AUSTRALIAN ARMY JOURNAL

NO. 79
DECEMBER
1955

D copy

Notified in AAOs for 31 December, 1955

MILITARY BOARD

Army Headquarters,
Melbourne
1/12/55

Issued by Command of the Military Board

A.D.W. Knight

Distribution:

The Journal is issued through RAAOC Stationery Depots on the scale of One per Officer, Officer of Cadets, and Cadet Under Officer

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A Periodical Review of Military Literature

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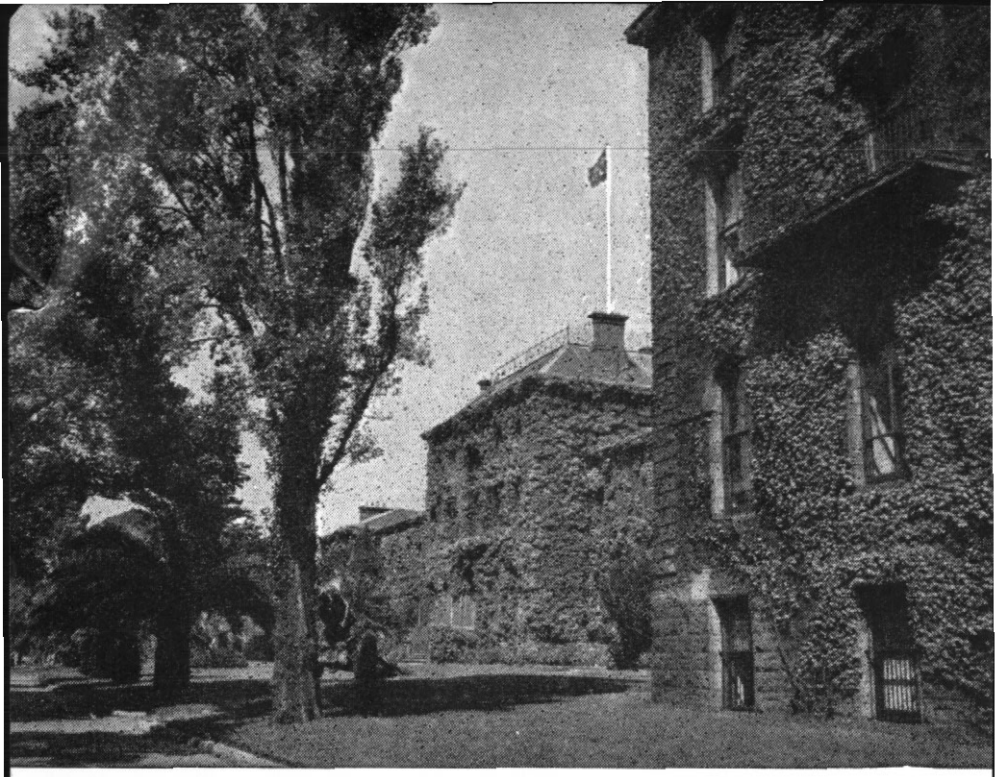

VICTORIA BARRACKS, MELBOURNE

AUSTRALIAN ARMY JOURNAL

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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. £5 will be paid to the author of the best article published each month, and £40 to the author of the best article published during the year.

THE RISE TO POWER of COMMUNIST CHINA

Captain D. H. Morgan,
Royal Canadian Dragoons

"During the last few years, Communist China has emerged as a powerful and aggressive *first-class* power in the Far East.

"What do you consider will be the effects on other nations in the South-West Pacific, both on the mainland and in the Islands?

"What steps should the free world take to counteract the likely effects of Communism in this area?"[1]

Part I — Introduction

THE aim in this paper is to discuss Communist China's rise to power in the Far East. In particular, it is to determine the resultant effects of her rise on her neighbours, and to consider what can be done to check the spread of Communism in the South-west Pacific Area.

Approach to the Problem

It must be appreciated by all who study Far Eastern Communism that the problem there is very little different from that of the rest of the world. It is a struggle for men's minds. The Western nations strive to bring freedom, knowledge and justice to the Far Eastern peoples; the Communist powers would suppress individual liberties and institute the totalitarian state.

To the reasonably well-informed citizen of the West, communism, bred in poverty, sickness, ignorance and illiteracy, seems to be a loathsome substitute for freedom. But among the Far Eastern peoples

1. *This paper was set for students attending the 1955 course at the Australian Staff College.— Editor.*

communism arises as a rich attraction wherever the alternatives are starvation and insecurity.

If we appreciate that even a totalitarian government is better than bad government or no government at all in the minds of these people, and if we appreciate the wide gap which exists between our respective ways of living and our respective scientific advances over the past two hundred years, we should be able at the outset to understand the forces which drive the Asians in their search for a better living.

Part II — The Problem

Brief History of Communism in China

The Manchu Dynasty, which had ruled China since the early Seventeenth Century, was replaced in 1912 with a Chinese Republic. This change marked the end of an era, for the new Chinese Republic was never to assert her influence over her neighbours in the same degree as her predecessors. The Governments of the Chinese Republic, particularly since the accession to power of Chiang Kai-shek, have been corrupt in most respects, with resultant decline in military preparedness and efficiency, lack of a definite foreign policy, and misrule of the homeland. In short, under the Republic, China ceased to be a power in the Far East.

In 1927 the Chinese Communist Party, which in its initial form bore little resemblance to Russian communism, split from the Kuomintang or Nationalist Party, and set up a rival republic in the mountains of South-east China. Fanned by misrule, poverty and general unrest in China, and despite Chiang's efforts to eradicate the rebels, the communist influence grew until 1935-36, when the communists made their famous "long march" from South-east to North-west China, where their influence was extended over infinitely greater areas of the country.

Communists and Nationalists cooperated uneasily against the Japanese in World War II. At war's end, when United States intercession was unsuccessful, the final stages of civil war were resumed. By 1949, with passive assistance by Russia, the Communist Chinese drove the Nationalists off the mainland to Formosa, where the latter's government still holds forth, purporting to be the lawful representative of the Chinese people.

Captain Morgan joined the Canadian Army in 1940, and served in England and North-west Europe from that year until 1945. He received his commission in the Royal Canadian Armoured Corps in 1944. He held various post-war appointments in Ottawa, London, Ontario, and Newfoundland prior to 1951, when he joined his Regiment, the Royal Canadian Dragoons, and became Adjutant. On completion of the 1955 Course at the Australian Staff College, Queenscliff, Captain Morgan goes to Army Headquarters, Ottawa, where he has been assigned to the Directorate of Military Operations and Planning. —Editor.

Since 1949, by exploiting racial hatreds, revolutionary violence, infiltration and armed force, the Communist Chinese government has struck throughout South-east Asia in an all-out bid for dominance in the area.

So, from a beginning where Chinese Communism depended on the desires of millions of peasants for fair land settlement and a form of government which would secure for them the fruits of their labours, under Mao Tse-tung the communist movement has in the past thirty years adopted the Marxist line. It is the Marxist ideology; his is a goal of domination of South-east Asia, even though he would insinuate that his policies are based more on national reform than communist aspirations, more on settlement of an old revolution than precipitation of an international conflict.

China's Outlook

If Mao Tse-tung were to adopt a policy of friendship with the West, no doubt China would receive many of the privileges at present denied her in the United Nations and throughout the free world. There are strong reasons, however, for China's maintaining a belligerent and aggressive attitude in Far Eastern affairs.

The first is China's recovery of big-power status. Mao has built a strong army, restored national unity, and to a great extent has stopped the decay inherent in the governments of his predecessors. He has in effect rebuilt China. China has, in no sense, any desire now to succumb again to the yoke of Western dominance; accordingly she views with suspicion any Western attempts to befriend her.

Second, her associations with Russia bring her military aid, economic assistance, and above all, through their alliance she need have no fears for her borders with Russia, for the present, in any case.

The third reason for China's attitude towards the West is her communistic affiliation with Russia —the ideological rebuttal by China of non-communist doctrines. However much her doctrine may be modified from those of Lenin and Stalin, her aim remains the same— totalitarian government of the homeland; maintenance of the military state; domination of her Asian neighbours. In these matters she is "on the party line" of domination by force, and must remain so if she is to retain the character of her government.

The Western Powers in the Far East

The United States interests in the Far East have always been and still are mainly to provide a military buffer in the Pacific Islands against attack of the United States mainland. Since the war, in addition, however, the United States has taken a world lead in the fight against communism, and asserts the authority of the non-communist world in the Far East by means of her island defensive chain.

Great Britain, France and other European countries have maintained considerable interests in the Far East during the Nineteenth and Twentieth Centuries. Their colonies there have thrived on Eastern trade, and have provided in effect the life-giving elements of material and finance on which their empires have succeeded. As long as China remained weak, divided by internal

strife, and as long as their supremacy in the Far East remained unchallenged, the European influence on the area could not be unseated.

The balance changed, however, when Japan rose to challenge European dominance. The effects of Japan's rise, coupled with the resurgence of China in the form of a strong communist state, have overcome European influence and privilege in the Far East. They have permitted China to reassert her own strong influence over her possessions, and in the whole Far Eastern area.

The West's Present Attitude

It has been evident to all the Western nations since 1945 that the old domination of the Far East is quite impossible now, in view of the resurgence of China. Their attitude inclines towards accepting China's new position, even at the expense of the colonial systems. A Nationalist or democratic China, free of the Russian yoke, is their goal; the Communist China is not acceptable. That is the reason why Formosa receives United States protection, why Communist China is refused a United Nations seat, and why most of the Western governments have yet to recognize the communist regime as the government of China, even though it controls the majority of Chinese people.

Unless the Western powers impose a strong deterrent upon China's so-called legitimate interests, it is apparent that China will over-run the whole of South-east Asia, for she is prepared to sacrifice national progress for military adventure whenever the results will further her totalitarian aims.

Based on experiences to date with the Chinese communists, it would seem unwise for the Western powers to rely on the restraint of a regime of that kind. The combination of national fervour with delusions of communist ideology have in the past and can again in the future prove dangerous.

Part III — The Effects of the Problem on China's Neighbours

The Philippines

The Republic of the Philippines constitutes America's major stronghold in the South-west Pacific area. Its government is closely affiliated to the Western cause, and can be certain of Western aid in keeping out communism. It has had a marked degree of success in putting down the Huks, a Chinese-sponsored band of revolutionaries, and so long as American garrisons remain on the islands, little harm can accrue from Mao's influence.

New Guinea

The Island of New Guinea is divided into British New Guinea, an Australian protectorate under the United Nations, and Dutch or West New Guinea, where Dutch and Indonesian interests are in conflict. This is the last outpost of Dutch colonial power in the Far East. Here it is of advantage for the communists to support Indonesia's claims to West New Guinea, while Great Britain supports Hol-

land's case. The outcome is still in doubt.

