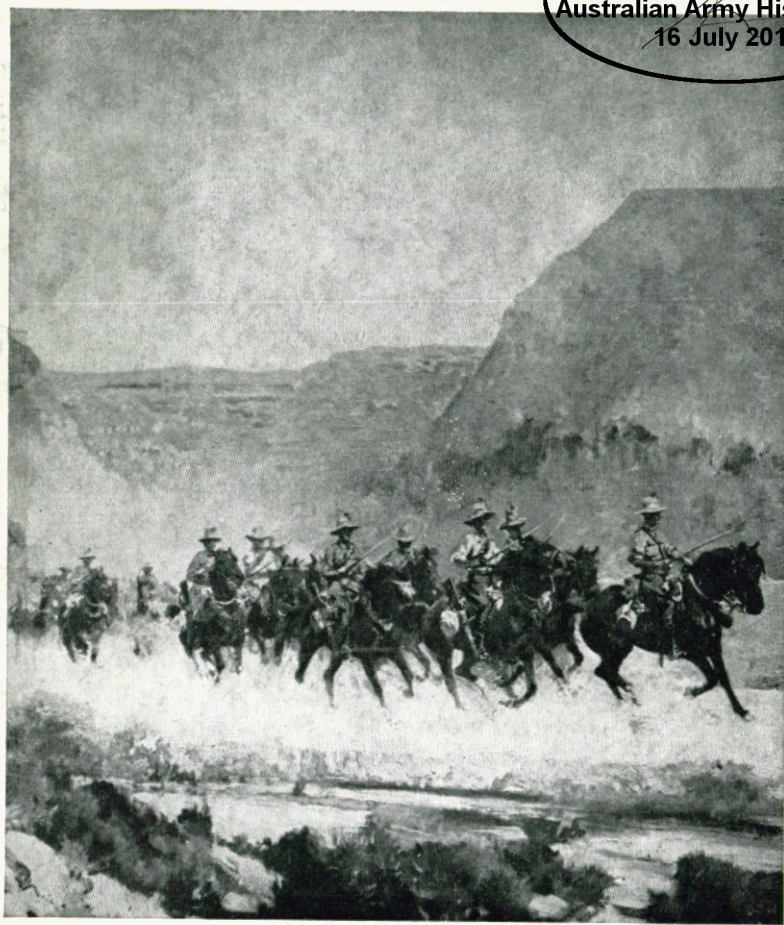


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COVER: From a painting 'Into Damascus, 1 October 1918' by H. Septimus Power, at the Australian War Memorial.

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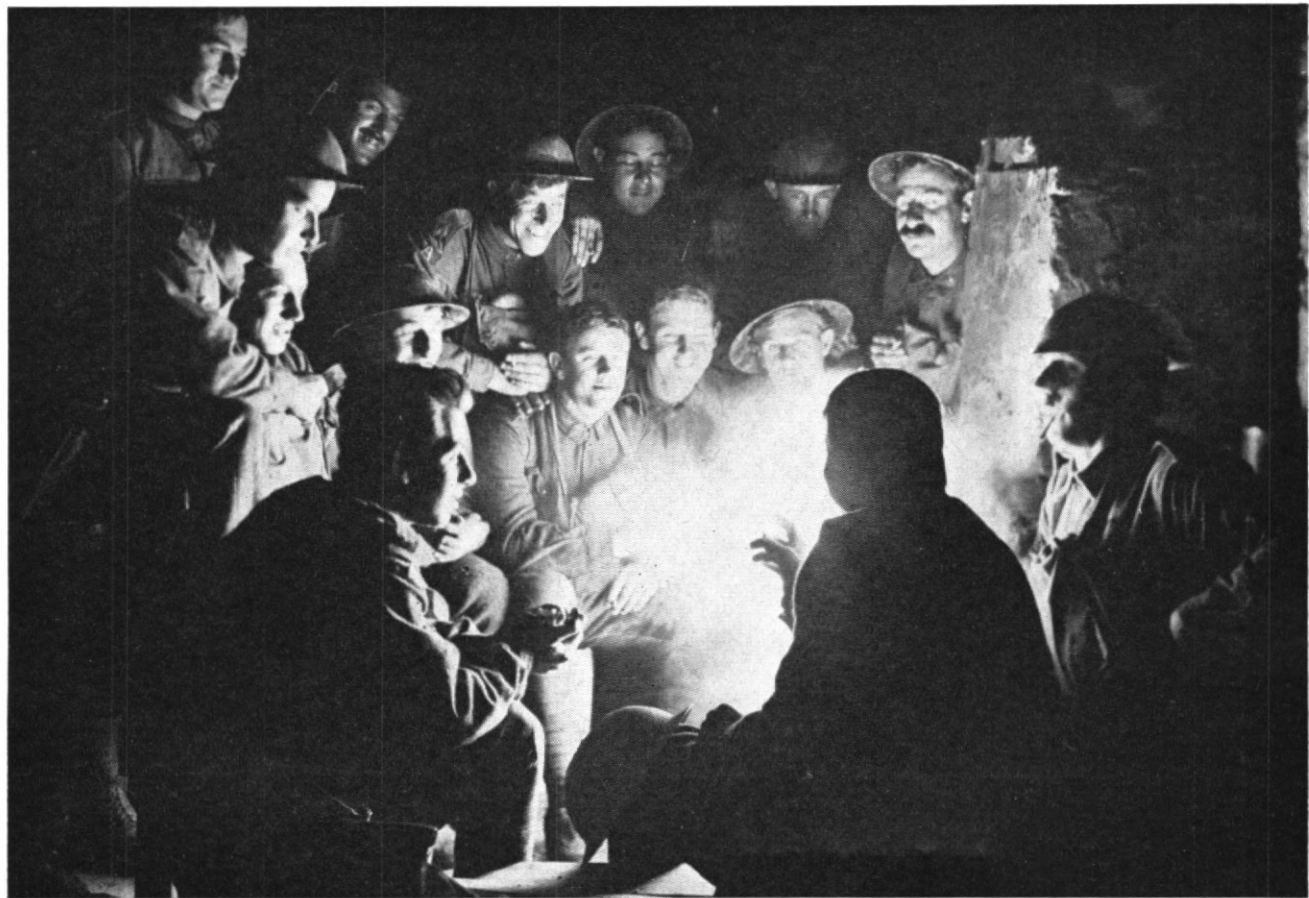
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(Australian War Memorial)

Artillery Operations in Borneo

Major D. Quinn

Royal Australian Artillery

OPERATIONS in Borneo differed from operations in World War II, Korea, and in more recent times, Vietnam. There were many problems which had to be solved in the gunner world but they were problems which had to be solved—and in fact were solved—by the junior officer.

Borneo operations began in December 1962 when British Forces entered Brunei State in order to suppress an armed rebellion. This rebellion, which had spread to the Fourth and Fifth Divisions of Sarawak, was quickly crushed and by April 1963 the situation was quiet.

The creation of Malaysia produced an immediate reaction from Indonesia and by August 1963 British Forces were engaging Indonesian inspired terrorists crossing the Malaysian border. These crossings were most numerous in the First and Second Divisions of Sarawak. In late 1963 there was a strong incursion in the border area of the Tawau Residency of Sabah. This was defeated in December 1964.

As the British Forces defeated each incursion, so the pattern of terrorist activity changed. More Indonesian regulars were introduced to strengthen the terrorists and incursions became shallow hit-and-run attacks—mainly by night—across the border.

Therefore, to combat these tactics the British forces were mainly deployed in fortified posts close to the border from which intensive patrols and ambushes were conducted. In the rear areas patrols and searches were conducted in an attempt to disrupt the communist elements. Success was only achieved by an immediate reaction, day or night.

