UNCLASSIFIED
Australian Army History Unit
16 July 2014
0.12000.2014

AUSTRALIAN ARMY JOURNAL

SCHOOL OF ARTILLERY
SYDNEY
LIBRARY

AUSTRALIAN MILITARY FORCES

6. copy

No. 21 FEBRUARY, 1951

Notified in AAO's for 28th February, 1951.

MILITARY BOARD.

Army Headquarters,
Melbourne,
1/2/51

Issued by Command of the Military Board.

Secretary to the Board.

Distribution:

One per Officer and Cadet Officer.

AUSTRALIAN STAFF COLLEGE LIBRARY

AUSTRALIAN ARMY JOURNAL

A Periodical Review of Military Literature.

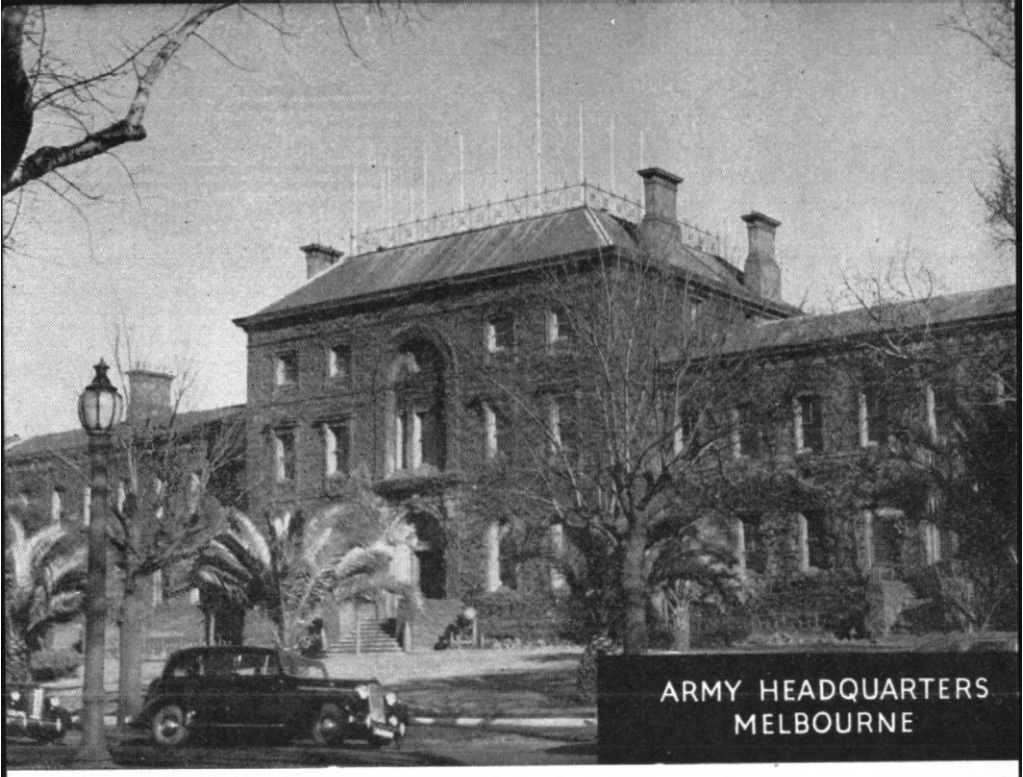
Number 21 February, 1951

CONTENTS

RESTRICTED.

UNCLASSIFIED

The information given in this document is not to be communicated, either directly or indirectly, to the Press or to any person not authorized to receive it.



AUSTRALIAN ARMY JOURNAL

Editor:

LIEUTENANT-COLONEL E. G. KEOGH, ED (R of O)

Staff Artist:

MR. CYRIL ROSS

The AUSTRALIAN ARMY JOURNAL is printed and published for the Directorate of Military Training by Wilke & Co. Ltd. The contents are derived from various acknowledged official and unofficial sources and do not necessarily represent General Staff Policy.

Contributions, which should be addressed to the Director of Military Training, Army Headquarters, Melbourne, are invited from all ranks of the Army, Cadet Corps, and Reserve of Officers.

LEADERSHIP

An Address delivered by Field Marshal Sir William Slim, GBE, KCB, DSO, MC, Chief of the Imperial General Staff, to the officers at Fort Knox, USA.

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 set 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.

I have been very lucky in my service. In getting on for 40 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.

—From Canadian Army Journal.

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 will-power, the third is initiative and the fourth is knowledge—courage, will-power, 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 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 things go wrong—when your aeroplanes are shot out of the sky; when your guns run out of ammuniton; 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 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 is 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. He 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 will-power. Your job as an officer is to make decisions, to tell people what to do. Well, it is not very difficult 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 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 appre-

ciate 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, opposition 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 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 iniative; 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. 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, will-power, 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.

TIBET

What is afoot ?

Directorate of Military Training.

THE importance and the spectacular nature of events in the Far East have diverted attention from the recent Chinese invasion of Tibet. Korea has pushed Tibet out of the news and we do not at present know how far the invasion has progressed, or to what extent the Chinese Communist Government has succeeded in imposing its authority on the hitherto more or less independent Tibetans. However, since Communist Governments rarely, if ever, make any move which is not a carefully integrated part of overall Communist strategy, it is desirable to evaluate the significance of what might appear superficially to be only a minor event.

Geography.

Tibet is the highest country in the world, comprising tablelands averaging over 16,500 feet above sea level, the valleys being at 12,000 feet to 17,400 feet, the peaks at 20,000 to 24,600 feet, and the passes at 16,000 to 19,000 feet. It is bounded on the north by Sinkiang, on the east by China, on the west by Kashmir, and on the south by India, Nepal and Bhutan. It has an area of over 1,000,000 square miles and an estimated population of about 3,000,000.

Physically Tibet may be divided into two parts—the lake region in the west and north-west, and the river region which spreads out from the former on the east, south and west.

The lake region extends from the Pangong t'so (t'so means lake) in Kashmir near the source of the Indus, to the sources of the Salween, the Mekong and the Yangtse. This region, known as the Northern Plateau to the people of Tibet, is about 700 miles broad and covers an area of some 212,000 square miles.

The lake region is extremely arid and possesses no river outlet. It is intersected with disconnected mountain ranges separated by flat, shallow valleys dotted with many large and small lakes. The soil is boggy and covered with tussocks of coarse grass. With an average elevation of 16,000 feet, the region is intensely cold and sparsely populated.

The river region comprises the upper reaches of the Brahmaputra, the Salween, the Mekong, the Yangtse and the Yellow River. Amidst the mountains there are many narrow valleys, partially cultivated from an altitude of 12,000 feet downwards, with here and there fine forests covering the mountain sides. Villages of stone houses are to be found wherever the valleys flatten out enough to afford space for agriculture.

The northern portion of Tibet is an arid and wind-swept desert; but in the southern portion the valleys of Lhasa, Shigatse, Gyantse and the Brahmaputra are covered with good soil and groves of trees, well irrigated and richly cultivated.

The most densely populated part of Tibet lies along the 1500 miles long valley of the Brahmaputra, a valley in places up to 200 miles wide. To the north and west lies the Chang Tang, a vast mountainous area about which little is known. To the south lies the Himalayan range, impassable at all but a few points. To the east are several important trade routes to China, but the mountain barrier is little less formidable than that to the south.

Climate and People.

Generally speaking, the climate of Tibet is intensely cold and dry, though summer temperatures in the river region and the Brahmaputra valley are moderate enough to permit the intensive cultivation of barley, oats, apples, plums, grapes and numerous kinds of vegetables. In winter nearly all the higher passes are blocked with snow, and even in summer some of them are difficult to negotiate. Throughout the year the whole country, except the southern valleys, is constantly swept by strong, dry winds.

There are no railways, and roads suitable for wheeled vehicles are practically non-existent.

The Tibetans, who probably spring from the Turko-Mongol stock, are divided between the nomadic tent-dwellers of the lakes region and the transition zone between it and the river region, and the settled, sedentary population of the valleys. They

are a quiet, unwarlike people, asking nothing better than to be allowed to go their ancient ways in peace.

One in three of the male population is a Lama or monk. 400,000 of them are assembled in 5,000 monastries. On the whole the organization of the Lamas is democratic. Any family can send a boy to a lamasery when he is nine years old and he will be trained for the priesthood. Any Lama can rise to the highest position in the order.

In the valleys there is an aristocracy based on landed estates, but the peasantry is generally prosperous and well cared for. The landed proprietor must play his part in the administration of the country, and in Lhasa, the capital, there is a large administrative class recruited from the landed families, poorly paid, but with a gracious and cultured solial life.

Resources.

Little is known about the mineral resources of Tibet, except that it seems certain that deposits of gold are spread fairly evenly throughout the country. Since nothing in the nature of a geological survey has ever been attempted it is not impossible that proper investigation would reveal the existence of valuable mineral deposits, including perhaps the rare uranium bearing ores.

The principal exports from Tibet are gold, silver, salt, wool, rugs, furs and musk. In exchange Tibet gets from China silk, porcelain and tea-bricks, from Bhutan rice, sugar-balls and tobacco, and from Nepal broadcloth, brasswork and drugs of Indian manufacture.

Government.

The government of Tibet is roughly divided into two distinct administrations, the one under the rule of the Dalai Lama of Lhasa, the other under local kings or chiefs and comprising a number of ecclesiastical fiefs. The system of government may be described as a theocracy since nearly all authority rests in the hands of ecclesiastical officials.

The Dalai Lama of Lhasa controls by far the wealthiest and most populous part of the country. The person next in importance is the Tashi Lama, the head of the monastery of Tashilhunpo near Shigatse. Theoretically the Tashi Lama possesses very little secular authority, but he is considered by many of his followers to be superior to the Dalai Lama in religious rank. In a theocracy it is difficult to separate the functions of the ecclesiastical and secular authorities; consequently disputes between the two Lamas are not infrequent.

The Dalai Lama is the final authority in all secular and ecclesiastical matters. Administration is in the hands of four ministers of state, who divide among themselves the management of all secular affairs of the country. There is a National Assembly, divided into a greater assembly, which includes all senior government officials and which meets only to decide matters of supreme importance, and a lesser assembly, which comprises certain high officials and noblemen of Lhasa and delegates from the more important monasteries, and which is fairly constantly in session.