Burma and Indonesia

These countries have several common post-war features. Both Burma and Indonesia have won their independence from foreign rule since the last war. As the attainment of independence is considered by Mao to be the first step in a country's indoctrination to communism, the Communist Chinese government extends a calculated diplomatic courtesy to both countries, no doubt hopeful of further revolution in them, wherein their communist leaders would turn to China for help.

The Chinese leaders appreciate fully the value of Burma in agriculture, and its strategic position astride the route between Near East and Far East. They are fully aware of the natural resources of Indonesia. And there are sufficient Chinese among the populations of both countries to provide Mao with an excuse for interfering with these states, ostensibly to liberate his Chinese affiliates.

On the other hand, both countries, though repressing communism within their borders, have expressed a policy of neutrality in the struggle between East and West. Mao appreciates the value of neutrality over belligerence in these areas, and until he decides on an appropriate time to "liberate" them he will be content with their present peaceful attitude.

Indo-China

Indo-China is made up of the now independent states of Viet Nam, Laos and Cambodia. Viet Nam has for centuries been the most powerful of the three. Whilst Laos and Cambodia stem from a Hindu civilization, Viet Nam has been tied to China since Before Christ.

For the past Century, Indo-China has been, through conquest, a territory under the French Union.

Indo-China's ties with communism date from 1925, when Ho Chi-minh organized a revolutionary youth movement, for which he later received international communist recognition. This party adopted the communist "tag" in 1930.

During World War II after Japanese occupation of Indo-China, Ho Chi-minh organized, in China, his Vietminh, embracing all Indo-Chinese nationalist factions. It was with Nationalist Chinese support that Vietminh was enabled to operate in Indo-China during the occupation. This group came to power at war's end as a nationalist Vietnamese government, favourable to the people.

In reasserting pre-war authority on Indo-China the French literally forced Ho-Chi-minh's following into the orbit of the Chinese communists. In 1949, upon Mao's attaining power in China, the Vietminh pledged unequivocal allegiance to international communism in return for Chinese aid, and set about the liberation of Indo-China from the French. Their successes culminated in 1954 in a vastly favourable but uneasy truce with the French, wherein the communists control Northern Viet Nam and South Viet Nam remains a republic within the French Union.

China's interest in the Indo-

China struggle stems firstly from her ideological sympathy with the Vietminh cause. Secondly, her own security is enhanced with the installation in this neighbouring state of a communist form of government. Thirdly, she is well satisfied to have the Vietminh in her debt for assistance given against the French.

No doubt she looks also to the future, when re-establishment of Chinese authority over Indo-China, lost to her since the Ninth Century, will be a reality.

Thailand and Malaya

Like Burma and Indonesia, these two countries have a common interest for China. In both cases the Chinese approximate in numbers the strength of the native populations, and in fact control most of the business enterprise of the two states. During the last war it was they who constituted the main resistance to Japanese occupation, while the natives maintained an attitude of indifference to the occupying forces.

The return of peace brought a renewal of pre-war policies in both Thailand and the Federated States of Malaya. In the eyes of the Chinese minorities these were discriminatory against them. The Siamese government strengthened its anti-Chinese legislation. The British administration in Malaya did little to appease its Chinese subjects. Unrest in both countries continues to this day as a result.

China's concern for Thailand lies in the possibility of attack against her through this area. Installation of a friendly government in Thailand would provide a further military buffer on her southern borders.

Mao may well assist the Chinese population of Thailand in unseating the native government, installing in its place a communist regime not only friendly to China but one which China could in turn dominate at will. The excuse for his actions may well be the liberation of the Chinese population from Siamese discrimination.

Direct interference in Malaya by China is hardly likely in the foreseeable future, in view of the distance between the two countries and China's inability to maintain secure communications over the South China Sea. If neighbouring Thailand were to enter the communist fold, however, Malaya's present immunity would of course be modified.

Unless and until the Malayan communists are able to receive active outside assistance, the communist movement there is doomed to failure. British arms are pledged to restore peace and order there, and British foreign policy is pledged to offer dominion status to Malaya as soon as the present communist rebellion is quelled. As long as success for communism in Malaya is unlikely, Mao will not support it.

Here, Mao sees the virtues of awaiting the establishment of the independent government promised by Britain. The new government, bound to include representation of the Chinese minorities, will be a far easier nut to crack than the existing British regime.

Australia and New Zealand

Undoubtedly the communist movement has a firm foothold in Australia and New Zealand, and will require untiring vigilance by their governments to curb its influences on their affairs. It is apparent, however, that such communist activities as do exist are directed by Moscow and not by the Chinese.

China is likely to be satisfied if Australia and New Zealand recognize her new communist status, and reintroduce reciprocal trade, thereby providing her with goods otherwise unobtainable, and additional markets to bolster her economy.

From the standpoint of the Western nations, the advent of China as a major power places a far greater significance on the southern Dominions, in their strategic position athwart the eastern defensive bastions of the Commonwealth, and indeed the whole free world. Increased commitments in both peace and war will be their lot, with resultant enhancement of prestige and diplomatic authority throughout the world. These countries are inevitably destined as the future strongholds of democracy in the South-west Pacific area.

They may well play the same mediary role between the South-east Asian powers and the United Kingdom, which Canada now fulfils between the Mother Country and the United States.

Part IV — The Remedy

Communism has as its goal in South-east Asia the subjugation of the Asian peoples through an autocratic government in Peking. Countering communist encroachment in South-east Asia is no simple problem, and there will be no simple solution to it.

The Psychological Aspect

No matter how one approaches the problem, however, the logical first step lies in an appreciation of the suspicions and mistrust of those South-east Asian territories who for years have considered themselves the pawns of prejudice and racial discrimination by the West. In so doing one can better appreciate their failure to observe, as we see it, the real gulf between communism and democracy, and why they are reluctant to join our side without reservations. We must help them to overcome their very real fears of Western democracy. While we denounce communism's doctrines and methods as strongly as we do, we must perhaps exemplify our own wholehearted sympathy with the Asian struggle for liberation from hunger, misery and foreign rule. The communists could not have succeeded over thirty years without playing these ideals in the faces of the Asian people. If we are to succeed at all, we shall have to start beating the same drum!

Military Aspect

The second step is military preparedness by the Western nations, used at the proper time and place to check communist aggression. Participation in the South-east Asia Treaty Organization is a wise forward step in checking the spread of communism.

Economic Aid

The third step lies in the economic and social development of the South-east Asian countries, to assimilate therein the standards at which the Western nations have arrived after two centuries of rapid progress.

The United Nations is showing us the way, through its Economic Commission for Asia and the Far East, and its special agencies such as World Health Organization, Food and Agricultural Organization, and other projects. The International Bank has financed much development in these areas. The American Far Eastern Aid Programme and the Commonwealth Colombo Plan have also helped to foster the foundations of economic independence in these countries.

But even the advances made are not enough. We hear today of Russia's offers of similar aid to Asian countries. Unless we care to see South-east Asia's economies interwoven into the communist sphere of influence, we shall have to rise to even greater heights of generosity in promoting our own kind of social and economic well-being among these people.

Self Help

To suggest that democracy, or freedom, or peace can be bought in Asia for dollars or pounds alone is to evade the real issues which face us in our efforts to halt the spread of communism. Fourthly, then, we must appreciate that what we are doing, by economic and social contributions in South-east Asian countries, is to help them by providing the wherewithal for them to help themselves. Only the efforts of the people themselves can finally erect within these countries the bulwarks of democracy—and it does not necessarily have to be in the form of our own parliamentary democracy.

Our major contribution will be by co-operating in a partnership of mutual respect, support and understanding with genuine leaders of the Asian peoples. The main project of the Asian peoples must be to organize, as some have done, governments which are strong enough, free and incorruptible enough to make use of Western aid and support in establishing law and order, prosperity and freedom, which alone are the only real counters to the appeal of communism.

Part V — Conclusion

The successful conclusion, for Mao Tse-tung, of the Chinese civil war, has resulted in the establishment in Peking of an autocratic and strong communist form of government, whose ultimate goal is the control and subjugation, not only of the Chinese people, but also of the people of South-east Asia. Thus, into the vacuum left in Asia by the withdrawal of European interests marches communism, the one limitless commodity available for export anywhere in the world today.

In the social and economic fields communism has made great strides forward for China, marred only by her unwillingness to devote major resources and energies to such im-

provements, if at the expense of military adventure.

The Chinese Communist government may not be intent upon a career of aggression and expansion in the South-west Pacific area, as its propaganda would insinuate, but China's determination to pursue what she claims to be her legitimate interests has already led her to ignore the legitimate interests and security of other people, and may do so again.

The only deterrents to the spread of communism in South-east Asia and the world today are the ability of the Western nations to meet force with force, and our ability to contribute in assisting the countries of the South-west Pacific to gain self-sufficiency of government.

We must appreciate the suspicions and the reservations of the South-east Asian countries with whom we must deal. We must indicate by our actions our wholehearted sympathy with their desires for relief from hunger, misery and outside interference.

We must provide through economic assistance the wherewithal by which these countries will be able to help themselves out of their present difficulties. We shall have to assist them to organize good government, where law, order, freedom and prosperity, the only real deterrents to communist dominance, may operate without fear of Peking or Moscow.

To these ends the Western powers will have to devote all their strength, all their support, their energy, wisdom and faith, if we are to succeed in combating the spread of communism in the South-west Pacific.

Many people think that a successful man is one who gets more out of life than he puts into it. But a valuable man is one who puts in more than he takes out.

—Einstein.

ARE YOU IN A TRAINING RUT?

Lieutenant-Colonel I. B. Ferguson, DSO, MC
Royal Australian Infantry

HAD the title of this article appeared in a more conventional form it is doubtful if more than a handful of readers would have gone as far as you have before skipping to the next page.

Of course you have discovered that to read the title correctly it should be placed in front of a mirror and that is exactly what every regimental junior leader should do in relation to his task of training himself and the men under his command. To a very large extent the reflection you will see will be one of lethargy and clock-watching.

This reflection is caused mainly by peacetime conditions, where the syllabus is set by a clock, and your very natural desire to get home to the wife and kids or girl friend as soon as possible. The sum of these conditions is a training rut which does little to improve the standard of training of either yourself or your men.

Do you ever stop to think that the squad you are about to teach is comprised of human beings, all of whom are individuals who, in their own small "O" groups before each period, are discussing you along these lines—

(a) "We get Sgt A—— next period, so don't ask questions—he will only bounce you."

(b) "We can toss Cpl B—— by asking about the time he crossed the Volturno River in Italy."

(c) How to construct a weapon pit? "Don't work too hard, we will only have to fill it in afterwards."

(d) "Next period will be a bludge because Sgt C—— had a night on the tiles last night."