Major Quinn graduated from the Royal Military College in December 1956 and was allotted to the RAA. After a number of regimental appointments he was posted to 102 Field Battery RAA, 45 Light Regiment RA in FARELF in September 1963. In 1964 he served in Sarawak as a troop commander with 70 Light Battery RA and in Sabah as a troop commander with 170 Med Bty. He later returned to Sarawak in 1965 with 102 Fd Bty.

In 1967 Major Quinn was a student at the Defence Service Staff College in India and in 1968 a student at the Australian Staff College at Queenscliff, where this essay was written. He is presently commanding 107 Field Battery RAA, 14 Light Regiment RA in FARELF.

It has already been pointed out that the British forces were actively engaging the Indonesian terrorists in August 1963; yet it was not until June 1964 that the gunners were used in their primary role.

The first artillery unit to be deployed in Borneo was a battery from 45 Light Regiment, Royal Artillery; in support of 99 Gurkha Brigade, which at that stage controlled a front of some 400 miles—the First, Second and Third Divisions of Sarawak. The directive to the brigade commander from the Director of Operations was: 'to deter the enemy from crossing the border and if he does to give him a bloody nose.'

The cry was for infantry and in the initial stages the gunners operated in this role while the guns were left in storage in Kuching. One troop was deployed in Western Sarawak and there they spent months in patrolling, ambushing tracks and in caring for the locals. In the meantime important gunner techniques became rusty and almost forgotten.

In March 1964 the battery was changed over and 70 Light Battery RA was deployed in the Sematan District from a minesweeper. Their task was an infantry one also. After a few weeks the battery was redeployed, one troop going into camp near Kuching to give support in the First Division, the other troop being sent to Batu Lintang on the border in the Second Division.

The troop in First Division then spent an arduous three months conducting cordon and search type operations—the net result being the capture of two Indonesian illegal immigrants who had been living in the area for ten years. Meanwhile, the other troop had been mortared once or twice but had not been used in a gunner role.

In late May 1964 the troops changed over and the troop in the Second Division was supporting the 2/2 Gurkhas. The commander was told that his troop would be used as infantry but after a few hours' discussion the battalion commander was persuaded that this would be a misemployment of artillery. This turned out to be a wise decision because on 13 June 1964 the most successful ambush at this stage of the confrontation was sprung. Twenty Gurkhas ambushed a party of one hundred Indonesians in the Batu Lintang area and the effective support from two guns prevented the Indonesians from counter-attacking. The Gurkha platoon commander, who was subsequently awarded the Military Cross wrote: 'The fire support given by the gunners prevented the Indonesians from overrunning our position. Thank you.' The next week a single gun was deployed in the Lubok Antu area in support of another Gurkha platoon operation and once again the artillery support was successful.

As a result of these two successful operations the cry now went up for guns; guns were wanted everywhere, and at once. There were six

guns to cover a 300-mile front and gun positions were reconnoitred, occupied and tasks registered. The guns were deployed singly, some by air and some by road. Administration and technical repairs were among the problems that had to be overcome and as there were only three gun fitters in the battery they spent their time hitch-hiking by helicopter from gun to gun.

Occasionally an officer went out on patrol, leaving the gun area in charge of a sergeant. In one case a young officer did this and was successful in breaking up an Indonesian ambush with artillery fire. He received a commendation from the Brigade Commander for his successful action and a blast from his battery commander for leaving his gun—both by the same post. As a result of the shortage of forward observers each platoon commander was issued with a 'Child's Guide' for directing artillery fire.

In early 1965 the British forces were increased and eventually there were three batteries in the First Division instead of one troop. However one battery, 102 Field Battery, Royal Australian Artillery, was supporting three battalions. Besides its own six howitzers the battery had under command two medium guns and another section of three howitzers from a British battery. To overcome the problems of the battery commander dealing with three battalion commanders each battalion was allocated an artillery officer to control the supporting artillery. This arrangement also provided alternative communications for the brigade; in fact the battery net stretched over 120 miles.

In one particular incident at Plaman Mapu a platoon of Royal Marines was nearly overrun by a superior Indonesian force. The artillery support was ineffective because the nearest registered DF was one thousand metres away. This led to a re-examination of the DF tasks surrounding all the border outposts and the two troop commanders virtually became gypsy observers, wandering from outpost to outpost registering the DFs. After weeks of painstaking work every border camp was protected by DFs one hundred and two hundred metres away from the wire. It was not uncommon during the registration to have a round bounce off the wire, but then this is nothing new.

Registration was a problem as most of the outposts were surrounded by hills and dense rain forest. Naturally the first round had to fall in a safe area and in most cases it could be heard but not seen. To overcome this problem registration was commenced from a helicopter. The artillery observer on the ground would then complete the task when he could observe the fall of shot.

With unreliable maps, suspect meteorology and difficult navigation, fire planning in support of operations was difficult. Operations would

be planned well in advance and all manner of intelligence was used to plan patrol routes. When the route was decided upon the company commander and his forward observer would select the most easily identifiable features along the route. These features were silently registered and as the patrol moved so the guns laid on the target in the immediate vicinity of the patrol. This system was also an excellent means of reporting positions instead of using other codes.

The gunners did nothing new in Borneo; they were just flexible, and in some cases unorthodox in their approach to the problems which arose. The lessons which can be learnt, or relearnt, from the use of artillery in the recent Borneo campaign are many but the main ones may be summarized as follows:

- Single guns *do* deter the enemy.
- Gunners should be employed as gunners, not as infantry.
- Communications can be made to work whatever the distance.
- An unusual problem requires a flexible and unorthodox approach.
- The techniques of technical gunnery remain the same whatever the tactical problem. □

MONTHLY AWARD

The Board of Review has awarded the \$10 prize for the best original article published in the May 1969 issue of the journal to Colonel E. H. Smith for his contribution 'Command and Control in Battle'.

The Western Soldier

versus

The Communist Insurgent

Brigadier C. N. Barclay CBE, DSO

British Army (Retired)

MILITARY experts have been puzzled in recent years by the frequent lack of success of the Western soldier against the Communist insurgent. The former—with his sophisticated weapons and equipment such as jet bombers, tanks, and helicopters—might be expected to achieve decisive and quick results against men armed mostly with only their personal weapons, without any regular supply system, supporting aircraft, artillery, or other items which the Western soldier regards as essential.

Explanations for this state of affairs often are more in the nature of excuses for failure than valid reasons. Many of the reasons or excuses are trivial and include the obvious assertions that the insurgents are fighting on their home ground and are little affected by bombing because they operate mostly in small parties and have no installations worth bombing. There are, however, several valid, fundamental reasons for this lack of success by the Western soldier. At the same time, there are indications of possible remedies.

The Problem

In order to place the specifics of the problem in their proper context, we need to recall that the Communist system of warfare is based on the teaching of Mao Tsetung who prescribes operations in three stages:

- Subversive action within the enemy country. By means of propaganda and incitement to violence, to subvert the minds of the population so that they either welcome and help the Communist forces when they arrive or remain apathetic.

Brigadier Barclay was commissioned in the Cameronians (Scottish Rifles) in 1915 and served in both World Wars I and II. He commanded a battalion at Dunkirk and later saw service in north-west Europe and South-East Asia. He is one of the Editors of Brassey's Annual and formerly Editor of The Army Quarterly and Defence Journal. This article is reprinted from the February 1969 issue of Military Review.

