" with a minimum of skill and a minimum of production on the part of the officer or subordinate will not do and is bound to induce poor work and poor relations.

4. Officers should recognize — especially in the technical fields — that not all wisdom resides in their own heads — the knowledge and suggestions of the man who "does the job" should not be overlooked or wasted.

5. An effective means of tapping the knowledge of those within an officer's command or direction, and making use of this knowledge should be devised. Credit should be given where credit is due. Where a suggestion is unacceptable, the fullest reasons should be given. This provides the officer with an additional and fruitful source of information, warning and advice.

6. The fullest possible information on all phases of operations and their underlying reasons should be given subordinates. "Community of interests" cannot be a reality when one party alone possesses the facts and the other has only rumours to go on; this is too often the case in the Army.

There must of course be limitations

to some of the suggestions submitted to you. Obviously there are many important phases of military activity and operations on which the soldier or subordinate officer cannot hope to have advance information. The reasons for such limitations will readily occur to mind.

1. Security requirements will always impose varying degrees of secrecy in connection with military activity, limiting the number of persons who can be "in the know" and the extent to which facts can be disclosed.

2. The great diversity inherent in modern military activity makes it imperative that a tremendous volume of work shall be carried on by highly qualified or skilled individuals whose specialized training and experience makes it possible for them alone to master the facts affecting their problems. A rule on "information" worthy of consideration is to tell the whole story unless there is good and specific reason for withholding it.

It is true, I feel, to say that your real problems in leadership will not occur in battle — they will occur in the training and non-fighting periods. The results of a battle, however, may well hinge upon your effectiveness in dealing with personnel problems in the period of preparation for battle.

You will have gathered by now, perhaps, that the main proposition which I wish to put to you is essentially this: that "man-management" is in reality a problem in "self-management". The officer who has practised, consciously striving for improvement at all times, the art of "self-management", will rarely have to face a serious "man-management" problem *of his own making.* The officer who performs his assigned duties with professional proficiency and skill, and who conducts himself towards all those about him, subordinates, equals and seniors, with the same consideration, courtesy, and fairness, will inevitably inspire the majority of his associates to do likewise to others.

In concluding these remarks, I would ask you to consider this statement which I have framed in an attempt to put the law of leadership in a "nutshell":

"The successful modern leader in any field will invariably be the product of assiduous self-discipline and self-preparation, whatever may be his basic personality endowments or defects".

One last exhortation: do not make the error of applying my remarks to "the other chap" thus reckoning how far short of being a good officer he is; apply the yardstick to yourself — measure yourself honestly, and then take action to improve yourself. The other chap will look after himself — he always does.

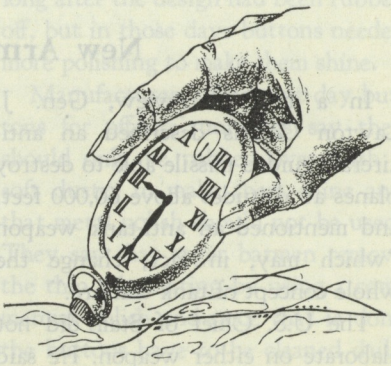
HOW FAR IS IT?

Capt. P. B. Watson, Jr., in the Marine Corps Gazette (U.S.)

What . . . piece of equipment is readily available to the using personnel for measuring distances on maps accurately? After a thorough evaluation of all of the standard items of measuring paraphernalia such as dividers, compass, string, etc., I have found that from the standpoint of expedience, accuracy, availability and simplicity only one remains. That one is probably the most obvious and one that you probably have in your possession at this moment. What is it? Why a wrist or pocket watch, of course. During times of stress or emergency they are issued rather widely throughout the Corps to enlisted personnel, and officers are allowed to purchase them.

Now, how can a watch be adapted to measuring distances on a map? First, set the watch to any given time, say 1200, and leave the stem in the "set" position. Second, hold the watch face upwards, stem inclined slightly downward, and place the stem carefully on the starting point of the distance to be measured. Third, roll the stem along the road, trail or path to the end of the distance to be measured. You now have registered on the watch face a representation of the exact distance from the point of origin to the point in question. All that remains to be done is to convert this reading, in hours and minutes, into ground measure. This is done by simply rolling the watch stem over the linear scale provided at the bottom of the map in such a manner as to cause the hands to rotate in the opposite direction to their original motion. As this is done note carefully the number of times the 1000-yard distance is traversed, and also the smaller units shown. When the hands are once again at the original setting used to begin the problem, you shall have the exact answer to your question.

In this manner you have easily traversed the entire distance as shown on the map, from point to point, and have accurately converted



this distance into a very definite number of hours and minutes. The re-conversion from hours and minutes is just as easy as the original measurement but it is done over a straight line, and is therefore a slight bit easier.

A conversion factor can easily be computed for any given watch using the scale of the map you use most often. Such a conversion factor for the author's watch using a 1:25,000 map works out to be, one hour equals 500 yards. It just happens that this one works out to a very simple conversion factor; however, anyone can find the factors for his own watch very easily.

After pondering this question of distance measurement on maps for quite a while, it is felt by the author that this method provides the simplest, quickest, cheapest and most readily available one, of all those now in use, or of possible use.

A critic might point out the fact that in utilizing the above method one would be forced to sacrifice the accuracy of the time setting on his watch each time it becomes necessary to measure a map distance. However, this is relatively unimportant, as watches are issued to all officers, first pay grades and various radiomen, telephonemen, and vehicle drivers; an accurate time check can be easily and quickly obtained. In addition to which, many other Marines in your unit have watches of their own.

In conclusion I wish to say that although not of world shaking consequences, this bit of applied ingenuity should be of sufficient interest to all Marines to warrant its application throughout the Corps.

New Army Weapons

In a radio interview, Gen. J. Lawton Collins described an anti-aircraft guided missile able to destroy planes at altitudes above 60,000 feet, and mentioned an anti-tank weapon "which may, in fact, change the whole concept of tank warfare."

The U.S. Chief of Staff did not elaborate on either weapon. He said the AA guided missile "gives promise of destroying attacking planes at even greater ranges and with even greater accuracy."

"The weapon which might change tank warfare is of radical design, and we now feel that we are well on the way toward producing it," General Collins said.—*Irish Defence Journal.*

SPIT AND POLISH

Reprinted from Soldier (Great Britain)

It was when warriors began to demand shining armour that the age of spit and polish came in; and when armour went out, spit and polish stayed. It is still here, and will remain as long as soldiers take a pride in their appearance.