(e) "You chaps ask all the questions about the compass, I never know how to work one myself."

(f) "For the next 40 minutes we will have to listen to the awful dirge of Cpl——. Looks like RAP for earplugs."

Actors and instructors have much in common; they must both know and play upon the feelings of their audience.

Conversely, how many times have you gone to take a squad thinking something like this—

(a) This is the last period, so I will cut it short, then I can get away early today.

(b) Pte E—— is in my next squad—never teach him anything.

(c) These fellows need a good shakin up, so I will drill them silly this period.

(d) There will be no inspection of my training area today, so I can take this period easy.

(e) Suppose I should have checked the section in attack area, but the one I used last year will do anyway.

(f) Why do I always get this lesson —*they* know I don't like it.

(g) There is no need to brush up this lesson. I have done it so often before.

Perhaps the most abused training aid produced in the Service is the "Lesson Plan," which is the lever to be used in prising you out of the training rut.

To continue our simile of the actor, he would no more step on stage without a rehearsal than you would buy a house without looking at it—or perhaps if you have not read this far you would.

A successful play may run for two and a half years with the same actors in the cast, but they still rehearse, and so it is with you except that your rehearsal is the compilation of a lesson plan for each and every lesson. Off the cuff instruction is bad instruction, so use your lesson plan before, during and after each performance, balancing it against your audience reaction and you will become an instructor despite yourself.

Always before you must be the knowledge that the soldiers you are training today may be those with whom you will fight alongside tomorrow and with this thought in mind there can be no room for slipshod instruction.

The golden opportunities that pass you by every day you remain in this rut are legion because even the simplest of training periods holds a lesson which can be noted and stored away to be used later.

In the Army today there are so many means of bettering your position that the individual responsibility of self discipline and self training are often overlooked.

Environment naturally plays a big part in your moulding during the early formative years and does set the pattern for the remainder of your service, and in this connection your associates will fall into two main groups—

(a) Those who evade responsibility.
(b) Those who accept responsibility.

Choose always those who accept responsibility for, if they are right, you have a pattern to follow and if they are wrong you have learnt a lesson.

Do not hesitate to draw on the knowledge of your seniors; they will not be in the Service for ever and those with active service can form your link with tactical situations in most parts of the globe in which you may be required to fight.

Above all, don't stand still in peacetime. It is the school from which wartime leaders graduate. And if a father's pride is reflected in his eyes when he looks at his family, let your pride in the Service be reflected in the soldiers you train.

COMPETITION FOR AUTHORS

AWARD OF FIRST PLACES IN SEPTEMBER AND OCTOBER ISSUES

The Board of Review has awarded first places and the prizes of £5 for the best original articles published in the September and October issues to "The Medical Effects of Radiological Warfare, Parts 1 and 2," by Major J. G. Sloman and Captain C. W. Baird, Royal Australian Army Medical Corps.

The Board considers that the preparation of this well-presented article involved the authors, both CMF officers, in lengthy research, and that it is a valuable contribution to the AMF's knowledge of Atomic Warfare.

MAN — THE VITAL WEAPON

General Matthew B. Ridgway
Chief of Staff, United States Army

The text of a lecture delivered by General Ridgway to the Armoured, Artillery and Infantry Schools, United States Army.

—Editor.

DESPITE the remarkable developments in military technology, despite the weapons and machines which have vastly expanded our striking power, it is still a basic truth that the only absolute weapon is man. Upon his determination, his courage, his stamina, and his skill rests the issue of victory or defeat in war.

I will speak on three principal, related subjects — the role of the Army today; the privilege of service; and the officer-enlisted man relationship.

Wars are won when the enemy's will to continue resistance is broken. History has shown beyond any question that, when the people of a nation believe in the cause for which they are fighting, they will accept defeat only when all reasonable hope for success through continued resistance is lost, when their armed forces have been destroyed, decisively defeated, or rendered impotent.

In other words, the military objective in war is the defeat of the enemy's armed forces. It is vitally important to keep this fact in mind.

The means employed to achieve this objective include attacks upon the enemy's ability to support his armed forces with supplies and equipment, munitions and reinforcements. They probably will include pressures upon the basic economic and social structure of the enemy nation—not as ends in themselves, but because of the effect of such pressures upon the capabilities of the enemy armed forces.

However, it is defeat of those armed forces which must be our ultimate military objective.

The Unpredictable Nature of Warfare

Among some circles today, a belief seems to prevail that modern wars may be quickly won by means of nuclear and thermo-nuclear

From the Army Ground Combat Forces Journal, USA.

weapons which will make unnecessary the operations of ground combat forces. This may prove true. Yet no man can today be sure of the nature, duration, or outcome of all-out wars of the future, if such catastrophes should eventuate.

Therefore, taken as an assumed basis for planning, no concept could be more potentially dangerous, perhaps even fatal, than the idea that the war would be over in a few days, weeks, or even months. War can take too many forms and can be characterized by too many surprises for any arbitrary or single promise as to its nature to be warranted. When survival as an independent people is at stake reasonable people will not place their reliance on any single system.

Consider first the situation of a global war. If nuclear weapons were only used strategically — that is, against the fixed facilities and industrial installations of an enemy power—it would still be a considerable time before shortages induced by air attacks upon sources of supply and lines of communication would begin to be seriously felt by enemy forces in the forward areas. Strategic bombardment, in fact, is of military value chiefly for its long-range, not its immediate, effects.

Furthermore, unless the enemy's attacking ground forces were effectively opposed on the ground, they could, by seizure of supplies and facilities in the territory of our allies, replace much of what had been lost in the bombing of their own homeland. That would leave us with the choice of allowing the enemy to keep what he had taken, or of bombing allied territory at an inevitable great cost in lives and property of friendly peoples.

If nuclear weapons were also used tactically, they would find remunerative targets only if enemy ground forces were compelled to concentrate in an effort to break through our own ground defence forces. And if these were too few in strength to compel concentration, we would find only unremunerative targets for our nuclear weapons.

There is also the possibility, in a war occurring some years hence, that atomic and hydrogen weapons might not be used at all, neither opponent being willing to initiate action which could be expected to bring on retaliation in kind. In that case, the role of ground forces would be apparent.

In sum, armies are an essential element in our ability to conduct global war successfully, regardless of whether or not atomic and hydrogen bombs are used.

The importance of the Army's role in geographically limited wars is equally clear.

Localized aggression tends to occur in under-developed regions, and these are usually characterized by mountain or jungle terrain. In such a war, our ability to make effective use of many of our most modern weapons is severely limited.

In Korea, for example, the comparatively undeveloped organization of the country produced relatively little return for the enormous effort we expended in our strategic attacks on the enemy's industry and lines of communication, both of which we literally demolished.

The more primitive a country, the more decentralized it is. Therefore,

such a country is much less severely hurt by blows struck primarily at the installations and facilities which in other countries would be its heart, brain, and nervous system. It does not depend on them for its life, as does a more highly organized and integrated enemy.

Conclusive military results against this type of enemy are achieved by destroying or severely damaging the bulk of his fighting forces, and breaking the will to fight of his leadership. All the military services, from the beginning to the end of hostilities, make essential contributions to the achievement of that goal, but ultimately the burden must be shouldered largely by the Army.

So far I have been talking about the responsibility of military forces to win victory in war. They have, however, a vitally important mission in peace — and that is to provide military capability of such a character that it deters aggressors from resorting to war.

This mission can best be carried out by developing military strength which will give any prospective aggressor serious doubts concerning his chances for success. Because of their potential importance for achieving victory in war, ground forces are vitally important as part of our military strength to deter others from starting war.

Since successful diplomacy depends largely on an ability to negotiate from a position of strength, our military capability is an essential element in the efforts of our statesmen to achieve our foreign policy objectives by peaceful methods.

I do not mean to suggest that technology is not having a marked effect on the Army. New weapons and equipment are giving us vastly greater capabilities. Our present tactics and tactical organization are sure to be materially modified.

You are all aware of the tests and exercises which are being carried out to determine the organizations and tactics which will enable us to realize our capabilities to the fullest extent.

One of the most striking effects will, I think, be the increase in dispersion, both laterally and in depth. We must disperse in order to minimize the effectiveness of mass destruction weapons which may be used against us. At the same time, to exploit the effects of our own mass destruction weapons against the enemy, we must be able to concentrate rapidly, strike hard, and quickly disperse again.

To do this, we are seeking to develop ever increased mobility and ever improved communications. Of these, much the most vital, is mental mobility throughout our entire chain of command, a freeing of our thinking processes from the paralyzing effects of undue reliance upon past experiences. Something new has truly been added to warfare, and we must meet the challenge of the new with new ways of adapting new weapons and new capabilities to old and unchanging human qualities and the basic principles of war.

These tactical developments will place greater responsibility than ever upon subordinate commanders. Even junior leaders will often have to operate independently and semi-independently. On their initiative and their judgment, no less than on their technical skill in the operation of their equipment, will rest a large part of our hope for victory.

The Soldier's Unconquerable Spirit of Service

This now brings me to my next major point, which is that as officers of the Army you are being given as great an opportunity as any to which anyone can aspire—the opportunity for useful service.

Our Nation, with all it stands for, lives under a continuing threat of attack by Godless Communism. To the Army, and especially to us as leaders of the Army, falls a vitally important share of the responsibility for maintaining the strength which will prevent the outbreak of war—or, if that is not possible, which will bring us victory.

The rendering of service to the Nation is no imposition upon the individual. It seems to me that all too many people are prone to concentrate on the comforts, pleasures, and luxuries our way of life makes possible—too remiss in showing forth in their lives a principle they utter with their lips and I believe acknowledge in their minds—the principle of the privilege of serving their kin, their country, and God.

The soldier forgoes many comforts. In place of luxuries he has hardships and often grave danger. Sometimes he is called upon to make the supreme sacrifice and lay down his life for the cause he defends. He knows this. If he is a good soldier he early accepts it fully, unhesitatingly. It becomes basic in his actions in peace and in war.

This spirit is eloquently expressed in the inscription on the monument in Edinburgh to the Scottish-American dead of the First World War. It says: "If it be life that waits, I shall live forever unconquered; if death, I shall die at last, strong in my pride and free."

None of this is new. Sacrifices have been made throughout the history of man. Our national history is replete with them. The history of our Army bears eloquent testimony to the dedication of its members to the ideal of service to others.

Nothing is free. Nothing worthwhile is cheap. The service we perform, the sacrifices we may be called upon to make, constitute the price we must be ready to pay to preserve for the future the blessings of liberty and justice, of human dignity and of individual freedom which have been handed on to us from the past.