Tibet acknowledges the suzerainty of China, but, up to the present, Chinese control has been more nominal than real. Generally, the Tibetans have run their own affairs without much interference from

anyone. They have never liked strangers and, until quite recently, have discouraged visitors.

Foreign Relations.

In 1872-1873 some attempt was made by Indian officials to open up trade with Tibet, and in 1886 a mission was organised to proceed to Lhasa. Owing to the opposition of the Chinese it had to be abandoned. The Tibetans took this as a sign of British weakness and made trouble on the Indian frontier. Negotiations were complicated by differences between the Chinese and Tibetan authorities.

Meanwhile a Russian subject, who had become a lama had acquired considerable influence with the Dalai Lama, whom he persuaded to invite the Russians to Lhasa with a view to them taking over the suzerainty of the country. Russia warmly responded, but the national assembly, many high officials, and the Chinese objected. In an attempt to accelerate Russian action the Dalai Lama provoked Britain into sending a military expedition to Lhasa in 1904. After protracted negotiations a treaty was signed on 7 September. The principal provisions were — frontiers were to be respected, no foreign power was to receive any concession in Tibet, territorial or mercantile, or to concern itself with the government of the country. The adhesion of China to this treaty was secured by an agreement signed in 1906, and the adherence of Russia by a convention signed in the following year.

Strategic Importance.

Owing to the paucity of communications and the general physical difficulties of the country, Tibet, before the advent of modern aircraft, possessed little strategic significance. The most that was to be apprehended by the Indian authorities was infiltration by an unfriendly power spread over a considerable period. Russia never pressed her interests very hard, and China only occasionally attempted to exert strong authority over the Tibetan government.

Today Russia is feverishly pushing her interests everywhere, particularly in areas where trouble is brewing or can be stirred up. Since China has become one of Russias most active satellites it is evident that the recent Chinese invasion of Tibet arises from something more than a sudden desire merely to establish her authority in that country.

If the Chinese succeed in establishing themselves throughout Tibet and there is no apparent reason why they should not succeed, Communism will be brought into direct contact with the Indian sub-continent along some 2,000 miles of frontier. Infiltration through that rugged and troubled region should present few difficulties to the skilled Communist agent.

Tibet towers above and dominates the three most populated countries of the world: China's 500,000,000, India's 400,000,000 and Soviet Russia's 200,000,000. Airfields set in her valleys would be but an hour's flight from Delhi, two hours from Chungking and three to four from Tashkent and Alma Ata, the great industrial centres of Soviet Central Asia. Bearing these distances in mind, it is apparent that the Chinese invasion of Tibet could mean that Soviet air power is establishing itself deep in the heart of southern Asia.

A Vital Force

YOUR SPEECH

Henry C. Porter.
Educational Advisor, Armoured School,
Fort Knox, USA.

Much of an Army Officer's career requires that he speak before groups of varying sizes. Not all of us are capable speakers, and only a knowledge of basic principles and constant application and review will lay the background that produces effective speakers.

THE high correlation existing between positive military leadership and the Army officer's employment of effective speech techniques was ably expressed by Colonel S. L. A. Marshall, author of "Men Against Fire," when he appeared as a guest speaker at The Armoured School last year. In the course of his speech, which was primarily concerned with the American soldier's reaction to combat as determined by critiques conducted by Army historians, Colonel Marshall made this observation:

". . . In the past, out of something like 600 of these critiques held after units had been in combat, I found one thing that was absolutely infallible—it was this; we would start a critique by putting the company commander up before his men, saying, 'All right, now you take the action and talk for about five or six minutes about how you started, about how you gave your order, and how the advance started. Then at the proper moment I will take it away and from that time on I will carry the discussion and I will call you back when I need you—when anything that you did or said becomes germane to the action.' This was the procedure. But the interesting thing, Gentlemen, was this, that without exception, as I put the company commander up there to talk to his troops and you saw the manner in which he approached his job, the way he approached his men, and

—From Armoured Cavalry Journal, USA.

their response to him, you could tell whether the action which you were going into was going to be a favourable action or a failure. You could tell whether or not that man was going to have control of his company in the action which was about to be developed. I remind you that some of these were cases where troops had been defeated, but you could see at the same time an appreciation there which resolved itself into one thing, absolute respect between the two forces, the commander and the commanded, and further than that, absolute confidence that they were getting from each other the best deal that was possible.

"If the man got up and talked hesitantly, if he stumbled around, if he did not look squarely at his men, without exception, he took exactly that same approach to the problems of unit command when he came under fire. If his men did not respond to him as he addressed them, if you found that you had suddenly taken the men completely away from that company commander because he was not a sufficiently vital force, that he could not stand on his own right, you would also find as you got into the critique that some noncom of junior officer had taken his fight away from him. He was inarticulate; he had not become a sufficient force in the thoughts and actions of those men for whom he was responsible. I simply pass that on to you by way of saying that I think we tend to slight the speech principles in the United States Army. We fail as junior officers too many times to be brought up to believe sincerely in the words of Disraeli when he said that all men govern with words. We do not stimulate sufficient respect for scholarship in our fellow officers. In the final analysis, whether it means the writing of an operations order or getting up before a battalion and convincing the men of one's self-generating power by your ability to bring ideas to others, speech, the use of words, is the method of control—there is no substitute. The training aids and instructional devices that we have can never become a satisfactory and all sufficing replacement for that power which is expressed in a man - to - man relationship within the military command."

This vital force within yourself coming from the ability to speak, which Colonel Marshall holds in such high esteem, is dependent upon three factors: (1) Your personality; (2) your knowledge and background in the subject; and (3) your ability to employ a few simple speech techniques effectively. It is the purpose of this article to point up a few of the techniques used in speaking before a group which have been found workable in the training of army instructors at The Armoured School. Some of these things are simple and need only to be recognized by the army officer to produce results. Although personality and knowledge of the subject will not be discussed here, they must be considered as essential elements in any programme for the improvement of public speaking.

The Composition of Your Speech.

Your ideas, in order to produce the desired effect, must be expressed clearly and in an understandable manner; it must be easy for the audience to follow you — the

mechanics of your presentation should be correct. You will find it especially helpful to think of your speech as being divided into three parts; the introduction, the body, and the summary. In the introduction your job is to establish contact with the audience, to arouse interest in the subject, and to disclose and clarify your subject. There are many devices which may be used in an introduction to accomplish these ends, but one stands out as essential; always tell your audience specifically what your mission will be and why it is important to them. A survey of last year's Officers' Advanced Class at The Armoured School, and after some nine months as students, they were certainly qualified to pass judgment, indicated that regardless of the technique employed by the speaker to gain contact or arouse interest an introduction was effective only when the objective of the talk was clear and the reasons given for its importance were valid. Your initial remarks are especially important because the audience is often won or lost in the first few minutes. It behoves the speaker to do his best in the introduction.

Putting the Message.

The body of the talk is the part which carries your message. If it becomes dull because of its organization or because of your delivery, it of course loses its effectiveness. Charles Dana once said, "The invariable law is to be interesting. Suppose you tell all the truths of science in a way that bores the listener—what is the good? The truths don't stay in the mind, and nobody thinks any the better of you because you have told the truth."

Some speakers approach their subjects feeling that the material is intrinsically dull. It is true that some subjects seem to be more vital to an audience than others, but all subjects can be made more interesting if the speaker will make the effort.

Here are some of the suggestions which are given to instructors who complain that their material is "dry." To vitalize an oral presentation:—

- Vivid and specific expression is helpful.
- Illustrations, stories, and examples keep interest high.
- Training aids help to hold interest.
- Ask questions, either rhetorically or to arouse participation.
- Logical organization will enable the audience to go along with you.

The summary serves to wrap up the ideas which you have presented so that the listener can readily take them away with him . If you cannot summarize a talk in a few sentences then there is probably something wrong with the organization of that talk. Don't wait until the end of your talk to use the summary. Frequent summaries throughout the talk will help the audience to follow you. After presenting several ideas, summarize before going on; this practice will help you to do a better job of thinking on your feet. You will find that it is easier to get from one main point to the next if summary statements are used frequently.

The overall view of the composition of a speech was well expressed by the southern preacher who, in

explaining his secret of success as a speaker, said:—

"First, I tells 'em what I'se goin' to tell 'em,
Then I tells 'em,
An' then, I tells 'em what I'se told 'em."

Don't Be Nervous!

This old bromide is hardly sufficient for the victim of stage fright; he seeks, and rightly so, some more definite and specific remedy for excessive nervousness. Here is one point, however, where it is best not *to depend upon short cuts.* Such short cuts as, "breathe deeply," "hold a pencil in your hand," "engage in some physical activity," or "tell a story," are substitute measures and may lead the speaker to be more conscious of his nervousness.

The speaker's most reliable remedy for excessive nervousness is a proper frame of mind toward himself, toward his audience, and toward the total presentation — we might call this the proper mental attitude. He must realize that fear is the basis for the very unpleasant mental and physical reaction which he experiences when before an audience, not fear of bodily injury, but fear of not being favourably received, fear of what others will think of him. The officer must *realize that this condition is not entirely bad,* it is evidence of the fact that he is stimulated to physically do his best. Once he learns to control himself, this nervousness becomes a keyed up, mildly emotional feeling which is highly desirable.

Most speakers who suffer from excessive nervousness let thoughts of themselves dominate their thinking. The subject or the message is the important thing and should be the centre of attention, both for the audience and the speaker. It is sound practice for the officer to be so thoroughly prepared in his subject and to present it with such vigour that the audience is hardly aware of his delivery. If the speaker will think in terms of his subject and the communication of the ideas he has to present, he will be making a sound approach to a proper mental attitude.

Know Your Subject.

Thorough preparation is the only *real insurance against stage fright.* Know the subject completely, try to anticipate any problems which may arise in its presentation, and rehearse it in detail. This will promote a feeling of confidence when the speech is delivered. Experience is no substitute for thorough preparation; even the old-timers find that their effectiveness is in direct proportion to their efforts in the planning stage.