- The infiltration of small parties of guerilla fighters who seek to terrorize the inhabitants into active support of the Communist cause and dislocate the process of government.
- The regular forces of communism march in to consummate the victory after it is considered that the first two stages have been thoroughly effective.

Not all military operations which have taken place east of Suez in the past two decades have conformed to this pattern. In Korea, stages 1 and 2 were imperfectly executed by the North Koreans, and stage 3 started too soon. The result was a war which began in World War II style and finished as an inconclusive linear war of attrition, with both sides occupying entrenched positions like those on the Western Front in World War I. The West learned two lessons:

- Asiatic Communist forces are largely invulnerable to air bombardment.
- The Chinese Communist soldier is a formidable opponent.

Although we are now dealing with Communist Vietnamese instead of Chinese, both of these lessons have been confirmed in Vietnam.

The Communists also have learned the lesson that subversive and guerilla operations pay a better dividend against Western troops than do operations on a World War II pattern.

Malaya and Aden

In Malaya from 1948 to 1960, operations followed the Mao Tsetung doctrine in the first two stages. Stage 3 was never reached. Stages 1 and 2 were only partially successful, and the Communists were unable to deploy sufficient forces for stage 3. Although it took British Commonwealth forces around 12 years, they eventually succeeded in bringing all of Malaya back to a condition of normal law and order.

Experience in Aden before the British withdrawal at the end of 1967 is hardly typical. The terrorists there may have had some Communist backing, but were mostly inspired by Arab nationalism. British troops acted more in a police role than a military capacity, but it was once again demonstrated how difficult it is to prevent acts of sabotage and murder conducted by determined infiltrators who do not wear uniforms and who resemble the local inhabitants in appearance.

The confrontation between British Commonwealth and Indonesian troops in eastern Malaysia (North Borneo) is also not typical. The enemy were not Communists but Indonesians who were fighting in an area some distance from the heart of their homeland. The operations were

on a small scale and consisted mostly of clashes between patrols. It provides, however, one important lesson in demonstrating that well-trained regular troops can beat the Asiatic guerilla at his own game. British patrols—Gurkha units in particular—gained a marked ascendancy over the Indonesians, and this led to terms for the cessation of the fighting.

In 1965, US Armed Forces were committed to combat in Vietnam. Since then, there has been a steady buildup of strength until, by the spring of 1968, US land, sea, and air forces exceeded one-half million men. Without this massive intervention, there is little doubt that the Communists would have overrun all of South Vietnam and probably be well on the way to doing the same in other countries of South-East Asia.

I do not profess to know how US Government and military officials rated the prospects of early success when they embarked on this course. But to many outside observers, it seemed likely that the matter would be satisfactorily resolved in a matter of a year once the United States had deployed a sizable force.

This has not happened. After more than three years of bitter fighting, Communist guerilla fighters and saboteurs—the Viet Cong—are still in control of large areas of South Vietnam and are still able to commit murder and outrages, and carry out ambushes in parts of the country nominally under the control of the South Vietnamese Government.

Communists Miscalculated

The Communists have completed stage 1 of Mao Tsetung's recipe for war and have gained a considerable measure of success in stage 2. In the spring of 1968, they erred in thinking that the time was ripe for stage 3. Stage 2 was intensified by acts of sabotage and murder in all the cities and large towns of South Vietnam. At the same time, major units of the regular North Vietnam Army were brought into action. In most cases, these were at battalion strength, but sometimes, particularly in the area of the demilitarized zone, full divisions were deployed.

There is little doubt that this action was expected to bring decisive results and a victorious end to the campaign. It failed. The guerilla attacks on the cities and towns did not bring about a revolution or uprising in favor of the Communists, and the larger formations and units found that, in large-scale operations, they were no match for US troops and the better trained of the South Vietnamese units. The Communists had miscalculated in believing that stage 2 had advanced sufficiently to permit a successful launching of stage 3.

Throughout these years of combat, the US Air Force has played an important part. Conventional-type bombs have been dropped in massive

quantities on important targets. The Communists surely have been severely handicapped by these operations, but bombing has not proved decisive or as effective as anticipated. Losses in aircraft have been heavy, mainly due to anti-aircraft fire from Soviet and Chinese-made anti-aircraft weapons.

In this campaign, no serious military commentator contemplates the defeat of the forces of the United States, South Vietnam, and the other allies. On the other hand, the Communist forces have proved hard to beat, and there is a long road to travel before they are decisively defeated.

We may now examine some of the causes of the difficulties experienced by the Western soldier in fighting the Communist guerilla, not only in Vietnam, but in Malaya and elsewhere. In this connection, it should be noted that the campaigns of terrorism started recently by the so-called African Freedom Fighters against the countries under white control in southern Africa bear a strong resemblance to the methods adopted by the Viet Cong in Vietnam.

Factors Governing Success

There appear to be three main factors necessary for success when fighting Communist guerillas:

- A high standard of tactical skill in the infantry—particularly at patrol level.
- The support of the civil population, not merely passively, but in an active capacity.
- A good intelligence system at all levels.

The forces of the Western Powers have not always been conspicuously successful in these respects.

The great advantages enjoyed by the modern guerilla-saboteur are well known. He usually operates in his own territory; he can pick and choose the time and place of his activities; and he can mingle with the population from whom he is often indistinguishable. To these and other inherent advantages must be added that his operations are usually skilfully directed at a high level, and the men who carry them out are well trained in tactics and in the use of their weapons which are of a simple design, but of good quality.

There is little difficulty in training the Western soldier to handle his weapons efficiently. However, it is not easy to attain a standard of tactical skill superior to that of the guerilla. That it can be done was demonstrated in the campaign by the British in Malaya. British troops

and Gurkhas showed a degree of tactical skill superior to the guerilla enemy. However, these comparatively small-scale operations were conducted mostly by regular, long-service volunteers. On the Malayan mainland, about 60 per cent of the fighting infantry were regular, long-service soldiers. The remaining 40 per cent were national servicemen except in Gurkha units which were all regulars.

The situation is different in Vietnam, with operations being on a vast scale. In these circumstances, most of the men are short-service draftees or reservists whose standard of training—tactical training in particular—cannot possibly be as high as that of long-service regular volunteers. A draftee who serves for only two years requires eight to 12 months to train to a good combat standard and be deployed in the theatre of operations. The US forces in Vietnam suffer from the great disadvantage that a high proportion of their men serve in the theatre for only one year.

There is a belief among many people that, compared with the technical arms, the infantry soldier's task is an easy one. There can be no greater mistake. The high degree of tactical skill required by the modern infantryman is one of the most difficult arts in the military curriculum. The late Field Marshal Lord Archibald P. Wavell, whose combat experience was worldwide and extended over a period of approximately 40 years, once wrote:

The art of the Infantryman is less stereotyped and far harder to acquire in modern war than that of any other arm. The role of the average Artilleryman, for instance, is largely routine; the setting of a fuse, the loading of a gun, even the laying of it, are processes which once learned, are mechanical. The Infantryman has to use initiative and intelligence in almost every step he moves, every action he takes on the battlefield. We ought therefore to put our men of best intelligence into the Infantry.

As a result of experience in Burma in World War II, Field Marshal Lord William Slim said:

The actual task of the Infantryman requires from him a much higher standard of training and a much greater power to think and act and act quickly, than that needed by any other arm.

Modern experience shows conclusively that the first requirement for success against the guerilla-saboteur fighter is a highly trained force of infantrymen. In jungle, swamp, or mountain, where the supporting arms find it difficult to operate, this requirement is even more important than in more open country.