Seldom have military men been afforded more challenging opportunities, more engrossing tasks than those which confront the leaders in our Army today. New weapons in constantly increasing numbers are being made available to the Army. Their mastery requires the application of technical skill and tactical judgment of the highest order. Because we are passing through a period of transition, there is a greater requirement than ever for mental flexibility, for creative imagination, for alert minds. "The orthodox mind maintains and preserves progress—the non-conformist makes progress." The far-flung deployment of Army forces places the Army's officers and non-commissioned officers in the position of ambassadors of our country in many lands and many climes.

And upon the success they attain today in all their varied tasks, may well depend not only the success of our Nation in attaining its objectives, but perhaps even our national survival.

At this point I should like to take a moment to pay tribute to those

who serve with the Army in a civilian capacity—from our highest civilian leaders to the hundreds of thousands of loyal and faithful employees without whose contributions the great work of the Army could not go forward.

In particular, we should be proud of our high-principled Secretary of the Army, Robert T. Stevens. His integrity, courage, devotion to duty, and his loyalty to the members of the Army merit our deepest appreciation and support.

The Privileges and Responsibilities of Leaders

Now I come to the third and last topic I want to discuss—the officer-enlisted man relationship.

Our achievement of success as soldiers is made easier by the high calibre of men and women in today's Army. One of the chief rewards which goes with membership in our officer corps, is the privilege of serving with our enlisted men.

In fact the two most important elements in any army are first its officer corps and second its non-commissioned officer corps.

The soldiers whom we command, like their predecessors throughout our history, have repeatedly proved that, when properly led, they are the finest fighting men in the world. Their intelligence, their enthusiasm, their ingenuity, and their initiative are among our strongest assets. But the responsibility for bringing out these qualities rests squarely upon the officers.

We must ever remember that we are responsible for our men, twenty-four hours a day, seven days a week, and that our success as officers rests solidly upon them, and regardless of whether we command a unit, or serve on a staff. They look to the officer corps for direction, guidance, and example.

It is in the intangible, but vital relationship between officers and men, that leadership becomes an art, not a mere technique. The officer-enlisted man relationship is the foundation stone of sound discipline, the *sine qua non* of morale and esprit.

Closely allied to this relationship is the one which exists between the non-commissioned officer and his men. He is the close and indispensable associate of the commissioned officer in the attainment of the Army's objectives. The non-commissioned officer corps, with its professional cadre of career personnel, is of vital importance in achieving the high standards to which our Army aspires.

Just as the officer corps must be the great reservoir of integrity, professional competence, and courageous leadership, so likewise must the non-commissioned officer corps form the great reservoir of character, of devotion to duty, of loyalty, of professional competence that gives strength and substance to our Army. The non-commissioned officer's responsibilities are reflected in the relationship that exists between him and his subordinates.

Coddling has no place in the relationship between leader and subordinate. The soldier is not a child, nor is he an object of pity. He is a colleague to be respected. He is a subordinate to be trained, guided, and directed. He is a fellow American who can teach us much, no matter how many years we have served —a civilian on loan, whose Army

service can make him a far better citizen of the future.

Each of us, regardless of rank, must be constantly ready to share in full the discomforts, the hardships, and the dangers which may fall to the lot of our men. This readiness must be something that the men must know they can take for granted. It must rest upon demonstrated acts.

Inexperienced officers sometimes make the mistake of believing that they must court the liking of their men, as though they were taking part in a popularity contest. Nothing could more certainly lead to failure. Respect and consideration for subordinates are essential parts of the good officer's attitude, but they must never overstep that line which dignity, honesty, and firmness dictate, and common sense demands. Character, courage, competence and consideration will keep us on our side of that indefinable but ever-present line, and under the stresses and tensions of battle, however great, permit us to discharge our responsibilities in keeping with the Army's finest traditions.

The Mutual Respect of Leaders and Followers

There is a single principle, a basic inter-relationship, underlying the thoughts I have sought to convey to you today. That principle can be expressed in the statement which I made at the outset—that the only absolute weapon is man.

In the final analysis, the form taken by warfare when the struggle becomes one of men against men—as, in the end, it must—is land combat. Only when we close with the enemy on the ground — as only armies can do—can we finally defeat his armed forces, and only by defeating enemy armed forces can we win victory over an enemy nation.

A basic element in our ability to win victory in battle is the relationship between our fighting men and our fighting officers who lead them. That relationship is grounded in the spirit of mutual respect, of mutual confidence, and of mutual understanding, in which discomforts, hardships, and dangers are properly shared, and in which ours can be the greatest reward that anyone can earn — the abiding respect of those who know us best —our comrades and associates.

To the officers and senior non-commissioned officers of the Army is granted the privilege of providing the example, the inspiration, and the leadership through which the Army can continue to perform its vital service to the Nation in peace and in war.

This opportunity for useful, meaningful service is limitless. On the manner in which it is seized and carried out depends a significant share of our country's hope for a future of peace and freedom. No one could hope for a greater opportunity. No one could ask for a finer challenge.

LIKE TO LEARN TACTICS

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THIS might well be called some reflections by an ex-Chief Instructor of the School of Tactics. When one likes tactics and likes more to teach the subject, it is often easier to view the whole question in retrospect and from a distance. That is the case — hence this article.

First of all, what is tactics? There are many definitions and explanations. One smart one is: "The opinion of the senior officer present." There is more wisdom in that than first meets the eye, because basically tactics is a matter of opinion derived, of course, from knowledge and reasoning. To a junior officer, and he is the person *who really matters*, it is a question of getting the best possible results with the forces available in any situation. This implies efficiency, and it is a key word which should be coupled with tactics. Tactics is an art, and we apply it unconsciously dozens of times a day in simply performing our daily chores efficiently, so it would seem that no definition can be complete —it is what you make of it yourself, but keep the scope wide open.

From the military point of view, tactics is a most important subject. It might be regarded as vital. It does not matter what corps or arm of the service an officer belongs to, he has an obligation to know not only how his own corps functions to best advantage, but how it fits into the overall effort to get maximum efficiency from the whole. Tactics, then, is not just a matter of how Infantry, Artillery and Armour capture or defend a feature—it is much wider than that.

If you should feel that you are not as good at tactics as you would like to be, don't be discouraged. It is probably not your fault. Tactics is not difficult to learn at all. There are no traps or tricks; it is quite straightforward. With coaching the average officer improves quickly, but don't expect to become an expert in three easy lessons. It takes a lot of time, study and experience to master the subject—if that is in fact possible.

Now for a little "know how." The first and most important factor is a mental one. Perhaps it is a matter of the correct mental approach or getting the perspective right. It is not just another job of work or another thing to learn. There is a manual or drill book covering many aspects of army training. They *simplify learning and standardize* many skills. There is no one book

which teaches tactics, although there are many dealing with the subject. While there are many aids to assist people with tactics, there is no "drill"; the best aid is an alert and inquiring mind. Sound tactics stem from sound reasoning; no two tactical problems can be exactly alike. Each must be treated as a fresh mental problem, requiring thought and the ability to reason out a sound answer. Each problem is therefore an individual challenge, and the personal satisfaction of solving it should be stimulating.

No problem can be solved with any degree of certainty unless a certain amount of data is readily available, and there are not too many unknown factors. In tactics the data boils down to a sound military knowledge and good intelligence coupled with a fair idea of enemy methods.

How much knowledge is required? That depends on level. Good training is on the "one up" principle. That is, a man is trained to do his own job, and should have sufficient knowledge and skill to be able to do his superior's job in an emergency. Examples could be taken from any Arm or Service. However, in the case of infantry, a section corporal should know not only how he can get the maximum efficiency from his section in any set of circumstances, but also how his section fits into the working of the platoon to best advantage. That implies a detailed knowledge of the functions and capabilities of the platoon. So it goes on until a stage is reached where knowledge of a single arm or service is not enough. No single arm or service should fight alone. It is the combined or integrated effort that counts, so it is necessary to have a look at the smallest self-contained fighting formation—the division. Junior officers are not expected to know all about the bits and pieces of a division and just how they should be used, but the more they do know the better. This knowledge is acquired slowly over a period of time. Take the case of an infantry subaltern. It is not unreasonable to expect that he should know exactly what his battalion contains, and he should soon learn how it is controlled and used. As experience is gained he must become involved with artillery and armour. Then as problems of supply and maintenance are raised he will continue to learn something of how they function as far as he is concerned. At the rank of Captain he should have a very good idea of what is in a division and how it functions, and at the rank of Major this knowledge should be detailed and thorough. At this stage it should, of necessity, include the corps and army structure if only in outline.

So far the knowledge mentioned is largely a matter of memory, so that the basic data are readily available. But this is not enough. The term "sound" military knowledge was used. Perhaps a better word would be "balanced." This implies that in addition to knowing the organisations, it is essential to understand their various characteristics or capabilities, as well as the methods of command and control. In other words, what can the bits and pieces really do and how can they best do them under a wide set of circumstances? Here experience comes into it, and today such experience is obtained largely from

discussion of problems both indoors and on exercises. Performance in relation to ground is the key to it, then the data become more practical and real.

The next step is really one of fitting this useful data into its right perspective. A good working knowledge of the Principles of War is essential now, and so is a fair idea of the organisation, capabilities and methods of the enemy. However, to produce sound, practical results it is necessary to have a good working knowledge of deployment procedure. In other words, just how the bits and pieces are moved at the right time and place to carry out their allotted tasks. This involves appreciations, usually mental ones, so that good orders, either written or oral, are given, and everyone concerned knows what has to be done to achieve the desired result.

Orders and appreciations often cause bother, and that is only natural. The appreciation is the thing that matters most, because if it is right the orders that often follow have a sound foundation. Appreciations are used a lot as a means of teaching tactics, because in making one, the individual solves the problem by a process of reasoning. As an aid to logical reasoning, the appreciation is worked out in a logical sequence. The idea of getting the relevant deductions from each factor considered is to amass sound information or advice which will suggest a line of action for the particular problem. How to do an appreciation is a subject in itself, but if one has a sound military knowledge and the ability to think and reason in a logical way they should present no problem. Many officers attempt three or four fairly simple appreciations, don't get the hang of it, and become worried and upset. Perhaps they expect perfection in a few easy lessons, which is hardly possible. It comes with practice and experience. Take the case of a man who buys a lathe for his hobby shop. The sequence might go like this. He fits a bit of wood and turns it on. The wood wobbles. He refits the wood and gets it true. He tries a chisel maybe about the middle, and after a clatter a ring appears. More rings are made at varying speeds holding the chisel at different angles. The result is a heap of shavings and an odd-looking piece of wood. The next attempt could look vaguely like the leg of something but is really a mess. After a few more attempts maybe he succeeds in making a possible leg for a chair. He might even get four looking more or less the same and at a fair standard. He would not call himself an expert or even a good wood turner, but he learnt as he went along and produced a result which satisfied him. So it is with appreciations—all a matter of concentration, application and practice.