It is also helpful for the speaker to have his initial remarks well in mind. In some cases the introduction should be committed to memory and rehearsed several times to insure naturalness in its delivery. This practice will help to get your talk started, there is no initial hesitancy, the approach to the subject is smoothly made, and initial *nervousness is soon replaced by enthusiasm* for the subject. It must also be recognized that nervousness causes a speed-up of all bodily processes. Keep this in mind; slow down, be deliberate, and relax—an informal approach helps. The best approach to the problem of excessive nervousness is: First, be thoroughly prepared; then approach your task with the proper mental attitude; and then, during your pre-

sentation realize that the keyed-up feeling which you have may cause you to speak or act too rapidly—guard against it by thinking in terms of the audience and their understanding of the subject.

Keep Contact with the Audience.

The good speaker looks at and talks to the audience, he speaks in a conversational manner, and strives at all times to maintain contact with his listeners. The speaker who checks his time by obviously looking at his wrist watch or takes his watch from his pocket is openly inviting each member of his audience to do the same thing. The first thing a speaker must do when he addresses a group is to make each man feel that he is talking to him personally. Nothing is quite so important as a means of establishing this personal contact as the simple device of looking at your audience and speaking to them in a conversational manner.

In most cases reading a speech from a manuscript is disastrous. An over-use of notes produces the same effect. Even the reading of a long quotation is dangerous, the quotation might better be paraphrased by the speaker. At The Armoured School most instructors improve their contact with classes by putting their notes on cards and placing them on the floor. This enables them to speak from the centre of the platform with little obvious reference to their outline. This practice also serves to encourage the instructor to limit his notes, to speak from main points, and to think on his feet. Many otherwise excellent speakers become ineffective because they tie themselves to a lectern and lose contact with their audience.

Your Physical Behaviour.

Basically, there are two broad aspects of delivery: that which the audience sees and that which they hear. When a member of the military profession speaks, his audience quite naturally reacts at once to his general appearance, to the way he stands and walks, and to the overall effect of his platform manner. The listeners expect more from an officer when he speaks than they do from other professional men. When the comment, "He certainly looks like a soldier," is made by members of your audience they have given you their highest accolade for platform appearance. This does not mean that your posture should be stiff and unnatural, but that you give the audience the feeling that you are alert, at ease, and self-possessed. Stand erect, not with the stiffness of a ramrod, but with the assurance of one in command of himself and the situation. Few officers will have any difficulties as to their appearance on the platform if they remember to:—

Avoid mannerisms which may cause the audience to concentrate on you rather than on your subject.

Avoid too much hiding behind the lectern, and please do not lean on it!

Avoid excessive and meanlingless movements.

Avoid a slouchy appearance, produced by folding the arms or standing with the legs crossed.

The question often arises as to what the speaker should do wih his hands. The answer is: "A speaker should deliver his message with the full resources of his personality."

To do this he must keep his hands free, they cannot be kept in the pockets, on the hips or locked in a "parade rest" position, they must be ready for the gestures and the physical expressions which contribute to the effectiveness of what is said. It must be kept in mind at this point that improvement in speech techniques comes from concentration on your strengths rather than too much awareness of minor shortcomings. To try to remember a list of rules relative to such things as what to do with your hands, how to stand, and mannerisms in general will cause self-consciousness and destroy your effectiveness. It is much more deirable to aim for an overall effect. Your physical behaviour should at all times contribute to the presentation of the subject; when the audience becomes more conscious of your actions than they are of your message, there is something wrong.

Be Enthusiastic.

Emerson's statement that nothing great was ever achieved without enthusiasm might well be applied to speech. Your enthusiasm for your subject will be contagious and will become the most important single element in your presentation. The preacher who made this notation on the margin of his sermon notes, "Pound like hell, the argument's weak," realized the convincing power of an enthusiastic presentation. Your own enthusiasm stems from your belief in the subject and your desire that others share that belief. Officers who are reluctant to demonstrate spirit in their delivery are omitting from their speech one characteristic which would go far to make their message vital to an audience.

Be Sure You Are Heard.

Obviouly, the speaker should be heard by every member of the audience. One reason Lincoln's Gettysburg Address was not an immediate success as an oral presentation was the fact that many people in the audience could not hear. There were thousands present, they were restless, and the speech was actually completed before conditions became favourable for listening by those away from the platform. We are more fortunate now because a public address system may be used when the speaker cannot make himself heard without undue effort. But, with the PA comes the necessity for techniques in its use. Here, as with other speech techniques, the guiding principle should be that the public address system should be used in such a manner that the attention of the audience is never directed to the equipment. Do not play with the microphone or stand. There is no need to carry the PA cord in your hand and certainly it should not be whipped about in lasso fashion. It is a good idea to check your radius of movement when using a lapel microphone. Above all use your normal speaking voice, don't shout, the assistant will handle the volume. It is a good idea to have an assistant stationed near the rear of the room to be sure that you are making yourself heard.

Be Sure You Are Understood.

The first step in making yourself understood is taken in your planning phase when you make a careful analysis of the background of the audience. An effort should be made to learn the level of comprehension which may be expected and then your material should be adapted to that level. Ask your-

self the question, "Will these men understand?"—by asking that question you will set up a yardstick for the organization of your speech. If this idea is also carried over into the delivery of the speech and you think, "Do they understand?" you will find that a sense of communication will be developed which is helpful to your delivery.

Of course, the speaker must speak clearly and distinctly if he is to be understood. This does not mean that you should strive for enunciation or pronunciation which is artificial; but certainly you should not slur or run words together, nor make mistakes in the pronunciation of words.

Another factor which affects understanding is your rate of speaking In most cases your rate will depend not so much upon the number of words per minute as upon your use of pauses. Even ideas presented at a relatively slow rate may not be understood if the pauses do not provide a psychological rest to permit the listener to catch up and move along with you. Without these pauses a retroactive mental inhibition is set up and the audience is lost. Pauses provide the speaker with an opportunity to orally punctuate his discourse; he should be careful not to mutilate his talk with pauses which destroy fluency, or employ "ers," "ahs," "andas," and other such mental crutches which mark the speaker as ineffective.

Seek Variety and Emphasis.

Most speakers who are known for their enthusiastic, forceful, and interesting presentations are those who have learned to inject variety into their speech. They have also learned how to emphasize important points in their speech. These techniques are your best weapons against monotony. In most cases variety will come with your effort to orally interpret your ideas for the audience. Emphasis on the other hand is secured through skilful repetition. It has been found that an idea repeated five times at different points throughout a speech will make that idea about three times as effective as it would have been with one statement of the idea. Other techniques such as raising the voice, gesturing, and placing an important idea at points in the speech where emphasis is greater (at the beginning or the end) serve to accentuate the ideas presented.

Set Your Course.

The points which have been discussed here represent a few of the major considerations which the officer ought to face in improvement of his speech techniques. We have never seen an officer who was not desirous for this improvement, but many do not know how to start such a programme for themselves. Here is a general outline which should set a course for the development of effective speaking habits:—

First, develop a critical understanding of why the speech of other men is either good or in need of improvement. When you hear a speaker or listen to the radio try to analyse the techniques employed. In other words become alert to how others speak. Then establish standards for your own speech. Through self-analysis and friendly criticism from your associates find what your strengths are; work to make these stronger. Learn your weaknesses and work to correct them.

And finally, practise good speech at all times. Too often we have speech techniques for the platform, others for conversation, and still others for the home. Good speech should be constantly practised. Make use of recordings, take every opportunity which comes your way to address an audience, and consider every appearance before an audience an opportunity to improve your techniques.

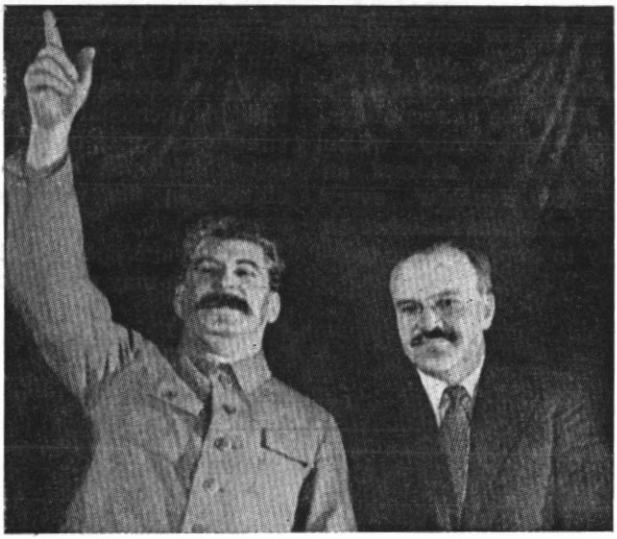
The officer, perhaps more than members of other professions, needs to be able to express himself orally. He needs to be effective in his communication of ideas; he is particularly concerned with instruction, and his personal leadership, that vital force, will be, in a measure. dependent upon his speech technique. In the words of Shakespears:—

"Mend your speech a little
Lest you may mar your fortunes."

The well-trained infantryman is an even more highly skilled technician than most of his comrades in other arms, and the Infantry require men of the highest intelligence and education. To think otherwise is to follow the not inconsiderable number of people who quite honestly, but quite wrongly, believe that an individual who goes from door to door selling vacuum cleaners, or who performs some purely mechanical duty in a factory or workshop, is of superior worth to a trained agricultural worker, who is master of a variety of duties demanding marked intelligence and a high standard of judgment. No one appreciates the work of the technical arms who support the front line assault troops, and provide their needs, more than the infantryman. The latter makes no claim to a superior status; he merely asks to be regarded as a highly skilled fighting technician—not as an unskilled labourer.

—*Army Quarterly, Great Britain.*

SOVIET WORLD AIMS



This is the first of a series of articles prepared by the Directorate of Military Intelligence in order that students of current affairs may have fundamental background information on which to base their thoughts for the future.—Editor.

Introduction.

The free peoples of the world are in grave danger of subjugation by the exponents of the evil, imperialistic doctrine of Russian communism. Already, in five short years, six hundred million persons have become the slaves of the Kremlin. The motives and methods behind this achievement are discussed in the following paragraphs.

