CANADIAN Army JOURNAL

VOLUME 4 NUMBER 2 MAY 1950

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This Month's Cover

British troops crossing a river during the South African War.

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.

Leadership

Field Marshal Sir William Slim, Chief of the Imperial General Staff

I have chosen to speak to you on leadership but I am a little diffident for two reasons. The first is, that if anybody who has had any command talks about leadership, he is awfully inclined to talk about himself and that gets horribly boring. I shall try not to, but I probably shall. The second thing is that I have very often sat where you are now sitting, and to get up at this time in the morning to come and listen to a foreign general talking about something that a lot of people have talked to me about already is not really my idea of a happy morning.

Now you are all officers, and the be-all and end-all of an officer is to be a leader. You are also—most of you—officers of the Armoured Forces, and in the Armoured Forces, leadership is required to an extent very much greater than many other arms of the service for the very simple reason that you work in small parties, crews of vehicles, and your leadership is really the raw material of leadership. You

have your men in your own hands, under your own eyes, and that is the basis of leadership—your handling of men. I have been very lucky in my service. In getting on for forty years of service, I have commanded everything from a section of six men to an army group of a million and a quarter, and, believe me, while it gets sometimes more difficult and sometimes easier, the bigger your command, the essentials of command and leadership are always the same. It doesn't matter whether you command ten men or ten million men. If you are going to be a leader you have got to have certain things. Leadership is a mixture of example, persuasion, and compulsion. If you ask me to define what leadership is, I should say it is the projection of your own personality so that you get men to do what you want them to do even if they aren't very keen on doing it themselves. Leadership is the most intensely personal thing there is in the world, because leadership is just plain you. I have told you that leadership is the projection of your personality, so it is not much good starting off to be a leader unless you have got personality, and you have got to have a certain kind of personality. In that personality you must have certain qualities. The first of these is courage, the next is willpower, the third is initiative and the fourth is knowledge,—courage, willpower, initiative and knowledge. If you haven't got those, you won't make a leader, and I would like, if you will allow me, to talk for a moment or two about those qualities.

First of all, courage. We all, thank God, you and I, come of races which have not failed for want of courage. We can look back on our history and we needn't fear for the courage of our race, or our races, but an officer requires something more than mere physical courage. He must have that. You must take the lead when it is most dangerous. The officer must accept the greatest hazards, but, in addition to the ordinary physical courage, an officer is required to have a courage of two kinds, much more than the men he leads. Now the first thing that an officer must have is the courage that goes on. Now a British soldier is no braver than a German, or an Italian, or an Arab, or a Persian, or anybody else, but he is, thank God, brave for a little bit longer, and that is the kind of bravery that the officer has to have. You have to go on being brave. Anybody can be brave for five minutes, but it takes something to go on being brave for five weeks. That is what the officer has to do, that is what his men look for—that when things are bad, they look to the officer. We

This address was delivered by Field Marshal Slim to officers at Fort Knox, U.S.A., during a visit to that country several months ago. It is reproduced in the *Journal* by his permission. — *Editor.*

can all get along all right when we are winning. I'm a hell of a general when I'm winning, but I haven't always been winning. If you have been a British General at the beginning of a war, you will know what I mean. There always comes a time when the things go wrong—when your airplanes are shot out of the sky; when your guns run out of ammunition; when it is cold and it's wet and your men are hungry, and when a chap's heart sinks down into his empty belly. When that happens, it doesn't matter whether you are the general commanding an army or the officer commanding a platoon or section, you will find—a lot of you have found it—you will find there comes a pause and your men just look at you. They want to know what to do, and they look to you to tell them, to lead them. That is the test of an officer—the test of leadership, and you won't pass that test unless you have thought of it and practised it. Sometimes it is very difficult. It has happened to me—men have looked at me to see what I was going to say and I haven't known what the hell to say.

I stepped out of a tank once which was the only means of communication I had, and standing outside that tank there were three of my subordinate commanders, a couple of staff officers, and one or two other chaps. The situation was bad. We had got a division cut off and nothing to get it out with. It didn't look as if we should last very long, and as I stepped out, I saw those fellows waiting. They didn't do anything—they just looked at me. I didn't know what the hell to say, but I had to say something to cheer them up, so I said, "Well, Gentlemen, it might be worse", and one of those fellows said, "How?" The only thing I could think of answering was "Well, it might be raining", and by golly in an hour it was. Well, I don't hold that up to you as an example of leadership, but it is the sort of thing that does occur, the sort of thing you have to steel yourself against—that moment when the courage and morale of the men you lead falters, and you, the officer, it doesn't matter whether you have one bar on your shoulder or a couple of eagles—you are the man who has got to put that courage and that morale back into them. For that you need a long-term courage. The other kind of courage that you have got to show as an officer is moral courage. Moral courage, believe me, is a much rarer thing than physical courage, much rarer. All men I have known who have had moral courage have had physical courage as well. I can give you a very small example of moral courage in your everyday life. A junior officer passes an enlisted man who doesn't salute him. The officer has seen it; he knows the man ought to have saluted him, but he doesn't say anything

doesn't say anything because, first of all, perhaps he is a bit shy and he doesn't say anything because he is afraid that if he stops this big husky doughboy, he may get a bit of lip from him, and then there is trouble. The real reason why he doesn't do what he knows he ought to do, is because he is frightened, because he hasn't got the moral courage to do it. You want to start young and practise it, because unless you have got moral courage, you won't be much good as an officer.

The second quality I talked about was willpower. Your job as an officer is to make decisions, to tell people what to do. Well, it is not very sometimes to know what you want to do; the difficulty is to get it done. It is not good enough to give an order, you have to see that it is carried out. When you give an order or make plans that you want carried through, you will find there are an awful lot of things that will turn up to oppose it. First of all, there is the enemy. Well, that is all right; you expect them to be like that. I remember a long time ago in the first World War, in 1915, when they kept on asking us for reports. We were up in a front line trench and they sent us up a big form to fill in. One of the questions was "What is the attitude of the enemy?" One of the young officers in my regiment filled that in as "hostile". The form was sent back to him with a reprimand, and he was told to fill it in again. He sent it back altered to "still hostile".

You expect opposition from the enemy, but you will get it from all sorts of other places as well. You will get opposition from your own side; you will get opposition from people who want to do it in another way; you will get opposition from your own staff, especially your administrative or logistical staff, who, in my experience, jolly good chaps as they are, always tell you that anything you want to do is quite impossible. Of course, too, you will get opposition from your allies. When you fight in the next war, you will probably fight with allies, and some of them will be worse than the British. Allies are frightful people. They are narrow-minded. They can't see the big picture. They have extraordinary ways of doing things, and, really they don't appreciate how broad-minded, how sound, and how big-hearted you are. When you begin to feel like that—and you will—I used to sometimes when I was discussing things with Joe Stilwell—when you feel like that just remind yourself that you are an ally too. All you have got to do is to walk around and sit on the other side of the table and you will look just like that to the fellow sitting opposite you. When you have realized that, start again, and you will get on all right. As a commander, you will have all this opposition, opposi-

tion of every kind, and you have to have the strength and will to break it down and force your plan through. Without strength of will, a commander is no use at all. But there is a trap in it. I have seen some very good fellows fall down on it. You have got to distinguish between that is just plumb obstinacy and strength of will. You must keep a flexibility of mind so that you can change your mind when it is necessary. That is one of the trickiest things to do, and when you solve the problem of keeping a balance between strength of will and determination and flexibility of mind, you are well on the way to being quite a big chap. But willpower is an essential of any commander.

The next thing I said you need is initiative. Now initiative is very simple. It simply means that you don't sit down and do nothing and wait for something to happen, because, if you do that in war, it will happen all right, and it will be most mighty unpleasant. The way an officer shows initiative really depends on how much he thinks ahead. Your job is to be several jumps ahead of your men. If you are a platoon or section commander, you probably think only a half hour ahead. If you are a company commander, it may be a matter of hours; a battalion commander, perhaps a day, and if you are an army commander, you are probably thinking three months ahead. The higher you go, the farther ahead you must think, but whatever you are, whatever your rank, you have got to think ahead of your men. That is the only way you will get initiative; that is the only way you will make things happen instead of just have them happen to you. So think ahead, and keep the initiative.

The fourth quality is knowledge.

> If you ask me to define what leadership is, I should say it is the projection of your own personality so that you get men to do what you want them to do even if they aren't very keen on doing it themselves.

Now you and I set ourselves up to be officers. You have got bars and leaves and stars on your shoulders, and I have a thing on mine you have never seen before, but it all means that we are officers. We have no business to set ourselves up as officers at all unless we know more about the job than the men we are leading. If you are a junior officer commanding a small sub-unit, you ought to be able to do everything that you ask any man to do better than he can do it himself. If you can't, just go out behind the hut and practise until you can. . .

You will see here in this school of yours all sorts of things which will make you more efficient killers and more efficient soldiers, but the whole

lot isn't worth two-pence if the men who handle it aren't right and if the men who handle it are not properly led. The first bit of knowledge you have got to get if you set yourself up as a leader is how to deal with men. Get to know your men, learn which man is the sort of fellow that needs a little encouraging; which responds when you go around your posts at night, and put your hand on his shoulder and talk to him about his home town; which man wants barking at, and which is occasionally the sort of fellow who wants a good kick up behind. Know your men! The basis of all leadership is knowledge of men.

If you have those qualities that I have given you—those qualities of courage, willpower, initiative, and knowledge—you will be a leader. People will follow you, but there is something else that you have got to have—something that will make men follow you when things go wrong. If you have those four qualities you will be a leader, but you won't be a good leader and you won't be a leader for good or for long. You have got to have one more quality, and that is self-sacrifice. If you have the quality of self-sacrifice, your men will follow you not only in good times, that is easy, but in bad times.

I remember after a bit of a battle—one of the many battles I lost—I was told that a particular battalion had not done well, and so I went along to see why. I found this battalion just behind the battle line, where they had been brought out. The men were sitting about, they were very, very tired, very dirty, a lot of them were wounded. They were hungry and miserable. I looked around, walking amongst those men, and I could not see an officer anywhere, and I thought, as sometimes happened, all the officers had been killed. I went around a corner and I found a little bunch of officers. They were sitting there having a meal, and they were having a meal before their men had fed. Then I knew why that was a bad battalion. You, as officers, you will put the honour of your country and of your unit first; you will put the well-being, the comfort and safety of your men second, and you will put your own comfort, your own well-being, last, and last all of the time.

If ever you have that kind of leadership with that ingredient of self-sacrifice in it, then your men will follow you anywhere. The sort of men you lead are worth that. Now I have talked long enough. I will end up by saying one thing, as a rather old officer to a lot of younger officers, and that is this. In the Army of the United States, there are no good regiments and there are no bad regiments, there are only good and bad officers. See to it that you are good officers.

Canada and the South African War

By
Colonel C. P. Stacey, OBE, Director of the Historical Section,
Army Headquarters, Ottawa

Part I:

The War—How It Began and What It Was Like

On Confederation Square in the heart of the city of Ottawa there stands an old 12-pounder field gun. Thousands of Canadians hurry past it every day, but few of them ever give it a second glance, and fewer still have looked at it closely enough to see that there's a little brass plate on it. Yet that plate tells how three Canadian soldiers won the Victoria Cross saving this gun in the Transvaal just half a century ago. This insignificant little cannon is an honourable relic of our first Canadian overseas war — a war that was a landmark in our national development.

We haven't heard much about the South African War in recent years. People have seemed reluctant to dwell on it, and it's not hard to understand why. There has been an uneasy feeling that it was an aggressive war by a great power against small ones, the sort of enterprise most of us nowadays are glad to forget. What's more, the people we fought against fifty years ago are our good friends and associates in the Commonwealth today. They've

fought beside us in two much bigger wars, and it might perhaps seem ungracious and a bit embarrassing to recall the bad old days when they were our enemies.

However, the South African War passed into history long ago. It was an incident that seems strange to present-day eyes, but that is no reason why we should refuse to look at it. Neither the Boer people of South Africa nor we whose fathers or grandfathers fought on the other side will be any the worse for remembering the brave deeds done on those old battlefields. And those days and those deeds had an influence on our own country and its place in the world. That influence was greater than many people now realize.

What I want to talk about today is how the war came to happen and, in a general way, what it was like.

The background of it is a very long story, and there's no point in trying to tell it all. It goes back to Napoleon's time, when Britain took the Cape of Good Hope from the Dutch. From the beginning, the British and the Dutch inhabitants found it hard to get on together. One of the main differences between them centred on the problem of the treatment of the negro races, which is still the basic question of South African politics. By the late nineteenth century South Africa was divided into two main sections. One was the two British colonies — Cape Colony and Natal. The other was two Dutch Boer republics — the Orange Free State, and the Transvaal. The republics had been founded by Boers who trekked into the interior to get away from British rule.

What started the war was a dispute over the status of foreign miners in the Transvaal. The fabulous gold fields of the Rand were discovered in 1886, and gold-seekers poured in from all over the world, threatening to swamp the Boers in their own country. The question was whether the "Outlander" miners were to have political rights in the Transvaal, and on what terms. On this issue the cosmopolitan capitalist and the shrewd Dutch farmer met head-on. Many of the miners were British, and the British Government made their cause its own. In 1896 came the Jameson Raid, a thoroughly unjustified armed attack on the Transvaal which was engineered by Cecil Rhodes, the Premier of the Cape Colony. This destroyed what confidence was left between the English and the Boers, and produced an atmosphere that

This is the first of four scripts written by Colonel Stacey for a series of broadcasts which he delivered over a Canadian Broadcasting Corporation network during May to commemorate the 50th anniversary of the South African War. By permission of the author and the CBC, the Journal is privileged to publish the series. Part 2, "How Canada Got into the War", will be published in the next issue. — *Editor.*

made war almost inevitable. It finally began in the fall of 1899.

It's hard for us today to imagine two really civilized communities choosing to go to war over a question like this one about the Outlanders. How could such a thing happen? The explanation, I suppose, is largely in the spirit of the age. It was very different from ours. The nineties were the Jingo period — a time of crude, rather simple-minded nationalistic imperialism. They were also an age of great international business enterprises which often seem to have managed to be a queer blend of philanthropy and piracy. Think of the representative men of those days. In the United States, it was the time of Theodore Roosevelt, the Colonel of the Rough Riders, the hero of San Juan Hill, the man who "took Panama". In Germany, the limelight was on the excitable young Emperor, William II. He loved to frighten Europe with his sabre-rattling. He wasn't content with having the most formidable Army in the world, but was just embarking on the dangerous course of building a great Navy as well. In the British Empire, who was the man of the hour? It was Rhodes, the millionaire who was also a South African politician, the idealist who also believed in painting the map red. All these men were megalomaniacs. They all wanted to do something great for mankind. And they all had a tendency to think that the end justified the means. Such was the spirit of the age. It affected every western country to some extent. It certainly affected Canada.

Apparently the jingo spirit even had some influence on the South African Boers. At any rate, the fact is that *neither* party to the dispute in South Africa showed any real desire to avoid war. The British Government, of course, felt quite sure of an easy victory over the two little Boer republics. But the Boer leaders were almost equally sure that they could beat the British. Many of them didn't know much about the outside world; and they remembered that they *had* actually cut a British force to pieces at Majuba Hill back in 1881. At that time Gladstone had been the British Prime Minister. He chose to make peace without wiping out the defeat, and recognized the independence of the Transvaal. The Boers may have thought something similar would happen in 1899. Anyway, it was they who finally started the war — by sending an arrogant ultimatum to the British Government and following it up with an invasion of Cape Colony and Natal. But Mr. Gladstone was dead, and British affairs were being run differently now.

It turned out that both sides had been wrong. The Boers found they couldn't beat the British. And the British found that they had to fight

two and a half years to beat the Boers.

What was this war like? It was a very different affair from either the First World War — with its deadly trench battles — or the Second, with its vast mechanized manoeuvres. I once asked an old soldier who had been through both the war in South Africa and the four years in France which was worse. His answer was, South Africa. In France, he said, there was much more chance of getting killed, but you usually got *fed* regularly, and that was definitely not the case in South Africa. This suggests a basic difference. The 1914 war on the Western Front was a static affair in which supply was relatively easy to arrange. The Boer War was a mobile, fast-moving campaign, fought "over eleven degrees of a bare brown continent"; and it was hard for the rations to keep up with the troops.

Fifty years ago, the scientists and inventors hadn't given us the aeroplane and the blockbuster — let alone the atom bomb. The idea of making war by bombarding cities full of defenceless civilians was still regarded as barbarous. For another thing, motor transport hadn't yet come on the scene. This was a horseman's war. It was also a rifleman's war. The king of the battlefield was the man who knew how to ride and shoot. And the farmers who made up the Boer commandos *could* ride and shoot. They didn't know much about modern technology, but there was one piece of machinery they thoroughly understood. That was the magazine rifle. The British Army had never faced such musketry fire as it met on the South African veldt. It soon found out that to win battles there it had to copy its enemy. The supreme arm in these African battles was *mounted infantry*. What was needed was troops who could ride to the scene of action on horseback and fight there efficiently on foot with the rifle. This meant being able to hit the other fellow at distances up to 1500 yards — ranges unheard of for riflemen in the last two wars.

But there's something still more striking about this campaign in South Africa. It was fought in a clean and decent way—so much so that it has been called the last of the gentlemen's wars. Now war's a dirty business at best: I imagine it was pretty nasty even when it was fought with clubs and battle-axes. And whatever the British may have thought, it's fair to assume that the Boer farmers whose lands were laid waste didn't regard this war as a particularly sporting proposition. And yet it was very different from those "total" wars that the great powers have gone in for in more recent times. We all know too much about them. We know how hatreds were aroused and fanned by rival ideologies and propaganda, and

how decent human values were more and more debased until you got horrors like Belsen and Buchenwald. There was bitterness enough in South Africa, but there was nothing like that.

If you've read Denys Reitz's fascinating book *Commando* you'll remember how the Boer guerillas used to dispose of their wounded men. They had no hospitals, so when a man was too badly hurt to ride they simply made him comfortable and left him behind, feeling certain that the British would pick him up and look after him. And the British always did. Men of either side who got themselves captured were almost invariably well treated. The fact is that this was a conflict between civilized men, and they usually managed to fight each other without forgetting that they *were* civilized and that there were standards of decency that were worth observing even in time of war.

You don't read far in the records of the war without finding out how much mutual respect there was between the soldiers of the two sides. In particular, the British often paid warm tributes of admiration to the men they were fighting. I'd like to read one passage of this sort. It's by the correspondent of the London *Morning Post*. He's writing about the aftermath of a successful fight and the treatment of the Boer wounded:—

> . . . We searched the ground, finding . . , ten dead and eight badly wounded men. The soldiers crowded around these last, covering them up with blankets or mackintoshes, propping their heads with saddles for pillows, and giving them water and biscuits from their bottles and haversacks . . . The desire to kill was gone. The desire to comfort replaced it. A little alert officer—Hubert Gough . . . —came up to me. Two minutes before his eyes were bright and joyous with the excitement of the man hunt. He had galloped a mile—mostly under fire—to bring the reinforcements to surround the Boers . . . Now he was very sad. 'There's a poor boy dying up here—only a boy, and so cold—who's got a blanket?' So the soldiers succoured the Boer wounded and we told the prisoners that they would be shown courtesy and kindness worthy of brave men and a famous quarrel . . . I have often seen dead men, killed in war . . . but the Boer dead aroused the most painful emotions. Here by the rock under which he had fought lay the Field Cornet of Heilbronn, Mr. de Mentz—a grey-haired man of over sixty years, with firm aquiline features and a short beard. The stony face was grimly calm, but it bore the stamp of unalterable resolve; the look of a man who had thought it all out, and was quite certain that his cause was just, and such as a sober citizen might give his life for. Nor was I surprised when the Boer prisoners told me that Mentz had refused all suggestions of surrender, and that when his left leg was smashed by a bullet he had continued to load and fire until he bled to death; and they found him, pale and bloodless, holding his wife's letter in his hand.[1]

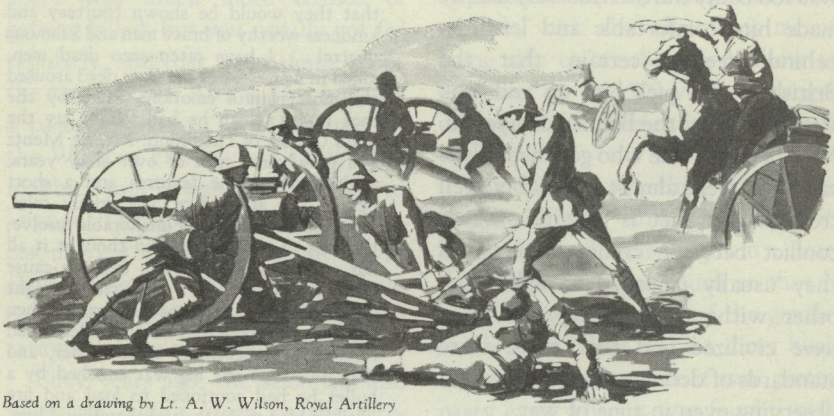
Coming from a newspaper correspondent in time of war, such words about the enemy are surely very remarkable—even though the correspondent was a rather unusual person. (His name was Winston Churchill.) And yet this wasn't an

[1] Winston S. Churchill, *London to Ladysmith via Pretoria* (New York, 1900), 289–90. By permission of Longmans, Green and Co.

isolated opinion. Listen to Major Allenby, who was to be the most uniformly successful British commander in the first German war. He wrote home, "I have always liked and admired the Boer, and always shall".[2] This sort of spirit kept this war from degenerating into the monotonously dirty and disreputable business that the wars of dictators tend to be. It was bloody enough; but at least it wasn't barbarous. And this helps to explain how it happened that a new British Dominion came into existence in South Africa just eight years after the war ended; and the King's first Prime Minister in that country was one of those Boer Generals who had fought against the Crown so long and well.