Orders should be clear and concise and be delivered with confidence. Of course they should. But this is rather a tall order on the first attempt. Again practice is the only real answer, and after many attempts one should reach a good standard. However, it is as well to remember that one can become rusty quickly at both appreciations and orders, so that a periodic practice or exercise serves a very useful purpose.

Perhaps it would be as well to review briefly the ground covered

so far and see just what is involved. Details of unit organizations, some of their characteristics, command and control, deployment procedure, and suggested sequence headings for appreciations and orders are readily available to all officers. Other items are covered in one or two precis. These may be carried about on exercises and the data they contain will be readily available if the memory fails. The main requirements appear to be a correct mental approach to the problem of learning tactics and a sound knowledge of the capabilities of units under varying circumstances. All of this work will be of little value unless it stems from an alert and thinking mind with the ability to reason in a logical sequence.

Quite a bit of the background study and work required for skill at tactics may be done individually. As a test on ability to reason it might be a good idea to try some of the small books prepared as mental exercises for teen-age school children. Some of the small problems set are not as easy as they look. However, in any private study it is wise to watch one's capacity to absorb and stop when it is apparent that a lot of time is being used to learn very little. It takes time and practice to learn to study, and some people find this out the hard way.

The most effective way to learn is in a syndicate or group. In both indoor and outdoor work it is essential to get one important thing straight. Curb your ego and don't answer the questions you know, but swallow your pride and try to answer those you are not sure of. This sounds all wrong and all too few understand what it means. If you should volunteer the answer to some point in tactics which you know is right, then you do not add to your knowledge. On the other hand, you deny the opportunity to someone else to reason out an answer to it. Again, don't be upset if a good instructor should stop you when you are on the right lines of a solution and asks someone who is not so sure and needs the practice of reasoning it out. In any group studying tactics the standard is likely to be uneven, and if discussion is well conducted, those with more ability are likely to speak up less often than those who are weak.

It might be as well to offer a few simple suggestions to help officers get better value from tactical discussion. Never let a point pass unless you are sure you have obtained all you can get from it. Many people do not care to disclose that they either don't know or are not sure. Surely this is false pride if the desire to learn is genuine, so speak up and ask questions on any and every point which is not clear. Usually such questions assist the instructor.

Another suggestion is to be quite sure you have the setting correct. You must see it exactly as it is painted, otherwise people talk at cross purposes or confuse the issue. When working out a solution remember to think two up and two down before making a decision. For example, if a problem is on battalion level it is wise to recheck on the job in hand, how it fits in with the brigade and just how it all fits into the role given to the division.

Then check down to the effect on companies and platoons. This is a good aid to flexible thinking and prevents the view of the problem being restricted. Implied in all this is a detailed knowledge of exactly what you have to command, and if some element is not used then think again. It is hard to get the maximum efficiency from a force unless you know in detail what it consists of and how it is normally used.

Often a doubt will arise when factors appear to conflict, and there may be some indecision as to which course should be adopted. If in doubt, try the simple or obvious solution, and more often than not it will be best. When presenting a case it is wise to do so slowly and logically to assist others to follow your line of reasoning. By the same token, listen to another solution with undivided attention and you will learn. Quite often when another solution is being given a previous speaker is concentrating more on additional argument to support his own case. This is unwise, as quite a deal of value may be lost from subsequent discussion. Above all, be prepared to change your mind if a better suggestion is offered.

In discussions try to present your views in concise, logical and confident speech. This takes time and practice, but it is likely that by the time your tactics are sound so will be your method of presenting your views. The motto might well be: "Think before speaking and when in doubt think again." This will curb any tendency to making wild or illogical statements.

No doubt there are many more points which might be covered with advantage, but at this stage they might confuse rather than help.

On reflection, several important words appear to recur in this article —knowledge, efficiency, concentration, thinking, logic and reasoning —not to mention practice. All might be regarded as essential ingredients of learning tactics. Perhaps patience should be coupled with practice, and if progress should appear to be slow and tedious there is one good thing to do. Go to a concert and hear a singer or pianist and consider the study and practice that preceded the performance. Better still, for peace of mind, go to a cathedral and observe the organist. Quietly he pulls and pushes various little levers, then he pushes some buttons and switches—all the right ones for what he wishes to do—then he will pause and without apparent effort he will make beautiful sounds.

ATOMIC DEFENCE

Lieutenant-Colonel F. O. Miksche,
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Lieutenant-Colonel F. O. Miksche, formerly an officer of the Czechoslovakian Army, is a well-known writer on military subjects. He left his country's service when the Communists seized power in Czechoslovakia, and is at present Professor of General Tactics at the Staff College of the Portuguese Army. This article, which is reprinted from the "Military Review," USA, is based on some ideas appearing in his book "Atomic Weapons and Armies," reviewed in AAJ 76.—Editor.

WHAT shape will the battles of tomorrow assume? Does trench warfare—with its deep shelters—provide us with the correct picture or does the blitzkrieg—with its rapid and profound penetrations by armoured armies—give us a true picture? These are questions which are difficult to answer. Tactics are essentially a combination of fire and movement. New weapons produce new forms of fighting — new forms of attack and defence. The growth of firepower tends to increase the strength of the latter. As a result of the invention of atomic weapons, firepower increased a thousandfold. At the same time, the means of movement on the ground remain unchanged. Trucks and tanks are used as they were in the last war. It is easy to say that future tactics will require more speed, more briskness and more flexibility in movement. However, all these notions have their invincible limits. It is difficult to see how ground manoeuvre can ever compete against tactical atomic weapons carried by 600-mile-an-hour jet aircraft, while guided missiles or atomic shells cannot be intercepted in flight. This fact has its unavoidable consequences, which cannot be cancelled out by tactical or technical counter-measures, except by the inventions of means of movement as revolutionary as the nuclear arms themselves — means which are still very far from being in sight.

In warfare, everything assumes a different aspect when both sides are basing their tactics upon the use of the same weapons. Clausewitz' old saying, "Defence is the stronger form of war," still remains valid. There are many factors which tend to favour defence. The attacker is compelled to operate in the open, whereas field fortifications offer, to a certain degree, shelter

against atomic weapons. The defender can also protect himself more easily by camouflage. His strength is based mainly upon concentric fire, whereas success in attack depends largely upon physical concentration of forces, supported by fire. In atomic warfare, it will also be much easier for the defence to co-ordinate firepower from several separated positions, whereas for the attacker it is incomparably more difficult—if not entirely impossible—to force a decision with his necessarily dispersed forces while every concentration inevitably becomes a highly vulnerable target for atomic weapons. Furthermore, an offensive can only be deployed from depth, and it is precisely there that atomic weapons exert maximum effect.

Without concentration in attack there can be no piercing power. Fire alone can hardly decide the issue, while without movement there can be no manoeuvre—consequently no decision. Could not all this again lead to a bogging down of the fighting? In such circumstances it is very likely that mechanized forces would lose their former importance; perhaps less because of the numerous antidotes which they encounter on the battlefield than because of the high vulnerability of the cumbersome auxiliary services on which their success depends. It would be no great problem, in atomic warfare, to cut off almost hermetically the few supply channels in a 30- to 40-mile sector of an offensive. Whether paratroops would be of much avail also remains a matter of doubt. Large-scale landings can scarcely succeed in face of an enemy who has a powerful air force at his disposal. That, however, is another story.

In World War I, the battlefronts bogged down against the will of both sides. In a third war, in order to avoid a hostile invasion and win time for mobilization, it might be of interest to organize a type of atomic trench warfare, a possibility which is probably realizable with present - day tactical atomic weapons. Such disposition would be based on the combination of atomic artillery, tactical air forces and guided missile battalions, and conventional ground forces.

Atomic Artillery

Try to imagine a front 400 miles long, behind which atomic artillery is moved into line. Because of our own troops' safety, it cannot deal with targets in the forward area; therefore, its zone of action is confined between 3 and 20 miles behind the enemy's line. In order to achieve adequate effect along the entire front and to cover all possible sectors against attack, it suffices if individual guns are put into position separately at intervals of 4 to 6 miles from each other and at a distance of about 6 to 8 miles in rear of the front-line. With a range of 25 miles, it will always be possible to co-ordinate the fire of four or six such guns on threatened sectors of approximately 20 miles width. The probability is small that the attacker might succeed in destroying all these weapons by air bombardments or other means, and the dispersion described above is designed to diminish any such eventuality. The security of these positions can further be enhanced by frequent changes. The use of

dummy atomic guns would be another method of dispersing the enemy's attention in time and space.

Communication ensures co-operation between the individual atomic guns which, in the same way as normal artillery, are organized in troops of 4 and batteries of 12. Of course, on our imaginary front, the distribution of this special artillery is not uniform, but is adapted to the characteristics of the theatre of war—denser where the probability of attacks is greater, and less so behind natural obstacles such as rivers, or in mountainous areas. In its essentials, this system presents the same features as does that of conventional artillery. It is, however, carried out on a greatly magnified scale, where the guns are not 30 yards from each other, but spread over 4 to 6 miles, and where the batteries do not cover a frontage of 1,000 yards but some 40 to 50 miles. The present state of technique makes the co-ordinated functioning of such a system easily realizable. A battery of 12 guns could cover a frontage of about 50 miles, which on an average corresponds to a sector held by an army of 6 to 10 divisions. The defence of a front 400 miles long would necessitate about 80 guns.

Ammunition Supply

What would appear more difficult is the question of how to supply the positions with ammunition. Atomic shells are costly, and the quantity available is much more limited than ammunition for conventional guns. Both for material reasons and on grounds of security it is difficult for atomic artillery to be supplied with shells in the normal way. On the other hand, would an opponent be able to attack simultaneously on the entire length of a 400-mile front? Furthermore, he would take every precaution against divulging his intentions prematurely. Therefore, piling up of shells at each gun would merely be a dispersion of valuable energy.

However, here modern technique can help. Perhaps it would be sufficient to keep, in each position, one atomic shell for each gun or, in more exposed sectors, two or three. If 80 atomic guns protect our front of 400 miles, then 100 to 120 atomic shells would do as a first ammunition scale, enabling the front-line to withstand the first shock of an unexpected attack. As we have said, our disposition, in spite of its dispersion, is articulated in such a way that several guns can cover each sector. How should the further supply of ammunition be organized? Scattered at a distance of 80 or more miles behind the front, and in small, carefully concealed dumps, supplies of atomic shells would be kept in readiness. Helicopters would assure quick delivery according to the requirements on the battlefield.

It is difficult to gauge, in comparison with normal artillery, the firepower of 80 atomic guns, spread over a frontage of 400 miles. Allowing 5,000 conventional guns for one atomic gun, our line would be defended by a zone of fire corresponding to the enormous number of approximately 400,000 field guns of medium calibre.