Communist Aim.

Stalin's definition of the Communist aim is as follows:—

"The consolidation of the dictatorship of the proletariat in one country using it as a base for the overthrow of imperialism in all countries."

In fact it means the burning desire of world communism to see revolution accomplished everywhere on the Soviet model.

To this aim is aligned the traditional Russian urge to expand to the sea-coasts of the land mass that is dominated by the Soviet Union, and the more recent desire of the masters of the Kremlin to rule the world.

Cold War.

In 1945, when the rest of the world was preparing for peace, the Soviet Union determined to extend the Communist revolution to the world arena. They embarked on the Cold War.

Remarkable success has attended this political and idealogical struggle, in which the main weapons

are the Communist Parties in nearly every country of the world and the menace of the armed might of Russia. In the struggle of ideas the Communist system is already on what is practically a war footing. Its propaganda machine is attacking daily in every quarter of the world with a stereotyped vocabulary of abuse and with an unceasing stream of lies. Such is only a part of the cold war camaign which may be defined as the policy of making mischief by all means short of war—that is to say, short of war involving Russia in open hostilities with the West. This policy already has had marked success in Greece, China, Malaya, Indo China and currently in Korea.

Communist Activity Since 1945.

Immediate success was achieved by militant communists in their initial efforts to establish an empire after Hitler's defeat. Eastern Europe was marked down as the first objective. Poland, Rumania, Bulgaria, Hungary, East Germany and Czechoslovakia, one by one, were brought under Russian control through the seizure of power by their indigenous Communist parties. In each case this process was assisted by the presence—either in the country or within easy reach—of the Russian armed forces. The forward march of communism in Europe was arrested in Greece through timely and considerable military aid from the United States and Great Britain. The Greek Communists following their defeat, remain a dormant, but dangerous threat to the impoverished Greek nation.

Throughout Western Europe, and particularly in France and Italy, the very strong Communist Parties have achieved considerable success in discrediting the governments and in disrupting the economics of those countries. In France, and in most other countries, including our own, Communist instigated strikes have been directed against the vital industries and services—coal, steel, railways and shipping. Indeed, the Communists in France are an active and powerful "Fifth Column" acting on behalf of the Soviet Union.

Whilst no territorial successes have been achieved by the Communists in the Middle East, they have managed to further their aims there by maintaining a constant threat to the area. This military threat has necessitated the maintenance of large and uneconomical forces by the two most vulnerable countries, Turkey and Persia, to the detriment of their internal economies. There can be no doubt that the Russians covet the Persian Gulf oilfields and are stoking the fires of anti-British feeling in Egypt.

It is in Asia that world communism has made its greatest gains. The Chinese Communist Party, although not directly in receipt of any considerable aid from Russia, but nevertheless certain of support if required, now controls the mainland of China and, at the time of writing, threatens the destruction of the United Nations Forces in Korea. We must face the facts and realize that a new China has emerged from the recent struggle, and in concert with the aims of world communism threatens, not only the United Nations' position in Korea, but Formosa, Hong Kong, Indo-China, Burma, Siam, Malaya and even India.

The international nature of the Communist insurrections in both

Indo-China and Malaya is only too evident when viewed in the light of world communist aims. In each case the ultimate aim is the establishment of a communist state, whilst the immediate aim is the disruption of local government, the draining away of military and financial resources of France and Great Britain, and interference with the local economic position.

The vast wealth of Indonesia is prized by world communism. Rapid strides are being made in the reorganization and strengthening of the Indonesian Communist Party for its eventual bid for supremacy in the struggling new republic.

In Australia the Communist Party, as an agent of world communism, is bent on the creation of dissatisfaction, the disruption of industry and the weakening of Australia's defences. The disturbances on the coalfields, in the iron and steel industry, on the waterfront, and more recently, in the transportation services in three States are ample evidence of their effectiveness.

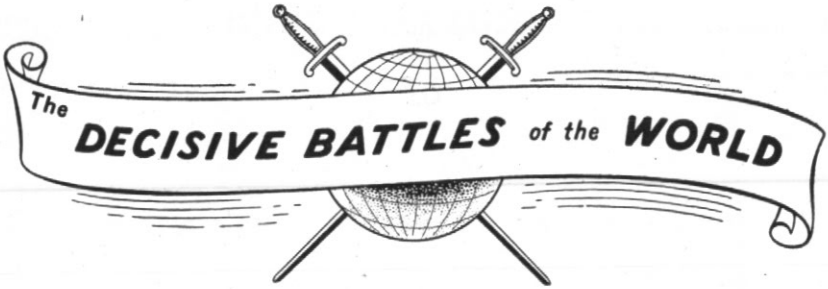
That this has been possible in a fully democratic country is due to the fallacious appeal of communism to those of limited education and capacity for thought, whereas a thorough analysis of Soviet method of Government will indicate that it is anything but communist. In fact it is a tyrannical, totalitarian rule imposed by a bolshevist oligarchy.

Conclusion.

The cold war currently being waged is a direct threat to our way of life. In it our enemy is world communism backed by Russian military power. Only by preparedness, firm concerted reaction to Communist aggression and a constant awareness of Soviet aims can we hope to prevent a Third World War, which may well result in the complete destruction of our civilization.

How can a historian expect to get as much money as the crier who calls the news in the market place?

—*Juvenal, AD* 60.



EVERY battle is in a sense decisive, even if it does no more than determine which side remains in possession of the battlefield. Some battles indeed decide no more than this simple and immediate issue. Some decide campaigns and some decide wars. And there are some, a very few, the results of which have far transcended the immediate issues involved, and which have influenced human development for generations. For a battle to be classified in this category it must, according to the great historian, Hallam, have been one "of which a contrary result would have essentially varied the drama of the world in all its subsequent scenes."

It will be appreciated that the size of a battle, the number of combatants engaged, the number of casualties inflicted, are not the standards by which we judge its importance to mankind. Its significance depends entirely on the influence which it has had on the eternal chain of cause and effect, on the direction it has given to history, considered not merely as a record of the past, but as an unfolding and unfinished story.

In a series of papers beginning in the March number we shall take in turn each of the fifteen battles which have been decisive in the sense of Hallam's definition. We shall trace the events, political as well as military, that led up to the engagement, describe the great issues that trembled in the balance, and suggest the course that subsequent developments might have taken had victory gone to the other side. We shall test the strategy and tactics employed in the light of the principles of war, and we shall endeavour to show the influence exerted by the personalities and characteristics of the statesmen and commanders involved in the incidents under discussion. Thus we hope that the papers will be of interest and value in the broad historical field as well as in the strictly military sphere.

THE ROYAL CORPS of AUSTRALIAN ELECTRICAL AND MECHANICAL ENGINEERS

Organization and Employment

This authoritative article is written for the Australian Army Journal by the Directorate of Mechanical Engineering at the request of the Director of Military Training. It is designed to present a comprehensive picture of the E & ME organisation, and the employment of its units, which should be known to officers of all arms.

Field Marshal the Viscount Montgomery of Alamein, in portion of a speech which he made on 15 March, 1947 to a gathering of engineers in London, said:—

"The Corps of Royal Electrical and Mechanical Engineers was formed in 1942 with the object of concentrating our electrical and mechanical maintenance services and introducing new and improved methods. It exists, in fact, to keep the punch in the army's fist.

"The hitting power of any army lies in its being maintained at, or as near as possible to, its full strength in men, weapons and equipment. The only way in which its needs in the last two commodities can be met is by recovering, repairing and returning to units within a matter of hours every possible gun, tank and vehicle.

"The work of the Corps thus covers, with few exceptions, the inspection and repair of all mechani-

—Not to be Published.

cal and electrical items of equipment in the army — a very wide range on the mechanical side, from the 15-inch coast defence gun down to push cycles, and, in the field of telecommunications, from radar equipment to the hand telephone."

History.

The Corps of Australian Electrical and Mechanical Engineers was formed in 1942 with the same object as for REME and to discharge a similar task. The Corps is a combatant one.

Prior to the formation of the AEME, the recovery and repair task in the AMF was the responsibility of the Mechanical Engineering Branch of the Australian Army Ordnance Corps. In addition, the majority of arms and services had unit repair tradesmen for light repairs and, in some cases, for recovery.

The AAOC Mechanical Engineering Branch became the AEME on 1 Dec., 1942. Unit repair tradesmen of all arms and services, except Royal Australian Engineers, the Australian Corps of Signals and the Australian Army Service Corps, were absorbed into the AEME on 1 May, 1943 and, on the same date, the designation "craftsmen" was introduced in lieu of "private" for tradesmen of the new Corps.

Together with several other Corps of the AMF, the AEME has been honoured by the grant of the prefix "Royal" by His Majesty the King as a result of war service, and is now the RAEME.

There is a slight difference between the RAEME and the REME in certain detail in the "make up" of some of its units. The REME did not absorb unit repair tradesmen, but RAEME did. The original plan for the formation of the REME included the absorption of all unit repair tradesmen of all arms and services, but this part of the plan was deferred for several reasons, one being the administrative problems involved in such a major reorganisation while the British forces were engaged in a major war and were dispersed in all theatres of operation throuhout the world.

The implementation of this deferred part of the plan is now being proceeded with in UK, but, once again, with certain restrictions for different reasons.

The RAEME, having absorbed the majority of unit repair tradesmen in 1943, is therefore, for a while, one stage ahead of the REME. Thus it will be found that, unlike the REME, certain RAEME units include in their composition tradesmen who are allotted back to units or sub-units to carry out those functions previously the responsibility of unit repair tradesmen.

The Task.

The RAEME is responsible for the repair of all mechanical, electrical, optical, telecommunications and radar equipment and the recovery of damaged vehicles and technical equipment, with certain exceptions, which are as follows:—

(a) The Royal Australian Corps of Signals is responsible for light repairs to signals equipment.

(b) The Royal Australian Army Service Corps, using its workshop platoons, is responsible

for light and a proportion of field repairs and recovery of its own vehicles.

(c) The Royal Australian Engineers are responsible for light and a proportion of field repairs and recovery of engineer equipment.