(To be continued)

2 Field Marshal Viscount Wavell, *Allenby, Soldier and Statesman* (London, Harrad, 1946), 63.



Based on a drawing by Lt. A. W. Wilson, Royal Artillery

The Boer War—R.H.A. bringing their 12-pounders into action under heavy fire.

MILITARY HOSPITAL

Ten years ago, on July 15, 1940, the first Canadian military hospital to function overseas in the Second World War was officially opened near Taplow, Bucks, England, by the late Viscount (then Rt. Hon.) R. B. Bennett. It was constructed on the grounds of the beautiful Thames-side estate of Lord and Lady Astor where a similar institution had been built for Canadians during the First World War.

The cost of building and equipping the 600-bed hospital was $1,000,000 and was borne by the Canadian Red Cross Society.—*Directorate of Public Relations (Army).*

The Good Officer

Lt. Col. F. E. Anderson, Deputy Director of the Army Budget,
Army Headquarters, Ottawa

In his first message to Canadian National Railway Employees Donald Gordon, newly appointed President, is reported to have announced that he expected each of them to "continue their efficient and loyal co-operation with the executive in the interests of the service." He also said, "you have a right to expect of me that I show leadership, imagination and energy in the development and betterment of the system, and you have a right to expect me to be jealous of your welfare in all respects."

Those were not platitudes. Nor was Mr. Gordon groping for words; he obviously was stating a code which is an integral part of his personality as one of our foremost executives.

Moreover, every top-notch executive must not only have full knowledge of the principles of business administration but have long since determined for himself what precise application he will make of those "rules" in daily contact with staff and associates.

The days are definitely past when we in the Army can afford to accept formal routine as a substitute for planning, or military discipline as a substitute for intelligence. The officers of Canada's new Army should be as familiar with developments in the administrative and personnel fields as they are with the improvements in weapons or training methods. A staff officer, an officer responsible for unit administration, or an officer in any of the service corps has duties similar in many respects to those of a business executive. All officers will certainly benefit from study of the theory of management; while we must, of course, also be proficient in soldiering, and we have round-the-clock responsibilities for military personnel which a civilian executive can shrug off at quitting time.

This article will touch on a number of characteristics which in composite make a successful executive, and a "good" officer. There is, however, no royal road to knowledge. The required study cannot be absorbed in capsule form, though a summary such as this may prove useful as a refresher.

The successful executive is a man with the ability to get things done. He is primarily a leader of men.

This is familiar ground: much hto been written telling us how as

conduct ourselves as officer leaders. We see each year our individual ratings on each of the personal traits considered sufficiently important for inclusion on Officer's Confidential Report forms. We have our personal experience as background and we have examples of both the good and the not-so-good officers with whom we come in contact as a basis for analysis in conjunction with the following restatement of desirable officer characteristics.

Officer Leadership

The quality of leadership displayed by unit officers is, you will agree, largely responsible for the variation that exists between poor, good, and the few outstanding units; and the type of leadership which brings success in battle is of equal importance to our peacetime activities.

Every officer should, therefore, develop his own philosophy of leadership and consciously strive to improve his capacity for supervisory appointments. Some few people are natural-born leaders, but others, possessing the ordinary attributes, can become good leaders through the observation of tested procedures and by deliberate effort towards self-improvement.

An officer can be a leader or a driver. But he should remember that the driver has the harder job; he must do almost all the thinking for his group, and be constantly on the alert to ensure compliance. No less an authority than von Clausewitz has pointed to the frustration experienced by Commanders due to "the friction of the machine." The leader on the other hand directs a joint effort; his men work not only for but with him. Willing hands are more effective than forced labour; many heads are better than one. The day when the foreman was the individual physically able to beat all the men under him, the day when employees could be kicked around, has passed. A new type of supervisor has developed in industry; greater emphasis is now placed on powers of persuasion, on leadership. The same is true in the Army.

Leadership and man management go hand in hand, and the essence of man management is getting subordinates to accomplish the tasks assigned. Unfortunately, because individuals and situations vary so greatly, it is not possible to state precisely what must be done to become an effective leader. There are, however, certain generally accepted principles which every officer can review and profitably adapt to his personal use. Those principles are largely common-sense, but they are tools which must be used either consciously or without thought in the course of an officer's normal duties.

Every officer should keep in mind that men are the instruments of his craft; that he can only be successful to the extent that he succeeds in

having those under him work effectively for him. Efficient leaders are careful in their relations with subordinates; they know that only through the efforts of other people is it possible for them to adequately meet their responsibilities.

Almost every man wants to do what is expected of him and when he fails to do so it is usually because he has not been properly instructed. Yet, on their own initiative, people normally work at considerably less than their full capacity. This might be likened to an iceberg which, however impressive, is nine-tenths submerged. Each of us can bring to mind examples of physical or mental accomplishments far beyond our normal pace. The success of an officer can be measured by the extent to which he is able to bring out the latent capabilities of his men.

It may be useful to visualize a triangle the apex of which is "Productivity" while one base corner is "How to work" and the other "Will to Work." Or consider it as an equation; "How to Work" plus, or minus, "Will to Work" equals "Productivity." How your men work is dependent upon available procedures and facilities. It is their will to work that a capable officer can improve.

An officer should develop initiative in his subordinates. Men learn to do by doing, but in so learning they make mistakes. The good officer takes responsibility for the honest mistakes of his subordinates though he takes corrective action later. He backs his men up. He does not by-pass subordinate commanders, but fully uses them in order to add to their proper prestige. He does not belittle or underestimate the importance of his subordinates. He assigns responsibilities and with those responsibilities he gives the authority which must go hand in hand with responsibility. Not only is the job done better when all give their best to portions of it, as opposed to a one man effort with disinterested assistance, but subordinates welcome evidence of trust and the opportunity to demonstrate their abilities.

An officer should develop his ability to select competent subordinates. If he makes a mistake in choice, then he should soon remedy that mistake, however unpleasant to the man concerned. He should not jeopardize his mission for fear of admitting an error in selection. He should handle his own mistakes. Nor is it a favour to let a man continue in a job for which he is unsuited since a change of employment makes it possible sooner for that man to find the employment for which he has real talent, with obvious advantages to himself as well as to the Army.

Morale is a natural product of good leadership. Good morale comes in part from doing a worth-while job well and receiving recognition for it. Congenial work and a job in which results

and improvement can be measured are perhaps the most satisfying things in life. Men who perform their tasks with enthusiasm and loyalty will find major satisfaction in their work.

Men have the right to expect that their good work will be recognized and publicized where appropriate. This is perhaps the most important single step an officer can take in building team spirit, with himself the leader of the team. Teamwork also requires the right kind of organization, combined with mutual confidence, and knowledge of the powers, limitations and aims of all participants. It requires combined training to get a co-operative effort for attainment of common goals.

An officer should therefore keep his men oriented and explain, so far as practicable, the reasons for desired action. He should shield them from harassment from "higher up", and maintain their essential pride-in-self by administering all necessary criticisms privately.

Men have the right to expect honest, just and fair treatment from their leaders; a well thought-out programme of training; clear-cut and positive decisions, and orders which are not constantly changing; demands on them commensurate with their capabilities, neither too small nor too great; and the consideration due them as mature individuals. They have the right to expect that their needs will be anticipated and provided for; that they will receive all the comforts and privileges practicable; and that personal interest will be taken in them as individuals.

Men must look to their leaders for rewards and punishments. The O.C. must personally decide who is to be recommended for promotion, and he should assess punishments personally rather than permit the Sergeant-Major to make up his mind. He can and should accept recommendations, but it must never be thought that he rubber-stamps a subordinate's list. Men will admire a strict officer if he is also just.

An officer should be as good as his word. He should not make promises of rewards or punishments he cannot fulfill, and he should adhere to those he makes. He should not issue orders which he cannot enforce; it is a wise officer who ignores, officially, something he can do little to correct. When a man has punishment coming to him be sure that he gets it, but in an impersonal way and to a degree that fits the circumstances and the particular offence. When the debt has been paid forget the incident.

An officer should do everything he can to increase the personal pride of his men. Cleanliness, neatness, and orderliness are evidence of personal pride. A prominent U.S. industrialist has been quoted as saying: "A clean and tidy shop is an efficient shop; I

have yet to see sloppy individuals and a disorderly plant break any production records." General Patton put it this way: "Did you ever see a dirty man with medals?" A proud unit is a good unit.

An enthusiastic and cheerful attitude is contagious.

The good officer knows the names, backgrounds, and individual characteristics of all the men with whom he has close contact. Yet he should not seek popularity. Attempts to "buy" popularity will not be successful. Good soldiers do not expect their officers to be familiar with them. It is not necessary to call men by their nicknames to show friendliness, nor will doing so increase your hold on them. An officer must show genuine, personal and friendly interest in his men if they are to return that interest.

An officer should be intellectually honest. He cannot bluff his men and retain their respect. When he does not know the answer to a question he should say so; and then he should find that answer. He cannot be expected to know everything.

Be loyal. Criticism of your superiors in front of subordinates lays you open to the same treatment; loyalty works both ways. Moreover criticism of superiors before equals is every bit as dangerous, and a far more common habit. All men have faults and peculiarities, and any flaws in the personalities of senior officers are especially apparent because they are constantly under the spotlight. Criticism and gossip is not only detrimental to the man concerned, but to his appointment, and thus it weakens the disciplinary structure which is the backbone of the Army. As a loyal and self-respecting individual refuse to participate.

And finally, remember that rank has the sole purpose of enabling an officer to meet his responsibilities. It is not a reward for past service. It should not be used for personal prerogative; rank gives you the opportunity to serve your subordinates.

In many respects the duties of an officer are those of a supervisor directly in charge of a few men engaged on particular projects, and so, with risk of repetition, some necessary attributes of a good supervisor are summarized for review.

The Supervisor

The personal relationship between supervisor and subordinates is of obvious importance, and can be improved by honest interest in the individuals themselves, their families and their after-hour activities.

Good workmanship cannot be fostered if your men feel they are not trusted. You must not adopt a behind-the-post technique. Nor should you sit at your desk all day behind a full "In Basket." Mingle with your men, ready to discuss their problems as they arise and to assist them in all

ways possible. Show your men that they have your trust and the response will surprise you.

Certain policies and procedures cannot be upset, of course, but remember that there is generally more than one good way of attaining a desired result. You should not always insist that tasks be done in your particular way. Give your subordinates some freedom to use their own brains and initiative. A good supervisor lets those under him exercise their own judgment whenever practicable.

Mistakes will be made, but the good supervisor does not immediately cry out in anger. He seeks a way to correct matters and takes steps to prevent repetition of the error. Responsibility rests on the man in charge.

So far as possible assign to every man the type of work he likes, and conscientiously see to it that there is a fair rotation system in your allotment of all unpleasant duties.

When tight deadlines have to be met, a "hurry-hurry" attitude only increases the possibility of error. Your job is to be on the spot in a matter-of-fact way, ensuring that all possible progress is being made, personally clearing away any hindrances, and bolstering the team's effort with your own shoulder to the wheel. And when a special task is completed you should not be niggardly with your praise and thanks. Praise when fully merited pays dividends in increased loyalty and efficiency.

Not much fault can be found with the above oft-repeated advice to officers and supervisors, but lip service paid to those precepts will not make you a good officer.

Most activities of today's Army are such that they are open to the application of sound principles of management, tempered where necessary to make them wholly suitable. An officer's goal should be good management and true efficiency in all his undertakings. In furtherance of that goal the whole field of business administration can profitably be studied, and that study in turn must be supplemented with practical experience and constant effort to improve one's supervisory ability.

In the opening paragraphs of this article, a relationship was indicated between the good officer and the successful business executive. That relationship is heightened by comparison of the foregoing advice to officers against the following portrait of an executive—all derived from creditable sources.

An Executive

To be an efficient executive one need not have extensive formal education, but there does exist a requirement for common-sense, keen intelligence, and qualities of judgment, temperament and drive.

The successful executive will or

ganize, deputize and supervise. He will originate, direct and scrutinize, and before he reaches decisions he will confer and consult. He knows that in his position co-operation is not only a virtue but a necessity. He cannot win or keep his subordinate's good will unless he consults them on matters for which they are responsible.

Consultation is also a great factor in building morale. When the men in an organization, from top to bottom, are working for its success and advancement, that group has good morale. They need to know exactly what they are doing and why they are doing it in one way rather than in another. They have to believe in the sincerity of their boss, and in their own personal importance in his plans.

The good executive will not insist on seeing every report. So long as the machine runs smoothly, he will be a looker-on. It will be his standard rule never to do anything himself that can be done well by subordinates, because there are enough things they cannot do sufficiently well to keep him busy. The executive must be a doer of things. The opportunities for improvement he sees from his position have no meaning unless they are translated into action.

The business executive must be confident. People do not work well for a pessimist.

Most important, probably, is his power of decision. The executive who hesitates is lost. For efficient management, therefore, he needs courage. Too many men wrongly decline to undertake a project unless they have complete assurance of success.

Finally, in this list of qualities of an executive, he must keep on learning; all worthwhile activity is based upon theory.

The successful executive has schooled himself in business law, economics, accounting, industrial management and other valuable administrative aids. More and more he, and labour leaders, have become students of the science of Human Relations.

Human Relations

An officer will more ably meet his responsibilities if in his dealings with other persons he is constantly aware of the truism that the people he deals with are human. And if he has some understanding of the complexities of humans and of human relationships.

Interests in the subject of Human Relations first developed in England during the First World War, when a desire for maximum productivity was in a large part nullified by shortage of manpower. That interest soon spread to the United States where many experiments were tried on representative industrial workers, and in each case the results studied as to their effects on production. Broadly speaking, it was found in those experiments that production tended to increase in spite of varied intensity of lighting,

varied rest periods, varied strictness in supervision, etc., etc. It was decided that this must be interpreted as evidence that the workers under survey came to consider themselves of special importance within the organization, and that their productivity therefore increased. A detailed explanation of much of the work done in this field can be found in the book "Management and Morale" by Roethlisberger. It was discovered that people have "feelings" and that "attitude" towards the job is of great importance. It was found that "stimulus" brings "response"—which varies because of the varied attitude of individuals. This variation results from the life history of the individual and the immediate factors connected with his job.

To attempt an understanding of what determines human behaviour we should know something of the nature of society, and the nature of the individual. Society to maintain itself must socialize individuals so that they will conduct themselves in a manner generally acceptable. In the Army, where individuals are working together more closely and for longer periods of time than in civilian life, this is especially true.

The nature of the individual is in large part culturally derived, and if an individual deviates from "normal" he can expect harsh treatment—yet normal behaviour varies with each strata of society and varies from place to place. Every individual has certain physiological needs which are necessary for life—oxygen; food; rest; outlet of energy; elimination; equilibrium of bodily temperature; group membership (a child is completely dependent upon membership in a group, and an adult dependent when seriously ill or injured); individual autonomy (which may be described as the way in which the other needs are satisfied). All needs, by definition, must always be satisfied.

Individuals also attempt to meet a number of drives, which are not essential to life—three examples being acquisitiveness, cleanliness and sex—which, because not necessary for life, involve the constant making of choices. Such drives are important because most of them can be induced and therefore can be used as a factor in the building of morale and creation of interest in the job to be done.

Society is organized, for example, into families, communities and social institutions. Group organization not only provides attention to the individual's basic needs but also orders and controls in some fashion both the means and extent of their fulfillment. Thus there are blocks and checks placed in varying degrees on each individual. In the book "Frustration and Aggression" by John Dollard, the idea is advanced, which is not necessarily true, that every frustration is

followed by aggressive behaviour, even to the extent that frustrations are "saved up" and that sometimes an outlet for aggression is found against inanimate objects. In any case the blocks and checks placed on an individual make it necessary for him to adjust and adapt himself to group organization if he is to survive within that group.

Economists, sociologists, anthropologists, and psychologists are all interested in the study of Human Relations, but the subject cannot be approached solely from the viewpoint of any one of them because each phase of it is part of and dependent upon other sciences.

A parallel to the study of Human Relations is found in the growth and expansion of "Scientific Management". In 1912 a book on that subject was published by F. W. Taylor, concerning time and motion study, personnel work, accounting, production planning, etc. Since that date industries have come to have a number of staff departments each of which is responsible for a special phase of management, such as engineering, accounting, production planning, quality control, sales, and personnel. It should be noted that staff specialists set goals and specify procedures which the workers and junior supervisors must meet, with consequent curtailment of individual freedom and initiative. The introduction of increasing numbers of formally trained individuals into management in the expanding staff fields has therefore tended to cause morale problems.

It is also well for an executive, or officer, to be aware of a correlation between schooling under our formal educational system and the gradations formed in industry and in the rank structure of the Army. Grade schooling is now universal, and the man who stops his education at that point can expect to start at worker level with perhaps a later move to a lower supervisory appointment. At High School a split occurs, some students taking College preparatory studies and other Commercial or Technical schooling. If the first option is taken the individual is initially handicapped in getting a job but is qualified to take additional academic training at some later date. On the other hand specialized High School courses make it easier for the graduate to find employment but largely closes the door on further education. He can expect to start at worker level, progress to the lower levels of supervision, but then is blocked because he lacks the qualifications of the staff specialists. College education involves postponement of taking a job but equips the student for later high level earnings since university courses are largely designed to meet the requirements of professional occupations. It is, however, very difficult for a college graduate to

fit in at worker level, and therefore the man who is most likely to attain high office often fails to gain an understanding of his subordinates' way of life.

The Canadian Army does not at the moment acutely feel this problem because of the number of officers with war service who have risen from the ranks, but it is a difficulty which should be foreseen and provided against in the future.

The problem is obviously complex with basic cause for unrest on the part of the many individuals, who, because of lack of formal education, find themselves face to face with circumstances for the most part beyond their control but likely to hold them in the ranks of workers, technicians or junior supervisors.

On the reverse side of the coin is the vital requirement that industry, and the Army, obtain the best possible management.

By way of concluding this somewhat rambling discourse it is suggested that while the personality and general ability of each of us as officers has obvious influence on the efficiency of operations, an awareness of tried and proved principles of organization will make it possible for us to better meet our administrative responsibilities.

Principles of Organization

The following are twelve basic principles:

1. Every necessary function of an organization must be assigned to a section of that organization.

2. The responsibilities assigned to every unit of the organization must be specific, understandable and understood.

3. No particular function should be assigned to more than one independent unit of the organization since overlapping responsibility may cause duplications, conflict, confusion, and delay.