The subversive propagandist and the Communist guerilla mix with the civil population and often closely resemble them in appearance. Obviously, if the civil population is friendly or overawed, their task is made easy. If the civilians are hostile, the task is difficult and sometimes

impossible. Clearly, it is a primary task of Western troops to gain and maintain the support of the civil population.

This is not to be done by idealistic slogans. People who are starving, ill, and living in the middle of a battleground want help to grow their crops, and need doctors, nurses, and shelter. Above all, they want to be sure that, if they help the Western troops, they will not become the victims of Communist reprisals.

Occupy Small Areas

Once the regular troops occupy an area, they must stay there. They cannot expect help from the civil population if it is known that they are likely to withdraw and let the Communists return. Moreover, burning and destroying villages because of a suspicion that they harbour Communist fighters is a policy of doubtful wisdom. The Communists may well be unwelcome visitors in a friendly village. They are armed; the villagers are not and, therefore, have no alternative to admitting them. It is much better to occupy a small area and protect it properly than a large one and leave its inhabitants open to Communist reprisals.

Another factor of success is intelligence. In great wars such as World Wars I and II, military intelligence is mostly on a high, or strategic, level. It aims at discovering when and where the enemy's next major attack will be delivered, the movement of forces from one theatre of operations or front to another, the enemy's manpower situation, and the state of his armament industries, his morale, and similar matters.

In operations against Communist insurgency, some of these matters are still important although the intelligence is directed to a much lower level. This is tactical intelligence and is concerned with small enemy concentrations and camps; stores of food and ammunition; and, above all, prior information about impending ambushes, acts of sabotage, and attacks on posts and defended villages.

Tactical Offensive

It is only by the plentiful and prompt supply of information of this type that the guerillas' plans can be upset and the regular troops assume the tactical offensive. The surest way to failure is to assume a defensive posture and await attack or ambush. The guerilla bands must be sought out and destroyed before committing their acts. This is no easy matter, and 100 per cent success is obviously unattainable. However, as was shown in Malaya and later in Borneo, even a modest degree of success in offensive

operations pays a good dividend. The guerillas become dispirited and physically exhausted and eventually abandon the contest.

Without good intelligence, these results are unobtainable. Clearly, intelligence is tied closely with good tactical training and the co-operation of the civil population. Highly trained troops will automatically provide a large measure of their own intelligence at a low level. If co-operation with the civil population, including civil police, is also good, a steady flow of information about enemy activities is assured.

How can these requirements for defeating guerillas be met?

In the deserts of the Middle East, and in much of the open country of Europe, the airplane, the tank, and the long-range gun or rocket can often play a decisive role. In the jungle and swamps, and sometimes in the mountains, of South-East Asia, the enemy cannot be seen from the air or by the artillery ground observer, and the tank cannot operate because the terrain, except on roads, is mostly unsuitable.

In these conditions, the infantry soldier—operating on his feet with little more than his personal weapons to help him—is the only arm capable of attaining decisive results. In my view, this is the crux of the entire matter. If the infantryman is highly trained, then the other requirements will come easily.

Difficult Problem

The dilemma for the United States is this: How is it possible to have highly trained infantrymen in large-scale overseas operations, as in Vietnam, in an Army where a high proportion of the soldiers serve for only the short period of two years?

This is a difficult problem. A good proportion of my 31 years of army service was spent in training infantry soldiers, directly and indirectly, and commanding them in battle. Special thought was given to minor tactics. Even with the long-service soldiers which the British Army recruited in peacetime before World War II, and the excellent training facilities often available overseas, it was no easy matter to produce a unit really well trained in minor tactics. In war, with men enlisted only for the duration, it was even more difficult to attain a high standard of tactical training once the peacetime junior leaders had gone—through casualties or through attrition.

This problem was never solved to my satisfaction. However, with the increasingly high standard of intelligence and education among Western soldiers, it may now be possible to put the short-service combat

soldier in a position of tactical superiority over the Communist guerilla-saboteur. The following suggestions are offered:

- Ensure that the men of best intelligence and physique are put into the combat arms—the infantry in particular. The so-called technical arms should not be given preference. There is no higher grade technician than the well-trained infantryman who always bears the brunt when the going is toughest and the terrain too difficult for the other arms to operate.
- The basic personnel in minor tactics are the junior officers and non-commissioned officers—the men who, once trained, train the men under them. In times of peace, it is not difficult to provide junior leaders of this stamp from among the long-service professional soldiers, and they will last for a short time when war begins. After a few months, however, when casualties, wastage, and dilution due to the formation of new units or the activating of old ones take their toll, the supply begins to run out. If operations are on the scale of World War II, Korea, or the campaign in Vietnam, the standard of minor tactics gradually deteriorates and can become thoroughly bad or practically non-existent.

To prevent this trend in a big war of long duration is difficult. Most military skills such as weapon training, signal procedure, and defence construction can be learned as a drill, and quickly, by intensive methods. But there is no short-cut to the art of minor tactics in which the soldier—and the junior leader in particular—must use initiative and intelligence in every move. The solution lies in taking timely action to secure a steady flow of good junior leaders.

In World War II, this matter was not tackled seriously in the British Army until half-way through. By 1943, some improvements had been made, but many units never attained a high tactical standard. In the meantime, battles and engagements were lost, mainly in North Africa and often due to a low standard of battlefield tactics.

It should be part of the mobilization plans of every Defence Ministry to establish schools of instruction at various levels for teaching minor tactics to junior leaders as soon as it becomes clear that big-scale operations are impending. A carefully thought-out plan for instruction in this subject would provide a continuous flow of instructors for existing units, and instructors and a cadre of junior leaders for newly raised, or newly activated, units. If the existence of the problem is realized at the outset, its solution should not be too difficult under modern conditions.

Another important matter is that a team functions at its best when the members know, and have confidence in, each other. If its personnel

are continually changing, it loses efficiency. Some changes are inevitable in war, but, in tactical units, they should be reduced to the minimum.

A greater proportion of training time should be devoted to tactical training. There is a tendency to spend too much at weapon training which is comparatively easy to arrange, whereas tactics is more troublesome and requires considerable preliminary thought. With more time devoted to the latter subject, short-service men should attain a degree of proficiency which enables them to be efficient followers, if not instructors and leaders, in the field of minor tactics. The inventive officer, with sufficient seniority and authority to influence training, will have little difficulty in adapting his methods and organizing instruction to suit the men and the conditions at the time.

I am convinced that it is the well-trained, lightly equipped infantryman, operating on his feet, who can bring victory against the Communist guerilla-saboteur. The supporting arms—aircraft, artillery, and tanks—should be used to the full, but experience has shown that they cannot be decisive. The more difficult and enclosed the country, the less effective they become. □

OFFICERS AND MEN

Art thou officer? or art thou base, common, and popular?

William Shakespeare, 1564-1616 *King Henry V*, Act IV, Sc. 1,37.

I have not seen one soldier perform any one act of religious worship in these Catholic countries, excepting making the sign of the cross to induce the people of the country to give them wine.

Duke of Wellington, Badajoz, September 8, 1809,
to John Charles Villiers.

Laterite

A soil common to many regions of defence interest to Australia

Major M. M. van Gelder
Royal Australian Engineers

FOREWORD

ALTHOUGH this article is based on the author's engineering experience with laterite in the Northern Territory, Thailand and Vietnam, to a certain extent it consists of extracts from other sources on the subject. The wish is to express in terms as simple as possible the nature of the material known as laterite, as there is a dearth of information possessed by the Australian Services on the properties of this material, found in most regions where Australians may be called upon to serve. The article will fulfil its purpose if it promotes a general interest in the material by the Arms and Services, and a specific exploratory interest by the Royal Australian Engineers.