The RAEME is responsible for repair, and, where appropriate, recovery, of signals equipment, RAASC vehicles and engineer equipment beyond that shown as the responsibilities of the Corps in (a), (b) and (c) above.

An understanding of the task permits the major functions of the Corps to be broadly defined as being:—

Firstly, repair and recovery.

Secondly, routine inspection of the majority of technical equipment and of unit maintenance of technical equipment.

Thirdly, technical advice concerning the serviceability and battle-worthiness of the majority of technical equipment of the AMF, including advice in the investigation of defects and the design of modifications (the latter from repair aspects).

The RAEME System of Repair in the Field.

General.

In order to carry out repairs, a workshop unit of any nature must have available the men, the tools and the stores required for the particular class of repairs it is formed to deal with. Further, workshop facilities must either be taken to the equipment which needs repair or the equipment brought to the workshop.

Under active service conditions, the process of taking heavy equipment long distances to a workshop is a difficult one and, for this reason, repair units are required to accompany the field force units during operations. It is thus most essential that some field force workshop units should be mobile. In order to attain this, it is necessary that the equipment should be sufficiently light and compact to meet field conditions. The degree of mobility conferred on a given workshop unit automatically limits its repair capacity. However desirable it may be for a workshop unit to be able to undertake repair of any kind and also keep with its formation, it is not possible to cope with both these requirements. As a result, the type of repair undertaken by mobile workshop units must of necessity be limited by the requirements of mobility.

Present-day army equipment is very largely composed of assemblies fitted together to form major items of equipment. The repair of a piece of equipment very often necessitates the repair or replacement of one or more of its constituent assemblies. Normally the tools required to replace an unserviceable assembly with a new or reconditioned assembly are smaller, often fewer and hence more portable than those required to take the assembly apart and repair the damaged item, or items, in the assembly. Further, it is usually quicker to replace assemblies than to repair them. Again, when reconditioning assemblies, it is frequently quicker to replace the damaged item by a new or reconditioned item than to repair or recondition the damaged one.

The Four Types of Echelon Repairs.

Because of the above considerations, the repairs have been divided into four classes which are known as Echelon Repairs and are as follows:—

First Echelon Repairs.

These repairs are adjustments, minor repairs, replacement of accessible components, emergency replacement of certain assemblies and light welding repairs which can be carried out in unit lines with the tools and equipment of the unit and its RAEME element or Light Aid Detachment.

Second Echelon Repairs.

These repairs are primarily the replacement of defective assemblies by new or reconditioned assemblies. In addition, repairs to certain assemblies and to items not dealt with as assemblies insofar as they can be satisfactorily completed in the time and with the equipment and personnel available to the workshop.

Third Echelon Repairs.

These repairs are primarily the repair of assemblies by fitting new or reconditioned parts, and, secondly, the repair of defective parts. The extent of these repairs is limited to work not requiring extensive or elaborate testing apparatus or plant.

Fourth Echelon Rapairs.

These cover all repairs not specified in first, second or third echelon repairs. They embrace overhaul, repair or reclamation of components, assemblies and complete equipments.

An Echelon of Repair is therefore an arbitrary grouping of specified repairs that normally may be effected in a prescribed workshop.

Workshop Organisation in the Field.

Workshop organisation must be designed to provide workshops of varying degrees of mobility and able to effect varying echelons of repair.

The repair organisation in the field has therefore been divided into four lines with workshops designated first, second, third and fourth line workshops. These lines define the position of the workshops relative to the units they are supporting, i.e., first line is immediate support normally in unit lines, second line is support of relevant first line workshop, and so on. Line workshops collectively have no common geographical location or boundaries, i.e., first line workshop units may be found attached to units in a base area behind first, second and third line workshop units in forward areas.

In order that repair in the field may be carried out without delay and in the most practicable manner, first and second line workshops are sufficiently mobile to keep pace with the moves of the formation units the equipment of which they service. Similarly, third line workshops, though not fully equipped with transport, are sufficiently mobile to keep up with the formation they serve; whilst fourth line workshops units which require, by nature of their work, to be static are normally located in the base area and are base units. Each line workshop is provided with the necessary equipment, tools and per-

sonnel required for carrying out the types of repair which it will normally have to undertake, at the same time having easy access to the stores likely to be required.

The allocation of work is by no means rigid and may be varied and adapted to suit the prevailing conditions in different theatres of war or tactical considerations applicable at the time. The appropriate authority that may vary the work allocation to various line workshops is the senior E & ME representative of the formation, etc., concerned.

Normally, however:—

First line workshops undertake first echelon repairs.

Second line workshops undertake second echelon repairs.

Third line workshops undertake the overflow of second echelon repairs and a small amount of third echelon repairs in emergencies.

Fourth line workshops undertake the bulk of third echelon repairs and all fourth echelon repairs.

Any repair appropriate to a particular workshop can be carried out anywhere in the field, that is, the location of a unit does not vary its task.

Echelon repairs allocated to any line workshop automatically include also such work involved in echelon repairs of a lower number, i.e., the fourth echelon repair of an equipment may embrace repair operations specified as first echelon repairs, and so on.

When echelon repairs other than normal are undertaken by workshops, adjustments in holdings of stores and temporary transference of tools and equipment may have to be made by the senior RAEME officer of the formation in collaboration with the corresponding RAAOC officer.

It is important that the terms "Line Workshop" and "Echelon Repair" are not confused. They are not synonymous.

Implicit with the foregoing organisation, it is necessary that damaged equipment be moved to *line workshops effecting the appropriate* echelon repairs.

The prime aim of the repair system is to ensure that, at all times, the maximum amount of fully serviceable equipment is available to units in the field. Normally, therefore, equipment requiring repair remains on unit charge only if the repairs can be undertaken by first or second-line workshops. In other cases, it is normal for equipment to be replaced from a reserve equipment pool and the replaced equipment to be fed back into the pool as a replenishment after repair. Should first and second line workshops be overloaded, equipment requiring repair, even though such repair is within the prescribed echelon of repair being effected by such workshops, may be replaced by pool equipment.

To move the equipment to appropriate line workshops for repair, recovery elements are provided either as integral portions of line workshops or as independent units.

Supply of Stores.

The foregoing system of repair necessitates an adequate supply system to ensure that spare parts, replacement assemblies, etc., are available to appropriate line workshops as and when required to facilitate repair.

The organisation therefore provides for line workshops to either

carry within their own transport resources an appropriate replenishable holding of spare parts, etc., or for RAAOC Stores Sections of suitable size to be attached for the purpose.

RAEME Units.

Headquarters of a Commander RAEME.

In the Army, Corps and Divisional areas, a Commander Royal Australian Electrical and Mechanical Engineers, with a suitable staff, is provided for the co-ordinated control of RAEME units within the formation areas.

Light Aid Detachments.

Light Aid Detachments vary in size and composition according to the type of unit to which they are allotted. They are fully mobile and always accompany the unit to which they are attached. For all practical purposes, they are part of the parent unit, living and working with it all the time. Their working rule is "A stitch in time." They carry out minor repairs, rectify minor defects and deal with troubles as soon as they arise. LADs are first-line units carrying out first echelon repairs. They mainly work with hand tools and one or two machinery trucks. All LADs have recovery vehicles. According to their type (e.g., "A," "B," "C," etc.), which is dictated by the equipment of their parent unit and its organisation, they vary in strength from approximately 1 officer and 25 other ranks to 1 officer and 73 other ranks. The majority of LADs have a Headquarters (which in the UK organisation is the equivalent to the entire REME LAD) and an appropriate number of Squardon, Battery or Battalion sections (the equivalent to the Squadron, Battery or Battalion repair tradesmen in the UK organisation).

Light Anti-Aircraft Workshops.

These units are similar to LAD's, having a Headquarters and Battery Sections. They are allotted to Light Anti-Aircraft Regiments Royal Australian Artillery. A Type "A" Light Anti-Aircraft Workshop, which is a first-line unit with a strength of approximately 65 all ranks, is allotted to Divisional Light Anti-Aircraft Regiments; a Type "B," which is a second-line unit with a strength of approximately 100, to non-divisional regiments.

Heavy Anti-Aircraft Workshops.

All heavy Anti-Aircraft Regiments have allotted to them heavy Anti-Aircraft Workshops, Type "A" or "B;" the Type "A" to semi-static regiments, the Type "B" to mobile regiments. These second line workshops are organised and equipped to carry out second echelon repairs, and include in their composition battery sections (once again the equivalent to unit repair tradesmen) for allotment to batteries for first echelon repairs. The strength of the Type "A" is approximately 60; Type "B" is 87.

Anti-Aircraft Brigade Workshop.

When Anti-Aircraft Regiments are brigaded, they may be served (if considered operationally suitable) by an Anti-Aircraft Brigade Workshop. When required, this unit is formed under theatre arrangements by a reorganisation of the existing regiment workshops. It is a second line unit.

Army Group Royal Artillery Workshops.

Anti-Aircraft Regiments in an Army Group Royal Artillery (Anti-

Aircraft) will always be served by separate regiment workshops which, as explained above, do first and second echelon repairs. However, in an AGRA (Field), field regiments have LADs capable of first echelon repairs only and a separate second line E & ME unit known as an AGRA workshop is required for second echelon repairs—strength 150 all ranks.

Observation Regiment Workshops.

These are similar to the other second line units provided for other Royal Australian Artillery Regiments—strength 115 all ranks.

Infantry Workshops.

Three of these second line RAEME units are allotted to each Infantry Division and one per Independent Infantry Brigade Group for second echelon repairs. They work in machinery trucks and include workshop sections for repair work on small arms, telecommunication, armament and automotive equipments, also a recovery section—unit strength is 164 all ranks.

Armoured Workshops.

Two of these second line RAEME units are allotted to each Armoured Division and one per Independent Armoured Brigade Group. Organisation equipment and task is similar to the Infantry Workshops, except that an additional section is added for tank repairs. The unit strength is approximately 230 all ranks.

Some Other Second Line Units.