4. Consistent methods of organizational structure should be applied at each level of the organization.

5. The organization must never be permitted to become so elaborate that its work is hindered by that elaborateness. If an organization is to be completely effective it is essential that it be accurately documented, with a statement of functions and an organization chart, and those documents distributed to all members of the organization and to all those who are in frequent contact with any part of it; this without interfering with essential flexibility.

6. Each member of the organization from top to bottom must know to whom he reports, and who reports to him.

7. No member of the organization should report to more than one supervisor.

8. The number of independent individuals reporting directly to a

supervisor should not exceed the number (four to seven) which can be effectively co-ordinated and directed.

9. Responsibility for each function must be matched by the necessary authority to ensure performance of that function.

10. Authority and responsibility for action should be decentralized to the units and individuals responsible for actual performance of operations to the greatest possible extent, so long as such decentralization does not hamper essential control over policy and standardization of procedures.

11. The supervisor should exercise control through attention to policy and matters of special importance; by overall supervision rather than through participation in the routine actions of his subordinates.

12. Channels of command should not be violated by staff specialists.

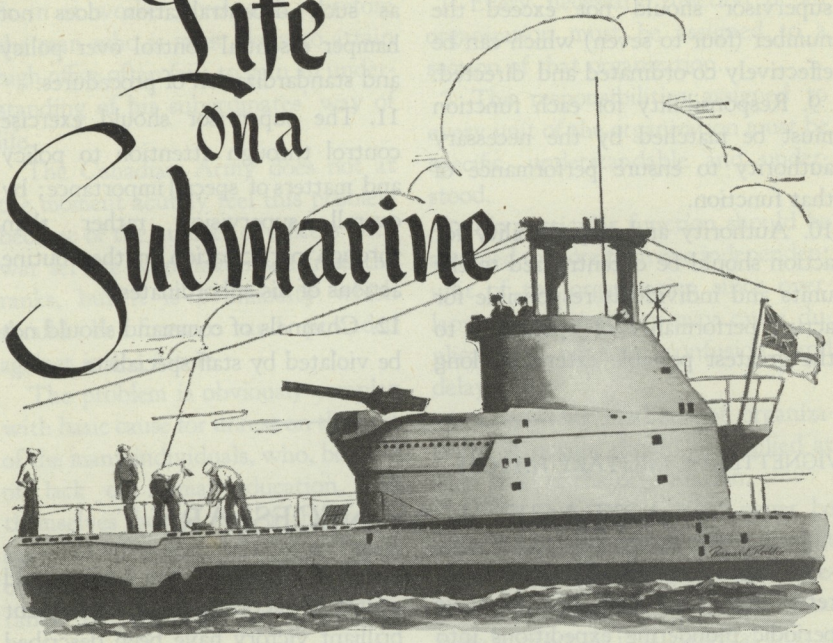
VIGNETTES OF MILITARY HISTORY

ATTACK WAS NECESSARY

In September 1513 the Scots were returning home from one of their periodic plundering expeditions into the north of England when the Earl of Surrey finally caught up with them. King James IV of Scotland was shrewd enough to remain in a strongly entrenched position, however, and force the English Army to take the initiative. As the two armies were quite evenly matched, the Earl of Surrey was somewhat loathe to do this but logistics forced his hand. He executed a daring and skilful march around his enemy's flank and on 9 September attacked from the rear. James IV and the flower of Scottish chivalry were killed in this battle of Flodden Field.

The circumstances which forced the Earl of Surrey into such a bold course of action and a subsequent brilliant victory have been described by Sir Charles Oman in his *History of the Art of War in the Sixteenth Century:* "Surrey now found himself in a most tiresome situation. The English army was already short of provisions, and in a few days would have exhausted all its scanty stores. It is recorded as a special sign of trouble that beer had run completely out on the 6th, and that for three days following no one had anything but water to drink. It was necessary to fight at once, for there was no adequate supply of food to be got nearer than Newcastle or Berwick . . ." — *Contributed by the Historical Section, Army Headquarters, Ottawa.*

Life on a Submarine



COLONEL JOHN D. KENDERDINE

On a submarine there is room for everything—except a mistake.

Probably in no other arm or service of the Defence Establishment do the lives of men depend so continuously on quick thinking, accuracy and exact timing. A carelessly opened valve, a miscalculation in navigation, a split second miss in co-ordination—and the lives of some 80 officers and men are in jeopardy. Escape in disaster is possible, it is true, and men are meticulously trained for it; but escape may mean coming to the surface only to be delivered into the hands of an enemy.

Submariners (accent on the second syllable) are taught to rely on themselves and on each other. The team is everything; there can be no quick replacement, no relief. The ship and the men in it are on their own—often for months at a time. Such conditions require leadership of the highest calibre, and a crew of tough-minded, quick-thinking men.

Every instrument and device on a submarine—thousands of switches, gauges, lights, levers, telephones—is

essential to operations. Each must be in perfect condition at all times and each must be in place. There are no spare inches of space on deck or bulkhead. The sub carries with her all her replacement parts, stowed away in nooks and crannies. The shower-bath rooms and even some of the bunks are piled high with rations when the full load of food is aboard. The crew literally eats its way through the ship until the surplus is used.

The only unused space in a submarine is between the hull and its covering superstructure. This light, free-flooding superstructure—enclosing the boat and welded do it in various places—allows space for pipes, exhaust and other devices. The further utilization of this space for the stowage of supplies and equipment is being studied as a means of giving the sub a wider range of action.

The newest type of submarine, of which the *Dogfish* (SS 350) is an example, has a streamlined superstructure; and impedimenta formerly on the deck have been removed, leaving only the conning tower and its enclosed parts projecting above the smooth deck. This streamlining, together with batteries of increased capacity, provides Greater Underwater Propulsive Power and gives the ship its familiar type-name of Guppy (the "y" added for euphony). A Guppy also has a stronger hull, permitting her to submerge to greater depths.

The other device that identifies the new type submarine is the snorkel. This ingenious apparatus, adapted from the Dutch *schnorkel*, and used by the Germans in World War II, enables the submarine to breathe while submerged. It has made the submarine, for the first time in history, truly a submersible ship. Heretofore, the submarine had to rise to the surface in order to breathe—through valves in her hull and her conning tower. At high speed she could submerge and run on batteries only for an hour or two; and at low speed for not more than a day—and then only under ideal conditions. Now when she has to have air, she need not rise to the surface but only to the extent necessary to expose her snorkel. Though the snorkel she can breathe in air for her engines and her ventilators. Thus, by exposing only her snorkel from time to time, the submarine can cruise submerged for indefinite periods, limited only by the supply of oil for her Diesel engines and food for her crew.

The snorkel is a basket-like affair, about the size of a coal scuttle. When not in use, it nests in the conning tower structure with valves closed. When raised and in use, the intake

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lies above the water, the exhaust just below. The intake is an automatically controlled valve which clamps shut when water touches it and which springs open only to admit air. Thus, the snorkel can ride the waves, right on the surface, so low that it makes a difficult pickup for enemy radar.

While it is extremely difficult for the enemy to detect the submarine at snorkel depth, the enemy is not invisible to her. She can raise either or both of her periscopes and scan the horizon; and she can identify surface ships and air objects through her radar antennae, which also are raised through the conning tower. But in doing so she pays a price, for periscope and radar antennae can be picked up by enemy radar, and their wake can be identified by enemy eyes. Safety for the submarine, therefore, lies in submersion, and is then only relative. For unless her engines are idling, the beat of her propellers can be picked up by enemy underwater sound devices. Complete concealment is possible only when submerged below that layer of water—from 100 to 200 feet—which because of its steep thermal gradient, deflects sound. In such a position, she gains relative safety but loses her initiative.

It is such equations that give submarine tactics a cat-and-mouse aspect. In combat, hunter and hunted are quickly reversible roles, and the crew must be ready instantly to make the most of a moment's tactical advantage.

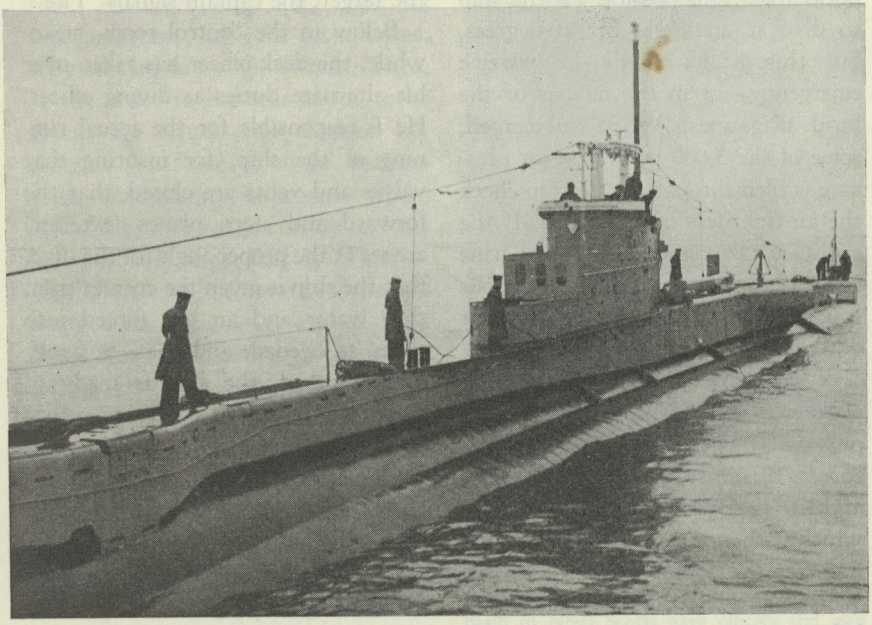
Submersion, however, with radar and periscope inactive, does not completely cut the submarine off from knowledge of what goes on about her. Having lost her sight, she still retains her hearing through two kinds of sonar (underwater sound) devices. One type, housed flush with her deck, is an oblong magnetic "ear" which picks up some sounds as far away as two or three miles. This device is so sensitive that it can pick up the movement of fish, or conversation among an enemy crew. The other sonar device rides astride the keel and consists of a bell-shaped object. It sends forth sound as well as receiving it. The emitted sound hits a distant object and "pings" back an echo. The loudness and bearing of the ping tells where the object is, its range, its characteristics, its movement.

Sonar, again, is not an unmixed blessing, for the keel sonar's pinging system discloses the submarine's position to a possible enemy. How to send and receive sound under water—preferably voices, but at least code sounds—without disclosure to an enemy, is one of the knotty problems on which a staff of scientists is working day and night at the Navy's Underwater Sound Laboratory in New London [Connecticut]. The porpoise idea was discarded early in the war. An armchair inventor, it seems, seriously proposed that por-

poises might be trained as are homing pigeons, making their way from ship to ship with "The Admiral presents his compliments". A moment's consideration was given, however—but only a moment—to the proposal that porpoises could be trained to swim above enemy submarines, disclosing their course to watchful airmen.

The *Dogfish*, typical of the guppy-type submarine, is as long as a football field—and as compact as a drug store bargain window. From bow to stern, she has eight double-tiered compartments. In emergency, any of the eight compartments can be isolated and flooding can be confined to the compartment that is hit.

Distributed throughout the sub are living quarters and facilities for the crew. Banked aft of the huge torpedo mechanisms are the three-tiered bunks of the men; and in the forward torpedo room is a toilet (the "head") and shower bath. The forward battery room contains the ward room (officers' mess) and officers' quarters. The captain has his own quarters, but other officers double up in cubicles—each provided with a



Royal Canadian Navy Photo

The British submarine *Tudor*, loaned to the Canadian Navy for training, arrives at Halifax. The *Tudor* is a patrol type general service submarine displacing about 1200 tons and carrying about 60 officers and men.

small desk, book rack, two-tiered bunk, closet, chairs. Most of the crew have their quarters in the after battery room near their galley (kitchen) and mess.

In order to dive, the ship's tanks must take on water. By this means, negative buoyancy is gained. Vents are opened, and the inflow of sea water is regulated—fore and aft, starboard and port—so as to give the diving ship the proper angle and the exact trim needed. Normally, diving is at a gentle angle—about five degrees—and the change in angle is scarcely noticeable. It is possible for the ship to dive at an angle of 30 degrees, but this is done only in extreme emergency—or in the movies or the lurid magazines. When submerged, some of the 3,000 pounds of air pressure is bled through the ship to check the air-tightness of the vessel. If the slightest leak is evident, the submarine is surfaced immediately. Various gauges indicate its trim, and how far down it is.

When surfaced, the captain, his executive or the deck officer is always on the bridge, above the conning tower. Before submerging, the officer and the deck watch leave the bridge which is then sea swept. The captain occupies the conning tower atop the main hull, while the deck officer goes below to the control room.

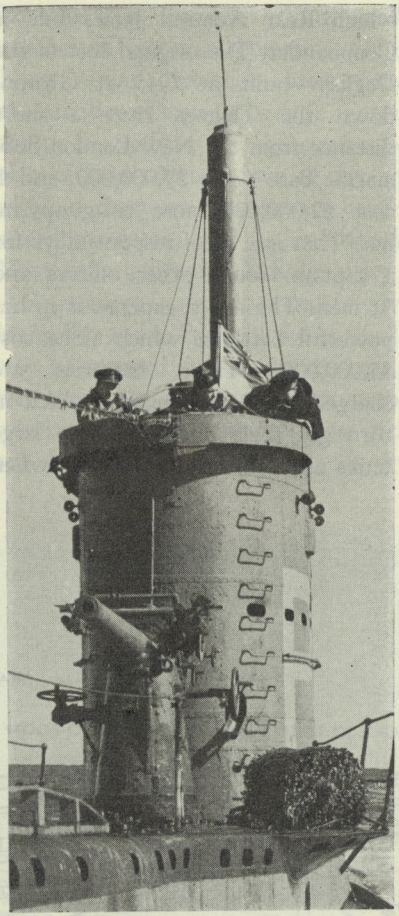
Speed and precision keynote the conning tower-control room team in action. Receiving terse reports from his crew, the captain concentrates on making the best approach on the enemy, manœuvring for position, then—by signal to the torpedo room—firing the torpedoes. With him, in the small space of the conning tower, are four officers (the torpedo computer officer and his assistant, the plotting officer and the executive officer) and four enlisted specialists (a radar operator, a sonar operator, a helmsman and a quartermaster—the latter to keep the log). When position, course and speed are just right in relation to the target, the captain signals "Fire."

Below in the control room, meanwhile, the deck officer has taken over his alternate duties as diving officer. He is responsible for the actual running of the ship, for insuring that valves and vents are closed, that the forward and stern planes (exterior) are set at the proper angle for the dive, that the ship is given the correct trim, that water and air are forced into tanks as needed, and that, in every minute detail, the ship is ready to perform as required. He insures that no lives are risked by the careless action of a crewman. As a further check, green lights on a panel board show that all proper valves and vents are closed before the ship dives. Only when all lights are green does the ship submerge.

In a typical training operation, the *Dogfish* ran at periscope depth. This

gave her concealment—except for the underwater sound of her movements—but enabled the captain to raise the periscope, the radar antennae, and the snorkel, as needed, with only slight changes in depth. Up periscope for a quick swing around the horizon; down periscope and up radar for range estimation of the target ship, a mile off the starboard bow; then down radar—and pings from sonar, indicating the changing position of the target. As the target ship zig-zagged, the captain manœuvred the *Dogfish* in an attempt to catch his prey broadside. A target ship "zig" for six minutes, then "zag" for six minutes; they seemed to form a pattern. Then, as the order to fire was about to be given, the target ship changed her pattern. That meant more manœuvring, until the precise moment when, in the captain's judgment, he had the best probable target display. Then—"fire", and two forward torpedoes plunged on their way, set off by a signal from the conning tower to the torpedo room.

A torpedo weighs about 3,000 pounds and is, in essence, a submarine in itself. It has fins and a tail assembly; and it has a gyro, which makes it run a straight course after it leaves the muzzle of the torpedo tube. As soon as the torpedo is fired, sea water rushes into the tube, thus compensating for the loss of weight caused by firing the torpedo. This water is then drained into huge tanks so that the submarine continues to retain her weight as she loses torpedoes.



Royal Canadian Navy Photo

The schnorkel and the periscope of HMS *Unseen*. The Royal Canadian Navy Training base, HMCS *Cornwallis*, on the Annapolis Basin in Nova Scotia gave officers and men experience in detecting schnorkel equipped U boats by building a dummy schnorkel on the *Unseen*, a British submarine stationed at *Cornwallis* for training purposes.

The *Dogfish*, based at the New London Submarine Base, is part of the Submarine Force, Atlantic Fleet, of which Rear Admiral James Fife is Commander. The original cost of the *Dogfish*—built in 1945 at Groton, down the Thames river a short distance from the New London Submarine Base—was $7,000,000; and it cost $2,000,000 more to guppy-ize her. That is a lot of responsibility for a captain, seven other officers and 71 men. The major expense is in her powerful batteries which alone cost $5,000,000. These batteries are charged by Diesel engines which in turn get their fuel from two large tanks amidships and their air (when submerged) from the snorkel. Batteries must be recharged at least once every two days. Hence the great operational advantage gained by the snorkel; for with this Dutchman's "snout" the ship can ride submerged for weeks, breathing under the waves.

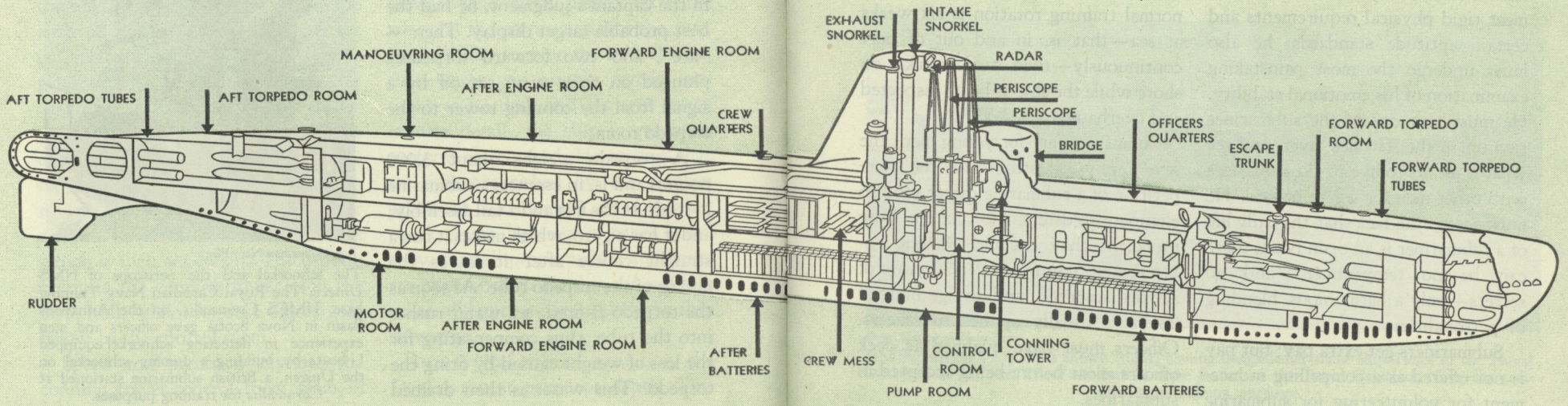
Absence from a supply base is feasible for several months and may be extended if refueling by surfacing and tying up to a supply ship is practicable. Fresh water supply is no problem, since distillers can convert sea water into fresh water—not only for the batteries, but also for drinking, cooking, bathing and laundry. There is a washing machine aboard, and each submariner does his own clothes. The

ship is allowed $1,500 a month for operating supplies, including spare parts. Repair work is accomplished by a variety of maintenance tools on board, including a welding outfit and lathes.

Amazingly, life is comfortable on this capsule ship. It has to be; for there is no room in a submariner's life for the fussing and feuding that go with discomfort. Quarters are cramped, to be sure; but "cramped" is a relative word. A hospital corpsmen petty officer looks after the health of the crew. Food is excellent and special care is taken in its preparation and serving. Baking is done on board, except when in port, and fresh bread is a must. The ration allowance is $1.31 for each man—considerably higher than the allowance at the New London Base, because of the small number of men on a submarine. (The Navy ration allowance varies with the number of men to be fed). There are no restrictions on the consumption of food. At any time of day or night, a crewman may have a sandwich or a snack, and the traditional Navy coffee pot works 24 hours a day.