Guided Missile Battalions

While the atomic artillery covers the immediate rear of the enemy's forward zone, the tactical air forces

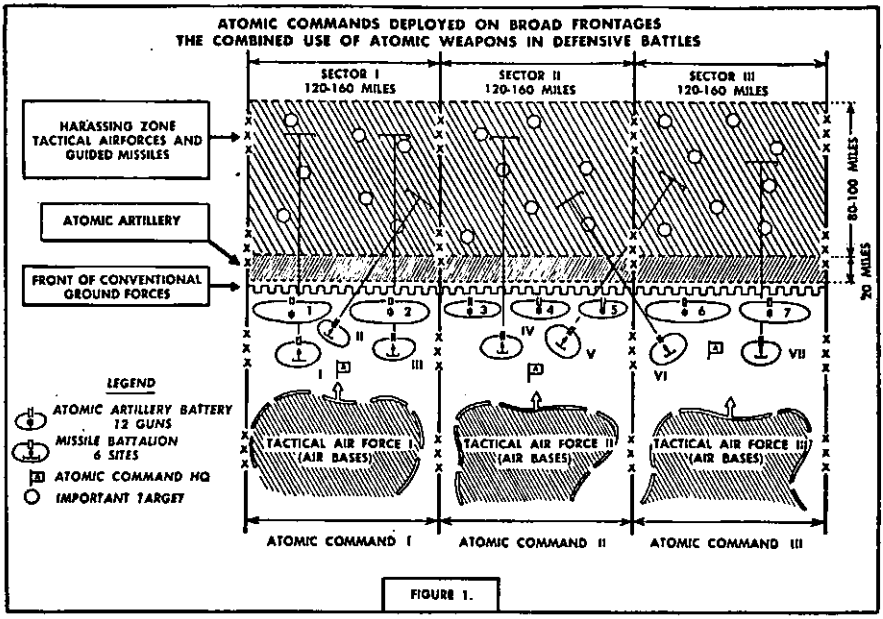


FIGURE 1.

in conjunction with missile battalions, will have the task of extending this effect in depth. Good results can only be expected if air reconnaissance, radar locating, missile launching units, atom bomb-carrying aircraft, and conventional fighter bombers work in conjunction. The main task of the tactical air forces and missile battalions is to prevent enemy concentrations on the front, thus making the launching of an offensive difficult. (See Figure 1.) During the battle, continuous air activity should isolate the attacking forces from their supplies and reinforcements. Both these tasks should be carried out with atomic projectiles as well as ordinary ones — generally in combination, to a depth of 100 miles.

The further the air forces and guided missile battalions act in hostile territory, the more indirect becomes the support which they can bring to their own ground forces. A penetration of about 100 miles would appear to be ample in order to impede efficiently large concentrations within this limit. A further extension of this "harassing zone" into the enemy's rear could easily provoke a dispersion of effort. The more the activity of the tactical air forces and the missile battalions is carried into depth, the greater becomes the number of important targets to be neutralized; it is an old rule of tactics that to be simultaneously everywhere at once means to be nowhere in sufficient strength. Plans made on a scale of 1 : 500,000 proved that in a Western theatre of war, within a zone 160 miles wide by 100 miles deep, the harassing of an average of 8 to 12 communication centres suffices in order to reduce the

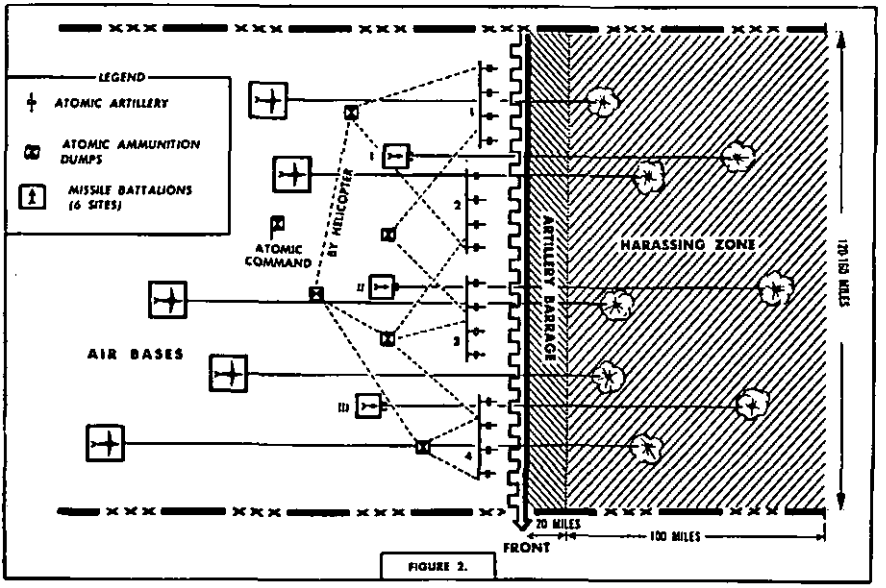


FIGURE 2.

movements of the enemy by about 50 to 60 per cent. (see Figure 2). Behind this limit of 100 miles, the field of activity belongs to the strategical air forces.

The entire mechanism of the defence is principally based on the combined effect of atomic artillery, missile battalions, and atom bomb-carrying aircraft, and it is this core around which the conventional arms must be grouped and to which they must adapt themselves. The work of the atomic artillery and missile battalions depends much more upon the action of the air forces than upon the conventional ground forces, because without radar locating and air reconnaissance the atomic guns are blind, and without atom bomb-carrying aircraft and guided missiles the effect of atomic artillery cannot be extended in depth. Practically all action against hostile atomic artillery and rocket launching sites is conditioned by the tactical air forces —so is the protection of one's own atomic guns against enemy air attack. The entire issue of the struggle, on the ground as well as in the air, will inevitably evolve into a contest between atomic weapons. They will become the main object of the battle, for it is logical that the side which succeeds in paralyzing the atomic weapons of the other clears the way for the advance of its own ground forces.

Since it is in close relation with the tactical air forces that tactical atomic weapons, as used at present, would probably find their most rational form of employment, the establishment of a new type of higher unit—let us call them atomic commands—becomes an obvious necessity.

The atomic command should be organized in such a way as to in-

clude all weapons and auxiliary services required to fight an atomic battle. The atomic command might include:

1. Headquarters and staff for planning and directing the action of the command as an entirety.
2. Special units, such as radar. topographical, ballistical and meteorological groups.
3. Air reconnaissance squadrons.
4. From 1 to 3 batteries of atomic artillery — 12 to 36 guns.*
5. From 1 to 3 guided missile battalions — 6 to 18 sites.
6. Combat air forces, including both fighters and bombers— the latter carrying both atom and conventional bombs and rockets.
7. Infantry and anti-aircraft units for the defence of air bases, atomic gun positions and missile launching sites.
8. The necessary signal units, engineer troops, and supply and maintenance services.

Of course, the organic build-up of each atomic command — which might be subdivided into artillery, missiles and air force divisions— could vary greatly in composition and strength, according to the features of the theatre of war in which they are intended to operate. They could eventually have only a temporary character. In defensive battles, the strength of the tactical air forces should be at least equal to one-third of the attacker's airpower.

In spite of their great effect and long range, atomic weapons are unlikely to change the classical rules of strategy and tactics, but rather may alter the scale in which these rules should be applied in the future. Therefore, atomic commands would operate in incomparably greater dimensions than the conventional army corps of the ground forces. This circumstance might not ease the necessary coordination between both, especially should heavy atomic weapons be subordinated to the latter. The rational exploitation of these new arms, the need for their intimate co-operation, calls for the creation of centralized leadership on one hand, and on the other for a planning on a scale corresponding to their effects and ranges. In contrast to the normal army corps, the atomic commands would act in sectors with frontages of 120 to 160 miles, perhaps even more, and up to a depth of 100 miles into the enemy's rear — again according to the features of the theatre of war within which all atomic commands should be subordinated to their own atomic high command.

In all kinds of large-scale operations, atomic forces might play a decisive role, thus becoming the most important units of future armies. It will be their task to prepare and to support offensive battles, to protect the open flanks of manoeuvring armies, or to cover their withdrawal in case of retreat

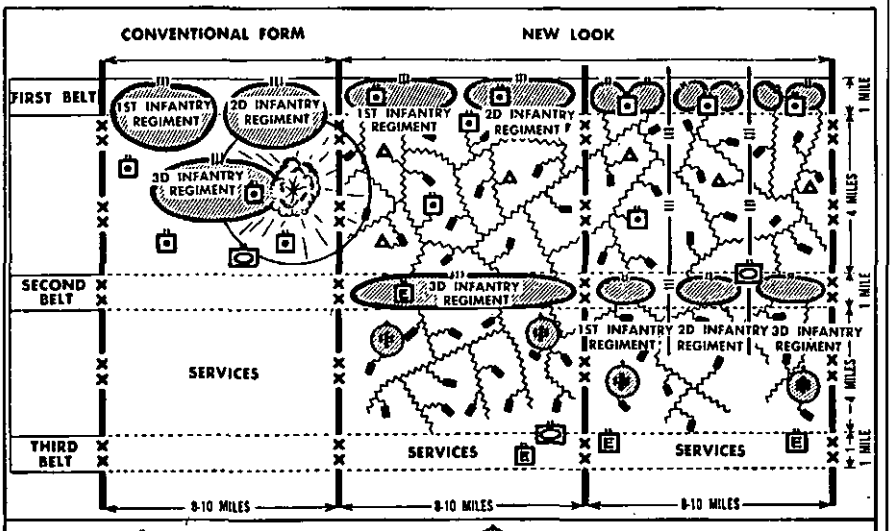
* The organization of atomic artillery batteries per 12 guns seems to be the best solution. Normally, each battery would support one army of three conventional army corps, while each army corps would be supported by a troop of four guns. Each battery is controlled centrally. Topographical, ballistical, and radar spotting groups would be equipped with helicopters, the same means being used for quick reconnaissance of gun positions. Missile launching battalions should work on similar lines.

into new lines, and to support the resistance in the latter.

The deployment of higher atomic units on broad frontages does not necessarily mean that their weapons will be used all the time, similarly to the constant artillery duelling so characteristic of World War I. The high expenditure of atomic projectiles makes such an evolution rather improbable. On many sectors of the front, fighting will continue with conventional material, and atomic weapons might only intervene in important battles to decide the issue with relatively small numbers of projectiles. At present, no one would be able to say how great this number will be. It might also happen that atomic commands, kept in readiness, will merely stand by, in order to use their suicidal weapons—too dangerous to drop in either sense—as **ultima ratio** only.