To carry out the same functions as the Infantry Workshops in the Infantry Division and Armoured Workshop in the Armoured Division, that is second echelon repairs, in the Base Sub-Area and in the General Headquarters, Army and Corps Area, and also on the Lines of Communication, the following units are provided:—

General Troops Workshop.—One per General Headquarters and one per Base Sub-Area.

Army Troops Workshop.—One per Army.

Corps Troops Workshop.—One per Corps.

L of C Troops Workshop.—One per 50 miles of L of C.

Medium Workshops.

To undertake heavy second echelon and emergency third echelon repairs, medium workshops, which are third line units, are provided on the basis of one per Infantry or Armoured Division and one per Independent Armoured Brigade Group. These units are fully mobile and, except in the case of an Independent Armoured Brigade, are Corps Troops. They do not contain recovery sections as separate units are provided for this task, under the control of Corps, and with the Independent Armoured Brigade Group.

Advanced Base Workshops.

These units are force or General Headquarters Troops. They consist of Headquarters and Companies, each comprising suitable Company Headquarters and workshop sections, according to the composition of the force and the nature of the task imposed by the equipment of the force. The force may also contain a Base Workshop, which is similar in composition to the Advanced Base Workshop.

These units carry out third and fourth echelon repair of equipments and components, no matter how extensive the repairs may be, provided they are worth while in the prevail-

ing circumstances. They are not mobile. Sections are provided for the complete overhaul and repair of medical and dental equipment, tyres, radar, engineer equipment, tanks, vehicles, guns and all other types of technical equipment likely to be found in a theatre of operations.

General.

The units listed above are not the only RAEME ones likely to be found in an operational theatre. Many units have not been shown. It must be realised that the type of equipment in use, the units in the force and their operational role, and many other factors decide the repair task to be undertaken and, therefore, the types of RAEME units required. For example, some other units are as follows:—

Movement Light Battery Workshops.
Equipment Assembly Companies.
Crystal Cutting Units.
Watercraft Workshops.
Engineer Equipment Workshops.
Beach Maintenance Workshops.
Port Workshops.

Recovery.

In addition to recovery sections or elements included in the composition of certain units already mentioned, special units designed solely for recovery work are allotted to Corps and Army as follows:—

(a) *Infantry Troops Recovery Units.*
These are allotted on the basis of one per Infantry Division.

(b) *Armoured Troops Recovery Units.*
On the basis of one per Armoured Division or Independent Armoured Brigade.

(c) *Army Recovery Companies.*
Army Troops which contain administratively self-supporting sections allotted on a scale related to the formations in the Army or force.

The functions of Infantry and Armoured Recovery Sections are identical. They provide the 3rd line recovery services for their separate formations.

The functions of Army Recovery Companies are to provide for the recovery requirements of back-loading equipment casualties of all natures from the Corps back-loading point to the Army back-loading point and railhead, as well as on the Lines of Communication.

Third and fourth line RAEME units are provided with recovery vehicles only for limited use in and around workshops.

RAEME Communications.

LADs attached to units of RAAC, and other units in an Armoured formation, also RAEME units specially designed for recovery work are equipped with wireless communications, the sets being manned and operated by RAEME personnel.

The majority of other RAEME units are supplied with sets and operating personnel by Royal Australian Signals.

RAEME Personnel.

The productive element in the RAEME is the qualified tradesman. The foreman is the armament artificer, who, as well as being a qualified tradesman, is capable of supervising the work of a group of tradesmen of different types, is trained in techniques and procedures and man-management, and has a wide knowledge of technical equipments. The officers are professionally or practically qualified engineers.

In addition to the technical elements of the RAEME, all units have

a proportion of administrative personnel such as clerks, storemen, regimental instructors, and so on, and many units include one or more administrative officers.

Conclusion.

Only the field organisation of the RAEME is covered by this article. The static organisation in Australia is not dealt with in detail, but, in broad terms, it comprises Command Workshops in each Command responsible for all echelons of repair. Certain work beyond their capacity is carried out by the civilian trade under RAEME control. In addition, Base Workshops may be included in the static organisation to concentrate on the repair of RAAOC depot stocks.

RAEME personnel must be fully trained as soldiers and as craftsmen, and continually refreshed in their equipment knowledge, in peace, to be prepared for their task in war. They must be prepared to fight to recover damaged technical equipment and to defend their workshops, as well as carrying out their primary task of rapidly and effectively repairing equipment.

The organisation, which is under constant review, is sufficiently flexible to cater for whatever repair task is imposed by the fighting troops and their equipment, the only limitation being the availability and efficiency of the skilled craftsmen.

A final word from Field Marshal Montgomery is of interest: "A review of the trend in development indicates that, although in the long run the standardisation of types, particularly in tanks and transport vehicles, should simplify some of the problems of repair and maintenance, the increasing complexity of equipment and introduction of new and unorthodox types will extend the field of engineering knowledge required by RAEME personnel."

A Whetstone For Your Sword

Lieutenant-Colonel L. J. Loughran
Australian Staff Corps.

"The personal qualities which demand a high standard of conduct at all times and which inspire courage and self-sacrifice in a crisis are by nature spiritual, not physical, and these are essential to our nation at all times."

—*Extract from Military Board Instrucion. No.* 59/1950.

Part I

It is not often that one finds an MBI quitting, for a moment, the mundane path of practicality and dabbling in philosophy. The above is one that briefly managed to do so. In that short, simple passage the anonymous author has put his finger on a problem that is everyone's responsibility, but nobody's baby. Or perhaps I should say that the average soldier would stoutly declare it to be the chaplain's baby, and nobody eles's.

This is an ostrich-like attitude because chaplains are only human beings with human personalities, and their primary function is to minister to the spiritual needs of their respective flocks. Some chaplains, by virtue of their personal qualities, attract and retain the respect and loyalty of many; others, whilst performing their duty with the utmost zeal, may lack the traits of character which make for popularity. Their influence is consequently limited.

Now, a soldier may hate his bayonet-fighting instructor, but he will still learn something from him. If, however, he dislikes the chaplain's manner or methods he will avoid him, and he is quite at liberty to do so.

It is apparent, then, that someone else besides the chaplain must take a hand if the ennobling qualities referred to are to be spread throughout the army.

I don't think that any rational man will hold that courage and self-sacrifice depend on glands and hormones rather than the spirit. We all know of people who, in the last stages of torture and starvation,

have held fast to their ideals. There can be no doubt that their fortitude was essentially spiritual.

The extent to which the spirit, rather than the body, stimulates courage was stressed by Shakespeare when he wrote: "Thrice is he arm'd that hath his quarrel just." And again, he noted that it was "Conscience that does make cowards of us all." Mankind has not changed since Shakespeare's day, and an American padre produced a modernized version of this thought when he wrote: "There are no atheists in a fox-hole!"

Although the average man will admit all this to himself, if he thinks about it, he finds himself in a world which, collectively, tends to brush aside spiritual things with a light laugh. In practically any company a man may say, without embarrassment, that religion is a racket, that he doesn't believe in God, and that no one will convince him otherwise. By contrast many people are almost apologetic when forced to reveal that religion is part of their lives. To say the least this is surely a topsy-turvey state of affairs in an allegedly Christian country.

It is only natural that the Army should reflect the negative attitude of the community towards this problem, but at least it has shown a more positive appreciation of its importance. The terse opening of the MBI from which the text above is quoted, reflects the self-consciousness normally associated with the discussion of religion; in fact, the conventional nature of the opening might well obscure a vital part of it. This is how that MBI began:

> "The attention of all ranks is directed to the importance of religion in the Army and the right of every soldier to the free practice of his religion."

The Military Board here proclaims its belief that religion is important to the Army. The reason the Board considers it important is obviously because it realizes that *many desirable soldierly qualities* are "by nature spiritual, not physical." Yet, what can it do about it? Convention, that iron disciplinarian, has taught us to be wary of religious matters because it is so easy *for someone to claim that his freedom* of conscience is being violated.

At first sight, therefore, the Military Board would appear to have no power to do more than provide chaplains and direct that men are to be permitted to attend church services if they so desire. This is a necessary minimum step in the right direction, but, basically, it leaves the development of spiritual qualities entirely to the individual. In fact, it might be said to leave it to those who, in the past, have presumably had the greatest opportunity to cultivate them.

If it be conceded that these qualities are desirable in a soldier then surely their development should be no more voluntary than, for example, physical fitness. This can be attempted quite easily without any violation of conscience. After all, a claim to freedom of conscience has its limits, and the soldier who sought exemption from Sunday duty or fatigues on the grounds that it violated his conscience would get short shrift.

The mere provision of chaplains and insistence on freedom of wor-

ship does little or nothing for the individual who has never had any sort of philosophy of life because of his environment. Most probably he won't bother with church parades because he doesn't know or care what they're all about. And even if he did happen to go along it is quite possible that, lacking any basic instruction, he would get little out of it.

Primarily this is a national problem because it is apparent that the man who lacks spiritual qualities—one of which is the spirit of service—may never join the Army except as an unwilling conscript. But I believe that the Army can give the nation a lead and that it should do so.

What is needed is to incorporate as an integral part of Army training a series of lectures designed to show how spiritual qualities must be based on some spiritual values, which, in turn, depend on certain basic beliefs.

It can be shown that no country without beliefs can survive. If it has not the will to live and to fight —based on beliefs worth living and fighting for—it will always go under to a more spiritually virile enemy.

All this is far removed from the sphere of dogmatic religion. Pagans will work themselves into a frenzy on behalf of a wooden idol; Japanese will die gladly for an Emperor whom they worship as a God; Germans overran most of Europe in the service of a man whom they came almost to deify. But, note well, ALL believed strongly in something.

In a Christian country it is unthinkable that we should hitch our wagon to the star of a wooden idol or a human being. Yet, if we don't hitch it to something or someone, we must surely waste away and succumb to those whose beliefs—no matter how fantastic—spur them on.

It is not my intention to say "There is the problem — someone should do something about it." In the second part of this article I will outline, in as much detail as is necessary, a course of lectures which might well do some good and could certainly do no harm.

SNOW and SKI WARFARE SCHOOL

Lieutenant J. C. Gorman,
Royal Australian Armoured Corps.