Recreation facilities are necessarily limited by space. Football and baseball may be engaged in when at the base, but there are only rare chances to participate in fleet competitions. At sea, recreation is in small groups or

From a drawing by James Cutter



individually. When surfaced in a flat calm, the deck provides room for limited forms of "dungaree" sports; but most recreation is of the sitting variety—cribbage, chess, checkers, acey-deucey and the like. There is a library on board, under the supervision of the library officer. It is ample in size, and well rounded in selection. Fifty dollars a month is allowed for recreation and library purchases although most books are obtained on a loan basis from the base library. The educational courses of the United States Armed Forces Institute are widely used.

Submarine duty is voluntary; only those who apply are considered, and they—officers and men—undergo a rigorous course of training at the U.S. Naval Submarine School in New London. Not only must a candidate meet rigid physical requirements and certain aptitude standards; he also must undergo the most painstaking examination of his emotional stability. He must tour one of the submarines tied up in the Thames river, and see what it means to live in close quarters with other men for weeks on end. He must accept the fact that the daily life of a submariner is an open book; there can be no temperament and no secrets—only a harmonious blending of personalities.

Submariners get extra pay; but pay is not offered as a compelling inducement for volunteering for submarine duty; it is, rather, a form of recognition by the Nation of one of the most critical responsibilities in the Defence Establishment. Officers and enlisted men (there are no Waves in the submarine service) receive hazardous duty pay ranging from $150 to $30 a month, depending on grade.

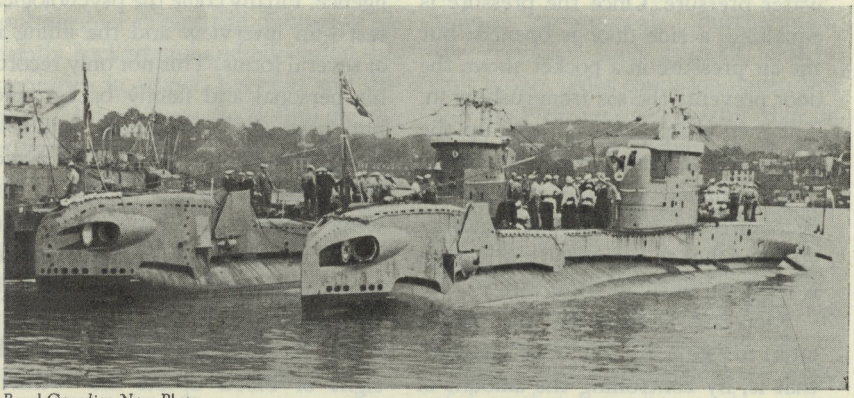
Men volunteer for a variety of reasons—reasons which blend and overlap. Volunteers who have been caught by the glamorous tales of fighting and hardship, of escapes and rescues—and by home town headlines—find that glamour gives way to hard work and to desperately serious training and indoctrination. A practical inducement, in addition to better pay and better food, is that a submariner, except in time of war, is likely to be in his home port more often than the surface sailor. The normal training rotation is six weeks at sea—that is, in and out of port continuously—then two weeks on shore while the ship is being inspected and overhauled.

Submarines are for young men; the severe physical strain and the competition of a submarine career tend to eliminate oldsters, no matter how proficient they become. Among enlisted men, few men over 30 years of age are accepted; and an age limit of 28 years usually applies to officers. Officers must have qualified as deck officers afloat before being accepted in submarines.

Training is long, hard and rigorous. For the officer, it consists of six months at the Submarine School at New London. A year at sea is followed by a practical qualifying test before a board of senior officers. Only then may the officer wear the coveted dolphin insignia and be assigned to submarine service as a career. The school course for enlisted men is only eight weeks, but it is rugged; the student not only must understand fully the overall operation of the submarine; he also is drilled in the precise functions that will be required of him when he is a responsible member of the fighting team. After nine months at sea, he is examined by the officers of his ship and may be recommended for permanent assignment and for promotion. The promotion rate is high, partly because of the age limits and partly because of the Navy's rotation policy.

Before being accepted as a student at the Submarine School, a candidate must pass an escape test. The escape tank is the failing point of a considerable proportion of the applicants. Prior to entering this huge cylindrical tower full of water, the applicant is placed in an air compression chamber to determine whether his ears and lungs can take the required pressure. If he can withstand 50 pounds pressure in the diving tank, he can withstand water pressure at 112 feet. But if he cannot take 50 pounds, he is eliminated from training, unless the defect can be remedied within a reasonable time.

While he is within the submarine, pressure on the lungs of a submariner is no problem, for the air pressure



Royal Canadian Navy Photo

HM Submarine *Tally Ho* is shown (right) coming alongside her sister ship *Tudor* in the Naval Dockyard at Halifax. These submarines were loaned to the Royal Canadian Navy for anti-submarine training purposes.

within the ship remains at atmospheric pressure; and water pressure is resisted by the hull. It is when he must escape while the ship is submerged that ability to withstand water pressure is the payoff. If an emergency strikes, men can escape from either of two hatches—one in the forward and one in the after torpedo room—which lie flush with the deck. To each of these hatches is attached a buoy which, when released, rises to the surface, trailing behind it a cable, attached to the ship. Up this the escaping men are guided to the surface, their grip on the line insuring that they do not rise too rapidly. To prepare for escape, four men enter a small escape chamber which nests below one of the hatches. The air pressure in the chamber is raised to a degree where it equals the outside water pressure. Once the pressure is equalized, a side door is opened; but the air pressure in a pocket above the door prevents the sea from rushing in. The men escape, one by one, up the guide line streamed from the hatch. The chamber is then closed and decompressed, to permit another group of four to enter; and the process is repeated until all are saved.

Men are trained (in the escape tank) to escape by the "free" method; that is, by controlling the amount of air in the lungs as they rise to the surface, releasing just enough to equalize the outside pressure. It is a tricky business, and only the skilled can do it. The novice, therefore, is trained through the use of the Momsen lung, invented by Rear Admiral C. B. Momsen. The lung, resembling somewhat the gas mask worn by an infantryman, is worn on the chest and has a nose clamp and mouthpiece. It automatically regulates the exhalation of air from the lungs. Every submariner is issued a Momsen lung, free ascent being only an emergency procedure.

Having passed the escape tank test, the prospective submariner is given a second physical test, by personnel of the Medical Research Laboratory, for visual acuity, for hearing, for night vision. He is given a general classification test, a test in reading and arithmetic, and preliminary tests to determine his emotionality and intelligence. Finally come the psychological test—an interview and the filling in of several forms. This not only records his personal and family background, but asks such searching multiple-choice questions as: "I seek (or avoid) excitement." "When excited, I feel weak (or strong)." "I wish I could get myself to take more chances; or I wish worrying wouldn't make me sick to my stomach." "I think I might like to watch a surgical operation; or, the sight of blood upsets me"—thirty-two multiple-choice questions in all.

With the personal inventory form and a personal history questionnaire

The Reminiscent Seagull

By
Lt.-Col. W. G. MacKenzie Robinson, OBE,
Toronto Scottish Regiment

A distinguished Canadian commander during the recent war has since set out some comments on the function of command with the object of passing on to those who may aspire to command in war, the benefit of his experience as a brigade and divisional commander. Since it is inevitable that in any future conflict there will be certain individuals whose function will be to assist those exercising command, the following random comments based on experience as a brigade major and a GSO I in the field are set forth.

It is perhaps advisable at the outset to understand that in battle the principal staff officer is an unobtrusive assistant to the commander and is primarily concerned with supervision of the collection, interpretation and dissemination of information. Decisions affecting a battle are those of the commander. Rarely on his own initiative does the principal staff officer give an order affecting operations. When

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LIFE ON A SUBMARINE

(*Continued from previous page*)

before him, the medical officer talks with the prospect for a few minutes, putting him at ease and discussing his family background and education, his activities in school, his likes and dislikes, his ambitions. So skillful are the interviewers that they sense the adaptability of the man by his manner as much as by his responses, and rarely do they send into training a student who fails to fit into the team. They readily disclaim infallibility, however, and continually search for additional criteria for judging a prospective student.

Possibly an underlying reason for a submariner's *esprit* is his intense pride in belonging to a hard-hitting, fast-stepping team, a group of highly trained professionals. Furthermore, the crewmen form a small, closely knit group. That condition engenders the kind of intense loyalty that is more difficult to acquire on a large ship.

While submarining is a young man's business, youth alone is not enough. It takes an infinite capacity for hard work, a ready adaptability to group living, an unassailable sense of responsibility to one's companions—a sense of duty that never flags, either under boredom or in the high pitch of undersea battle.

he does so it is in the name of his commander. Very frequently he provides the explanatory and complementary details of the commander's orders to those concerned.

The BM or GSO I will, if he is keen and competent, find that he is, whenever possible, taken into his commander's confidence before orders for battle are issued and in time to form an opinion, offer criticism or perhaps influence the plan radically. This is a most important aspect of his relations with the commander. A commander can never indicate hesitancy, doubt or indecision in front of a subordinate commander. A well trained, vigorous staff officer provides an excellent confidential sounding board for proposed action. On his part, it will be understood that the staff officer must be discreet and tactful, his criticism must be constructive and, of course, once the commander's decision is made, the staff officer must adopt it wholeheartedly and keep entirely to himself any different opinions he may have had. In his proper role as a confidant of the commander, the staff officer will sometimes have to enter vigorous protest if his belief differs on plans. On such occasions he must not hesitate to speak out. If he is competent, his opinion will be heard and respected, but not necessarily acted upon. If such opinions are not competent he will soon be replaced.

As mentioned above, the collection, interpretation, and dissemination of information is most important. The demand for up-to-date information is never ending and the principal staff officer's efficiency is in no small way judged by the accuracy and up-to-the moment state of information provided by his headquarters. Information and communications in battle are synonymous—if the latter are at their most efficient the former is achieved with little trouble. Technically, communications are the responsibility of the RCCS but the BM or GSO I can improve the service tremendously by having the closest possible co-operation with the OC Signals. Such action as the prompt reporting of anticipated moves of the subordinate HQ can save hours of delay in re-establishing good communications. Likewise, in moving his own headquarters, the staff officer must invariably consult Signals in advance on likely areas and long before a move is imminent the probable axis should be indicated. Doubtless, wireless communication has improved tremendously since the

The author served at Headquarters of First Canadian Corps in Italy as GSO II, and as the Brigade Major of 3rd Canadian Infantry Brigade for a considerable period. Later he joined Major-General Christopher Vokes, CB, CBE, DSO, (the commander referred to in the introductory paragraph of his article), as GSO I, 4th Canadian Armoured Division, in North-West Europe. An experienced staff officer in active operations, Lt. Col. Mackenzie Robinson is now a Supplementary Reserve officer.—*Editor.*

recent war, but this means of communication can never be as satisfactory as line, which should be insisted upon whenever, and as early as possible. Detailed plans for line communications should be a prime consideration in any assault operation.

It is quite probable that the line communications required within a brigade will, at times, exceed the resources in manpower of the Signal section even in the opinion of a skeptical brigade major. Line detachments have a hazardous job, particularly at brigade, and there is a limit to their physical exertions if extensive communications are necessary. For such occasions the brigade major must be prepared to assist and it is suggested that any suitable personnel, such as, for example, members of the defence platoon, be trained as supplementary line detachments. The augmentation of the Brigade Signals should, of course, only be temporary to meet the requirements of a special situation, and should not be permitted to become normal. One final comment on communications: it should not be forgotten that wireless becomes more difficult at night, and many a headquarters has had good wireless reception at last light, and an hour later could not hear a thing. Step-up wireless sets for use at night should be put out whenever possible in daylight and men should not have to stumble out in the dark to their position because somebody lacked the necessary forethought.

During the past war the staff officer's skill in the drafting of written orders became largely unnecessary. The doing away with written orders was partly a result of the fluid nature of operations, which changed plans so rapidly, and partly the result of the constant intervention of commanders in the direction of operations, made possible largely by improved means of communication and transport. Nevertheless, written orders have their place. It will be held, and rightly, that a commander is quite capable of receiving and implementing intelligently the orders of his superior. When time permits, however, brief confirming orders, particularly when timing and co-ordination may be difficult, are valuable. Chinagraph notes can be rubbed off, note books can be lost or individuals can even become casualties. It is stressed, however, that all written orders should be as brief as possible; movement orders for brigade and division, for example, should go on a small Signal message form. The senior staff officer should always reduce the commander's orders to writing for inclusion in the operations log. By so doing he ensures that all members of his staff, no matter how

tired or inexperienced, have the commander's intentions and plan clearly available to them for reference at all times.

Certain commanders are very keen on tactical headquarters. These should be discouraged as much as possible by the principal staff officer. The commander who lurks about in some vague location with inferior communication is creating an added communication problem and throwing an added strain on his reduced staff, who must not only find out what he is doing but also make sure he knows what subordinate formations are doing. In short, for a protracted period it is hopeless. The principal antidote to this tendency is a boldly located main headquarters with excellent communications. The commander will generally forego the inconvenience of a tactical headquarters if a main headquarters is convenient to subordinate headquarters by road and he is provided with up-to-date information. It is recognized that in some instances, particularly in armoured formations, the commander will have to leave his own headquarters to keep up with those which are moving in shorter but more frequent bounds than his own. In such circumstances the staff officer should do everything he can to induce a wandering commander to move close to and make use of the HQ communications of a subordinate unit or formation, rather than improvise his own communications and staff.

The siting of field headquarters in an area outlined by the BM or GSO I is usually done by the camp commandant with assistance from the staff. A good camp commandant is a prized possession. In the recent war the army operated at most times without hazard from hostile aircraft. Past experience, however, may be no teacher in a future campaign. In choosing HQ locations it must generally be accepted that safety from gun and mortar fire is seldom possible. Buildings should be avoided at all costs. When our forces dominate the air, a dry, flat, open field about 40 acres in size, suitably defiladed at a distance from direct observation, makes an ideal HQ location, provided standings are obtainable. On more than one occasion the staff of a headquarters so sited has watched, it is true with certain inner trepidation, while buildings no more than a quarter of a mile away have been heavily shelled. The experience of many staff officers has also included having their headquarters shelled while bunched under the reverse slope of a comforting hillside. It goes without saying that cross-roads are to be avoided and also the temptation must be resisted just to pull off to the side of a main road. A

few extra minutes getting in and out isn't likely to lose a war, and a commander's irritation can be compensated by safety. One last comment on this subject. The principal staff officer can often wield a terrific influence on a battle by, on occasion, moving his headquarters close up on that of a subordinate. It is remarkable how quickly a brigade HQ will move forward when divisional main HQ moves into a field, say, a quarter of a mile away. Similarly, battalion HQ often finds the district "run down" upon arrival of brigade headquarters.

Perhaps staff colleges in the post war era provide some hints on the psychology to be applied by staff officers when their formation is operating in conjunction with allied forces. If not, they should. Differences in nationality can be very important at times. It was my experience, and this, of course, was subject to the personalities of those concerned, that in Second World War Canadians got along best by being:

(a) Ultra-Canadian in speech and manner when dealing with the British; and

(b) Slightly British when dealing with the Americans.

I suppose it really boiled down to the fact that we were very jealous, as Canadians, of our independent nationhood within the Empire, and also of our independence on the North American continent. It was remarkable the number of Britons who regarded us as Colonials, and the number of Americans who thought that Canada was a frozen waste in which the Royal Canadian Mounted Police always got their man.

If you have to deal with forces which speak a foreign tongue, beware of the word "yes". When a foreigner says "yes" it doesn't necessarily mean he will comply with your plans. It may only mean that he understands what you have said. It may be the only word of English he knows. There is only one course of action for you as a staff officer, and that is to remain very polite and formal and to speak through an interpreter, preferably a Canadian.

The principal staff officer of a formation—the Seagull of the Second World War—in any future campaign will go through a variety of experiences that he will value more and more in retrospect. Whilst undergoing these experiences he will be at times abused, at times bemused, at times confused, and even, on occasion, amused, but he will never be bored.

THE MIDDLE EAST

Reprinted from U.S. MILITARY REVIEW

The Middle East countries, Turkey, Syria, Lebanon, Israel, Egypt, Trans-Jordan, Saudi Arabia, Iraq, and Iran, occupy an area slightly smaller than Australia and have a combined population of about 62 million. Taken as a whole, the area is rich in oil but poor in most other resources. Its great importance lies in its strategic position astride the main communication routes between Europe, the Far East, and Africa.

Geography

Considered very broadly, the area consists of the following:

1. A great arc of mountains in the north extending across southern Turkey and into Iran, containing a number of high plateaus.

2. The peninsular block of Arabia between the Persian Gulf and the Red Sea.

3. The corridor dividing the mountains in the North from Arabia and connecting the Eastern Mediterranean with the Persian Gulf.

4. Egypt, with its fertile Nile valley and surrounding deserts.

The most striking feature about the whole area is the general lack of water. The climate almost everywhere is one of prolonged or perennial drought. The summer months are especially dry. Only a few areas, principally northern Iran, northern Iraq, eastern Turkey, and the Mediterranean coastal region, have enough rain for normal agriculture.

The nature of the country can be classified into three major groups, true deserts, semi-deserts, and cultivation areas.

True deserts are those where vegetation is absent owing to lack of water and the nature of the surface. These deserts have a surface of either hard gravel, deep gravel and sand, or soft sand dunes. Some too have a hard volcanic surface. These areas are largely limited to Iran, the Arabian peninsula, and Egypt.

The second type, the semi-deserts, are vast tracts of land with a hard, dusty surface—except after rain—having natural waterholes and coarse vegetation in the hollows. This type of land is the most widespread of all and is especially characteristic of the northern plains between the Arabian peninsula and the northern mountains.

The third group, the cultivated areas, includes quite a considerable portion under irrigation and supports the bulk of the population in the Middle East.

Inhabitants

The 62 million inhabitants are predominantly Moslem and are mainly of either Arab or semi-oriental stock. Of the minorities, the Armenians of Turkey and the Kurds of Iran, Iraq, Syria, and Turkey are the largest and most important. The

Jews of Palestine, until recently a strong minority, have founded the sovereign state of Israel and by their victories against the Arab States in the war in Palestine, they have assured for themselves a position of great importance in the Middle East.

Middle East Oil

Apart from oil, the mineral resources of the Middle East are poor. Turkey does have an adequate supply of coal, iron, copper, and other minerals, but it is the only country in the area which has any mineral wealth other than oil.

The Middle East oilfields, for so long a vital source of British supplies, are now of great strategic importance. In fact, it is considered that Middle East oil is the greatest single strategic-economic factor in the world. Without it, the whole economy of Western Europe could easily become chaotic. In 1948, two fifths of Europe's oil came from the Persian Gulf area, and by 1951 it is estimated that it will amount to four-fifths. The reasons for this dependence on Middle East oil are chiefly because the United States has become an importer of oil and that practically the whole of the Caribbean production will shortly be absorbed by the Americas.

The main oil-producing areas are bordering the Persian Gulf and north of the River Tigris in Iraq. Their geographic position in relation to Russia clearly indicates the strategic problem with which the western Powers are faced as a result of their dependence on Middle East oil. Between them, Britain and America control over 90 percent of both production and reserve and are continually consolidating their position in the area. On the other hand, the Soviet Union has not been able to gain any control or concessions in the area.

Strategic Importance

A glance at the map of the world will dispel any doubts as to the significance of the Middle East in relation to British Commonwealth communications.

The importance of Egypt and Palestine as bases and the value of Iranian communications as an approach to the USSR were amply confirmed by events in the recent war. There is good reason to believe that they have since lost little or none of their significance in this aspect.

It is also difficult to conceive the successful prosecution of such a war from a Commonwealth point of view without the possession of land, sea, and air bases within the Middle Eastern area. Finally, were this area to fall into unfriendly hands, a serious threat would be created to the security of the Indian sub-continent at a point where its natural defenses are the least formidable, and also to the security of the northwest Indian Ocean.