Some of the old recipes for raising a shine are known to us. In the early 15th century the knight's followers cleaned his armour with pumice powder, usually mixed with olive oil. Today pumice is still used on old armour in museums, but mineral oil has replaced the olive oil.

Chain Mail

Chain mail was cleaned in a special barrel mounted on an axle and revolved by a handle. Into this was placed sand and vinegar, which was well shaken up along with the armour, as the handle was turned.

Later, sections of something very like chain mail, stitched to leather squares, came to be used for burnishing the metal pieces of harness, and are still occasionally used today. A good finish could be obtained by shaking up the whole lot, burnishers included, in a blanket or a sack for about twenty minutes. Gunners competing in "best gun" contests during the late war found that such items as chains could be given a brilliant finish by prolonged shaking in a sack which contained torn-up scraps of newspaper.

Another aid to cleaning metal—mostly used for swords and bayonets—was brick-dust. This, incidentally, was also used instead of soap for scrubbing table tops and barracks floors. Men who used it claim that they got woodwork far whiter than the soap-users of today.

First Mixture

Buttons, which have been made of all kinds of metals, including pewter, have not always had to be polished. One of the first mixtures for cleaning them was pumice powder and whitening. Later came a variety of proprietary pastes and chemical cleaners.

Very old soldiers say that buttons are not what they were. At one time they had a lead lining which stood up long after the design had been rubbed off, but in those days buttons needed more polishing to make them shine.

Manufacturers of present day buttons for officers' uniforms say they should only be rubbed over with a soft duster to make them shine and that metal polish should not be used. They say that eager batmen remove the thin gilt coating by using a commercial polish and once that is done the buttons have to be cleaned daily

with metal polish. What will the batmen do when the permanently polished button, announced two years ago, comes into use?

The soldiers of the seventeenth and eighteenth centuries had to tar their leather equipment, sword and bayonet scabbards and ammunition boxes. This helped to make the articles waterproof but in a hot climate keeping the tar from running was a tricky problem.

Later buff leather was used. It was softer and the best way to clean it was to wash it in soapy water. The soap had to be left in it, otherwise the leather went hard. As the soldier of those days did not have much soap, he usually only brushed his equipment.

After the Peninsular War came the age of pipe-clay, which was in fact the stuff used for making clay pipes. It was used to whiten equipment and breeches and caused a good deal of heartache. For one thing it did not stick very well and three or four coats were needed to do the job that one coat of blanco will do.

Soon afterwards someone invented a mixture called sap which had better staying power, but it was not a great success because it had a tendency to discolour.

Then in 1875 a firm of polish manufacturers made a new mixture for whitening buckskin equipment. That was blanco. Exactly what blanco consisted of was, and still is, a trade secret.

With the advent of khaki, blanco came forth in new shades which today have varying vogues. But one use of blanco is now passed out of fashion: in the calvary at one time it was considered a preventive and cure for saddle-sores.

Like blanco, bootpolish had its predecessors. Foot-wear and harness were polished with blacking, which might be one of several greasy and mysterious mixtures.

Later blacking was made of oil of vitrol and molasses (concentrated sulphuric acid and treacle) with carbon black. Troops were using this mixture at Woolwich 60 years ago when they were visited by a Mr. Wren who was trying to drum up business for a new wax polish for leather he had invented.

Mr. Wren went up to one trooper and produced a tin of his wax. Within a few minutes that soldier's saddle had a better shine than all the others which had undergone hours of spit and polish.

Within a year "blacking" was a thing of the past.

Up to World War I boots were made of rough and very greasy leather. To get the grease out troops would rub in half a potato, the juice of which did the trick. Then followed the job of boning the boots—rubbing the wrinkles out of the leather with a hard, and sometimes hot, object.

GOLD MEDAL PRIZE ESSAY

1948–49

Lt. Col. C. W. T. Kyngdon, Branch of the Master-General of the Ordnance, Australian, Army Headquarters*

"No armed service can have a high degree of morale unless, amongst other things, it is nourished by the goodwill of the community from which it is drawn. Discuss this statement, indicating the positive steps which can be taken by the Australian Army to ensure that it has the support of the Australian people as a whole."

Part 2

The Regular soldier with short service, who is naturally more often a private or junior non-commissioned officer, is still largely in a state of transition from civilian to soldier. He has made a break from civil life which is immediately and clearly marked, but at the same time he is not yet remoulded to the military pattern. A sense of "not belonging", of uncertainty in himself as a soldier and in his status as a citizen, tends to produce attitudes of disdain towards the civilian, or of nonchalance towards military standards and usages. These reactions can be seen in the young Army driver who hogs the road, and in the "lair" who saunters down the street, ill-dressed and slovenly. It only takes one of these to efface from the civilian mind the good impression made by hundreds of soldierly troops.

The three groups of citizen soldiers [see Part 1 in preceding issue] have in some measure the attitudes and attributes of their regular counterparts, but they have the advantage in the matter of securing the goodwill of the community of being in fact civilians the greater part of their time and so knowing the civilian mind. Though they have joined the Army they are not, in the same way as the Regular, the paid servant of the State, and can leave the Army more easily. The citizen soldier has the advantage of knowing the two worlds, and he is a valuable medium for interpreting the Army to the community.

Before leaving the subject of the attitude of the soldier to the community, I feel I should say something of the "no-hopers". I understand that the percentage of these in the Army is about fourteen as against eight in the community at large. I believe psychologists attribute this to the fact that the Army, even the Citizen

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Forces, offers a haven to the social misfit, who finds himself where he cannot easily be sacked as long as he does a certain amount of work and does not get into serious trouble. He probably has no clearly defined ideas of his own attitude to the civilian, but rather is content to go along, caring little for the good opinion of either citizen or soldier. He is thus a major liability to the service, for the bad effect that he can have on the attitude of the community towards the Army is out of proportion to the numbers of his kind in the service.

Positive Steps

With this brief survey of the historical and current relationship and attitudes of the community and the Army to one another, we come now to a consideration of the positive steps which can be taken by the Australian Army to ensure that it has the support of the Australian people as a whole.

In the Sixth Century B.C., Shu Hsiang, a Chinese statesman of the day, is reported to have said:

"When a country is on the verge of ruin, it is sure to take endless measures."[7]

The Australian Army is by no means on the verge of ruin: indeed the steps being taken today to put it on a sound basis are probably more comprehensive and thorough than anything in the history of our country. The special measures necessary to secure the support of the community are, in my opinion, few, and can be divided into two broad categories:

- Corrective measures to eliminate from the Army current faults which are likely to alienate the goodwill of the Community, and
- Constructive measures for influencing the community in its attitude to the Army.