Introduction

Most Australian soldiers who have served in tropical areas have come across a reddish soil which they have successfully swallowed as dust, used to fill sandbags, dug weapon pits in, or simply watched engineers push from Point A to Point B. Those who were more observant would have noticed a reddish-coloured 'buckshot' gravel or large red stones being used to construct the base of a road, and brownish grave headstones in the middle of a paddy field. Invariably they would have heard the term 'laterite' used.

They would have been no more puzzled than Francis Buchanan, a Scottish surgeon-cum-historian who travelled widely through India at the beginning of the 19th Century. He noticed the ferruginous deposits

Major van Gelder, who graduated from RMC Duntroon in 1955, was allotted to the RAE and early biographical details are shown in previous issues of the journal. In 1966 Major van Gelder attended the Staff College at Queenscliff from where he was posted as OC 23 Construction Squadron at Holsworthy. In February 1968 he was sent to Vietnam as OC 17 Construction Squadron. A graduate in civil engineering and economics he gained his Master of Engineering Science from the University of NSW in 1968. He is presently DAAG in DPS(A) at AHQ, Canberra. An unabridged version of this article deals more comprehensively with the nature of the material, and cement and lime stabilization in construction.

which covered large areas of India and presumably, because it was used by the Indians in the construction of buildings, gave the material the name of 'laterite' (from the Latin *later*—a brick).

Francis Buchanan was not to know that similar deposits occurred in many other areas of the world. Copious literature of the last century and a half reveals that laterite in some form or another occurs in such widely separated regions as North America, South-East Asia, Australia, Arabia, and Brazil. Geologically ancient deposits are even more widespread.

What has stimulated a great deal of research and literature on laterite is the fact that, depending on the parent rock, the laterite can contain the commercial ores of aluminium, iron or nickel. The three latter metals are of great interest to Australians today. The variable chemical composition of primary laterite depends largely on relative proportions of the two lateritic constituents—the hydroxides of ferric oxide and aluminium. Ultra basic rocks which contain trace amounts of nickel may, under tropical-humid weathering, give rise to laterites enriched in nickel in the form of genthite or garnierite, which are varieties of serpentine.

This article will endeavour to explain the origin of laterite and to clear up a few of the misconceptions as to its nature and properties. Because Vietnam is the country in which Australians are presently serving we shall have a look at the geology of Phuoc Tuy Province and speculate (in the absence of firm data on soil properties) on the origin of the lateritic soils of that province. Because the soils present some engineering problems some time will also be spent on a few suggestions in regard to dust abatement, and methods to improve the usefulness of laterite for road and airfield construction.

Definition of Laterite

Where better to find a definition of laterite than from a collection of papers¹ which reviews the terminology, the chemical, physical and mineralogical characteristics, physical environment, parent materials and the processes of formation. It was defined as a 'highly weathered material enriched in iron and aluminium, poor in humus, bases and combined silica, and hard or else subject to hardening after repeated wetting and drying, which may or may not contain various non-diagnostic constituents such as quartz and silicate clays'.

¹ Sivarajasinghan S. (and others) 'Laterite', *Advances in Agronomy* Vol. 14, 1962, pp. 1-16.

In explanation, under conditions of tropical-humid weathering, iron and aluminium (and to a lesser extent nickel, titanium, manganese and cobalt) form insoluble hydrated oxides. In well-drained flat areas the more soluble constituents, including silica, the alkalis and the alkaline earths are selectively removed, with resulting development of cap-like enrichments (laterites) of hydrated oxides. Such weathering differs from temperate climate weathering, in which the end product is largely clay minerals (hydrated aluminium silicates).

Iron rich or ferruginous laterite is largely haematite Fe_2O_3 and goethite $\text{FeO} \cdot (\text{OH})$ and may be an ore of iron. Aluminous laterite is composed of gibbsite and boehmite and is the principal ore of aluminium (bauxite).

Clay minerals of the kaolin group are typically associated with laterite. Early research previously considered laterization as profound leaching (desilication) beyond ordinary kaolinization. 'Studies in tropical regions show that weathering of alkaline silicates may yield gibbsite directly without passing through an intermediate clay stage'.²

Laterites range from soft, earthy, porous material to hard, dense rock. Concretionary forms of varying size and shape commonly are developed. The colour depends on the content of iron oxide (and is therefore usually reddish) and ranges from white to dark red or brown, commonly variegated.

Not infrequently the ferric hydrate occurs as small pisolitic nodules. Exposed surfaces of laterite are of a blackish-brown colour and often have a scoriaceous, lava-like appearance. When freshly broken, laterite shows a vermicular structure, has a porous texture and is mottled with various tints of brown, red and yellow. This rather lengthy description is provided to assist in identification of material suspected of being laterite.

Two types of laterites are generally recognized—a high-level primary or *in situ* type and low-level secondary or detrital (Buchanan's) laterite. What makes differentiation on these grounds so difficult is that under certain circumstances lateritic debris may re-cement into masses which resemble the primary material.

The parent material greatly influences the composition of laterite, which may be developed from a variety of igneous (e.g., basalts and granites), sedimentary (e.g., shale, alluviums) and metamorphic rocks.

² McGraw-Hill, *Encyclopaedia of Science and Technology*.

Misuse of the Expression 'Laterite'

Because of its generally reddish colouring and because of the abundance of red soils in tropical regions, most red soils have come to be loosely called 'laterite'. If we were to consider laterite as a material occurring in various soils rather than a soil itself then the misuse of the expression would probably disappear.

Tropical red soils are invariably soils involved in the process of laterite formation. They have not formed laterite in their profiles however because of the absence of one or more of the conditions favourable to laterite formation. Because of the geological period involved in the formation of laterite the engineer cannot wishfully think that a heavy overnight shower is going to turn that useless red dust into a good construction material. It is interesting to note a US Engineer Report states that only 30% of the soils of South Vietnam have a reasonable potential for laterite formation. 'The other soils are either too wet (the Delta), too dry (the South-Eastern Coastland) or too mountainous (the Highlands)'. As much of the actual fighting in South Vietnam has occurred in the Mekong terrace regions, soldiers will continue to meet up with laterite on more occasions than this percentage would indicate.

Fundamentally, although laterite shares its red colouring with many soils, it differs from clay soils in that the aluminium is present as hydroxide instead of silicate.

Again, although laterite can be correctly termed 'gravel laterite', 'laterite gravel with some clay of low plasticity' or 'laterite gravel with some clay of high plasticity', engineers themselves probably confuse the issue by using material called 'poor quality laterite' when they are really using clays.

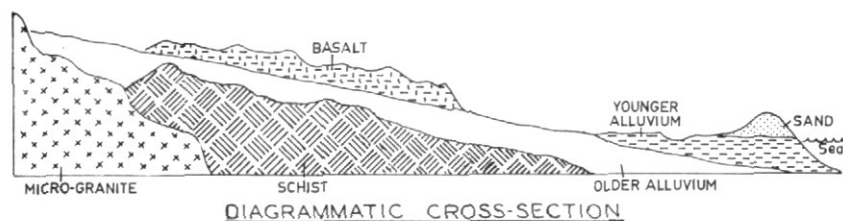
The physical and chemical composition of the particles comprising laterite is not fixed and the particle size distribution can vary tremendously. For example, a good laterite gravel at Lee Point near Darwin had only 12% passing the smallest (clay-silt) sieve. Some of the laterite samples at Long Binh in South Vietnam had 44% passing the same sieve. What is important is that the clay be of low plasticity. Laterite used on the airfield at Ubon in north-east Thailand was specified so as not to have a percentage greater than 45% passing the smallest sieve. A percentage of fine clay is of course necessary to give the material good compaction characteristics.