The Battle of Milne Bay

SAMUEL MILNER Historical Division, Department of the [U.S.] Army Special Staff

The accompanying article is reprinted from the *Military Review*, published by the Command and General Staff College, Fort Leavenworth, Kansas. The events related in this article form a part of Mr. Milner's book tentatively entitled "Victory In Papua", which is now being prepared for the office of the Chief of Military History, Department of the Army, in the series *The U.S. Army In World War II.*

The landing of Japanese forces at Milne Bay on the southeastern tip of New Guinea in August 1942 was part of an enemy plan to gain control of the Papyan Peninsula and of the Coral Sea.

Port Moresby, strategically the key to Australia's all-important east coast, was the main objective. The Japanese planned to take it by an overland march across the Owen Stanley

Mountains. Milne Bay, which flanked Port Moresby, and covered its seaward approaches from the southeast, was to be captured to provide support from the sea for the overland operation.

Neither Port Moresby nor Milne Bay fell to the Japanese, who had to make an ignominious withdrawal from the latter place 10 days after they first landed there. Most of the credit for Milne Bay's successful defence goes to the Australians, who formed the great bulk of its garrison. However, it should not be forgotten that there were some 1,300 American troops on the scene, some of whom fought shoulder to shoulder with the Australians, and to whom a portion of the credit for the victory should go.

Strategic Background

In April 1942, the Japanese *Imperial General Headquarters* ordered the amphibious seizure of Port Moresby and of three key bases on the allied line of communications between the United States and Australia—Fiji, Samoa, and New Caledonia. Port Moresby was to be taken first and operations against the island bases would follow immediately. The objective of these operations, as the Japanese saw it, was to isolate Australia in order to prevent its use as a base for counter-offensive operations against them.

The Japanese, who then had 10 aircraft carriers in commission, undertook the amphibious operation against Port Moresby in May. At the Battle of the Coral Sea, task forces of the U.S. Pacific Fleet forced a Japanese amphibious force on its way to Port Moresby to return to Rabaul. One Japanese carrier was lost in the action, and the amphibious operation against Port Moresby was postponed.

The Japanese had meanwhile changed their plan. In addition to the operations previously ordered, two new objectives—Midway and the Aleutians—were marked for capture. Following the action at the Coral Sea, a new operational schedule was drawn up. Under the new schedule, Midway and the Aleutians were to be taken first; Fiji, Samoa, and New Caledonia would come next; Port Moresby would be taken last.

The new plan did not prosper. In June, at the Battle of Midway, the U.S. Pacific Fleet sank all four of the Japanese carriers engaged. As a result of this disaster, the amphibious operation against Fiji, Samoa, and New Caledonia had to be postponed, and the Japanese began an infiltration of the southern Solomons. The Japanese intention was to strike at the three Allied bases at a later date from the key island of the group—Guadalcanal.

Although they thought they could safely postpone an attack upon the

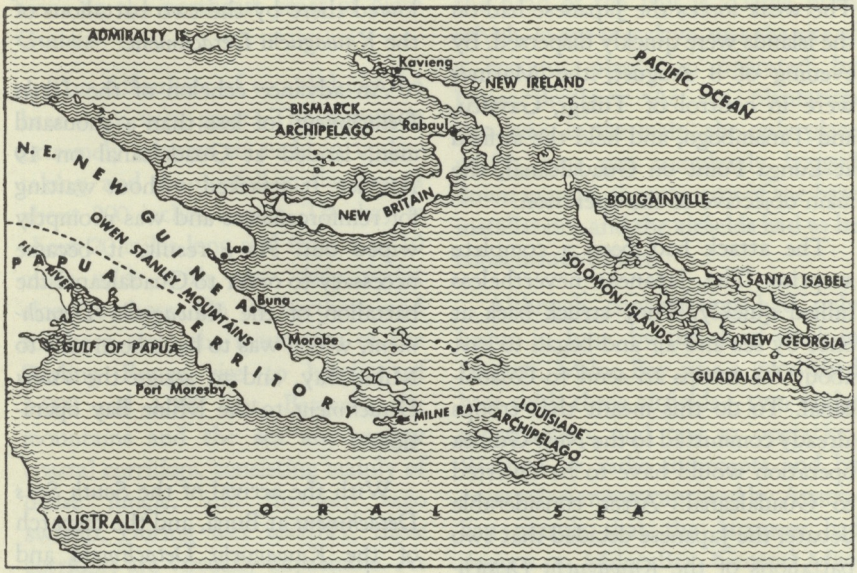
Allied communications line, the Japanese felt they could not postpone the Port Moresby operation. Port Moresby lay on their flank and would have to be taken immediately. They dared not risk any more carriers in an amphibious operation against it, and therefore they decided that it would have to be taken by an overland attack from Buna across the Owen Stanley Mountains.

As the Japanese knew very little about the terrain, they landed a large reconnaissance force at Buna on 22 July with orders to report on the feasibility of the proposed mountain crossing. If the commander of the reconnaissance reported the operation to be practicable, full-scale operations would be undertaken.

Only a few companies of Australian militia stood in the way of the reconnaissance force, and its commander, Colonel Yosuke Yokoyama, lost no time in reporting favourably on the project. Lieutenant General Harukichi Hyakutake, Commanding General of the *17th Army*, who had then just arrived at Rabaul, passed on the information to Tokyo, adding that in his opinion the overland operation was feasible and should be undertaken at once. *Imperial General Headquarters* agreed, and, on 28 July, issued orders calling for the capture not only of Port Moresby but also of the Allied base at Milne Bay, of whose existence the Japanese had first learned in June, shortly after it was established.

Rabaul was advised of Tokyo's decision the same day the orders were issued and took immediate action to implement them. The Commander to the *17th Army*, the *8th Fleet*, and the *11th Air Fleet* (the Japanese Army, Navy, and Naval air commands at Rabaul) signed a joint agreement that day to commit all their available forces to the operation, in order, as they put it, "to gain control of the Coral Sea . . . in conjunction with forces operating in the Solomon Islands".

The *17th Army* then consisted of units at Rabaul, Davao, and Palau. The *South Seas Detachment*, the *144th Infantry, Reinforced*, was at Rabaul; the *41st Infantry* was at Davao; the *Aoba Detachment*, a *4th Infantry* unit, was also at Davao; and the *Kawaguchi Detachment*, the *124th Infantry, Reinforced*, was at Palau. The plan provided that the *South Seas Detachment* and the *41st Infantry*, under the *Detachment* commander, Major General Tomitaro Horii, would land at Buna in mid-August, and from positions previously prepared by Colonel Yokoyama, move on Port Moresby, via Kokoda, and the mountain pass known as the Gap. Milne Bay would be seized by the *8th Fleet* and the



Kawaguchi Detachment. After Milne Bay was taken, a "Port Moresby Sea Attack Force", a portion of the *Kawaguchi Detachment*, with suitable naval and air support, would make an amphibious landing at Port Moresby. The landing at Milne Bay and the overland attack on Port Moresby would be timed to take place together, thus bringing the defenders under fire simultaneously from both land and sea.

The Allies, meanwhile, were preparing to mount an invasion of their own. On 2 July, the Joint Chiefs of Staff had directed that a limited offensive be undertaken against the Japanese. The first objective was the seizure of Japanese positions in the southern Solomons. By late July, preparations for landings at Guadalcanal and nearby islands were almost complete.

Thus, as the Japanese commanders at Rabaul began preparing for the operations in New Guinea, the Allies were making last-minute preparations for the seizure of Japanese positions in the southern Solomons. Early on 7 August, the 1st Marine Division, Reinforced, went ashore on Guadalcanal, Tulagi, and adjoining islands, supported by the naval forces of the South Pacific Area, carrier task forces of the Pacific Fleet, and Task Force 44 from the Southwest Pacific Area.

The weak forces the Japanese had on the islands were quickly dispersed. By evening of 8 August, the Marines were in control of Tulagi, Gavutu, and Tanambogo, and held the airfield at Lunga Point on Guadalcanal, the main objective of the operation.

The attack had been a complete surprise. The Japanese nevertheless rallied quickly. They struck back at once by sea and air and began to cast about for troops to send to Guadalcanal. To do this meant that troops already committed to the New Guinea operation would have to be diverted to Guadalcanal. After considerable debate, the Japanese decided that two battalions of the *Kawaguchi Detachment* at Palau would be sent to Guadalcanal, and the remaining battalion would go to Milne Bay. It was also decided that the *South Seas Detachment* and the *41st Infantry* would remain committed to the capture of Port Moresby. The last remaining unit of the *17th Army*, the *Aoba Detachment*, would remain in Army reserve.

In this emergency, no shipping could be found to bring the *Kawaguchi Detachment* from Palau to Rabaul. The *Ichiki Detachment*, a *28th Infantry* unit, then on its way to Palau from Guam, was therefore assigned to the *17th Army* and ordered to Guadalcanal. As soon as shipping became available at Palau, it was to be followed there by the two battalions of the *Kawaguchi Detachment*.

An advance echelon of the *Ichiki Detachment*, of less than a thousand men, landed at Guadalcanal on 19 August. It attacked without waiting for reinforcements and was promptly wiped out. As a result, it became necessary to order to Guadalcanal the battalion of the *Kawaguchi Detachment*, which was to have been sent to Milne Bay, and to assign the *Aoba Detachment* to the Milne Bay operation.

With the arrival of the *South Seas Detachment* at Buna, and the dispatch of the *Kawaguchi Detachment* and the rear echelon of the *Ichiki Force* to Guadalcanal, the *8th Fleet* began preparing for the landing at Milne Bay. *Fleet Headquarters*, which had suffered many interruptions in this attempt to get the operation underway, lost no time in undertaking it.

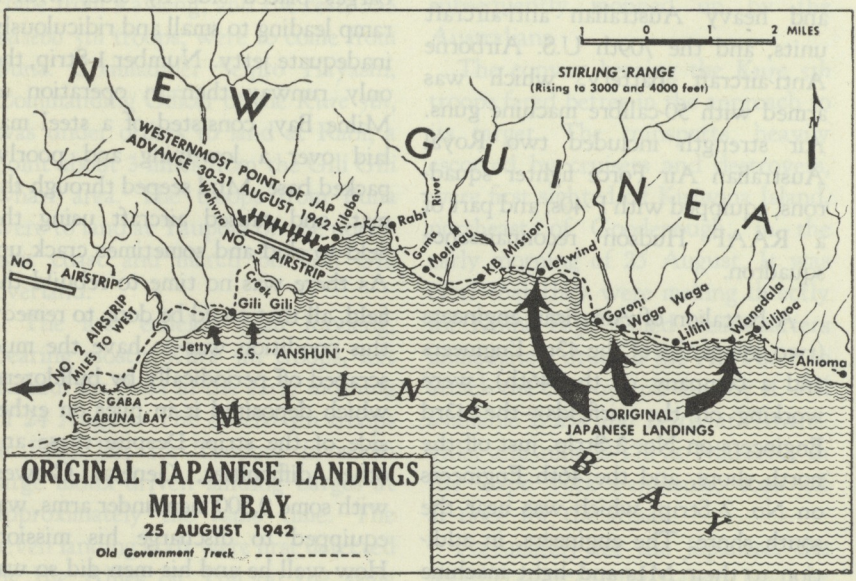
Allied Positions at Milne Bay

General Douglas MacArthur, Supreme Commander, Southwest Pacific Area, had ordered the establishment of a base in the Milne Bay area in May 1942, in order to provide flank protection for Port Moresby, to permit bombers to strike at Rabaul and the northern Solomons without the necessity of crossing the 13,000-foot Owen Stanley Mountains, and to provide a trans-shipment point for future opera-

tions on the northeast coast of New Guinea.

The difficulties of establishing the base were very great. The terrain is extremely adverse to such an undertaking, and the rainfall in the area is about 200 inches a year. The bay is about 20 miles long and from 5 to 10 miles wide with very deep water close to shore. On its northern and southern arms the mountains of the Stirling Range rise to heights of 3,000 and 4,000 feet. Between the mountains and the sea are narrow coastal corridors, consisting mainly of dense jungle, and hip-deep sago swamp. During wet weather, these corridors are virtually impassable. At the head of the Bay is a large plain which, in pre-war days, was the site of a coconut plantation operated by Lever Brothers. As the plantation area was, in the main, the only place which was not completely bogged down in mud, the majority of the base installations and the airfields had to be concentrated there.

Although construction had only begun in June, by the third week in August, Milne Bay was a good-sized base with three airfields—two under construction, and one in operation. Warned by radio intercepts and by enemy documents captured by Australian patrols that the Japanese had designs on Milne Bay, General Mac-



Arthur decided to reinforce the 7th Infantry Brigade, Citizen Military Forces, an untried militia unit, which had arrived at Milne Bay in July, with the 18th Infantry Brigade, Australian Imperial Forces, a veteran unit with combat experience in the Middle East. By 21 August, the 18th Brigade was in place. A day later, Major General Cyril A. Clowes, an experienced Australian infantry commander, took over command of Milne Bay. His instructions were to protect the airfields and to deny Milne Bay to the enemy.

By this time, Milne Force was a substantial command. In addition to the two infantry brigade groups, it included 25-pounder field pieces, light and heavy Australian anti-aircraft units, and the 709th U.S. Airborne Anti-aircraft Battery, which was armed with 50-calibre machine guns. Air strength included two Royal Australian Air Force fighter squadrons, equipped with P-40s, and part of a RAAF Hudson reconnaissance squadron.

A battalion of American engineers (two companies of the 43rd Engineers and a company of the 46th), were working on the airfields—the 43rd Engineers on No. 3 Strip, just off the north shore, and the 46th Engineers on No. 2 Strip, which was near the south shore. The engineers, in addition to their M1s and light machine guns, were armed with 50-calibre machine guns, and 37-mm anti-tank guns on half tracks. The total Australian troop strength was 7,429 men, of whom 6,394 were combat troops, and 1,035 service troops. American troop strength, consisting mainly of engineers and anti-aircraft personnel, was 1,365 men. The strength of the RAAF was 664 men, most of them at No. 1 Strip in the centre of the plantation area.

Although a great deal of work, under the most adverse conditions, had gone into the construction of the base, much still remained to be done. The roads were in very poor shape. The dock at Gili Gili consisted of two barges placed side by side, with a ramp leading to small and ridiculously inadequate jetty. Number 1 Strip, the only runway then in operation at Milne Bay, consisted of a steel mat laid over a low-lying and poorly-packed base. Mud seeped through the mat, and caused aircraft using the field to skid and sometimes crack up. As there was no time to rebuild the field, all that could be done to remedy this condition was to have the mud scraped off periodically by bulldozers, which deposited it in piles on either side of the strip. Despite these and other difficulties, General Clowes, with some 9,500 men under arms, was equipped to discharge his mission. How well he and his men did so was

soon to be put to the test.

The Landing

Although the *Aoba Detachment* was still at Davao and could not immediately be brought to Rabaul, the *8th Fleet*, which had some naval troops at Kavieng, decided to proceed with the Milne Bay operation without waiting for the *Aoba* troops to come in. *Fleet Headquarters* erroneously estimated that Milne Bay was held by 2 or 3 infantry companies, and 20 or 30 aircraft, and on 20 August, ordered some 1,500 men to Milne Bay. Of these, 1,171 men (612 troops of the *Kure 5th Special Naval Landing Force* (*SNLF*), 362 men of the *10th Naval Pioneer Unit*, and 197 of the *Sasebo 5th* (SNLF), were to come from Kavieng; and the rest, 353 *Sasebo 5th* troops, were to come from Buna. Commander Seijiro Hayashi, Commanding Officer of the *Kure 5th*, was under orders to land at Rabi, a point about 3 miles from the Gili Gili wharf area. The troops from Buna were to land at Taupota on the northeast coast and march on Gili Gili overland.

The first echelon from Kavieng, bearing mostly *Kure 5th* troops, left Rabaul for Rabi in the early morning of 24 August. The *Sasebo 5th* troops at Buna left for Taupota in seven large motor-driven landing barges at approximately the same time. The seven landing craft were first detected by the Allies off Tufi on the same afternoon, and, early the next morning, reconnaissance aircraft reported that they were nearing Goodenough Island. Twelve P-40s from Milne Bay (which had been unable to attack previously because of enemy raids and bad weather) took off for Goodenough Island at noon, and shortly thereafter they discovered the landing craft beached on the southeastern tip of the island, where the Japanese had put in to stretch their legs and to prepare a meal. The P-40s gave the drawn-up barges a thorough strafing. When the attack was over, all the landing craft had been destroyed, and the *Sasebo* unit, its stores, ammunition, and communications gone, was left stranded on Goodenough Island, where it was subsequently mopped up by the Australians.

The convoy bearing the *Kure 5th* troops fared better in the approach to its target. The transports, heavily escorted by cruisers and destroyers, were first sighted off Kiriwina Island, northeast of Goodenough, in the early morning of 25 August. It was clear that they were making directly for Milne Bay. Allied Headquarters immediately ordered the Air Force to attack the convoy and destroy it. All available B-25s and B-26s at Townsville, and nine B-17s at Mareeba, in the Cape York Peninsula, took off at once for the attack.

Fortunately for the Japanese, the weather—except for a short break at

noon which the RAAF had exploited to the full in the attack on Goodenough Island—was very bad all day, both at Port Moresby and Milne Bay. It was so bad, in fact, that for many hours planes were unable to take off from either place. Attempts by the B-17s from the Cape York Peninsula and the P-40s and Hudsons at Milne Bay to hit the convoy proved fruitless because of violent rain squalls and a heavy overcast. Visibility by late afternoon was down to zero, and, despite occasional breaks thereafter, the Air Force found it impossible to attack successfully that day.

After shelling the beaches from the sea, the Japanese began landing shortly after midnight at three points on the north shore of the Bay—Lekwind, Waga Waga, and Wandala, 8, 10, and 12 miles from Rabi, the prescribed landing point. The landing force, which had mistaken Lekwind for Rabi because of the heavy overcast, set up headquarters at Waga Waga and established supply dumps there and in the Wandala area. Lekwind became the main Japanese bivouac area and forward departure point.

The Japanese could scarcely have chosen a poorer landing place. Their objectives, the airfields and the wharf, were at the head of the bay. They had landed miles away on a sodden, jungle-covered coastal shelf. It was virtually impossible to manoeuvre there, not only because of the almost impenetrable jungle and swamp covering it, but also because of the mountains to the north, which are often as little as half mile from shore.

It had rained steadily during the preceding few weeks, and the heavy tropical downpour continued. The mountain streams had become torrents, and the spongy soil of the corridor a morass. The single coastal track which skirted the corridor had become a quagmire, and the level of the many fords which crossed it had risen to almost three feet. Except for a few abandoned plantations and mission stations, the corridor was a sodden welter of jungle and swamp, a nightmare for any force operating in it.

Although they were hopelessly outnumbered and had landed miles from the head of the Bay on a muddy coastal shelf, the Japanese did enjoy some tactical advantages. Their left flank was secure, since they had control of the sea in the operations area, and their right flank could not easily be turned because of the mountains to the north. They could count on little air support, as Lae, their nearest air base, was 340 miles to the north, but they did have landing craft. This enabled them to move men and equipment forward at night, despite their deficiency in the air. They enjoyed another and even greater advantage. With Task Force 44 and other Allied naval forces

concentrated in the South Pacific, the Japanese were in a position to bring in reinforcements almost at will, under cover of bad weather. The knowledge on the part of the Allies that the Japanese had the power to land reinforcements in this way also worked in their favor. It forced General Clowes, who neither knew nor had any way of knowing the strength the Japanese intended to commit to the operation, to hold back his main force till he was satisfied that they intended to land only on the north shore.

The Attack

At the moment that the Japanese began landing, Milne Force, the main body of which was deployed at the head of the bay, had two companies of the 61st Battalion, 7th Brigade, in the path of the invasion—one at Ahioma, just east of Wandala, the other at KB Mission, a plantation and mission station about a mile west of Lekwind. In addition, there was a platoon of the 61st Battalion at Taupota on the northeast coast.