Corrective Measures to Eliminate Current Faults

It is axiomatic in business that goodwill cannot be built up on a bad product or service. This is equally true of an Army. The first step towards securing the goodwill of the Australian people must be to produce a soldier whose appearance and bearing engender respect, confidence and affection. Steps to this end are being taken but not in all places, and therefore it is appropriate to refer briefly to the current faults in our Army and to make suggestions for correcting them.

The faults most likely to be apparent to the civilian are:

- Carelessness in dress.
- Slovenliness in deportment.
- Poor standards of military courtesy.
- Bad driving of Army vehicles.
- Active participation in political meetings by soldiers in uniform.

[7] *Chinese Philosophy in Classical Times (Everyman's Library)*, p 7.

After a war there is usually a lowering of military standards and in the present case this has been made worse by the period of uncertainty through which the Australian Army passed between 1945 and the announcement of the plans for peacetime organization and training. Now that we know where we are we must set to work energetically to raise the standards again.

Much of the slovenliness seen today springs from a misconception of the proper bearing and qualities of the Australian soldier. Professor Chisholm, writing in the Melbourne *Argus* of 27 Jun 42, said:

"Our picture of the Australian soldier is frequently wrong. It was painted for us very largely by people who, through the long disastrous years of pacifism, elected to see the soldier as something that should not exist . . . These worshippers at the shrine of an unreal idealism, a timorous and underserving idealism, being misled by their own taboos, tried to dispel the reality of soldiering, twisting it into a caricature, just as we sometimes get rid of our own subconscious worries through the senseless distortions of our dreams. It is from that dream psychology of human ostriches, afraid to face the realities of history, that the popular picture of the Australian soldier came. It showed him as a drunk comedian, an untidy supporter of lamp posts, a man without discipline —and discipline is the real source of morale. The picture was touched up by two schools of politico-social artists. First there was the sinister school of the saboteurs . . . who deliberately set out to undermine the morale of the Army in order to bring revolution and the millenium. The other school falsely imagined that an ill-disciplined, un-trained civilian sometimes developed an unorthodox but amazing discipline in battle. They imagined that this was the real Australian, the 'dinkum' soldier. They did not know their own history, the history of the pioneers who faced the hardships and perils of a hard land, and made good. They did not know the real Australian bushman—not the type that went on the spree when the shearing was done, or the mine petered out, but the man who toughened himself against the hardness of climate and conditions, who was master of his craft . . . That is the real Australian, and and of such as he are the real Australian soldiers made, whether they are reared in town or country. The unkept, undoubted individualist was never the model of a soldier either in the old AIF or in the Australian Army of today."

It is a commonplace to say that the Australian soldier does a thing best when he knows what it is all about. Let us therefore explain the Army and its customs and procedures to the

soldiers. The Americans have a truly excellent booklet which is given to every soldier upon elistment. It is the US War Department Pamphlet 21–13, September, 1946, entitled *Army Life*. In an introduction to it General Eisenhower says:

"I am glad to have the opportunity of welcoming you into the Army of the United States. Ours is a proud Army. This pride has developed not only through victory in war but also through the manner in which members of the Army have conducted themselves over the period of the years. As a new member of the Army, you are expected to bring credit to the Service, maintaining the traditions established by the soldiers who have served before you.

"This booklet, *Army Life*, has been prepared to help you off to a good start. It will provide the answer to most of your current questions, including information as to how the Army expects you to conduct yourself.

"You will find that some traits of character, such as dependability, honesty and initiative that make for successful living in civil life, are equally important in the Army. I hope that the experience and friendships you will have in the Army will be of great value to you in the years to come."[8]

[8] *US War Department Pamphlet 21–13 Army Life, p iii.*

The booklet explains simply and clearly the meaning of most things in the Army and provides much valuable information. Some of its subject headings are:

You have a place in the Army.

Training comes before fighting.

Privileges are part of this life.

You're a Soldier—wherever you go.

Use your off-duty hours well.

Making the most of your opportunities.

Everyone shares in the work.

How the Army is organized.

You live under a new law.

What military courtesy means to you.

You'll be ready—if you are needed.

I suggest that a similar booklet be written for the AMF and its subject matter used in re-educating all soldiers in their attitude to their own Army. For instance, if there is one thing in the Australian Army today which needs clarification it is the question of saluting. Let us make up our minds quite clearly as to whether we are going to have it or not. If not, then get it out of our regulations. If we are going to have it, let us have it properly. The American pamphlet just referred to says on this subject:

"There has been a lot of unnecessary talk about the salute. Most of this talk comes from civilians, who completely misinterpret its purpose and significance. They take it to be an

acknowledgment of the soldier's inferiority to his officer. Nothing is further from the truth. The salute is a privilege. Every officer salutes every other officer, just as every enlisted man salutes every officer. The highest ranking general in the American Army is bound to return the salute of the greenest buck private. The same general, however, does not have to salute the wealthiest man in the country, or any other civilian except the President in his capacity as Commander-in-Chief. The salute is one of the many things which all military men have in common to bind them together."[9]

Military courtesy, which includes the salute, extends beyond the relationship of soldiers to one another. The tradition of Knight Errantry is written deeply in our British history and nothing is more likely to excite a friendly response than a courteous and helpful gesture from a soldier to the weak or the fair. A clear code of behaviour in this respect should be laid down and actively promoted in the Army. The standards of public courtesy have fallen badly, and the Army cannot expect a recruit who has been accustomed to this poor standard to achieve a higher one miraculously on donning a uniform. Actual instruction is needed. Explanation of the meaning of such things in the Army as military courtesy, and insistence on their being observed will do much towards dispelling that sense of uncertainty in himself as a soldier which, as I have suggested earlier, is one of the characteristics found among soldiers, especially young ones.

Training in the correct wearing of uniform and insistence on good turnout is urgently necessary. The new uniforms that are coming will do little towards improving the appearance of the soldier if they are worn in the same slovenly manner as is so often the case with the present ones. The old uniforms have their defects admittedly, but plenty of smartly turned-out soldiers bear witness to the fact that with a little trouble a really good appearance can be achieved in them.

Bad driving needs to be handled in the same way—explanation of Army standards, and re-training in them.