Sometimes a little too much clay is better than too little because it is simpler to improve the grading characteristics of the material by lime or cement stabilization than to deliberately introduce fine material.

Geology of Phuoc Tuy Province, South Vietnam

The following geological notes are taken from a lecture presented by E. G. Wilson of the Joint Intelligence Bureau (Australia) on 'Underground Water and Wells with Special Reference to South Vietnam 1967'.

The geology of the area is comparatively simple—a basement of older rocks consisting of granite and schist is covered by a thick sheet of alluvium (about 300 feet in this area) and in some places remnants of an extensive sheet of basalt overlies the alluvium. The present day streams have carved broad, shallow valleys in the alluvium and basalt in which they deposit their own alluvium in flood time. We therefore refer to the alluvium of the present stream system as the Younger Alluvium, and the underlying alluvium is known as the Older Alluvium.



The basement of schist presents a fairly regular but uneven surface out of which hills of microgranite such as the Long Hai Hills and Nui Dinh rise well above the countryside.

The Older Alluvium blankets the uneven surface of the underlying basement with as much as 300 feet of sand, gravel, silt and clay, and various mixtures of these components. This alluvium was deposited on the extensive flood plain of the Mekong that existed at that time, probably about a million years ago.

An extensive sheet of basalt lava flowed out over the alluvium from a number of volcanoes in the area; the maximum thickness of the basalt in the province was probably about 300-400 feet, but in the southern part of the province near Nui Dat most of the basalt has been weathered away and all that remains in some places is probably less than 50 feet of reddish-brown soil with basalt boulders. The 'Horseshoe' feature to the north of Dat Do is one of the volcanic cones that contributed to the basalt sheet.

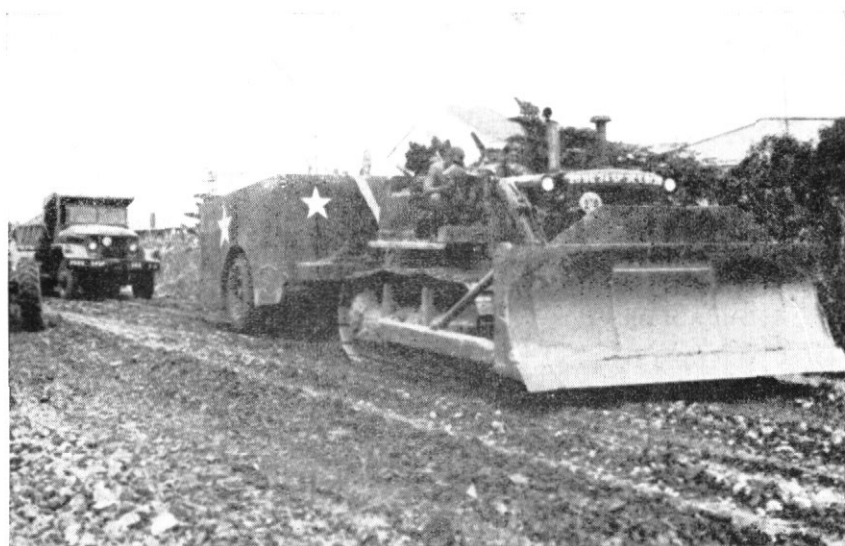
With subsidence of the seaward part of the area, streams have deposited their sediment in alluvial flats, backshore swamps and in coastal mangrove swamps. These sediments comprise the Younger Alluvium.

Finally, sand was thrown up along the beach and extensive sandy beaches developed; the shoreline migrated seaward with the deposition of more sand in the back beach area.

E. G. Wilson states that a late event in the history of the area was the formation of laterite within the zone of seasonal fluctuations of the water table in the Older Alluvium; laterite concretions of iron oxide overlie a mottled and leached zone of silty pallid clay. In the basalt areas, large boulders of ironstone concretions formed in the red soil that overlies the basalt.

Laterite in the Area of Nui Dat

Although, as Wilson says, the geology of Phuoc Tuy Province is very simple, there occurs a variety of rocks and history of soil formation to provide a number of possible explanations of the origin of the laterite in the area of Nui Dat.



US engineers on road construction in South Vietnam.

To further complicate the picture, the province is the approximate meeting point of three geomorphic provinces of South Vietnam (US Engineer Report)—the Mekong Delta to the West, the Mekong terrace to the north and north-west, and the South-Eastern Coastlands. In addition, a line running north and south through the middle of Phuoc Tuy

Province (approximately through Nui Dat) marks the westerly extent of a large basalt flow.

It is safer to accept the fact that laterite will form from a variety of rock or soil type as long as the physical conditions of formation as previously outlined are met. The laterites may vary enormously in quality but this quality determination is very easily made by mechanical examination and partially by visual inspection.

It is concluded firstly that some of the laterite in the Nui Dat area has been formed in the silty sandy ancient alluvial soils typically found in the Mekong Terrace region. Laterite forms in these soils around the original soil grains. Secondly, because of the additional presence of the iron-rich basalt plateau soil, pellet laterite has also been formed and, thirdly, because of the closeness of the laterite to the surface, most of the Nui Dat laterite is fossil laterite and no longer forming. (A little more research into the exact nature of the Nui Dat laterite is obviously called for).

PROBLEMS IN THE USE OF LATERITE IN PHUOC TUY PROVINCE

Dust

In dry weather any road surfaced with laterite and subsequently untreated becomes very dusty. Not only does the dust cause personal physical discomfort in living and working areas but it has the following disadvantages:

- Mechanical wear in equipment.
- Low speeds due to poor visibility.
- Hindrance to observation from vehicles in convoy.
- Road hazard.
- Loss of fines from constructed road surfaces.

The overall classification of excavated laterite is a medium gravel with some clay of low plasticity. On the assumption however that at least some of the laterite of Phuoc Tuy Province has similar gradation and plasticity characteristics to the laterite of the Long Binh/Lai Khé areas, it appears that one pit can produce a number of widely varying samples. At Long Binh the percentage passing the No. 200 sieve (the clay-silt fraction) varied from 30% to 50%. Therefore to avoid as much dust as possible care must be taken to select the best material and not exploit any one pit or area indiscriminately.

A poor laterite has numerous weakly cemented gravel-size particles which tend to break down when soaked and mechanically graded. An old road surface of laterite after alternate soaking and drying, and subjected to heavy traffic, will break down into dust. Worse still, if a red

soil is used by mistake instead of laterite, the lack of compaction and higher dust nuisance will readily become apparent.

Generally, in comparison with the US Forces, there was a reluctance by the Australian Force to use dust palliatives. This probably stems from the shortage of water and bitumen distributors, the slow rate of, or lack of emphasis on, the development of water wells in the Nui Dat area, and an initial shortage of peneprime (bituminous priming material or soil-binder).

The main roads of the US 1st Infantry Division base at Lai Khé were sprayed with a diesel/peneprime mixture every day. Not until late 1968 was there any large-scale spraying of 1 ATF internal roads and this preceded the sealing programme. The Australian force should be more conscious of the need to lay dust and establish itself with sufficient water and bitumen distributors.

Methods used by the Australian Task Force to allay dust are the spraying of water, diesel, oil or peneprime. The water is sprayed using distributors fitted with spray-bars. The oil, quite often the waste products from the servicing of vehicles, is often hand-applied, and the peneprime or diesel is sprayed from a bitumen distributor.