At 0140, 26 August, a few minutes after the first landings began, a Japanese spearhead clashed with the company at KB Mission. Bogged down in mud, and confused as to their whereabouts, the Japanese attacked unsuccessfully through the night. At dawn, they withdrew to Lekwind.

The company at Ahioma did not fare so well. It was under orders to return to Gili Gili by sea and two of its three platoons had been on their way there when the landings began. The troops, in two ketches, had no sooner left Ahioma than they ran into a Japanese landing wave off Wandala. One of the ketches was sunk, but the troops in the other boat escaped, and with the remaining platoon, marched to Taupota, and thence to Gili Gili, where they rejoined their battalion several days later.

By 0745 that morning, the weather had abated sufficiently for the P-40s from No. 1 Strip, and the B-17s staging from Port Moresby, where they spent the night, to go into action. In an extremely successful morning's business, the P-40s managed to destroy most of the food and ammunition the Japanese had brought with them, and the B-17s inflicted heavy damage on a Japanese transport while it was unloading offshore.

Towards evening, a second Japanese convoy was sighted off Normandy Island, making at high speed for Milne Bay. Before the convoy could be dealt with, a heavy fog descended over the area, blotting out its further movements. The troops aboard landed safely that night. The 1,170-man movement from Kavieng had been completed.

The Japanese, who had reconnoitered the Mission during the day, struck again that night in much greater strength than before. Although

by this time a second company of the 61st Battalion had reached the Mission, the Australians were forced back to the Gama River, just forward of Rabi. The Japanese broke off the engagement at dawn and withdrew as before to the Lekwind area. The Mission was left unoccupied.

Thinking that the enemy might be withdrawing, General Clowes ordered forward the 2/10 Battalion of the 18th Brigade the following morning*. Its orders were to keep in contact with the enemy. Clowes held back the rest of his troops because, as he was to report later, he had "to consider the possibility of a fresh attack from the sea either frontally or on my left flank". The 2/10 Battalion reached the Mission unopposed in the late afternoon of the 27th and set up a light defence perimeter for the night. Its intention was to move on again in the morning.

At 2130, the Japanese again struck at the Mission, with two tanks and all their available combat troops. Despite the unceasing rain, the ground in the well-drained and relatively open Mission area was firm enough for tank action. The two tanks, equipped with brilliant headlights, cruised about almost at will and caused the 2/10 Battalion heavy casualties. The Australians, only lightly armed and without anti-tank support, were unable to knock out the tanks and also failed to shoot out their headlights. After about 2 hours of fighting, the Japanese managed to split the battalion in two. Battalion headquarters and two companies were forced off the track and into the jungle, and the remainder of the Battalion was pushed back to the Gama River and also cut off. A portion of the Battalion reached the plantation area that night, but the main body, which took to the hills in order to get around the enemy's flank, only succeeded in doing so three days later.

The Japanese, after pushing the 2/10 Battalion out of the way, continued on to No. 3 Strip. The real fight for Milne Bay developed at that strip, a fight in which American anti-aircraft and engineer troops were to play a most significant part.

The east-west airstrip, only a few miles west of Rabi, was an ideal defensive position. The runway, a hundred yards wide and 2,000 yards long, was cleared but only partially graded, and the Rabi track at its western end was a sea of mud through which no tank could pass. The strip afforded the defenders a broad, cleared field of fire. Lying obliquely across the mouth of the corridor, with its northern end close to the foothills of the Range, and its southern end less than 500 feet from the water, it was

* *The author wishes to express his indebtedness to Lt. Col. Peter S. Teesdale-Smith, AMF, a company commander of the 2/10 Battalion, 18th Brigade, for the details of his battalion's fight with the enemy on 27 and 28 August 1942.*

directly in the path of the Japanese advance.

Brigadier J. Field, of the 7th Brigade, who was in charge of the defence, ranged his troops along the eastern edge of the strip. The main burden of holding the strip fell upon the Brigade's 25th and 61st Battalions, but the 709th Airborne Anti-aircraft Battery, and Companies D and F of the 43rd U.S. Engineers were assigned key positions in its defence. The anti-aircraft battery with its heavy 50-calibre machine guns was given the task of holding the northern end of the strip, and the 50-calibre and 37-mm gun crews of the two engineer companies, flanked on either side by Australian riflemen and mortarmen, were detailed to hold the centre of the line at the crucial point where the track from Rabi crossed the runway.

The Japanese reached the area in front of the strip just before dawn. They attacked repeatedly, supported by machine guns, mortars, and light field pieces, but were repulsed each time and eventually were forced to withdraw. No tanks were used in the attack, although two of them (the same two that the Japanese had used with such success at KB Mission) were brought up, only to bog down within sight of the defenders. There the 25-pounders, which were operating about a half-mile to the rear, quickly knocked them out.

The enemy was now within a few miles of No. 1 Strip, and General Clowes, fearful lest they infiltrate it during the night, ordered the P-40s to Port Moresby. The Japanese, fortunately, were quiet that night, and, the following morning, the fighters returned to Milne Bay to stay.

General Clowes had meanwhile received orders emanating directly from General MacArthur, to clear the north shore of Milne Bay immediately. General MacArthur issued the orders to General Sir Thomas Blamey, Commander Allied Land Forces, on the 26th, the day of the landing. The Commander in Chief gave it as his "professional opinion" at the time that the landing on the north shore would be reinforced within 72 hours. Because of defective communications, Milne Force did not receive the orders until late on the 27th. The following morning, General Clowes ordered the 7th Brigade to be prepared to move forward to KB Mission at dawn the next day. The orders were cancelled later in the day on the ground that another attack on No. 3 Strip appeared to be imminent. Strong patrols of the 7th Brigade were sent out early on the 29th, but they could not locate the enemy. General Clowes thereupon ordered the 18th Brigade, less the 2/10 Battalion, to clear the north shore. The orders were cancelled a few hours later when it was learned that a third Japanese convoy was on its way to Milne Bay. General Clowes

gave as his reason for the cancellation that he was "still apprehensive of an enemy attempt to land on the west and south shores of Milne Bay."

The convoy, escorted by a cruiser and nine destroyers, unloaded that night under cover of a heavy mist. It brought to the Japanese on the north shore 775 reinforcements—575 troops of the *Kure 3d* SNLF, and 200 of the *Yokosuka 5th* SNLF, under navy Captain Minoru Yano, who took over command of operations.

The daylight hours of the 30th were quiet. Milne Force sent out patrols to feel out the enemy in preparation for the long delayed advance, and the Japanese, hidden in the jungle, consolidated for another attack on No. 3 Strip. The climax came that night when the Japanese made an all-out attempt to take the strip. As before, the 25th and 61st Battalions bore the brunt of the attack. The machine-gun and anti-tank gun crews of Companies D and F of the 43rd Engineers, who were again assigned a key position in the centre of the strip, and the 50-calibre machine guns of the 709th Anti-aircraft Battery (which, this time, were deployed at either end of it) again played a notable part in the defence.

The Japanese made a supreme attempt to cross the strip, but so intense was the fire which met them that not a single enemy soldier was able to do so. The heaviest attack came just before dawn. It was also repulsed with heavy loss to the enemy who withdrew at first light, leaving 169 dead behind, a large part of them in front of the position held by the 43rd Engineers. The enemy dead were buried where they lay.

The Withdrawal

The Japanese had done their utmost and failed. The 18th Brigade, under Brigadier G. F. Wootten with the 2/12 Battalion leading, began the task of clearing them from the north shore the following morning. Heavy fighting developed at once along the Gama River and later near KB Mission, but it was not to be long sustained. At the Gama River, the enemy lost almost 100 killed, and his casualties mounted steadily as the Australians advanced. Hungry, riddled with tropical fevers, and with many wounded in their midst, the Japanese realized the end was near. Captain Yano, himself wounded, so advised the *8th Fleet* at Rabaul.

The Commander in Chief of the *Fleet*, Vice Admiral Gunichi Mikawa, considered the possibility of reinforcing the landing with the *Aoba Detachment*, a force of about 1,000 men, whose advance elements had finally begun landing at Rabaul on 31 August. Admiral Mikawa offered Captain Yano 200 more *Yokosuka 5th* troops immediately and the *Aoba Detachment* by 12 September, if there was any possibility that the troops at

Milne Bay could hold out until the *Aoba* force arrived. However, when he was told that the troops ashore were physically incapable of making a further stand, Mikawa concluded the situation was hopeless and ordered Milne Bay evacuated.

The wounded were put on board ship on the night of 4 September. The rest of the landing force, except for scattered elements who had to be left behind, took ship the following night from the anchorage at Waga Waga. The evacuees were only one jump ahead of the 18th Brigade, whose forward elements were actually within earshot when the Japanese pulled out. About 1,300 of the 1,900 or so troops landed were evacuated, virtually none of them in condition to fight.

The 2/9 Battalion, which was now leading the advance, met only light and scattered resistance on the 6th. By the morning of the 7th, it was clear that all organized resistance had ceased. All that remained of the Japanese landing forces were small bands of stragglers. These were disposed of in the next few weeks by Australian patrols, who were able to take only a handful of prisoners.

Scarcely had the Japanese evacuated the north shore than Task Force 44, which had been operating in the Solomons, was returned to the Southwest Pacific. This made it possible thenceforward to cover the sea approaches to Milne Bay. The dispatch to Milne Bay, during September, of two 155-mm G.P.F. guns, with attached searchlight units, helped further to secure the area.

The base, meanwhile, was being steadily improved. More and better roads were built; a new wharf was constructed to reinforce the old inadequate jetty; No. 1 Strip was rebuilt, and the construction of the other two airfields, held up because of the Japanese landing, was resumed and completed. The stage was set for the cismontane bombing of Rabaul and Japanese bases in the northern Solomons, and for the successful infiltration of the north coast of Papua from East Cape to Buna.

The victory at Milne Bay, which General MacArthur attributed to "the complete surprise obtained by our preliminary concentration of superior forces", had snapped the southern prong of the pincers which the Japanese had hoped to apply to Port Moresby. An essential part of the Japanese plan had failed. The rest of the plan, the overland attack on Port Moresby by the *South Seas Detachment*, was also destined to fail. General Horii's force, its spearhead high in the Owen Stanleys when Milne Bay was evacuated, was to glimpse Port Moresby from afar, but never to reach it.

The Case for a Lighter Tank

Major H. W. F. Appleton, ED, RCAC,
Directorate of Military Training, Army Headquarters

Any time you want to liven up the conversation in the Mess, just announce: "The tanks we use are too big and slow. We should use light fast ones." This article supports the argument in favour of lighter, faster tanks.

Air Transportable

It is taken for granted these days that after gaining control of the air, air troops are the best means to gain and maintain the initiative on the ground. The air Army's chance of success without tanks is slim. The need is a tank, powerful in an ordinary role, but also air transportable.

The Army's equipment is mostly too heavy for air carriage. The main determinant of the weight of Army equipment is tank design. Facilities during 1939–45 had to be provided to handle 30- to 40-ton tanks, and therefore designers did not feel restricted to lighter weights in other vehicles and equipment. Once it is established that the tank can be made lighter, then all the impedimenta of transporters, bridging, bulldozers, trucks, caravans (for those entitled to all the comforts of home), can also be lightened in proportion. A lighter general purpose tank will not only make an air Army more practical, but is needed to unburden the Army generally of much of its ponderous administrative "tail", which, against

anyone but a shattered enemy, so grossly hampers a modern Army's moves.

Thick Armour Obsolescent

The anti-tank gun and the shaped charge have made thick armour of doubtful value. The necessity for air transportability completes the conversion of 30- to 40-ton tanks into museum pieces. A moment's thought on the effect of the appearance on the battlefield of accurate, longer range, shaped-charge throwers ought finally to convince anyone who still doubts.

The armour is supposed to protect the crew. But the tank's only real protection is fully to exploit its mobility. Why, therefore, restrict mobility with heavy, nearly useless armour? Make the armour proof against small arms fire and splintering. Avoid the worst effects of gun fire by speed and manoeuvre. It is safer to be in a light, fast tank when moving against modern weapons.

Lighter Armament

It is frequently forgotten that the tank is a device for bringing to the battlefield means for direct fire such as the foot soldier can not himself carry. The long ranges, and the anti-tank functions of the current fashions in tank armament are a digression from the true purpose of a tank. A recoilless gun, mounted on a small turret and throwing anti-personnel missiles and shaped charges, is needed to effect a substantial saving in tonnage, both in the weapon itself, and by reducing the size of the turret ring and, hence, the size of the vehicle. The co-axially mounted machine gun should remain. The main weapon should have an accurate range of up to 1,000 yards; if the tank is small enough, and can accelerate quickly, it is in little danger at ranges greater than 1,000 yards.

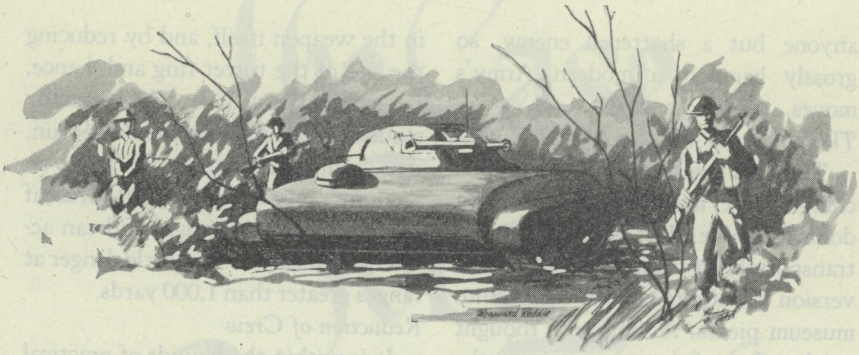
Reduction of Crew

It is within the bounds of practical engineering to mount sighting devices so that tank guns can be brought automatically on to targets sighted through the crew commander's periscope. The gunner thus becomes unnecessary as a crew member. A smaller fighting compartment would then be practical, further reducing weight.

Better tansmissions such as "fluid drive" reduce power loss, permit a lighter motor, reduce driver fatigue, and make a co-driver superfluous.

Light, with a low silhouette, wide tracks, and rapid acceleration, the little tank would be (boldly handled) a fleeting and disturbing target. It need have no less "punch" than the 36-tonner. Nor need one be concerned by the reintroduction of light anti-

After completing the Staff Course early in 1943, the author was GSO III (Ops), 5th Canadian Armoured Division, and later commanded "A" Squadron of the Governor General's Horse Guards in Italy from just after the Hitler Line until late in 1944. He was Brigade Major of an occupation brigade in Germany.—*The Editor.*



tank rifles. Everyone knows how hard it is to hit a running man with a single shot. Best of all, the little tanks, being cheap, could appear in swarms, and not just in threes or fours.

Anti-tank Guns

Our little tank is not designed to deal with enemy heavy tanks at ranges over 1,000 yards, nor should any tanks have such work as a primary task. The armoured regiment should not be without anti-tank guns as an integral part of the unit. Self-propelled, the guns should move in support, shepherding the tanks, just behind, or on flanks, moving from one commanding point to the next and dealing at long range with enemy tanks. Even so, a rocket gun of 1,000 yards' range will give the tanks themselves plenty of hitting power to knock out enemy tanks if forced to do so.

The flaw in the argument is the absence of a practical rocket or recoilless gun, accurate at medium ranges. Current weapons of this type are a very close approach to the need and their development should not be too difficult. The over-riding consideration is that air transportable tanks and guns are a *must*. Therefore, the nation which produces the gun for its low, light, fast tank will have made a major step forward in its capacity for decisive counter-offensive against long-range attack, such as most people seem to feel will open the war of the future.

Specifications

Here are specifications for the suggested tank:

General: Use of light alloys—aluminium, maganese—wherever possible.

Armament: Rocket gun, firing high explosive and hollow charge (anti-tank) projectiles. Mounted on the side of the turret, the gun could be loaded from inside. Having no recoil, the rocket gun will make possible a small fighting compartment, a small turret ring, and therefore, a small tank. Add a machine gun, co-axially

mounted.

Armour: Proof against small arms and shell splinters. Speed and manoeuvrability is the main protection for the tank.

Suspension: Christie type, for speed.

Tracks: Wide, for covering soft ground.

Power: Sufficient for rapid acceleration (250 h.p.?). A horizontally opposed motor might lower the silhouette.

Silhouette: Low. (One felt that he was on a flagpole when perched in the turret of a 10-foot Sherman.)

Crew: Commander, loader, driver. (Three only.)

Waterproofed: Up to the turret ring.

Weight: Less than ten tons, fully stowed.

It is easy to see that this little tank would be easier to maintain, would need fewer men per gun firing, and could be adapted for flame throwing, ammunition supply and a host of other uses. What is more, we could probably make it in Canada.

Making tanks is a grave strain on even a great industrial power. The heavy tank of to-day, with its bewildering array of gadgets, could be made in Canada, but at the expense of other and quite as important production. A much less vulnerable and cheaper means for getting more fire power into the fight is what Canadian tank men need.

It is contended that the lighter tank as described is more practical for Canadian manufacture, and would be better on the battlefield.

VIGNETTES OF MILITARY HISTORY

EYES RIGHT

During the height of the Italian Campaign, the Orderly Room Sergeant of a certain well-known infantry battalion commenced to suffer eye-strain and therefore reported to the Medical Officer with the idea of procuring spectacles. As the Spectacles Department of the Royal Army Medical Corps was believed to be in North Africa, the sergeant was evacuated progressively rearward and across the Mediterranean. The report regarding the issue of spectacles in North Africa proved, however, to be a an idle rumour, with the result that he was evacuated eastward, eventually arriving in Cairo some three months after leaving his unit. By this time his eyes had recovered to the point that he no longer required spectacles. — *Contributed by Brig. J. W. Bishop, Deputy Adjutant-General, Army Headquarters, Ottawa.*

Qui Sagittam Facit Non Sagittam Facit

Major J. F. Miller, Royal Tank Regiment,
in the Royal Armoured Corps Journal (Great Britain)

In October, 1948, the officers of the first Technical Staff Officers' Course passed out of the Military College of Science. The event was signallized by the symbols p.t.s.c. and the introduction of a new type of staff officer into the staff structure of the Army. This article, which is intended to apply only to those officers who have been trained at the Military College of Science since it was reopened at Shrivenham in 1946, can also be considered to apply in a very limited sense to those officers who have successfully completed courses at the R.A.C. School of Tank Technology.

I happen to be one of the eight officers of the R.A.C. who qualified as a T.S.O. in October, 1948, and I propose to originate a discussion on the question of the roles of a Technical Staff Officer. It is obvious that the more thought and discussion that are devoted to this new aspect of staff duties, the more widely will be the essential differences in the roles of a G.S.O. and T.S.O. be known and the more closely will the ideas and

functions of these two keystones of Army staff work be integrated.

Since I graduated at Shrivenham I have realized the existence of two distinct lines of thought within the ranks of Technical Staff Officers themselves and a rather mystified acceptance of a new-fangled idea by regimental officers, who seem to consider a T.S.O. a strange character who will undoubtedly produce a slide rule at the slightest provocation and reduce everything to a common denominator of "X". I therefore propose to give my own views as to what a T.S.O. is and what I consider his roles to be in peace and war. I must apologize for the ego which is inevitable in a paper of this description, but it is only by stating personal opinions on a controversial matter that further discussion can be achieved.

Technical Staff Officers themselves hold two distinct views as to what a T.S.O. is. These views can be decsribed in a general way by placing the emphasis on the "T" as being one, and the emphasis on the "S" as being the other. In other words, some T.S.Os. consider a T.S.O. to be a technical expert and others consider him to be a staff officer. Most officers who are not T.S.Os. seem to place the emphasis on the "T"; this is probably the inevitable reaction of those who have not studied the charter of the reconstituted Military College of Science and who have not realized that the successor to what was originally the Artillery College is really, in so far as T.S.O. courses are concerned, a Technical Staff College. This is made quite clear in the charter of the Military College of Science, a pertinent extract of which states:

"It will have the role of educating officers so that they may be capable of appreciating the scientists' and engineers' problems with relation to the design and development of weapons of war; also to train them to apply their military knowledge and experience to these problems in order that they may later advise those responsible for the design and development of such weapons regarding the practical military limitations and requirements inherent in service equipments."