Last of these faults requiring immediate attention is the active intervention in political meetings by soldiers in uniform. Such acts, however infrequent, are certain to reawaken the historical resentment of military interference in political and civil matters, and arouse suspicion of the political motives of soldiers. Strong emotions are likely to be stirred which, in there action and reaction, will antagonize the civilian

[9] *U.S. War Department Pamphlet 21–13 Army Life, p 161.*

and lessen that feeling of solidarity of the Army with all Australians which is a component factor in morale.

Aiding the civil power is necessarily one of the duties of a country's Army. Much as the soldier dislikes the idea of it, and the ordinary citizen recoils from it, the fact remains that a government may be forced at times to require such aid. One would like to hope that the democratic conception of majority rule and its concomitant of government by consent and agreement was now so firmly established in Australia that disputes within the community would never get beyond the capacity of the civil police to handle. The development of the "fifth column", however, has become so much a feature of wars and of preliminaries to wars that the likelihood of a properly constituted government having to seek the aid of the Armed Forces in preserving its internal authority has increased. This makes it more necessary than ever for soldiers of all ranks to keep "the uniform" clear of politics. All law-abiding and loyal citizens, of whatever political persuasion, must be able to feel that the soldiers who have been raised and trained with their assent and money shall only be used against civilians in the manner allowed for by law and at the direction of the properly constituted authority. The restraint in political matters that the donning of military uniform imposes both in spirit and in law, together with the duties that the law requires of the soldier in aiding the civil power and the only legal manner in which he may be required to undertake these duties, should be explained to every soldier, and the observance of the regulations enforced. This cannot be done just by issuing an order or by an address to the troops; it must be made a cardinal point in the training of all ranks. For if this is not done, not only will instances of improper manifestations of political bias by soldiers occur to the detriment of the Army's relations with the whole community, but there can be no certainty, should the soldier be legally called upon to aid the civil power, that he will not allow his private political views to interfere with the discharge of his duty.

Measures having been taken to correct the faults in question, those who fail to observe the correct standards must be checked. Naval officers have assured me that the shore patrol is an essential complement to training is these matters, and it is observable that the Navy maintains a good standard of turnout and deportment which has done its part in gaining for the sailor the goodwill of the community. The Army requires similar patrols.

The need for correcting the wrongdoer was well put to his soldiers by Julius Caesar when at Placentia in

49 B.C. said:

"For no society of men whatsoever can preserve its unity and continue to exist, if the criminal element is not punished, since, if the diseased member does not receive proper treatment, it causes all the rest, even as in our physical bodies, to share in its affliction. And least of all in armies can discipline be relaxed, because when the wrong-doers have power they become more daring, and corrupt the excellent also by causing them to become dejected and to believe that they will obtain no benefit from right behaviour."[10]

Constructive Measures to Influence the Community

In the First World War, military leaders re-learnt and reaffirmed that men do a task best when they know the reason for it, and are told the essentials of the plan to which they will be working. This lesson was kept alive in the Army during the peace, so that in 1939–45 it became an axiom of the science of military leadership. In civil life, too, during the peace, both government and management in industry were coming to realize the same thing, and this recognition was greatly accelerated during the recent war. For instance, Francis Williams, war-time Controller of News and Censorship in the United Kingdom, says in his book *Press, Parliament and People:*

"Democracy if it means anything means government by agreement and consent. It requires willingness and ability on the part of governments to explain their policies to the People and competence on the part of the people to judge whether those policies are good and what they want."[11]

Again in the industrial sphere, Sir Herbert Gepp has said:

"Public Relations is the connecting link in the partnership which should exist between industry and the community. It acknowledges the essential unity between industry, economics, and politics. Business can no longer live in a world of its own making . . . We can all study that great body constituting 'the public', upon whose confidence and approval our own well-being and existence depend."[12]

Still another notable public figure, Sir Patrick Abercrombie, in his lecture on "Planning a Great City" delivered at the Melbourne University last year, touched on the same subject when he said: "An essential element in executing a plan for a city is to have the plan properly publicized in a form that the public can understand."

Yet the Australian Army, which so well understands the need for

[10] *Quotation from Julius Caesar made in 1 Aust Armd Div Comd's Circular, No 19 of 14 May 42.*

[11] *Press, Parliament and People, by Francis Williams, p. 14.*

[12] *When Peace Comes, by Sir Herbert Gepp, pp 106-107.*

giving full information to its subordinates and to forces co-operating with it, is not well-equipped, organized or trained for doing the same thing with the public. That it is poorly organized or equipped for this purpose may be largely attributable to the traditional suspicion of the soldier, fear of military rule and dislike of "the Military Commandants" found among civilians resulting in limitations being placed by Governments upon the direct approach of the military leaders to the public. That it is inadequately trained in making the best use of the avenues of approach to the public open to it is, however, within its own power to rectify.

Relations with the public can be achieved by a number of means, e.g., by:

- Direct but casual every-day contact.
- Direct publicity through Press, radio, films and the public platform.
- Direct approach to civilian organizations.
- Displays and corporate participation in community life.
- Auxiliary organizations and personal canvassing.
- Indirect publicity through literature and art.

Each of these can be actively directed towards securing the goodwill of the community, and all are capable of being fostered under a comprehensive plan and made more effective by the training of all ranks. For public relations is not the sole concern of a specialist agency charged with dealing with the press, but is an essential element in our preparation for war and part of the duties of every soldier, from the highest commander to the newest private, covering all these methods and media by which men make contact with one another.

In the Australian Army the public relations organization at present appears to deal mainly with the Press, and to a lesser extent with broadcasting. In addition to this direct publicity through the Public Relations Officers, however, there is a valuable amount of personal contact and of individual and corporate participation in community life. Exchanges of official courtesies between Commanders and Civil Dignitaries, co-operation with the shire councils in bush fire-fighting, assistance with transport in floods and disasters, concerts by Military Bands, and games are all familiar examples. Again, the recruiting organization does much work in fostering public relations and the *Recruiting Manual* is a fine publication which gives CMF Commanding Officers comprehensive data and guidance. Nevertheless, much more could be done in all these ways, in particular in developing the public relations organization and in training all ranks to co-operate with and help that organization.