Conventional Ground Forces

Without adequate protection, the atomic command's positions would be left suspended in mid-air. Therefore, ground forces will be required in order to protect them by a barrier. Some readers may ask: "In view of the enormous effect of atomic weapons, is it really necessary to use ground forces in num-



IN NORMAL COUNTRY AN INFANTRY DIVISION OF 8,500 MEN WILL DEFEND A SECTOR OF 8-10 MILES. THERE ARE TWO POSSIBILITIES OF ORGANIZATION. ONE WOULD BE THAT TWO OF THE THREE INFANTRY REGIMENTS GARRISON THE FIRST BELT, WITH ALL THEIR BATTALIONS IN LINE, SIDE BY SIDE. THE THIRD REGIMENT DEFENDS THE SECOND BELT. THE DISADVANTAGE OF THIS DISPOSITION IS THAT EFFICIENT CONTROL OF THE THIRD REGIMENT, STRETCHED OVER A SECTOR OF 8-10 MILES, WOULD BE COMPLICATED UNDERTAKING. THE OTHER POSSIBILITY WOULD BE TO GARRISON THE FIRST BELT WITH TWO BATTALIONS OF EACH REGIMENT, WHILE THE THIRD BATTALION WOULD OCCUPY THE SECOND BELT. BOTH METHODS CAN BE USED IN COMBINATION. OWING TO THE GREATER DISPERSION IN THE SECOND BELT, EVEN A DIRECT HIT COULD HARDLY AFFECT MORE THAN ONE BATTALION.

FIGURE 3.

ber?" It is not difficult to answer this question. Without a continuous front, an enemy may easily attempt a massive infiltration, advancing on a wide frontage, cross country, and submerging the positions of the atomic command and the weak forces protecting them. Against such a dispersed invasion, atomic weapons would be of little avail. On the other hand, in order to break through a continuous front, the attacker is obliged to concentrate his forces, thus becoming vulnerable. In other words, by the mere existence of a continuous barrier, the enemy is forced into concentration, becoming thereby a paying target for atomic weapons.

How should the front of the ground forces be constructed? To answer this question, let us first state that an atom bomb or shell with an effective radius of about 2 miles covers an area of 12.56 square miles. However, when a disposition—whether offensive or defensive—is articulated to a depth of 1 mile only, then the real surface of the target is reduced to about 4 square miles. Does not that mean that tactical forms organized in broad lines could reduce the effect of atomic weapons to one-third of its maximum? In attack, a deep articulation will be more difficult to avoid, as offence must be deployed from depth. However, a 1-mile deep belt of ground forces may be solid enough to bring to a standstill an attack the impetus of which has been reduced by atomic bombing and atomic shelling.

However, in order to lend a more solid depth to the defence, it is proposed to organize three or more successive belts, each about 1 mile deep. In World War I, it was said that successive defence lines should be sufficiently distant from each other that the attacker could not reach them from the same gun positions. Here, in atomic warfare, the distance between the lines should be sufficiently great that two cannot be affected by the same atomic projectile. Of course, when marking out defence positions, account will have to be taken of such conventional factors as suitable field of fire, easy camouflage, and good observation. An additional condition will be that the configuration of the terrain chosen for defence should offer at least partial protection against atomic weapons. In atomic warfare, natural obstacles may be of greater importance than ever. It is difficult to imagine how an attacker could cross a river if his immediate rear were covered by heavy atomic fire.

How are these belts organized — deep trenches everywhere, dugouts, pillboxes and shelters, protected by barbed wire, minefields, and all kinds of other obstacles? The spade will again become as indispensable to the infantry as the machine-guns, the mortars, bazookas, and recoilless guns. Here and there, small packets of tanks are dug in and as carefully camouflaged as other parts of the position. Some batteries of normal artillery are also built into this system. Their task consists of shelling areas which, for reasons of safety, cannot be covered by atomic shells, and also to prolong in time or to complete the effects of atomic weapons, to support local counter-attacks, and to deal with special targets, such as shelters or pillboxes.

The main strength of the defence will be concentrated in the first

belt. The principle is to cling as narrowly to the enemy as is practically possible. Therefore, the "no man's land," as well as the position of the advanced posts, should be reduced to a minimum. The more the two sides are entangled with each other, the smaller the probability that the attacker, because of his own troops' safety, will use atomic weapons against the first belt. Such close contact, such mingling of both sides, could, in certain cases, be furthered by tracing the position in zig-zag form. In World War I the Germans succeeded several times in escaping the murderous preparatory fire by simply evacuating their position. This method could, perhaps, be used in a reverse sense. In certain cases, probably under cover of darkness, the attacker may suddenly break contact and retire in order to use atomic weapons in preparation against the first line. Normally, in spite of all his precautions, such movements will hardly escape radar detection. In any case, the forestallment against this or similar tactics necessitates constant alertness on the part of the defence, whose tactical reserves must be kept in readiness and able to follow at the enemy's heels by moving forward with sufficient strength almost immediately. As the evacuation of the first position by the attacker may easily be a sign of an imminent offensive, the atomic artillery of the defender should, without delay, concentrate on the supposed jumping off bases of the attack.

However, the application of such defence tactics will not always be possible. When both sides are separated from each other by an important obstacle — such as the Elbe or Rhine — it would be difficult to follow immediately an enemy suddenly evacuating his forward zone. The old rule, that an obstacle can only be forced with difficulty if it is kept under fire, might also retain its validity in atomic warfare. The problem is to know with what kind of weapon this should be done —atomic or conventional? The former is a thousand times more powerful. Therefore, would it not be logical to site the forward limit of the defence position about 6 to 10 miles behind the river, in order to keep both banks, especially at the crossing points, within the range of the atomic artillery?

Speaking from a general point of view, tactical situations which heretofore were exceptional may frequently become normal in atomic warfare. As it can be advantageous—according to terrain and other circumstances—to keep in close contact with the adversary, in certain cases the security of the ground forces in defence might be enhanced by an alternative solution—that is to say, by an abnormally deep "no man's land" of about 10 or more miles. In such an eventuality the attacker would be forced to employ an entirely new technique of concentration, as well as a new form of approach march — a form whose basic principle would be to avoid the fire of the adverse atomic artillery as long as possible, while at the same time assuring the entry into action of his own atomic guns at the earliest possible moment. There is no doubt the chances of success will largely favour the side which first succeeds in making use of his atomic artillery.

The stages of a defensive battle are, then, roughly as follows:—It is the function of radar detection and air reconnaissance to determine the intentions of the enemy. Tactical air forces, in conjunction with missile battalions, hamper his movements on the lines of communication. Those attacking forces which succeed in getting through the successive barrages as far as the jumping-off area of the offensive, run into the fire zone of the atomic artillery. However, should they, nevertheless, succeed in launching the offensive, then it is the task of the three successive belts of ground forces to stop their advance altogether. The entire system functions like a deep filter. Seen on a magnified scale through the eyes of World War I, one may say that atomic bombing by the tactical air forces and missile battalions takes over the rule of the former artillery barrages; atomic artillery, the task of the machine guns.

Although the positions of the ground forces are comparatively thin, the depth of the defence extends, in fact, to about 100 miles. Therefore, the attacker is compelled to deploy his forces much sooner, which means manoeuvring them in fractions, on broad frontages. Without concentration, however, the attack can have no piercing power, yet every concentration inevitably becomes a highly vulnerable target for atomic weapons.

In the last two wars it was only within the range of the normal artillery and machine gun fire that troops were forced to operate in thin formations — clinging to the ground, using every bit of cover, and digging foxholes. Modern technique has, however, increased the power and range of firearms to such an extent that in the future entire armies might be compelled to disperse while still very far from the battle area proper, approaching the front "crawling on their stomachs" and enhancing their security by digging themselves in whenever possible.

The eventual employment of atomic weapons heavier than the present ones in use could only accentuate the above-mentioned characteristics of ground fighting in defensive battles by provoking still greater dispersion. The picture would not be altered essentially by the massive introduction of small atomic projectiles. By using lighter atomic artillery—such as 120-mm or 90-mm calibre—one might possess the advantage of adapting the fire more elastically to the characteristics of the targets. This would logically lead to a more rational exploitation of the available firepower. In other words, the effect of four 5-kiloton shells would be incomparably more devastating than, for example, that of two 20-kiloton bombs.

The smaller radius of destruction of lighter calibres would have the further result of reducing the safety zone. This would allow a more intimate co-operation with conventional ground forces and the support of even local attacks or counter-attacks with atomic weapons. Of course, the range of light atomic ordnance would be more restricted in the case of a 120-mm gun in the neighbourhood of about 10 miles. Smaller ordnance would, however, be more mobile and could conse-

quently be attached directly to field formations. In such a case, the heavier types of tactical atomic weapons would still not lose their raison d'etre. Their task would be to fight the long-range battle, while within such a framework the light atomic guns would become the principal weapons of the ground forces in their atomic close-range combat. Heavy atomic ordnance, with longer range, will always remain essential so long as the technique of guided missiles has not yet achieved the same reliability and precision as that of the artillery. No matter from which angle one considers the problem, the lighter atomic weapons will also favour defence rather than attack.

If we are honest with ourselves, we will acknowledge that there are big wars, little wars, general wars, localized wars, Marquis of Queensberry wars and savage, ruthless wars; atomic wars and, perhaps, non-atomic wars. What can we expect? What can we count on to guide us in our planning? Again, if we are honest with ourselves, and have the wit to see the possibilities for varied political contingencies, we will conclude that we cannot say, for sure, just what kind of conflict the next international crisis might precipitate.

If the answer is "Atoms!" that is one thing. Were the criterion to be "No atoms!" we are militarily right back where we started.

I cannot, nor can anyone else, forecast the blueprint for an ultimate showdown of the nations now in ideological conflict. It is entirely conceivable that we might see a limited use of atomic weapons. We might see, and probably will see, a continuation of the so-called brush fires. Or we might see, as has so far been the case with chemical and bacteriological warfare, a nuclear stalemate, with both sides refraining for fear of retaliation.

Confronted with great uncertainty in this respect, I see no alternative but to hedge our strategic bets, ready to rush into the future, but also prepared to meet, and rely on, the methods of the recent past.

—Admiral Robert B. Carney, U.S. Navy

AIR OP in a COUNTER-BOMBARDMENT ROLE

Captain R. S. Deacon,
Royal Australian Artillery

[*The views expressed in this article are the author's, and do not necessarily represent General Staff policy.—Editor.*]

THE aim of this article is to emphasize the value of Air OP in Counter-bombardment.

Recent experience has shown that the characteristics displayed by likely adversaries in their use of artillery, leave many problems to be solved in the event of hostilities.

The two dominating characteristics are those of longer range weapons than the majority of those at present used in our forces, and a fantastic skill in digging for concealment and protection, the latter requiring an equal amount of skill and experience to counter.

Faced with this dual problem of greater range and the Communists' expert use of concealment through digging, it becomes evident that continuous air observation over the front is an essential in order that the movements and habits of the Communist artillery may be closely followed, and early observations reported.