DURING the month of February, 1950, the British Army of the Rhine conducted a Snow and Ski Warfare School at Altanau, in the Harz Mountains of Germany. The course was just over a month in length and students were drawn from all arms and services. The School was essentially for novices, the vast majority of whom had never before strapped skis to their feet.

Object of the Course.

Envisaging a modern war that would be world wide, the GOC Rhine Army decided to take advantage of the local snow conditions, and of the Norwegian Army officers in the British Zone, to train selected officers and men of the Rhine Army in snow warfare. The British Army has done little research into Arctic warfare, leaving the Empire contribution mainly to Canada. The trained men from the school would form of pool of semi-skilled ski instructors, and, more important, snow warfare instructors, should the British be called upon to provide ski troops in a future war.

The School.

Altanau is a small German village nestling in a valley high in the Harz mountains. Typically German,

it boasts an ice-bound main street and a cluster of wooden, two-storey houses. The whole area is pine forest, interspersed with long slopes of deep and sparkling snow. Three hotels had been taken over by the Army—one each for officers, sergeants and ORs. They were the usual wooden structures, heated internally and well staffed with servants.

A British Cavalry major was Commandant, with a Norwegian major as Chief Instructor. A Norwegian captain was assistant CI and eight Norwegian lieutenants were squad instructors. All spoke excellent English. The students, thirteen officers and thirty five other ranks, were divided into eight squads — Cavarly, Tanks, Artillery, Engineers, Signals, two Infantry, and Services.

Equipment.

The Norwegian Army issued a pair of skis, ski boots and sticks to each man. They were all normal issue type with which the Norwegian Army is equipped. Great care was taken that boots fitted comfortably over two pairs of thick socks. Skis were adjusted by the instructors to fit accurately over the boots.

The British Army issued the rest of a complete outfit. Coarse, strong, sleeveless singlets were worn to allow circulation of air next to the skin. Over these, very heavy khaki sweaters, with a drawstring at the throat, were worn. Normal army underpants were worn under battle-dress trousers, and a smock and lightweight trousers worn over the whole. One suit issued was green and brown, the second suit, white. The smocks had a hood which drew in at the throat. Cap comforters were worn as headdress, and six pairs of thick white socks were issued, to be worn two at a time. Normal basic web equipment was worn over the smock, and lightweight, comfortable rucksacks, attached to a light frame, were also issued. Six varieties of wax for varying snow conditions, felt American-style anklets and three pairs of gloves, two woollen and one waterproof, completed the equipment normally worn.

Olive drab parkas, reaching to the knees and lined around the face with wolf fur (to which snow does not adhere), reversible to white, and lightweight padded bedrolls, which require no blankets, were retained for later use. Mess tins were brought to the school by the students. Rifles and bayonets were also issued, and later Bren guns, Stens and grenades were added to the load.

Ski Training.

Clad in camouflage suits and carrying skis, the squade assembled on the snow, under their instructors, and ski training began. Sticks were piled and their use forbidden for three days. The instructors were highly skilled men and won every competition around the district for fifty miles, over the weekends. They were most patient and gave every man personal attention. From wild uncontrolled slides, the students gradually gained control of their skis. Confidence soared when simple brakes had been learned. It was emphasised that if one lost balance, the thing to do was to go limp and fall. This was a most effective move as there was not one casualty over the whole course—an all-time record for Army ski schools.

At night, films were shown, and ski techniques criticised by the instructors. They were mostly American films, and the Norwegians used them mainly to show what they did wrong. They scoffed at the use of climbing skins, at the American techniques and equipment, and impressed their own ideas upon the students.

The second week, rifles were carried slung across the back at all training. This was rather awkward, as the rifles invariably hit one's head if one fell. The third week, rucksacks, loaded with a blanket, were carried on all parades, as well as arms. By then the students were capable of long marches, swift twists and turns down mountain trails, and generally confident.

At night, the students had "Sauna" baths. Entering a small room, they sat naked for fifteen minutes in thick steam, produced by a roaring steel brazier, on which water was poured. Emerging dripping with sweat, they would have to jump into a tank of icy water, which, strangely enough, did not feel very cold, and then roll in deep snow, rub down with snow, toss a bucket of cold water over one another and towel dry. It is a famous Swedish bath, and most invigorating.

Snow Warfare Training.

During the first week, military history lectures on the Russo-Finnish War were given at night by Major Fjoerli, who fought with the Finns. The tactics were most interesting—a battalion held the narrow roads, ski troops cut the Russian columns and annihilated them in pockets. Lack of food and intense cold completed the destruction. The Russian 163 and 44th Divisions died to a man, beaten by less than a brigade. German Army ski training films were shown, demonstrating the use of arms in snow, camouflage and tactics. The principles of war with relation to Arctic conditions were outlined—marshes became passable, rivers became sled highways, snow drifts render passes impassable to all except ski troops.

When the students could ski sufficiently well, fieldcraft training began. Clad in white, patrols stalked each other, and ambushed other patrols. Sometimes a green-brown smock was worn with white trousers, as camouflage against snow and green pine background. Personal camouflage was practised, small arms training, care of arms in the snow and field firing. Students learnt how to estimate the number of troops who had used a trail, by counting the stick holes in any given six feet of track and counting urine marks at halts. Students learnt to counter these identifications by sparing use of sticks, swinging sticks to look as though troops were going in the opposite direction, blind trails, and towing branches behind the column.

Practice camps were held, Swedish tents erected and supply practised. Sanitation, hygiene, evacuation of casualties, first aid to the wounded, who die rapidly in the snow, care of troops, care of feet and long route marches were taught and students practised them all. At the end of the third week ski-ing technique was good. The warfare training was completed and the final week was given to snow manoeuvres, to put into practice all that had been learnt.

Manoeuvres—Exercise "Motti."

The students were amalgamated into a large platoon, with two British majors and an Australian officer as section leaders. The Platoon Commander was Lieutenant Odd Hagen, with Lieutenant Bivani Stifjeld as platoon sergeant. Brens and Stens were issued, bed-rolls and equipment (a 60-lb. load) loaded on the rucksacks and the platoon set out. Captain Wilhelm Rosendern led a small section of the "enemy."

The platoon marched 15 miles to the top of a mountain known as "Ski Kreuz" (Ski Cross) and bivouaced on the top. Weasels (broad, tracked snow carriers) towed sleds, tents, food, explosives and cooking gear up the mountain. Patrols wiped out the tracks. Tents were erected—the flooring was pine branches and the upright a flue for a small stove. A trail was broken around the camp and this was ceaselessly patrolled. Any intruders would show tracks crossing it. Tents were hidden deep in the forest, ski and rifle racks built, cookers sunk into the snow, and in general, a firm base prepared.

The narrative was that the road, ten miles below, was being used by a column of advancing troops, who had ski patrols. The platoon was to cut the road, blow a disused bridge, and after cleaning up one pocket of troops, withdraw. General Dahl (Norwegian C in C) and several British, French and American senior officers were to observe the action.

A fighting patrol was sent out to find the bridge and reconnoitre ambush positions. A second patrol was to investigate a withdrawal route, and the third held the camp. Enemy skiers patrolled the road.

The patrols returned. NCO's and platoon commander had a conference, and orders were issued for the raid to be carried out on the next day. Orders were issued to the men, and weapons, blank ammunition and explosives prepared. Equipment carried was limited to parka, rifle and rations.

The platoon left a security patrol at base and swooped down the mountainside in the misty dawn. In less than an hour the road had been cut on either side of the bridge. Silent skiers found that they could get fire positions within fifty yards of alert guards. White snow suits are almost invisible at that range. On a pre-arranged timing, patrols opened fire and converged on the road. An Engineer officer blew the old bridge sky-high and patrols melted away to the RV. A patrol was left to cover the withdrawal and the main body took an alternative route to the base, several groups leading blind trails and making misleading marks.

Finally all tracks within 500 yards of the camp were obliterated and guards were doubled.

The enemy pursued and were soon baffled by the conflicting trails. It took them nearly twenty-four hours to find the camp. They attacked at dusk and were met by machine gun fire.

Camp was struck next day and all the students ski-ied in a long column ten miles further on, up to the Russian East German frontier. A cross-country race was held, slalom competitions and finally an inspection by General Dahl, who was very pleased with the operation and the proficiency attained.

Conclusion.

Students who had qualified received a diploma as trained ski troops and the proficiency badge of the trained Norwegian ski trooper. General Dahl presented prizes for first, second and third at a social evening held on the last night.

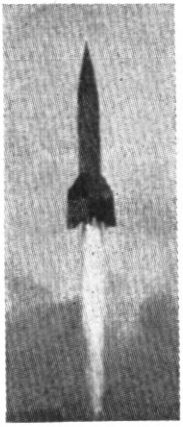
The object of the course had undoubtedly been achieved. The students were most enthusiastic to attain greater proficiency, and several applied for, and were posted to Alaska, for more advanced Arctic Warfare studies under the Canadians.

In Australia, the general military thought is mainly directed towards "normal" and tropical warfare. It is as well to remember that there are many other types of specialised warfare, of which snow warfare may be a very important one in the next war. Britain has begun to realise that fact, and the Rhine Army Ski and Snow Warfare School was a beginning towards training men to fight in extreme cold.

It is of the very nature of aggression derived from internal sources not to be influenced or appeased by either concessions or successes in the outer world. Its intrinsic insatiability forbids this. Only definite opposition can break it on the world of fantasy and restore that of reality.

Dr. Ernest Jones in "The New Statesman and Nation."

TACTICAL USE of the GUIDED MISSILE



Captain Nels A. Parson, Jr., US Army
Artillery School, Fort Bliss, USA.

IF the Battle of the Bulge had occurred in 1954, ten years later than it did, would the record of the historians, taking into account the latest developments in guided missiles, read something like this?:—

"On 16 December, 1954, the enemy Fifth and Sixth Panzer Armies and the Seventh Army attacked in great strength in the Ardennes region. By the end of December these units had penetrated as far west as the Meuse River and were preparing to cross that river in the vicinity of Namur. Adverse weather conditions deprived our forces of air support. A crossing at Namur and the subsequent capture of Liege and Antwerp by the enemy was a distinct possibility. Our only hope lay in preventing the arrival of fresh reserves and equipment for the new battle developing along the Meuse.