(To be continued)

OPERATION REDRAMP

By
Brig. R. E. A. Morton, DSO,
General Officer Commanding Prairie Command*

Part 2

OPERATIONS BLACKBOY AND RAINBOW

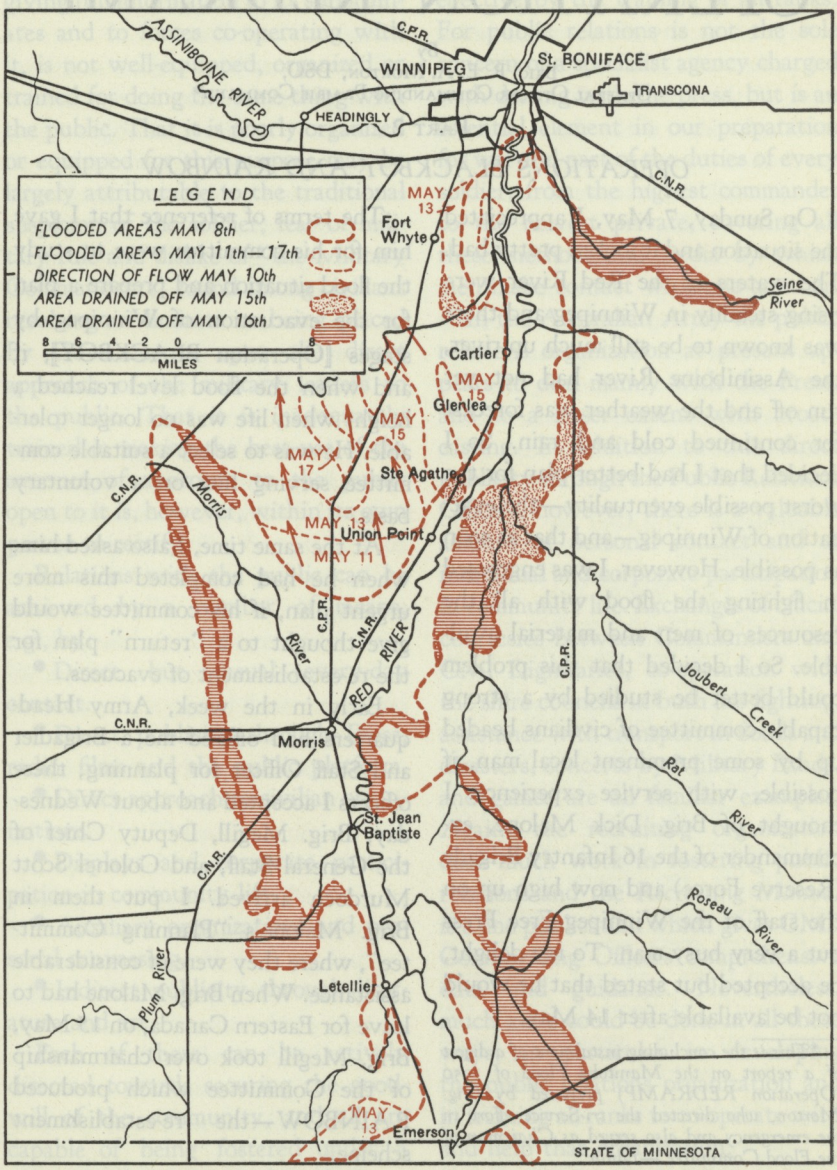
On Sunday, 7 May, I appreciated the situation and it looked pretty bad. The waters of the Red River were rising steadily in Winnipeg and there was known to be still much up river, the Assiniboine River had not yet run off and the weather was forecast for continued cold and rain. So I decided that I had better plan for the worst possible eventuality—the evacuation of Winnipeg—and that as soon as possible. However, I was engrossed in fighting the flood with all the resources of men and material available. So I decided that this problem could better be studied by a strong capable committee of civilians headed up by some prominent local man, if possible, with service experience. I thought of Brig. Dick Malone, ex-commander of the 16 Infantry Brigade (Reserve Force) and now high up on the staff of the Winnipeg Free Press but a very busy man. To my delight, he accepted but stated that he would not be available after 14 May.

The terms of reference that I gave him for his committee were to study the flood situation and prepare a plan for the evacuation of Winnipeg by stages [Operation BLACKBOY], if and when the flood level reached a height when life was no longer tolerable. He was to select a suitable committee serving him on a voluntary basis.

At the same time, I also asked him, when he had completed this more urgent plan, if his committee would give thought to a "return" plan for the re-establishment of evacuees.

Early in the week, Army Headquarters had offered me a Brigadier and Staff Officer for planning; these officers I accepted and about Wednesday, Brig. Megill, Deputy Chief of the General Staff, and Colonel Scott Murdoch arrived. I put them in Brig. Malone's "Planning Committee", where they were of considerable assistance. When Brig. Malone had to leave for Eastern Canada, on 15 May, Brig. Megill took over chairmanship of the Committee which produced RAINBOW—the re-establishment scheme.

*This is the concluding instalment of a digest of a report on the Manitoba Flood of 1950 (Operation REDRAMP) prepared by Brig. Morton, who directed the tri-Service effort in the emergency and also served as Chairman of the Flood Committee.—Editor.


LEGEND
FLOODED AREAS MAY 8th
FLOODED AREAS MAY 11th—17th
DIRECTION OF FLOW MAY 10th
AREA DRAINED OFF MAY 15th
AREA DRAINED OFF MAY 16th
8 6 4 2 0 8
MILES
ASSINIBOINE RIVER
C.P.R.
WINNIPEG
St. BONIFACE
TRANSCONA
HEADINGLY
C.N.R.
Seine River
MAY 13
Fort Whyte
Cartier
MAY 15
Glenlea
MAY 15
MAY 17
Ste Agathe
MAY 13
MAY 11
Union Point
C.N.R.
Morris
River
C.P.R.
C.N.R.
RED RIVER
C.P.R.
Joubert Creek
C.N.R.
Morris
Rat River
St. Jean Baptiste
C.N.R.
Roseau River
Plum River
Letellier
MAY 13
Emerson
STATE OF MINNESOTA

I owe a debt of gratitude to Brig. Malone and his committee of public-spirited citizens for their production of the plan BLACKBOY. It was a soundly conceived, practical plan and I am convinced that it would have worked. Such a scheme is probably unique in Canada today and it excited enthusiastic comment from those who studied it.

Brig. Malone produced two [plans], actually; the second, appearing on 15 May, was the final edition and included improvements over the first, which was in my hands as early as 12 May. I do not propose here to describe BLACKBOY, except to state that it planned how to collect, care for and transport some 50,000 persons per day by rail, road, bus and air out of Greater Winnipeg until there remained only some 75,000 fit men and women as a "Garrison".