Some further points to note in dust control are:

- Where brine or salt water is available this can be used as a simple expedient. The sodium chloride is hygroscopic and absorbs moisture from the atmosphere. It is particularly effective in the morning before the surface dries out again.
- On the sandy-silt areas of the Mekong delta US engineers were successfully using a diesel/peneprime mixture, fifty per cent of each, for laying of dust. On the poor type of laterite used on most of the roads in Phuoc Tuy Province a mixture with only a small proportion of diesel is advised.
- If a bitumen emulsion is used the emulsion can be diluted with water to lay dust on the clayey laterites.
- In all cases when laying laterite dust, the surface should be watered first to assist in the penetration of the dust palliative. When a water distributor is not available it is best to spread peneprime or emulsion after rain or early in the morning. No free water should be lying on the ground immediately before treatment.
- The spreading of bituminous material in areas which are otherwise likely to be disturbed by aircraft or helicopters has the two results of physically binding the soil and promoting plant

growth. The latter will occur more so if the ground beneath the bituminous surface is moist. Too much growth however will lead to disintegration of the bituminous cover.

Road and Airfield Construction

The use of laterite in construction can range from natural stone blocks; an ingredient in soil-cement bricks; or an aggregate for low grade concrete to a base or surface course material for roads, airfields, helipads and hardstandings.



Kangaroo Helipad: 1 ATF Base. Reconstructed and sealed by 17 Construction Squadron RAE.

Its most common uses in Phuoc Tuy Province are as a base course for large scale construction (airfields and highways) and a surface course on minor roads. Extensive use of laterite for road construction inside the Australian Task Force base at Nui Dat continued up to the end of the 'Dry' in early 1968. Even after this, and to make greater use of the self-elevating Euclid scrapers, the field squadron continued to use laterite, particularly as a top course water seal over a blast rock base. With extensive development of the Nui Dat and Ba Ria quarries and the use of the construction squadron for road construction, the preferred top course became crushed rock. There was another reason for this however; a laterite surface cannot stand up to the high wheel pressure of the local heavily loaded bullock carts. The narrow iron rims cut wheel ruts in a laterite surface.

The base courses of the reconstructed Luscombe Airfield (by US 36th Engineer Battalion) and Kangaroo Helipad (by 17 Construction Squadron RAE) were of laterite. Local failures in the Luscombe Airfield extensions appear to have arisen from poor bitumen sealing technique rather than failure of the laterite as a base course material. Unless the final surface is carefully prepared for sealing the clay or fines content of the laterite will not allow adequate penetration of the prime. The aircraft parking bay and hardstand show failure due to inadequate compaction, or compaction not up to the standard of the main airfield. Kangaroo Helipad is not subjected to wheel traffic (vehicle or aircraft) so is not adequately tested for compaction or quality of seal. (In most circumstances, of course, traffic is beneficial to a sealed surface). The material used in the reconstruction of Kangaroo Helipad was the *in situ* lateritic material probably originally imported from the laterite pit just outside the Task Force base.

Compaction and Adequate Water

Compaction without adequate water will always be unsatisfactory and there is nothing more wasteful in civil engineering than compactive effort applied to materials at moisture contents other than optimum. As an illustration of the importance of moisture content in compaction, a sand-clay sample compacted in the laboratory at 1% below Optimum Moisture Content produced a resultant density of 87% of criteria. This shows how critical moisture control can be when commonly required base course densities of 95% criteria are required, for example, Luscombe Airfield.

With coarse grained materials, particularly fine crushed rock, the safe method to adopt is to soak the material above optimum moisture content and 'roll through' optimum. This saves accurate determination of the optimum moisture content.

With a clayey or poor lateritic material this is not advisable as the base course may not dry out.

When adequate water is not available and the best compaction has to be obtained under the circumstances prevailing, any watering that can be done should take place shortly before rolling (preferably both actions should take place in the cooler parts of the day). Watering last thing in the afternoon and not rolling until next day is unforgivable in circumstances of shortage of water.

One of the factors contributing to the water shortage, i.e., water for construction purposes mainly, was the low water transport capability.

The following is a comparison of capacities of similar sized units:

US Navy Mobile Construction Battalion — 10,400 gallons (Airfield at Nakhon Phanom, Thailand)	
RAAF Airfield Construction Squadron — 10,000 gallons (Darwin)	(includes 2,500 gallons improvized)
17 Construction Squadron RAE — 6,000 gallons (Vietnam)	(includes 1,200 gallons improvized)

The Working of Laterite Pits

Laterite is invariably found in association with clay. For example, the soil profile in the vicinity of the British built airfield at Ban Kok Talat in North-East Thailand is generally nine inches of sandy top soil, two feet of laterite and/or sand and a clay subsoil. The thicker laterite deposits at Long Binh in South Vietnam are underlain by kaolinic clay. The reason for this is that clays of the kaolin group are genetically related to laterite.

It is understandable why some of the areas in which laterite occurs are used for rice cultivation. The impervious clay layer prevents water from soaking down too deeply and draining away. Care must therefore be taken when working a laterite pit to remove only the overburden of silt before excavation and not to dig into the underlying clay layer. The addition of undesirable material from the edge of a laterite deposit may decrease the quality of an otherwise good laterite.

The gravel and fines in the laterite deposit should be well mixed when placed and compacted. Pockets of clay alternating with laterite boulders should be avoided. Large pieces of laterite (greater than 3 inches) should be removed or broken down with 'sheeps-foot' rollers.

CONCLUSION

Two major understatements come to mind in connection with the material under discussion. Firstly, formation of laterites does not seem to be well understood and the literature discussing them is contradictory. Secondly, there is no substitute for first-hand knowledge and experience of the peculiarities of soil types in particular countries and climates.

This perhaps is a pointer to future research by military engineers or geographers into laterite: it is better to concentrate on learning more about the properties and characteristics of the soils in the most likely

combat areas rather than to generalize academically on a soil type occurring over a wide area of interest. The lack of information on laterite where Australian engineers have worked over the past five years—Thailand, Borneo and Vietnam—is a major shortcoming in our operational planning. The author himself is guilty of not appreciating the significance of comprehensive soil testing and recording, not only as a job expedient, but for future planning and the training of engineers who will use the soils in the future.



Provincial laterite road between Ba Ria and Hoa Long in Phuoc Tuy Province being prepared for sealing by Public Works Department.

Using the results of testing by other authorities, for example, US engineers in a neighbouring province of Vietnam and civilian highway teams in Thailand, is not the complete answer, for two reasons. Firstly, the characteristics of laterite are extremely variable and it would be purely accidental for two deposits of laterite to have the same physical and chemical properties. Secondly, the Australian engineers are not developing their own expertise in soil testing in location.

Laterite is not uniquely identified with any particular parent rock, geological age, single way of formation, climatic condition or geographical location. 'It is rather a response to a set of regionally varying physico-chemical conditions which are still far from being fully known in their

interaction'. (See reference 10). Therefore any attempt at over-simplification in a description of laterite is bound to end disastrously. I shall have to use this as an excuse for the rambling nature of the article and the intrusion of engineering discussion in what started out to be a descriptive discourse for general consumption. □

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BOUGAINVILLE, AUGUST 1945

In the whole campaign on Bougainville 516 Australians were killed or died of wounds and 1,572 were wounded. If the Slater's Knoll period be excepted, the number of Australian deaths ranged from two to 24 a week, the number of counted Japanese dead from 53 to 364 a week. The Japanese staffs burned their papers but, in a detailed investigation after the war, the conclusion was reached that 8,500 Japanese had been killed by the Australians and their native allies on Bougainville and 9,800 died of illness during the Australian period; 23,571 remained out of about 65,000 who had been on the island when the Americans attacked in November 1943, or had arrived soon afterwards.