"All guided missile battalions along the entire battle front were committed to this defensive mission. Seven battalions with missiles of 150-mile range and two battalions with the new 500-mile missiles were attached to the defending armies.

"Initially all major bridges crossing the Rhine River, upon which the enemy was largely dependent for logistical support, were destroyed by guided missiles. Then

—From Army Information Digest, USA.

communication centres, supply dumps and major troop concentrations became the targets. Without warning to the enemy, 50 tons of high explosive warheads would strike a target simultaneously.

"The effect was devastating. Enemy reserves could reach the front only by marching on foot and their supply system was severely disrupted. When our counter-attacks began, the enemy realized that his position had become precarious and attempted to withdraw again to the Siegfried Line, but once again his mobility was restricted by guided missile fire.

"When the weather cleared sufficiently for major air operations, the hostile air force was dispatched at once in great strength to silence our guided missile fire. Our air defence system met the attack with interceptor aircraft, anti-aircraft guided missiles and artillery. Enemy aircraft losses were so great that their mission had to be abandoned. Meanwhile, the enemy ground forces, defeated and exhausted, were compelled to retire to the Siegfried Line."

Is this account of a hypothetical battle merely sensationalism or a realistic picture of what could happen? Will guided missiles have such an influence on warfare of the not-too-distant future?

The answers to these and related questions are the primary concern of student officers at the Guided Missile School, Fort Bliss, Texas. Here officers of the Army, Navy, Air Force, and Marine Corps study the newly developed tactics and techniques of employment of this radically new weapon.

Generally speaking, a guided missile is an unmanned weapon that can be directed to the target by commands originating from outside it or by instruments built into it. Guided missiles are classified according to launching location and target location. An anti-aircraft guided missile, for example, is known as a surface-to-air missile. Likewise there are surface-to-surface, air-to-surface and air-to-air missiles. The ground forces of the Army are particularly concerned with surface-to-air and surface-to-surface missiles, which are essentially extensions of the conventional artillery weapons.

Surface-to-Air Missiles (SAM): Because of the great speed, manoeuvrability and an ever-increasing flight ceiling of modern aircraft, anti-aircraft artillery by itself can no longer provide an adequate defence against air attack. Even if the range of anti-aircraft guns were increased, the relatively long time of flight of the shell would permit aircraft to manoeuvre away from the predicted point of interception. Moreover, future aircraft will be able to launch powered guided bombs (air-to-surface missiles) at great distances from the target. The use of interceptor aircraft to destroy high altitude bombers is likewise only partially effective. Fighter planes are losing the speed advantage they once had and are also vulnerable to defensive fire from the bombers. A more certain method of attacking the modern bomber is to fire at it a missile which not only has great speed and range, but also the ability to change its course, thus overcoming any feint or evasive action of the target. This weapon is the surface-to-air guided missile.

For an effective defence, anti-aircraft guns, interceptor planes and guided missiles must be co-ordinated by a single agency in a highly

An early warning and target identification system capable of great range and almost completely automatic operation would be essential. The SAM would be integrated into this air defence team to supplement anti-aircraft artillery and interceptor aircraft. It would be used, for example, in attacking enemy planes operating boyond anti-aircraft artillery range that break through our interceptor defence.

Surface-to-air missiles are propelled by either rocket motors or atmospheric jet motors. In general rocket propulsion systems are preferable for shorter-range missiles, and jet motors (combining atmospheric oxygen with missile fuel) are more desirable for longer-range missiles. These weapons intercept their targets either by following a radar beam to the target or responding to radio signals from the ground. Compared to conventional anti-aircraft guns, the SAM is characterized by a large warhead and a high probability of destroying the target with a single round. With this type of weapon, the proper location of launching sites in relation to areas to be defended is a critical factor in assuring an appropriate volume of fire with a minimum of material.

Surface - to - Surface Missiles (SSM): The Army is especially concerned with the tactical employment of the surface-to-surface missile in support of ground operations. Increasingly, as weapons improve, important tactical targets are progressively moving farther from the front. Originally the "dividing line" between tactical and strategic targets was considered to be that line on the battlefield beyond which centralized air defence organization. an activity normally had no immediate or direct bearing on the battle. Today, however, many targets once considered strategic because of their distance behind the enemy lines are now actually tactical, especially since enemy reserves of troops and material can be held further and further to the rear without losing their capabilities of arriving on the scene at the critical moment. Thus the question might be raised: If troops or material that can be moved into battle within a few days are tactical targets, is not an airborne division assembling a thousand miles away for a combat mission a tactical target?

Against what targets, then, would SSM's be used? These guided missiles are not needed for some important new target, but for attacking existing targets under special circumstances which make their use more profitable than that of artillery or aircraft.

As the speed and mobility of military forces have increased, the need for effective long-range artillery has become more urgent. Range is the most important limiting factor in conventional artillery. The only answer to this problem is increased muzzle velocity, which is always accompanied by greatly increased size and weight of the gun. Conventional artillery as we know it, or with foreseeable improvements, cannot be considered a practical mobile support weapon at ranges greater than 15 or 20 miles. The SSM is needed, then, to provide demolition fire against heavily protected targets within artillery range and to reach vital tactical targets beyond the range of guns.

Aircraft, of course, can also attack every ton of high explosive de-

such targets, but this tactical air support is dependent on favourable weather conditions. Two other factors can also limit air support — namely, the enemy's local air superiority and his effective anti-aircraft defence of critical targets. These three factors, of which weather is the most unpredictable and about which the least can be done, make it impossible for tactical air to guarantee fire support to ground forces at the time it may be needed the most.

The surface-to-surface guided missile, on the other hand, furnishes the ground commander with a means of attacking targets at times and locations beyond the capabilities of ordinary artillery and tactical aircraft. Lives are not risked as when aircraft are used and little or no advance warning is given the enemy. Under any conditions the enemy can take but little active counter-action against the supersonic SSM. He can only disperse his installations, which is a handicap to him.

The SSM is not without disadvantages. Of foremost concern is the present limited accuracy of the weapon. A circular probable error of about four per cent. of the range was obtained by the Germans with the V-2 rocket, but it is certain that this limited accuracy will be improved. Due to construction costs and the supply problem involved, the number of missiles available for firing will always be limited. A fueled SSM ready to fire may weigh up to ten times the weight of its own warhead. This means that for livered to the enemy up to ten tons of material must be shipped to the launching area. Accurate target location and reliable damage analysis of the target will sometimes be difficult to obtain. Missiles on the ground, like aircraft, are extremely vulnerable. Another limiting factor in the employment of SSM's is the need for highly skilled technicians to handle and fire them.

There are two basic types of surface-to-surface missiles. Both are propelled by jet motors. The first is the rocket, which carries its own fuel and oxidizer, is not limited to the atmosphere, is supersonic and has a trajectory parabolic in shape. The German V-2 is an example of this type. The other is the winged missile which carries its fuel, but uses atmospheric oxygen for burning the fuel. The German V-1 (Buzz Bomb) is an example of this type. The atmospheric-jet missile is limited to flight in the atmosphere, is generally slower than the rocket and is more vulnerable to enemy counter-measures. On the other hand, since it resembles aircraft in many respects, conventional airframes, propulsion systems and fuels may be used in construction of the missile. This is an important advantage of the atmospheric-jet missile. At present the V-2 type rocket is generally considered the better missile for supporting ground operations up to a range of about 150 miles.

Since the accuracy of the SSM is limited, two restrictions are automatically placed on the selection of suitable targets—they must be area targets, and they must be of unusual importance. Targets that may be

considered appropriate for SSM attack include railroad yards, ports, beachheads, large supply depots, important command centres, tactical air fields, major troop concentrations and strategic targets such as key industries, raw material concentrations, dams, power sources and the like. The SSM will serve a double-barrelled purpose if, by neutralising such targets, it also contributes to the isolation of the battlefield.

The SSM must have sufficient range to attack targets the existence of which may have immediate or direct effect upon the employment of friendly troops. No specific distance can satisfy such a requirement. Therefore a family of missiles is needed beginning at the maximum of effective range of conventional artillery and extending without limit. Generally, however, missiles with ranges up to about 150 miles will probably be adequate for most tactical targets.

Good observation of the target area is essential to the successful employment of SSM's. Although a large proportion of firing may be unobserved, damage analysis of targets must be obtained. Also new targets must be discovered and accurately located. Visual, photographic and radar reconnaissance must be utilized to the fullest extent. In addition to reconnaissance by piloted or pilotless planes, radar observation would be used to locate enemy guided missile launching sites.

Since guided missiles will normally be used to attack targets beyond the range of division and corps artillery, SSM units may reasonably be placed under control of the army artillery commander in general support of corps. The guided missile fire of two or more armies could also be massed on army group targets. Just as medium division artillery can be used on corps targets, in general support of the division or to reinforce the support of a regiment, SSM units at army level could be used on army group or theatre targets in general support of the Army or to reinforce the support of a corps. Visualize, for example, the devastating effect of a dozen or more SSM battalions massing on a port area, beachhead or important rail centre. With no more than a few seconds' long-range radar warning to the enemy, 50 to 100 tons of high explosives would strike the target simultaneously with accuracy and velocity not possible by any other means.

The innovation of guided missiles, however, does not mean that an era of pushbutton warfare is at hand. Guided missiles are supporting weapons with specialized missions. In anti-aircraft defence against the fast, modern, high altitude bomber, they fill the gap between interceptor planes and anti-aircraft artillery. In ground operations their mere presence compels the enemy to disperse his installations, with consequent strain on his communications and transport facilities. In action guided missiles extend the firepower of the ground commander deep into the enemy territory and guarantee him fire support when tactical air is unable to provide it.

In other words, guided missiles are most effectively used in joint

employment with other weapons. They should not be considered separately. Whether or not they will develop into the "ultimate" weapon is a question only the future can answer. In the meantime the reinforcement they furnish other weapons more than justifies their development. The effort will be more than repaid if and when our efficient, target-seeking missiles destroy enemy atom bombers that may have broken through our interceptor screen.