Emergency Plans

The two most vital utilities which might go out under the existing circumstances and cause the greatest danger appeared to be electric power and line and air communications. In considering these two, we had to ignore such important utilities as electric trams and to confine ourselves to the most essential aspects regarding safety and civilian control. Hence, we planned to provide auxiliary lighting facilities for hospitals, headquarters, fire and police departments and the like. Our auxiliary communication network was provided by Army wireless sources and was intended to replace existing phone lines; it was to connect Control Headquarters with sources of personnel and supply. It was also intended to supplement this emergency net by all possible civilian sources that could be secured such as radiotaxis and "ham" wireless operators.

With these plans made, we proceeded to secure all the plants and equipment that we could as soon as possible. The work of the Provincial Department of Public Works was most helpful regarding the auxiliary lighting equipment. They accepted responsibility for providing or ensuring the provision of lighting for all civil installations, including plants for emergency passenger loading by railways or buses. We looked after the lighting at all service locations, using civilian firms to install.

The systems were subsequently tested by an Exercise and responded satisfactorily, though it was impossible to provide more than a skeleton covering of essentials.

Another interesting project that we had to set up was a system to warn people of the necessity of evacuating certain buildings and localities. If the power were gone, obviously the lights would be out

and the great majority of radios, being batteryless, could not function; so a sudden alarm by night and day had to be devised. We organized several PA-equipped vans with crews of two, ready on a 24-hour basis, to go to any spot we notified and give warning. They were given a laid-down script to broadcast and were to get in touch with adjacent inhabitants to assist them.

Evacuation, as I have mentioned, was on a voluntary basis except in zones which were in danger of flood; directed "mass evacuation" was planned in BLACKBOY. On Monday, 8 May, we set up an "Evacuation Section" as a part of Flood Control HQ to care for all evacuations that might be required by areas and to assist in other lesser cases. Of course, this was basically a Red Cross responsibility but the Navy and Army accepted the task of helping the civilian authorities clear the designated area.

The problems facing the municipalities of Greater Winnipeg were serious and developed rapidly; especially for the smaller ones, they were a severe tax on their engineering staff and resources. The Provincial Department of Public Works under the Deputy Minister, Mr. George Collins, did a splendid job gathering in the available resources of the Province and acquiring more by purchase and loan. Mr. W. D. Hurst, City Engineer for the City of Winnipeg, likewise did a fine job handling the complex problems of dyke construction, protection and repair of essential utilities, maintenance of services and security of public and private property, not only in the large City of Winnipeg but also in assisting the other smaller municipalities.

When the 23 Field Squadron, RCE (Active Force), from Chilliwack, and the 21 Field Squadron, RCE (Reserve Force), from Flin Flon arrived, Lt. Col. Blair decided to use them as special troops under his direct control. So they were employed on tasks requiring particular skill, such as bridge repair and construction, demolitions and road repair. Both units did very well and got a lot of useful practical experience in field work.

Pontooning was not used and we were obliged to keep our Bailey bridging in reserve in case it became necessary to use it over the Red River or for an absolute evacuation. However, the value of a supply of Bailey in such an emergency as this was obvious.

The Engineer Section of Flood Control HQ was required to help and advise the various municipalities and co-ordinate their requirements and was in close liaison with the Provincial Department of Public Works as regards resources and tasks. It was also in close touch with the Depart-

ment of Mines and Resources regarding flood forecasts and it provided assistance to the three Services, in an engineering capacity. It proved an energetic, skillful and dependable adjunct and was composed of all sorts of Engineers fired with a common purpose and determination.

Medical Aspects

I have already mentioned the position of the hospitals in Greater Winnipeg and their vulnerability to flooding. Thus it was decided to commence the evacuation of these institutions by railway and air as soon as possible. Unfortunately, we could not move them all out of the city at once and were obliged to clear the most threatened hospitals first. The plan adopted was to begin moving out of town as many as possible daily, while at the same time we cleared the most seriously threatened hospitals into others better situated. The bottleneck of movement was the capacity of the railways to supply hospital trains to move the invalids out of the city so that the process of movement was really carried out against time.

After the group of hospitals in Riverview were surrounded by the flood, the night before we took over, the medical authorities by praiseworthy efforts were able to keep ahead of the floods in their evacuation efforts. In fact, the medical evacuation was the only directed move organized and carried out completely during the flood.

The railways were especially helpful in the transportation of the sick and the aged by providing special trains, in addition, to their normal traffic, increased by voluntary evacuees. Hundreds of hospitals in large and small centres of population offered assistance, and patients and infirm from Greater Winnipeg found refuge in Northwest Ontario, Saskatchewan and Alberta in addition to other places in Manitoba.

By the middle of May, when the flood was reaching its peak, the medical evacuation plan had proceeded so well that we were at last in a satisfactory position. By this time, the hospitals and homes in danger had been cleared save for maintenance staffs, all hospitals had cut down their intake to essential admissions only and the two safest located hospitals—Deer Lodge and the Winnipeg General—were alone actively functioning.

When we could tolerate the return of people who could be housed, we began to return to normalcy as regards the sick and infirm. This was also an interesting and somewhat complex operation, carrying out the reverse process of evacuation, and Army personnel and resources took a prominent part in it also.

Security Problems

It was expected that the flood would considerably increase the re-

quirements of security but actually, other than the especial difficulties caused by the flood, no particular problems arose.

The City Police carried out their normal responsibilities, using boats for patrols in flooded areas and requiring more men to control the public about the dykes. The disruption of communications due to the flood also caused an increased need for traffic control.

We included a good proportion of Provost Corps personnel in our reinforcement requests and we were well served in this respect. The Canadian Provost Corps performed many very useful tasks during the emergency, the Active Force being assisted by the Reserve Force units in Winnipeg. We used the Provosts for traffic control where soldiers were working, co-ordinated with local police, for patrols in downtown Winnipeg and to maintain No. 9 Military Detention Barracks. As a precaution, at the commencement of the flood we had the Provincial Attorney-General's Branch swear in as special constables the members of our Prairie Command AF Provost Detachment. Our Provost downtown were integrated with the City Police and equipped with Army vans to deal rapidly with any service misdemeanours. There was very little military crime at all and the behaviour and bearing of the personnel of all three Services was really exemplary.