Providing continuous cover in itself presents a problem for all conditions other than those of air superiority. This is especially the case when light, unarmed aircraft may be called upon to operate up to heights of 7000 ft. to achieve effective observations.

The rapid development and progress made in the air does somewhat ease this problem. Enemy high-speed aircraft, whether on ground attack or interception roles, cannot afford to jeopardise safety through excessive use of fuel at low altitudes in order to harass the operations of Air OP aircraft. The main danger to these light aircraft will come from "cloak and dagger" or AOP "killer" aircraft—i.e., slow piston engined aircraft, armed and intent on shooting down aerial observers.

Thus, the greater the air develop-

ment and progress the more the gap will widen, and the greater the use that can be made of Air OP aircraft, regardless of height—to 7000 ft.

The use of Arty R aircraft, from the recce wing of TAF, must be considered for the engagement of targets by observed fire. This is particularly the case when air superiority has not been achieved.

Flyline and Observation

The selection of a flyline for observation and the height at which to fly will depend upon the nature and depth of the target and the trajectory of our own shells. This is generally effected from the region of our own guns or from a flank.

Under conditions of air superiority it is possible, and desirable, to fly forward of our own FDLs or in the vicinity of mobile troops forming the advance guard.

An observer flying 1000 yards forward of our own FDLs and at a height of 6000 ft. can effectively observe, when using binoculars, to a depth ranging from 8,000 to 12,000 yards behind enemy FDLs.

The advantage of observed fire from the air is that effective vision is not greatly hampered by dust or smoke in the target area. With height, this ever-present dust and smoke can, to a degree, be seen through—sufficiently to adjust fire.

Under the most difficult circumstances, i.e., conditions of low cloud and sleet, observation is possible up to 2500 yards, which generally is sufficient to observe the likely areas of a build up for an attack, or to observe active mortars.

Employment of Air OP in Counter-Bombardment

As borne out in operations in Italy, NW Europe and Korea, Air OP is the greatest single supplier of Counter-Bombardment information, whether the battle be mobile or static.[1]

To justify this statement, let us briefly run through the capabilities of an aerial observer, and in particular the Air OP.

Tasks Carried Out

(a) Source of Information

(i) The observer, by continually map reading on the front, acquires a detailed knowledge of enemy active areas and likely hostile gun positions. This knowledge can be used to advantage in accurately map-spotting gun flashes and smoke puffs. Such information is immediately transmitted to the CB staff via HQRA command net for plotting and recording.

On completion of his artillery observation sortie, the observer, by means of up-to-date photographic covers of the front held at flight HQ, can mark on the appropriate cover the location of the flash or smoke puff by area and grid reference, and the time active. This information is forwarded to the CB staff.

(ii) Unfixed and Suspect Hostile Batteries (HB):[2] Hostile Batteries

1. The Journal of the Royal Artillery, April, 1953. "Counter-Bombardment in Korea," by Major E. V. Thomas, R.A.

2. A Hostile Battery (HB) consists of any number of enemy weapons which appear to be controlled by one command post. With widely dispersed weapons it may be necessary for counter-bombardment purposes to treat them as two or more hostile batteries.

listed as either "unfixed" or "suspect" by the Counter-Bombardment Staff are marked for location by APIS on a photographic cover and given to the Air OP for reconnaissance and confirmation.

The observer, owing to his increased vision, both laterally and vertically, can assess whether the HB is occupied and locate its position to within 100 yards. Generally the results of this air recce and fixation are sufficient confirmation for the hostile battery in question to be listed as "fixed" by the counter-bombardment staff. Aerial observation can also assess whether the HB is a main, temporary or roving position.

Over and above the HB reconnaissance ordered by the CB staff, valuable information may be obtained by the observer, with regard to new HB locations not listed by the CB staff.

As previously mentioned, fixation of flashes and smoke puffs observed are forwarded to the CB staff for collation, and, in fact, this observation provides most of the information on new HB locations and is effected generally in the last hour of light. Again, the observer becomes intimately accustomed to the characteristics of a hostile gun position, and often during a lull in HB retaliation the observer reverts to routine observation of the front. During this routine scrutiny, the observer may locate hostile gun positions under construction or those recently completed. Fixation of these locations are of immense value to the CB Staff.

(b) Retaliation on Hostile Batteries

(i) Pre-arranged: From the information collected by the counter-bombardment staff on hostile batteries, priorities for the engagement of these HBs are allotted. Normally three HB priority tasks are given to the AOP Flight per day, for either neutralization or destruction. Each hostile battery is marked on an aerial photograph together with the grid reference and fire unit available, normally a section of heavy artillery.

Once airborne on the front and having identified his target, the observer conducts the shoot with the allotted fire unit on the flight frequency. It is of importance to note here that because of the low rate of fire of the heavy equipment, the observer has sufficient time between rounds to watch for likely active hostile batteries, hostile mortars and the movement of enemy troops against which impromptu retaliation may be directed.

(ii) Impromptu: Depending on the commander's counter-bombardment policy, the early reports of "active" hostile batteries by the observer to the CB staff (six figure grid reference and time active) are checked for location, and if the CB policy is active, immediate engagement is authorized. The engagement may be for neutralization or destruction. Destruction of a hostile battery is often a long process, especially if heavy and super heavy weapons with their low rates of fire are used.

If destruction of an HB is ordered and the observer finds he cannot complete the task with the fuel endurance available, the next observer, who is airborne on the front before the previous sortie is completed, is briefed in the air and

continues the engagement until the hostile battery is destroyed.

Such targets as may appear can be effectively dealt with by means of "bombards" — concentrations of fire synchronized to produce maximum lethal and neutralizing effect —without interrupting any HB shoot already in progress. The bombard method of engagement may also be effectively used when active AA is encountered.

The last observation sortie of the day is allotted the task of watching likely enemy FUPs for attack, neutralizing active mortars, and map spotting active guns. This sortie remains airborne on the front for 60 minutes after sunset, as HBs, under cover of dark, are most active at that time. Reasonably accurate map spotting of flashes is possible for 45 minutes after sunset, as natural features stand out when seen from the air for that length of time. Once a flash has been reported, a "bombard" of heavies is fired for neutralization.

A dawn observation sortie is similarly of value, with the observer on the front 45 minutes before dawn, to counter yet another favourite period of activity.

Neutralization of HBs controlled by aerial observation is usually more effective and more lasting. The better command achieved by Air OP, especially for deep HBs, ensures that the MPI of fire units involved is kept on target.

With the MPI adjusted on to the target, fewer guns would be required than would be the case were the target engaged by predicted fire, the inherent inaccuracies of which require a great number of guns from many fire units. The value of being able to effectively engage deep HBs with fewer guns will readily be seen when an extensive CB plan is required prior to a deliberate operation.

Value of Air OP in a Counter-Bombardment Plan

With a deliberate attack where the demand on CB resources is always greater than can effectively be met with the guns allotted for CB, the value of Air OP is inestimable. For effective and lasting neutralization of HBs, using predicted fire, ratios of 20 : 1 are employed for periods of approximately 10 minutes on each HB. This means that most guns allotted for CB are fully occupied neutralizing prior to H hour, and the resources available to deal with new HBs are, though allowed for, limited. Furthermore, if the pre H hour CB period is of short duration—because of the nature of the attack—then, with the guns available for CB and faced with a large number of HBs, only those HBs which would normally fire on the front of the attack, and a limited number of those which could but normally do not, could be engaged.

The main point arising out of this argument is that there will generally be insufficient guns available for counter-bombardment when predicted fire is employed. In this field, the use of Air OP in the counter-bombardment plan would lessen the problem greatly.

In the first instance, Air OP could be used to adjust the MPI of fire units on to hostile batteries. and thus the ratio of 20 : 1 could be greatly reduced. This would then release guns to permit the engage-

ment of hostile batteries which would otherwise remain unengaged, i.e., those which would have to pull weapons out of their pits in order to interfere with the attack. This type of HB must be considered, as normally every available weapon is used in defensive fire to break up an assault. These HBs are normally engaged early in the CB plan, and with extra guns made available could effectively be neutralized. On a Corps front, at least eight spotting aircraft could operate at varying heights (to prevent "overcrowding") safely.

Because few corrections should need to be applied to correct errors in prediction, the observer would be able to place the MPI of the fire unit accurately on to a hostile battery within ten minutes.

Using rotation procedure, two such hostile batteries could be dealt with simultaneously, but this may add up to five minutes on to the time required to adjust the MPIs.

Owing to the nature of a counter-bombardment plan, i.e., with a limited number of hostile batteries being engaged for approximately ten minutes, and then switching progressively to other HBs, it would be practicable for four observers to each handle two hostile batteries on each second serial.

With eight observers available, the time lag between the first four observers engaging on one serial and engaging on two serials later would be sufficient to enable the MPI to be adjusted.

With the MPI adjusted on to an HB, and consequently releasing more guns, two possibilities arise with regard to the duration of engagement of each hostile battery:

(a) The duration of initial engagement could be increased.

(b) Re-engagement of the more dangerous hostile batteries as H hour approaches would be made easier, and again the duration could be increased.

In this way more effective and lasting neutralization would be achieved, and a greater number of hostile batteries engaged.

This suggestion immediately brings to mind the problem of communications, but let us consider what is involved when using AOP on counter-bombardment.

It has been suggested that, when employing eight aircraft on the front, four spotters adjust the fire on to two HBs each on one serial, and the same on a later serial.

The solution to this ever-present communications problem may be found in the following way:—

Each observer to engage his two allotted HBs with the one fire unit, and operate on the frequency of that fire unit.

In this way the amount of traffic on one particular net will be reduced as far as AOP controlled HBs are concerned. The observer himself can ably net on the traffic of that net. This system could be employed by each observer on each serial. The only information required by the observer is the HB, its serial, the fire unit and the frequency. Once the MPI is adjusted, the observer need not enter into further traffic on that net, so leaving it clear in case the following serial by another observer is with that fire unit.

Once a CB plan is formulated and put into effect, it must be anticipated that new HB locations will

be received. It is essential that fire units be allotted to these "impromptu" targets, yet due to the fire units involved in effecting the counter-bombardment of located HBs, the resources of "impromptu" targets will be limited. The problem is then to make the most effective use of this limited allotment.

It is generally accepted that these new HB locations are most effectively and economically neutralized by aerial observers.

Summary

The problem of insufficient guns being allotted for counter-bombardment, together with the tremendous disadvantages of being faced with an enemy whose weapons outrange our own, is one most likely to face us in the event of hostilities.

It will readily be seen that any factor that may assist in lessening the counter-bombardment problem must, if practicable, be employed.

Considering the capabilities of Air OP and their advantages, yet not overlooking the disadvantages of weather and air superiority, it is essential that the formulation of a counter-bombardment plan embodies the potentials of Air OP to the limit.

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