In giving my own views I should state first of all that I am of the opinion that a T.S.O. is primarily a staff officer, the emphasis being on the "S" and not on the "T". In my view a T.S.O.:

1. Is a good regimental officer.

2. Understands the staff duties and the staff structure of the Army.

3. Understands basic technicalities.

4. Can appreciate technical problems.

5. Can explain technical problems to the user.

6. Can explain user requirements to the technical expert.

7. Is a user and can appreciate the feelings, thoughts and actions of the user.

8. Understands the structure of the Ministry of supply.

9. Knows where to obtain technical information from Army, Ministry of Supply or industrial sources.

I do not consider a T.S.O. to be a technical expert; in fact, I consider it is undesirable that he should be one. He may develop into one, and if he does his width of vision and understanding of Technical Staff problems will be narrowed and his value as a T.S.O. correspondingly reduced. This argument can be illustrated by reference to other aspects of Army Staff life. It is undesirable, for instance, for a D.A.A. and Q.M.G. to be an expert baker, whose interests in life are bounded by the four walls of the formation bakery to the exclusion of his other responsibilities. A D.A.A. and Q.M.G. requires "Q" common sense, able to appreciate the many and varied problems of his department and able to view the whole in true perspective. A General Staff Officer has, possibly, the most difficult task in the staff structure, because his decisions depend on common sense and logic. Appreciations consist merely in the orderly regimentation of facts and conditions; operation orders and so on are in themselves quite straightforward. The evidence in support of all decisions is, however, often conflicting, and it is the correct application of common sense to this evidence that is the required result of staff college training. Technical Staff Officers should follow the same pattern and be able to apply technical common sense to the technical problems with which they are confronted.

General Staff Officers and Technical Staff Officers are, I consider, complementary to one another in that jointly they are responsible at certain different levels in the administration of the Army for the production in peace of an effective and efficient tactical and technical framework for future expansion, and in war to make most effective and efficient use of the resources, human and material, allocated to the Army.

The role of the T.S.O. in peace must now be considered. The first responsibility is obviously that of training new Technical Staff Officers, and therefore I consider that the military staff at the Military College of Science should normally be p.t.s.c. in exactly the same way as the staff at Camberley is normally p.s.c.

The most important role, perhaps, is the acquisition of a clear conception of user requirements; this is equally important in war and peace, but it seems to be more difficult to get in

peace. User opinion must be backed up by user experience, and experience in peacetime is limited to make-believe, which is often reduced to a minimum by Treasury restrictions. This state is relieved occasionally by internal security problems which, though they do afford a test for armoured cars and light tanks, do not constitute any test of the modern heavy cruiser tanks, except possibly for that of mechanical reliability.

The Technical Staff Officer studies the relation of tactics and technics; he is trained to do this at the Military College of Science. Witness another extract from the charter: "It (i.e. the College) will study: (a) the inter-relation of tactics and armaments technology and those means of scientifically assessing the influence of the one upon the other."

Even without the authority of the charter it is evident that a T.S.O. should be able to draw tactical conclusions as a result of a technical analysis of any weapon; these conclusions must be written for the understanding of the user and not written to impress a technical expert.

The analysis of technical reports is another important feature in the life of a T.S.O., and one which will assume greater importance from year to year. General Staff Officers with no technical staff training are unlikely to be able to do justice either to themselves or to the authors in appreciating technical papers. They find it difficult to understand the points of view of technical experts, the conclusions of whom, although strictly accurate, may be based on false premises from the user angle. It would therefore appear desirable that staff officers, especially those dealing with design, development and modifications, who may be required to interpret user and technical requirements, should be Technical Staff Officers.

T.S.Os. should be in a position to buffer the effect of surprise caused by any new weapon in the hand of a potential enemy; T.S.Os. therefore should be able to brief agents with a view to obtaining data upon which counter technical and counter tactical action can be based.

In war there is no great change in the life of a T.S.O. except in the matter of time and space; information must change hands more quickly and liaison must be more intimate and more complete between the user and the designer. The biggest increase in T.S.O. responsibilities lies in the analysis of enemy weapon technique and examination of enemy equipment with a view to strategical and tactical counter measures.

I would like now to discuss the correct balance of T.S.Os. in the

Army. This balance, as I interpret it, raises the controversial issue of user experience. I consider that a T.S.O. must be a user in exactly the same way as a G.S.O. is a user. This inevitably means that the intakes into Camberley and Shrivenham must be very similar in so far as representation by arms of the service is concerned. Officers of the technical arms are, *ipso facto*, technical experts; they are not and cannot be users except in a very limited sense. They are not the ideal material from which T.S.Os. can be drawn, and they should therefore, in my view, be represented on Technical Staff Courses in the same limited proportions as they are represented at the Staff College.

There must obviously be an establishment of Technical Staff Officers in the Army, and this establishment could well be divided up on an arm of the service basis. This could then be reduced to percentages and the entry into Technical Staff Courses regulated accordingly. It is suggested that arms of the service should nominate their own percentage of entries, either with or without the aid of competitive examinations, and then give their candidates pre-course training of a comprehensive character.

At the Military College of Science the Technical Staff Officer student learnt how to analyze the application of pure and applied science to military technique. It did not teach him to be an expert: it taught him how to understand the language of experts; it taught him wisdom in the technical sense; it taught him technical common sense, and, above all, it taught him to realize the importance of a strong liaison link between the designer and the user. The efficacy of the liaison between the user and the scientist inevitably bears a direct relation to the technical and tactical efficiency of the Army in battle. The Technical Staff Officer is trained to effect this liaison, and in my opinion this liaison can never be efficient if the T.S.O. himself is not broad-minded in the technical sense and does not lose himself in a morass of scientific obscurity.

In conclusion, therefore, may I summarize the views I have expressed regarding the Technical Staff Officer. I consider it is undesirable for a T.S.O. to be a technical expert interested mainly in his own specialized subject. I suggest it is better for him to have an overall appreciation of pertinent technicalities, the ability to appreciate technical and user problems in the widest sense, to be able to weigh one technical or user report against another, and be able to present a balanced report to his commander in language and in form which can be readily understood.

Caen-Falaise

PART 2

CAPT. BERNARD-GEORG MEITZELL

27 June

Parts of our Panzer regiment, reinforced by a tank battalion of 2 SS Panzer Division put up as good a show as possible in securing the right flank of our left neighbour (Panzer Lehr Division). Some of our tanks which entered Grainville in the forenoon returned with the Commanding Officer of the Pioneer Battalion and the remainder of his unit which was overrun by British tanks on the morning of 26 June.

Elements of our reconnaissance battalion, skirmishing in front of the British assault forces, recognized a third British Division in this area.

28 June

British tanks and carrier-borne infantry renewed their attacks and made a determined push for Point 112 and Esquay.

All available forces of our division were ordered to this sector to check the British shove towards the Orne bridges. Our counter-attacking tanks,

This is the concluding instalment of a narrative by Capt. Meitzell, a German Staff Officer at Divisional Headquarters of the 12th SS (Panzer) Division. As related in this instalment, the author was captured by Allied forces near Falaise in August 1944. He writes a vivid account of the German forces movement in the dying hours of the campaign in North-West Europe.—*Editor.*

armoured cars and half-track vehicles succeeded in pushing back some British forces behind the line Baron-Gavrus. The 9th Bren-carrier unit which occupied Point 112 for a short time was cut off. Though these soldiers were forced to abandon their fighting vehicles, a good many of them managed to return to the British lines.

29 June

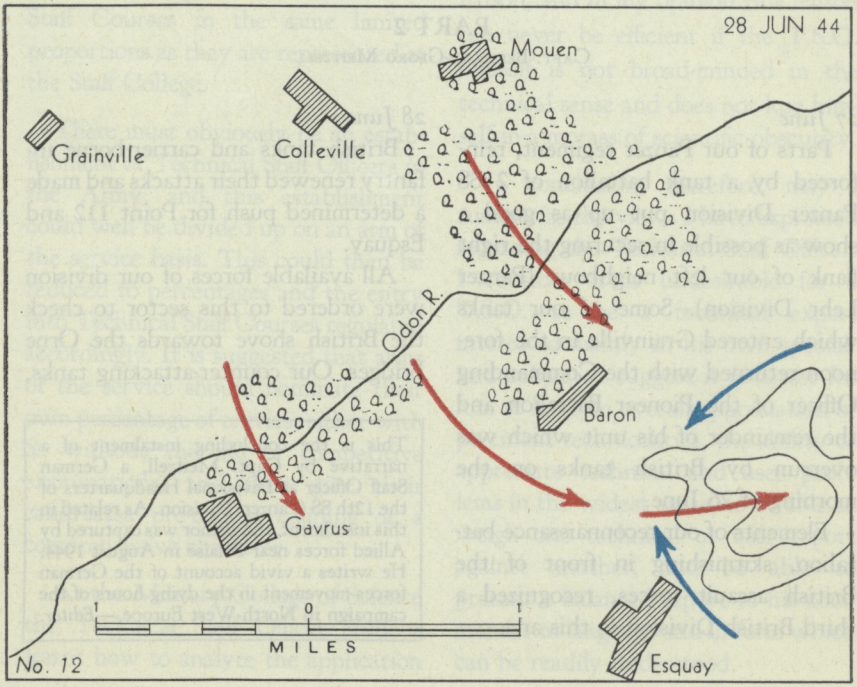
A newly-arrived regiment of 1 SS Panzer Division was placed at our disposal and took up its position in the line Carpiquet-Verson-Fontaine in the late afternoon.

The sector Baron-Gavrus was handed over to elements of 9, 10 SS Panzer Division. While this took place there were small elements of our Division engaged in reconnaissance east of Cheux.

1 July

1 SS Panzer Corps counter-attacked with parts of 2, the newly-arrived 1, 9, 10 and the rest of 12 SS Divisions. The operation was improvised and failed in consequence. All divisions engaged suffered heavy casualties.

Though nobody was astonished at the defeat of our armoured divisions by the British artillery, it was more than depressing that Corps HQ had



not even been able to co-ordinate the attacks of our divisions.

Division HQ moved from Louvigny to Caen.

3 July

At noon, Division HQ endured a heavy artillery bombardment. An 8-wheel reconnaissance car was destroyed. The medical officer of our staff was killed by shell fragments when he tried to rescue the crew of the burning reconnaissance car.

Division HQ moved to the old barracks in the centre of Caen. Only a Division Observation Post was left at the old HQ.

4 July

Parts of the first battalion, 26 Regiment, were forced out of Carpiquet village by an unexpected attack of Canadian infantry. Though hard pressed by Canadian tanks and infantry, bombed by fighter-bombers, and shelled by artillery, the first battalion was still in possession of Carpiquet airfield at the close of day.

I watched the fighting and movements of the British and the German tanks from our Division Observation Post and was deeply impressed by the close co-operation of Canadian tanks, British fighter bombers and artillery.

7 July

In the evening, Caen was attacked by hundreds of four-engine bombers. Our division suffered almost no losses, but a good many tanks of our right neighbour (21 Panzer Division) were either hit, overturned or buried by rubble.

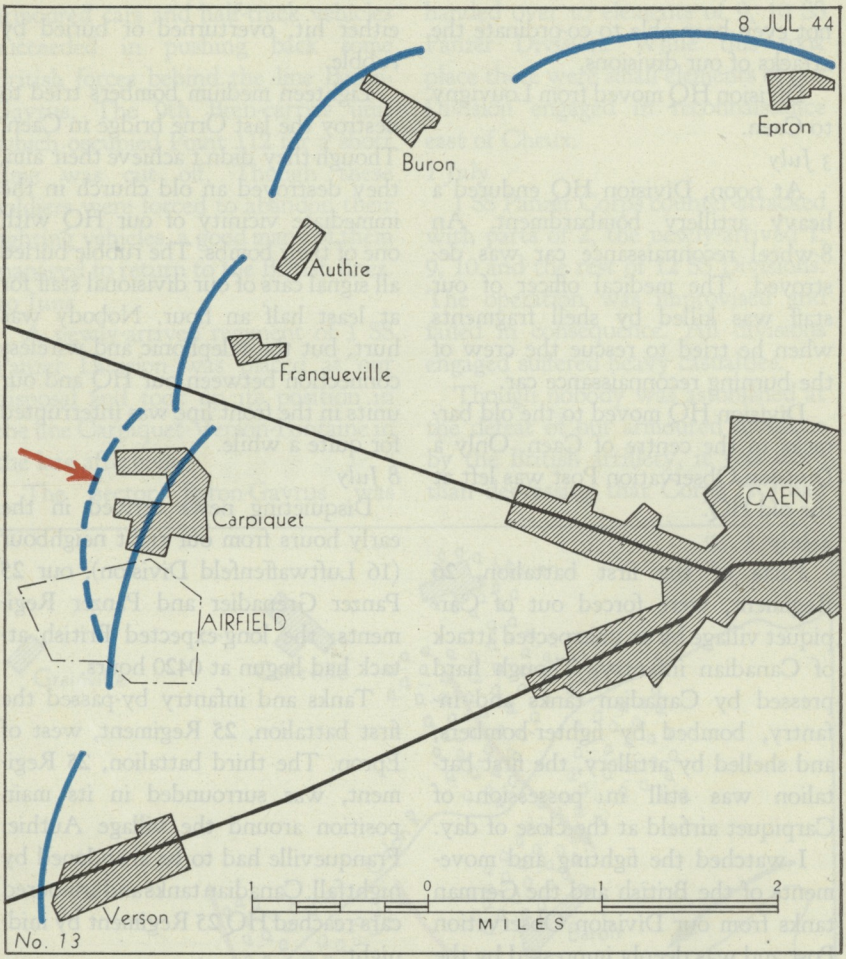
Eighteen medium bombers tried to destroy the last Orne bridge in Caen. Though they didn't achieve their aim, they destroyed an old church in the immediate vicinity of our HQ with one of their bombs. The rubble buried all signal cars of our divisional staff for at least half an hour. Nobody was hurt, but the telephonic and wireless connection between our HQ and our units in the front line was interrupted for quite a while.

8 July

Disquieting news arrived in the early hours from our right neighbour (16 Luftwaffenfeld Division), our 25 Panzer Grenadier and Panzer Regiments: the long-expected British attack had begun at 0420 hours.

Tanks and infantry by-passed the first battalion, 25 Regiment, west of Epron. The third battalion, 25 Regiment, was surrounded in its main position around the village Authie. Franqueville had to be abandoned by nightfall. Canadian tanks and armoured cars reached HQ 25 Regiment by midnight.

Some of our tanks counter-attacked during the night and enabled the first battalion, 25 Regiment, to retreat from their by-passed position west of Epron and to take up new positions north of Caen. But all attempts of our Panzer Regiment failed to relieve the surrounded garrison of Authie.



Our request for the permission to prepare an orderly evacuation of Caen was refused by the Corps. We were not even allowed to withdraw our heavy equipment from Caen. Though everyone of use was convinced that there was no sense at all in defending the rubble-heap, Caen, and in doing so sacrificing the last mobile parts of our division, we made up our mind to fight to the last.

Almost all members of our staff tried to keep awake during the next fateful hours, but I tried to take a nap. When at 0300 the Corps ordered—quite unexpectedly—the evacuation

of Caen, I didn't regret the two hours I had managed to sleep.

9 July

At 0400 hours Division HQ was moved from Caen to Garcelles.

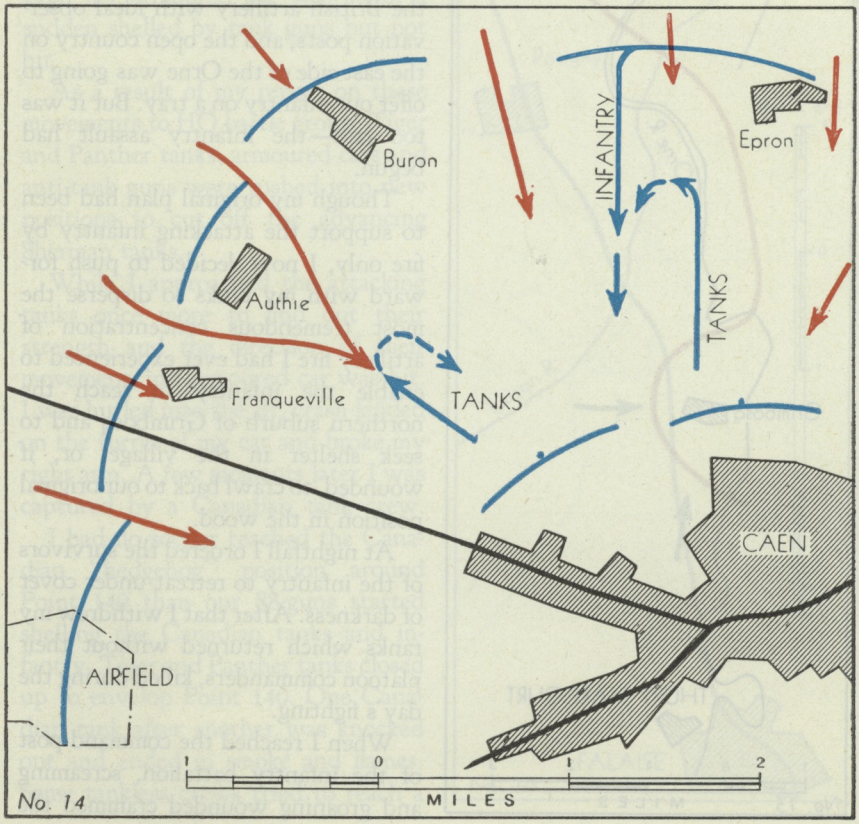
The greater part of our division abandoned Caen and Carpiquet airfield in the early morning.

The third battalion, 26 Regiment, acted as a mobile screen during these movements and retreated to our new positions in the late afternoon.

From 15 July to 8 August I took charge of the refitting of some of our shattered tank companies in the area of Le Neubourg south of Rouen.

8 August

By midnight 7/8 August I had arrived at headquarters of the Panzer battle group in the "Foret de Cinglais" with a refitted tank company to take part in a counter-attack against a British bridgehead across the Orne near Grimbosq.



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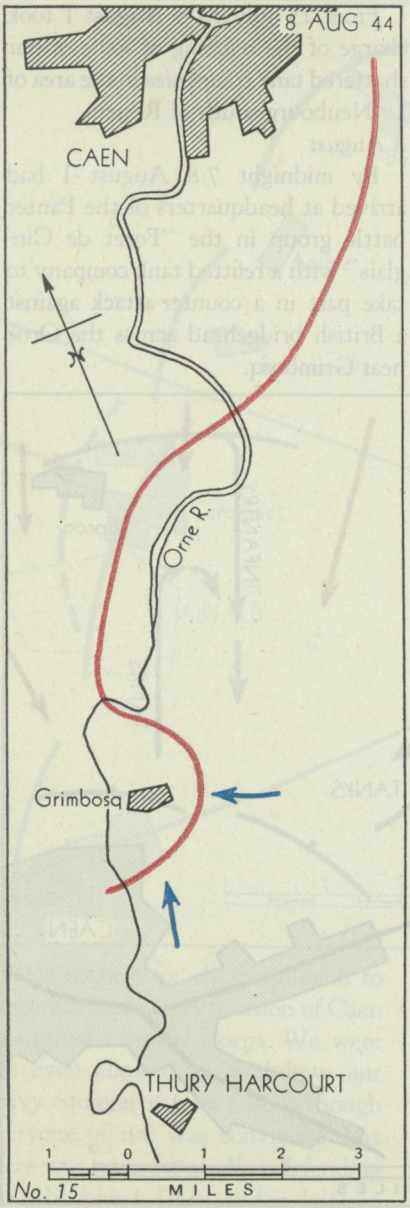


I was ordered to support an infantry attack to be launched from the east against Grimbosq. As I had no time myself to reconnoitre the battleground—0800 hours was fixed as H-hour—I had to rely completely on the infantry commander's information.

When I reached the battlefield I realized at once that we were going to attack as live targets in a shooting range of the British artillery. The hills on the west bank of the river provided the British artillery with ideal observation posts, and the open country on the east side of the Orne was going to offer our infantry on a tray. But it was too late—the infantry assault had begun.