A project of some interest and importance which we required was an estimate of the number of people evacuating Greater Winnipeg. Not only was it useful to know what response was being made to our requests that all who could should move out; in the event that BLACKBOY had to be invoked we needed to know how many people were still remaining in Greater Winnipeg. There were two types of evacuees, the first being those who were ordered to vacate due to the flood or were moved from hospitals and the like and the second, those who evacuated voluntarily. The first type were generally moved through the medium of the Red Cross or a civic agency and were more easily recorded, though many of them did not leave Greater Winnipeg. The second type were very difficult to record as they moved out on their own by train, air or road, were often accompanied by males who returned, and they themselves often drifted back to town after a short time away. Despite these difficulties, through the co-operation of the Red Cross and all the transportation agencies — railways, air and bus — I was able to secure approximate figures daily.

Conclusion

I have tried to give a lucid and brief account of Operation REDRAMP. This was a big and interest

ing task and many people — Service and civilians — were involved. I have mentioned several of my principal assistants but there were many others who also did well; thousands of civilians — men and women — worked hard and long during the critical days of the flood.

Lessons

I think that the lessons which we learned are of great value and interest to all of us in Canada today — certainly to all in authority or responsible for disaster planning. I will sum them up, as I see them, as follows:

Time and Space: Two well-known military factors reappear in this civil emergency. In this case, the danger gradually increased as the flood rose. When we took over on 6 May the entire situation had so deteriorated that only great efforts on the part of everyone averted a catastrophe. There will not normally be time to plan, organize, and make preparations after the eventuality has occurred. The flood covered a wide territory and at the same time made communications much more difficult. This is to be expected and underlines the importance of previous preparations against the disaster.

Resources: By the rapid organization of our Headquarters, immediate planning and by the provision of an efficient airlift, we were able to get control of the dangerous situation after seven or eight critical days. Again, previous planning, organization and the ready availability of essential stores and equipment is most important. Of course, all stores and equipment required cannot be stockpiled but a great deal can be done well in advance, nevertheless.

Personnel: The immediate provision of competent and willing persons ready to devote full time work and possessed of the confidence of the senior Government is important. In this flood, these were represented by my Command HQ Staff, together with some from the Reserve Force of the Garrison. Willing, capable and disciplined bodies are also very necessary; and a large proportion of them also should be willing to give full time to their special tasks. These were represented by the personnel of the Active and Reserve Forces of the three Services.

Engineer Firms: I think it is good value to secure the services of well qualified engineer construction firms to assist in such an emergency. And to enlist their help and advice before the disaster occurs, if possible; the expense involved would probably be made up in the long run.

The Canadian Red Cross (Manitoba Branch) was of great help throughout but their organization was not suited to their task as initial controllers of the battle against the flood. They were very pleased when we took over, as they appre-

ciated this fact fully. In their proper sphere of activity they were extremely useful, well organized and with adequate and willing full-time volunteers. It is necessary in the case of this voluntary organization that the various Branches should be closely correlated, as they must be prepared to co-operate with one another closely and rapidly.

Hospitals, Nursing Homes, Old Folks' Homes, Orphanages and the like have a special importance in an emergency. First, because it is necessary to get the inmates away from the seat of trouble as soon as possible; secondly, because the hospitals must continue to function normally, even if in a restricted scale. Again, many more beds may be required by reason of the disaster. Much planning and organization is needed in this vital field.

Fire and Police Departments: Proved adequate and efficient but in a disaster of another sort they might not be so, without forethought and training and a considerable increase in numbers. The provision of adequate and trained police and firemen reserves should be seriously considered.

Public Relations: Proved very important during the floods. We gave it every consideration and it paid off. It is necessary to inform and quietly influence the public if you are to control them in the difficult and dangerous circumstances surrounding an emergency. The newspapers and radio were most helpful to us but this pleasant situation might not always easily be arrived at. Care should always be taken to ensure that at least one newssheet is published in a disaster, and that one radio station can keep the air; also that the public can hear it.

The Fighting Services: The Army must be ever ready to assist the civilian population in an emergency, unless the military situation prohibits this; but we must be careful never to supersede civilian authority. It is vital that a well-prepared and soundly organized civil disaster set-up should be prepared and practised. Then the soldier may be merely required to supplement this scheme for a period of time and not to carry it out completely for the authorities concerned, as was done in the recent floods.

Urban and Rural Population: In a disaster, the larger the centre of population, the more complex the conditions of life and the more difficult the problems involved. Thus, in Greater Winnipeg the situation was much worse and more complicated than in the small towns up river. Also, the ideas, habits and characteristics of the country man are different from the city man. Due to their dependence upon public utilities, shops, transportation and amusements and their greater concentration per

square mile, the city presents a different problem in disaster control than the country. All this must be considered in any scheme for an emergency. Though we helped rural points earlier in the flood, when the crest reached the vicinity of Winnipeg, we had to concentrate our limited resources there. And, generally, the outside points did quite well more or less on their own. The RCMP did a great task in the outside places, due largely to their prestige and the individual knowledge by the local detachments of the local inhabitants.

Essential Utilities and Resources: It is rather remarkable, when one comes to consider it, how casually we take for granted public utilities when there is no emergency. I would say that the most important in terms of priority were the following:

Electric Power: Needed for light, heat (largely for cooking), transportation (most cities use trams or trolley buses), elevators, in hospitals and factories, etc., for the telephone system, batteryless radios, broadcasting, newspapers and the like (all important means of communication).

Food: If wholesale houses or depots are put out of action, shops do not carry much surplus and would need protection from looting. We kept trains stored with mixed commodities on either side of the Red River for over two weeks during the floods, as an emergency measure.

Water: No trouble here during the flood. We had sterilizing water wagons available, however, and used them considerably at rural points outside Winnipeg: however, an important utility in most emergencies.

Gasoline, Oils and Grease: A vital necessity nowadays, for obvious reasons. A lot of service stations were overrun, but sufficient remained during the flood. In drawing up an Emergency Plan, this feature needs careful consideration.

Coal and Other Heat-Producing Fuels: No trouble during the flood but in winter it could be very different. During the severe and prolonged blizzard in Regina in February 1947, which I reported in Exercise SNOWFLAKE as Area Commander, we experienced a dangerous situation produced by a serious shortage of coal. A large proportion of the dwellings in southwest Winnipeg are steam heated by two Central Plants; during the flood the connecting pipes were flooded and there was no heat. A similar disruption could be serious in cold weather.

Hospitals: Must obviously be maintained—or the maximum number possible. This has already been noted above.

Sewage and Garbage Service: This was not a problem to us during the flood but could readily become a very serious one in another type of disaster. Hygiene and sanitation must be con-

LETTERS TO THE EDITOR

Editor:—The other night I chanced to be reading the late Field Marshal Viscount Wavell's delightful poetry anthology entitled "Other Men's Flowers". It is a fascinating collection of well remembered, perhaps some not so well remembered, readable poems that the late Field Marshal recalled from memory and compiled into this anthology.

It is all the more remarkable when you remember that when this book was written in 1943, Wavell was occupying one of the most arduous and responsible of wartime tasks. He was Viceroy of India.

One of the poems that I read and particularly enjoyed was called "The Staff Officer" taken from Shakespeare's Henry IV. I am submitting it to you in the fond hope that some of your readers will recognize it as an old favourite and that others may enjoy it for the first time. I have also included Wavell's comment on this poem.—*Major S. C. Waters, DAA & QMG, HQ The Active Force Brigade Group, Army Headquarters, Ottawa.*

The Staff Officer
From Henry IV, Part I, Act I, Scene 3
By William Shakespeare

But I remember when the fight was done,
When I was dry with rage and extreme toil,
Breathless and faint, leaning upon my sword,
Came there a certain lord, neat, trimly dress'd,
Fresh as a bridegroom; and his chin new reap'd
Show'd like a stubble-land at harvest-home;—
He was perfumed like a milliner;
And 'twist his finger and his thumb he held
A pouncet-box, which ever and

(*Continued from previous page*)

sidered and action taken and advice given to the people by the authority concerned—perhaps the City Medical Officer of Health. Instruction regarding the sanitation of flooded cellars and warnings regarding water pollution were given by the City MOH in the newspapers, during the flood.

Schools: During the flood, most were closed in Greater Winnipeg and the younger pupils were a nuisance about the dykes. Arrangements were later made to use certain schools on two or three shifts per diem. Education and care of the young in an emergency needs careful consideration.

(*Concluded*)

anon
He gave his nose, and took't away
again;
Who therewith angry, when it
next came there,
Took it in snuff: and still he
smil'd and talk'd;
And as the soldiers bore dead
bodies by,
He call'd them untaught knaves,
unmannerly,
To bring a slovenly unhandsome
corse
Betwixt the wind and his nobility.
With many holiday and lady terms
He question'd me; among the rest,
demanded
My prisoners in your majesty's
behalf.
I, then all smarting with my
wounds being cold,
To be so pester'd with a popinjay,
Out of my grief and my impatience,
Answer'd neglectingly, I know
not what,—
He should, or he should not;—
for he made me mad
To see him shine so brisk, and
smell so sweet,
And talk so like a waiting-
gentlewoman
Of guns, and drums, and wounds,
—God save the mark!—
And telling me the sovereign'st
thing on earth
Was pamrmaceti for an inward
bruise;
And that it was great pity, so it
was
This villainous saltpetre should be
digg'd
Out of the bowels of the harmless
earth,
Which many a good tall fellow
had destroy'd
So cowardly; and but for these
vile guns—
He would himself have been a
soldier.

Note

The feeling between the regimental officer and the staff officer is as old as the history of fighting. I have been a regimental officer in two minor wars and realized what a poor hand the staff made of things and what a safe luxurious life they led; I was a staff officer in the first World War and realized that the staff were worked to the bone to try and keep the regimental officer on the rails; I have been a Higher Commander in one minor and one major war and have sympathized with the views of both staff and regimental officer. Shakespeare's description in this passage of the fighting officer's view of the popinjays on the staff is extreme, but amusing.—A.P.W.

On "An Appreciation"

Editor:—I refer to Major A. L. Brady's article "An Appreciation" which appeared in the issue "Summer 1950," and in particular to the statement " . . . we are not too happy

about the scanty, disjointed information and orders which the commanding officer . . . received from his brigadier."

The Commanding Officer received, I claim, ample information and orders. In fact, the problem set by Major Brady is almost ideal for emphasizing the need for giving wide initiative to subordinate commanders.

The flanks of the obstacle to be defended are secured by a lake and a swamp. The ground is rugged and will require most skillful reconnaissance if the battalion is not going to be badly caught. What more could the brigadier say than to give a time up to which they shall not pass, and to say what support is on call? Surely if the CO knows his job he needs no more.

There is a theory that the divisional commander tells the brigadiers where to place battalions, and the brigadier tells battalion commanders where to place companies.

Suppose our brigadier did start going into details here, and told the CO where to put companies. He could not do so without a detailed reconnaissance (for which he has not the time), and having departed, would leave the CO as nothing more than a post-office for passing on orders to company commanders, his initiative and skill hampered by restrictions probably hastily considered, nor would a flexible defence be practical.

Really, sir, any CO who having with ample support, all the resources of an infantry battalion under him, and who needs more information, and orders, than those given by Major Brady should be seriously considered for retirement. One would hate to serve under so timid a CO—fearful even of his own responsibilities, let alone the advancing aggressor forces. —*Major H. W. F. Appleton, RCAC, Army Headquarters, Ottawa.*

THE CORRECT NOMENCLATURE

Editor: It has been brought to my attention that in the review of "Twenty Million World War Veterans" in your last issue, the official title of the War of 1914 is "The Great War 1914–1919," and that the Canadian Cabinet has ruled that the official designation of the War of 1939 is "The Second World War." The British Government has also adopted the latter rendering.

The point may be small but the matter is of interest, as no doubt a number of your readers may be unsure as to the correct designations of both Wars.—*Lt. Col. H. M. Jackson, Director of War Service Records (DVA), Ottawa.*

Speak Your Mind!

The threat "I am going to write a letter to The Times about it!" expresses for the Englishman his willingness to cross swords with anyone about anything. In fact, this has almost become a figure of speech: it doesn't necessarily mean that the person is going to give The Thunderer the benefit of his views (although he very often does); the statement may simply mean that he "begs to differ".

Letters to the Editor do give readers an opportunity to blow off steam, but that is not their main purpose. Their real value is to be found in the presentation of a variety of opinions on any given subject. They provide a cross-section of public thinking.

The Journal would like to feel that it provides a medium for the expression of opinion, whether it be "for" or "against". To this end, officers and ex-officers are invited to write letters for this column. They may take issue with an author's views as expressed in the Journal; they may amplify some aspect of a subject already dealt with; they may present an entirely new line of thought; or they may simply be informative letters on some subject in which the writer is interested.

All letters should be signed with the name, rank and unit of the writer.

It is hoped that readers will be inspired to "write a letter to the Journal about it!"—and do it.

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