Though my original plan had been to support the attacking infantry by fire only, I now decided to push forward with my tanks to disperse the most tremendous concentration of artillery fire I had ever experienced to enable the infantry to reach the northern suburb of Grimbosq and to seek shelter in the village, or, if wounded, to crawl back to our original position in the wood.

At nightfall I ordered the survivors of the infantry to retreat under cover of darkness. After that I withdrew my tanks which returned without their platoon commanders, killed during the day's fighting.

When I reached the command post of the infantry battalion, screaming and groaning wounded crammed the

cellar. The entrance was almost blocked by corpses. But as new orders for me and my company had already arrived I had no time to think about it.

My second-in-command had the company into its new position north of the River Laison, while I had to report at HQ battle group.

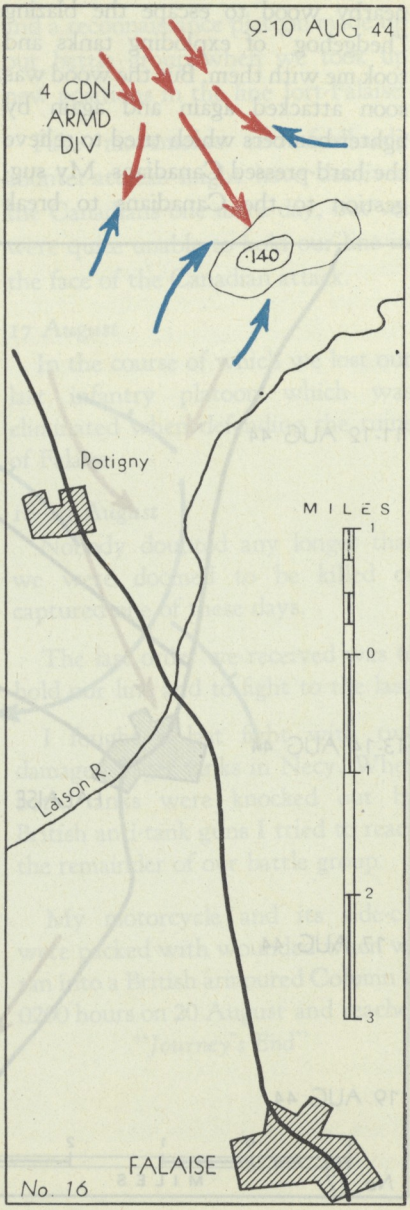
9 August

While scouting in the early morning east of my company's new position, my armoured car was all of a sudden shelled by tank guns but not hit.

As a result of my report on these movements to HQ battle group, Tiger and Panther tanks, armoured cars and anti-tank guns were rushed into new positions to cut off the advancing Sherman tanks.

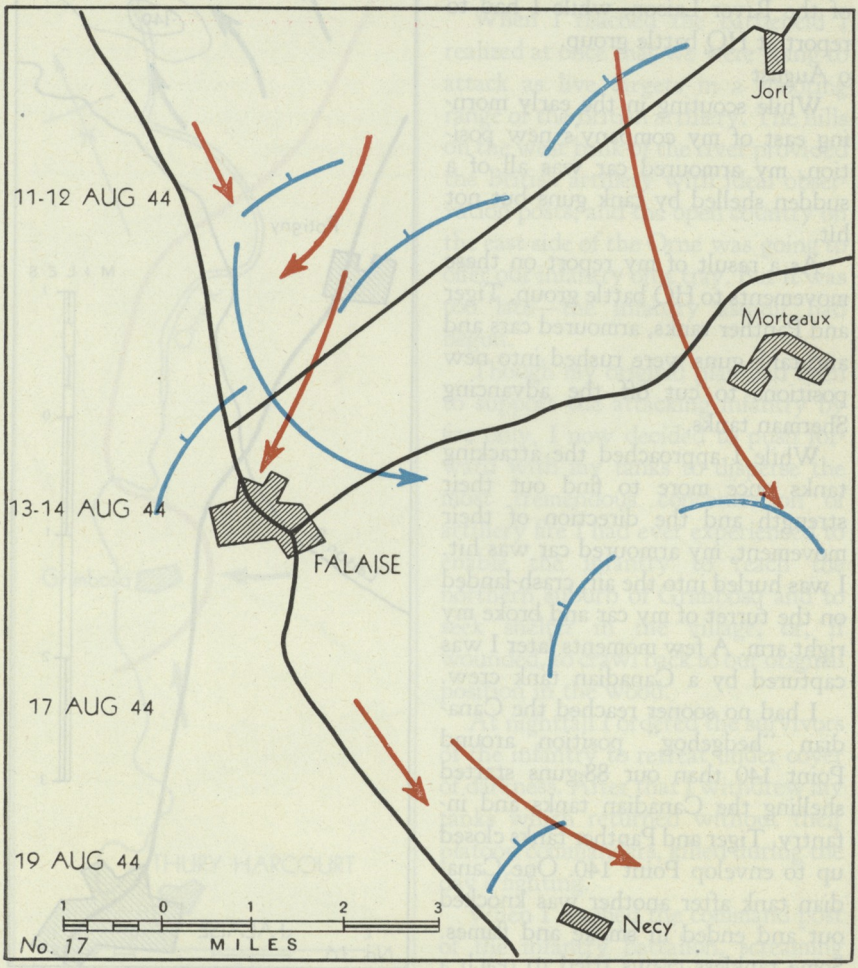
While I approached the attacking tanks once more to find out their strength and the direction of their movement, my armoured car was hit. I was hurled into the air, crash-landed on the turret of my car and broke my right arm. A few moments later I was captured by a Canadian tank crew.

I had no sooner reached the Canadian "hedgehog" position around Point 140 than our 88-guns started shelling the Canadian tanks and infantry. Tiger and Panther tanks closed up to envelop Point 140. One Canadian tank after another was knocked out and ended in smoke and flames. Some tankless crews tried to reach a



nearby wood to escape the blazing "hedgehog" of exploding tanks and took me with them. But the wood was soon attacked again and again by fighter-bombers which tried to relieve the hard-pressed Canadians. My suggestion to the Canadians to break through to our Command Post was declined with thanks until new fighter-bomber attacks changed their mind.

I arrived back at our Command Post in the late afternoon with 23 Canadians and a fractured right arm.



The Tiger commander, Wittmann, well known to all German Panzer men, was killed the same day.

11–12 August

With my right arm in splints, I had become liaison officer between our battle group and our Division HQ.

Our new position was about seven miles northeast of Falaise. We all regarded the future development with gloomy forebodings. Though we were hard up all that day, and the following, 12 August, we managed to hold our position until we were surrounded by Canadian tanks in the late afternoon of 12 August. But during the night, we succeeded in forcing our way out and reached the road Caen-Falaise.

I was slowly moving toward Falaise when all of a sudden two lights were to be seen a hundred yards in front of my car. For a moment, I too set lights. I felt a bit ill at ease when I passed a jeep and an armoured car moving in the opposite direction and recognized British helmets in the darkness.

13–14 August

Some 20 tanks, one former infantry battalion reduced to platoon strength and a reconnaissance platoon made up our battle group when we took up new positions in the line Jort-Falaise.

Fake movements and foolhardy counter-attacks might have deceived the Canadians one more day, but we were quite unable to hold our line in the face of the Canadian attack.

17 August

In the course of which we lost our last infantry platoon which was eliminated when defending the ruins of Falaise.

18–19 August

Nobody doubted any longer that we were doomed to be killed or captured one of these days.

The last order we received was to hold our line and to fight to the last.

I fought a last fight with two damaged Tiger tanks in Necy. When both tanks were knocked out by British anti-tank guns I tried to reach the remainder of our battle group.

My motorcycle and its side-car were packed with wounded when we ran into a British armoured Column at 0200 hours on 20 August and reached

"*Journey's End*"

Forces Fight Floods

Written specially for the Journal by the Directorate of Public Relations (Army), Ottawa.

When Manitoba's Premier Douglas L. Campbell declared a state of emergency on May 6 and called upon Brigadier R. E. A. Morton, DSO, General Officer Commanding Prairie Command, to take over as Directing Officer Flood Control, the Armed Services greatest peacetime effort in Canada's history swung into high gear.

From then until June 1, when control reverted to the Provincial government, more than 5,150 sailors, soldiers and airmen of the Active and Reserve Forces took part in the battle against the floods.

They worked side by side with more than 50,000 Winnipeg citizens in the nip and tuck battle to save Canada's fourth largest city from complete inundation.

The men of the Service came by rail and air from stations all across the nation and with them came hundreds of military vehicles and thousands of tons of military equipment. This equipment included dukws, wireless sets, portable cookers, hip boots, blankets, pumps, hand torches, switchboards, and Bailey bridging.

The Navy supplied more than 700 officers and men from Halifax and Esquimalt, flown in by RCAF airlift and from naval divisions in Port Arthur, Regina, Saskatoon, Edmonton and Calgary, and, of course, Winnipeg itself.

The Winnipeg naval station HMCS Chippawa was used for several days as a shelter for flood evacuees, dormitories were set up in classrooms and drill decks, and meals were prepared in the division galleys.

Nearly 4,000 soldiers of Canada's Active and Reserve armies did yeoman service on the miles of sandbag dykes protecting the flood-besieged city of Winnipeg. Gunners from Shilo, sappers from Chilliwack, paratroopers from Rivers, infantry from Calgary, signallers from Kingston—all did duty on the dykes.

Active Force soldiers wearing badges of such famous units as the Princess Louise's Canadian Light Infantry, The Royal Canadian Regiment, Royal Canadian Dragoons, Royal 22nd Regiment, worked shoulder to shoulder with citizen soldiers of proud units of the Winnipeg Garrison—the Fort Garry's, the Royal Winnipeg Rifles, the Queen's Own Cameron Highlanders of Canada, and the Winnipeg Light Infantry.

In a round-the-clock battle against the Red River hundreds of Army vehicles carried men and equipment to

vital points—soldiers patrolled key bridges and roads to regulate the flow of traffic—signallers manned stationary wireless sets to keep open the vital lines of communication, while others with walkie-talkie sets patrolled the dykes to relay information to Flood Control Headquarters.

Perhaps the key service personnel in the dyke battles were the army engineers. They supervised the building and maintenance of the miles of dykes in the besieged city, repaired bridges, carried out demolitions, and performed a dozen and one other engineering tasks.

Two of the major engineer units sent to Winnipeg for the emergency were the 23rd Field Squadron, Chilliwack (Active) and the 21st Field Squadron, Flin Flon, Manitoba (Reserve).

In the air the RCAF made a tremendous contribution to victory

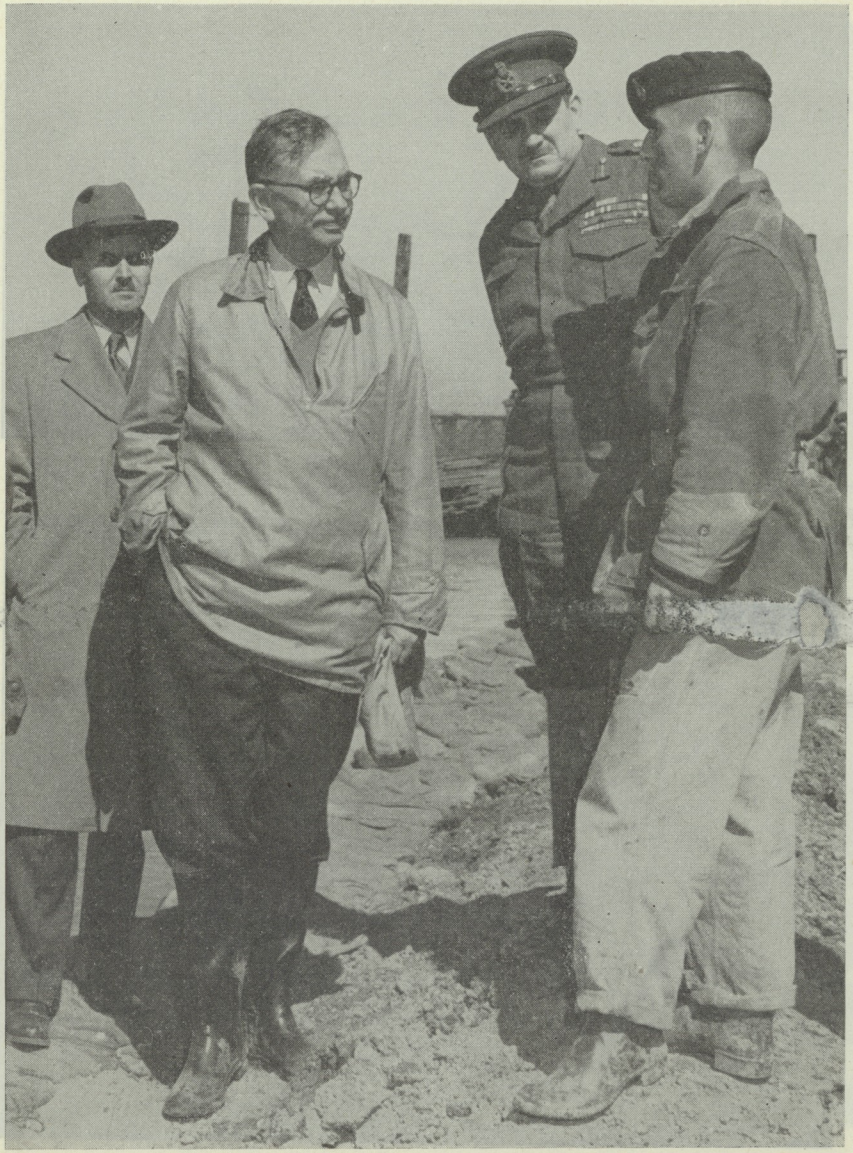
Members of the Princess Patricia's Canadian Light Infantry engaged in flood duties in the Winnipeg area.

and carried out one of the greatest emergency airlifts in the nation's history. Hundreds of Navy and Army personnel and well over a million tons of equipment were flown to Winnipeg from points as far distant as Dartmouth, Churchill, Vancouver and Minneapolis.

Millions of sandbags were flown into Winnipeg by RCAF transports and it is estimated that 4½ million bags were actually used on the dykes.

To back up the valiant battle of the flood fighters on the spot a Flood Control Operation Room was set up at National Defence Headquarters in Ottawa and was manned on a 24-hour basis during the emergency. The Operations Room handled all outgoing messages relative to the flood and aided in locating supplies needed by the flood fighters, as well as coordinating generally National Defence Headquarters' aid to those in the field.

Aerial photo of St. Boniface.

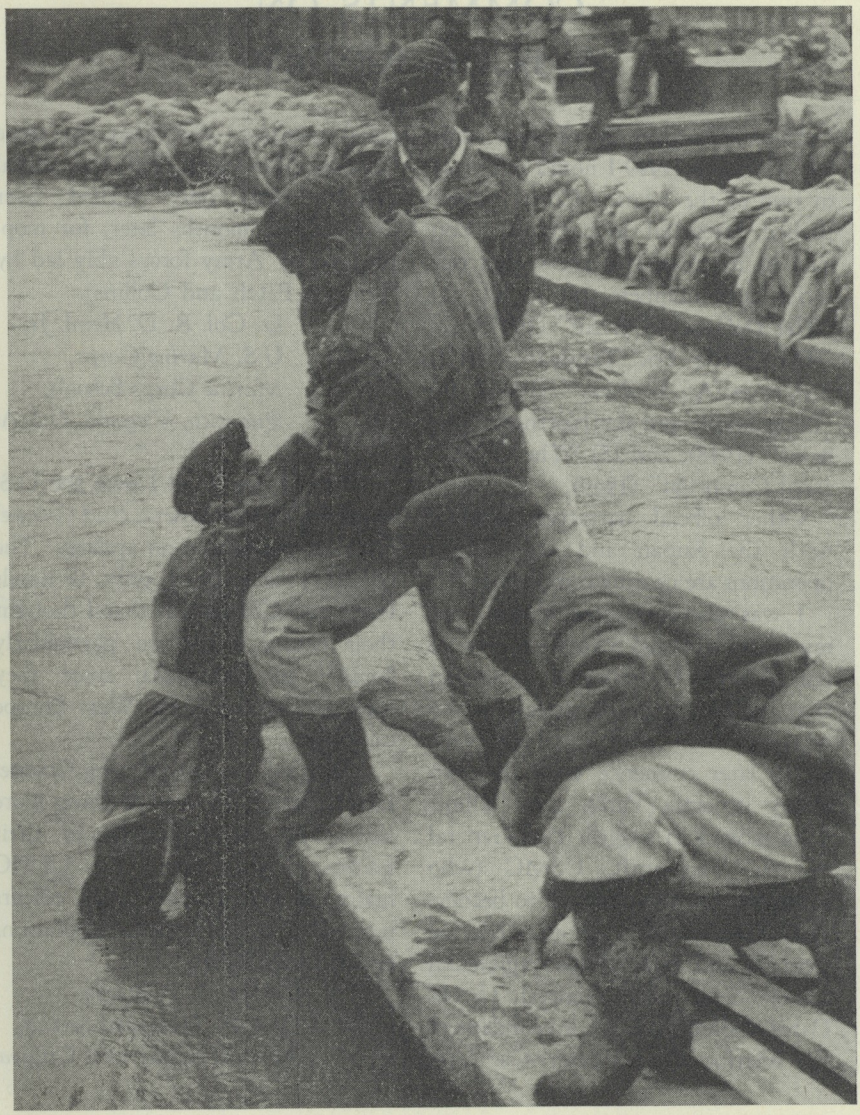


National Defence Photo

Defence Minister Claxton chats with a member of the Princess Patricia's Light Infantry engaged in flood duties. Second from the right is Lt. Gen. Charles Foulkes, CB, CBE, DSO, Chief of the General Staff.

Aerial photo of Norwood dyke with the Provincial Parliament buildings on the horizon.

Prime Minister St. Laurent on his arrival at Winnipeg airport is greeted by Brig. R. E. A. Morton, GOC Prairie Command, who was Flood Controller. Minutes later the Prime Minister and his party made a tour of the flooded areas.



The 21st Field Squadron, RCE, from Flin Flon, Man., build a bridge across the Seine River in St. Boniface.

COMMENTS ON A BOOK REVIEW

Editor: On page 28 of your issue for November 1949 I noted reference to two of the Marine Corps' paper-backed historical monographs. You may be interested to know that our series now numbers five in all: (1) "The Defense of Wake" (1947); (2) "The Battle For Tarawa" (1947); "Marines At Midway" (1948); (4) "Bougainville and the Northern Solomons" (1948); and (5) "The Guadalcanal Campaign" (1949).

Other official narratives dealing with the Saipan and the Peleliu operations are nearing completion.

I was also interested to read (in my friend, Colonel Stacey's review of our Army's Guadalcanal narrative) that *notable* among American officers who served on Guadalcanal and went on to later eminence were the two Army generals, Patch and Collins. I am moved to suggest that General A. A. Vandegrift, USMC (who returned from Guadalcanal to become 18th Commandant of the Marine Corps), and one of his regimental commanders, now General C. B. Cates, USMC (19th Commandant of the Marine Corps) deserve at least equal mention—the more so since General Vandegrift led the initial assaults (and only turned over Guadalcanal, months later, for mopping up by Army forces ably led by Generals Patch and Collins).

Lt. Col. R. D. Heinl, Jr.,
U.S. Marine Corps,
Marine Corps Schools,
Quantico, Virginia, U.S.A.

* * *

Editor: I am afraid I owe the U.S. Marine Corps in general (and Colonel Heinl in particular) an apology. The reason I mentioned only Generals Patch and Collins was that I thought their names would be particularly familiar to Canadians, since they took part in the North-West Europe campaign.

I am glad you are printing Colonel Heinl's letter, by way of doing more justice to the Marines and their leaders. I recommend the USMC historical monographs to all officers interested in amphibious operations or the Pacific War.

Colonel C. P. Stacey,
Director, Historical Section,
Army Headquarters, Ottawa.

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EDMOND CLOUTIER
Printer to the King's Most Excellent Majesty
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15,225 — 5-50-(3447)
H.Q. 223-C-3