—Gavin Long, *The Final Campaigns* (1963)

Military Review and Appreciation of the Year 1968

A Global Commentary in Sketches

General Baron Leo Geyr von Schweppenburg
German Army, Retired
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Translated by Captain W. Fladun, RAAEC

I

TECHNICAL progress advanced still further during 1968 and thus our globe has shrunk somewhat more again. It is unrealistic to view the revolutionary changes in the basic assumptions underlying military policies only from the vantage point of Europe—or what remains; a Europe that in any case becomes more and more second rate.

To have a clear idea of world questions it is necessary to look at a world map. This is especially so when we are concerned with military problems of global magnitude.

Perhaps the most efficient method with which to approach the task of a global appreciation may be to put defence/political world problems into an order or relative importance. After all, 1968 was only another link in the chain of continuing developments. Of course, once put into some sequence of order, one can argue over the position of the one or the other, and points of view may diverge considerably.

General von Schweppenburg was born in Prussia in 1886 into a family prominent in court and military circles and attended the War Academy at Potsdam from 1911 to 1914. After service in the 1914-18 War he was, during the years 1933-37, military attache in London, Brussels and The Hague. During the 1939-45 War he commanded the Berliner Panzer Corps in the Caucasus and during the attack on Moscow. At the end of the war he was Inspector General of armoured forces, West Normandy. An interpreter in English, French and Russian and a well known writer on military affairs he has previously contributed to the Army Journal.

II

In order of importance, first place should be given to developments in Space Research and Exploration. Regrettably, the major applications and their impact take place in military fields.

Future development and roles cannot as yet be clearly ascertained. It is pure wishful thinking to believe that war could be kept out of space or that treaties would effectively ban military operations there. One might as well believe in fairy tales if one thinks that the super powers would keep faith with agreements not to use outer space for military purposes in a final decisive conflict. The opponents of the last great war certainly did not act in accordance with agreements put on paper.

The race for leadership in space between the USA and the USSR continues. If sources of the Anglo-Saxon press are reliable the US Department of Defence is concerned with measures to counter an already tested Soviet space missile—designed to travel across Antarctica and thus able to avoid the northern Distant Early Warning system of the USA. It is also expected at Cape Kennedy that the Soviets are planning a space station to take up post above the USA for propaganda and military purposes.

The costs of this type of space work are so prohibitive that only the USA and the USSR can meet them. Europe is a long way behind, financially and in time. The European organization ESRO has difficulty in achieving at least partial successes in the fields of communications, meteorology and navigation. Any military activity will most likely remain out of the question.

III

Following these comments on outer space the topic that is next in importance is the complete change of the ratio of power on the oceans. This has continued throughout 1968 by an aggressive development of Soviet naval deployment. We can restrict ourselves to a few significant facts.

Mr Hanson Baldwin, an American who is recognized as a critical expert on the subject wrote recently: 'From now on, the defence policy of the Soviets will concentrate on the realities of Outer Space and the areas of the World's Oceans'.

At present the USA still has numerical superiority in fighting ships, but 60 per cent of her vessels are said to be 25 year old or older. The Soviet Union has the largest number of submarines. She is, however,

behind in the number of nuclear-powered submarines, compared with the USA. The annual increase in this special category in the Red fleet is estimated at 5 boats a year. Russia heads the world in their inventory of fishing fleets and oceanographic survey ships. The Soviet government's aim is to have the world's largest trading fleet by 1980. Present rapid growth indicates that this aim will be achieved.

During a military confrontation of the super powers sea traffic could be heavily affected by missile warfare. A typical example would be the impassability of the Panama Canal, because of proximity to Cuba. Traffic would be subject to detours via the Strait of Magellan or the Cape of Good Hope and Cape Horn respectively. Again, the first mentioned detour route could be threatened from Soviet air bases in the Antarctic. This state of affairs proves beyond a doubt that the united Anglo-Saxons have already lost the dominion over the North and South Atlantic. The same applies to the Indian Ocean. The exclusive control the US held temporarily over the Pacific since the defeat of Japan may, in the near historical future, be questioned; most definitely when the construction projects of the Red Chinese submarine arm are considered.

In summary, the might of the Soviet Union at sea is already one of her strong political weapons and means of exerting pressure. In case of open conflict with the other super power, the USA—a conflict that is unlikely at present—the first offensive priority of the Soviet fleet would be the isolation of North America from Europe and Asia.

IV

Those who make the effort and try to see, through the foggy picture of future history, something like 'the writing on the wall' are likely to consider the detonation of the second hydrogen bomb by the Red Chinese at Lop Nor in the province of Sinkiang with more perturbation than the moves the Soviets made against Czechoslovakia, which have disturbed Western Europe and the West generally to a high degree. Two standards are involved; but in the final analysis it is the global standard that is valid.

It can hardly be questioned that the area of concentration of political and defence/political moves has shifted from the Atlantic to the Pacific. The notion to consider Red China a 'paper tiger' because of her internal conflicts and power struggles is wishful thinking and self deception. Far better is it to consider the 'yellow giant' as a super power now. Due to her still insufficient nuclear armaments, her lagging air force development and her modern, but still embryonic navy, China has so far abstained and satisfied herself with little fish; for example, the acquisi-

tion of the strategically important area of Tibet and the peaceful, but successful *ipso facto* takeover of Portuguese Macao.

When the politicians of Peking make any sort of statement about the undesirability of atomic armaments nowadays it is well to remember the words of Talleyrand: 'Language serves to hide thoughts'. One can be sure that this piece of wisdom is still part of the arsenal of diplomats internationally, not only of those in Peking.

Considering the volume and the speed of Red Chinese nuclear development which, in spite of the strictest security measures, we know occurs in the provinces of Sinkiang and Chinghai, exact and certain data is hard to come by. The same is true regarding the real status of air force armaments at the end of 1968. The withdrawal of experienced Russian advisers on engineering problems and the loss of training facilities for air and ground crews in Russia has slowed down expansion. The ambitiously planned and erected production centres for the air force programme are located near and around Peking, Mukden, Harbin and Shanghai.

To round off the picture at the end of 1968 the following should be said—the strongest concentration of Red Chinese land forces stands at the Russian border. The standing army of Red China fluctuates between 100 and 120 divisions. Of these, only four are known to be armoured divisions and two to be airborne divisions. The air force should become a considerable force in the 1970s. The final status symbol necessary in order to be counted among the super powers—full nuclear arsenal—may not be achieved until a later time.

According to the particularly sober estimates of South African military experts, and based on documentary evidence obtained during 1968, it seems that Red China will have a number of inter-continental nuclear armed ballistic missiles by the end of 1975. It is also estimated that those missiles will be able to engage long distance targets in Western Europe, Africa, Russia, Canada, Australia and northern areas of the US.

What political meaning may be ascribed to the desire emanating from Peking to resume interrupted negotiations with the new Nixon administration is still not clear.

V

To try and work out how the USA scores in strategic position in the world today leads to headaches.

Until further notice she is the strongest state in military respects, but she has also the most obligations, either by national interest or by

treaties, agreements and pacts. The number of possibilities in which US forces could theoretically be deployed overseas is incredibly high.

The former US Secretary of Defence, Mr McNamara, stated significantly that the centre of gravity of defence problems has shifted from Europe to the Far East.

As to Europe, Henry Kissinger, expert adviser to the new president, said: 'judging by history, it is unrealistic to expect that the defence of an area as wealthy, as densely populated and industrially advanced as Western Europe will remain in the hands of a country 3,000 miles away'.

This leads us to the central question of what we can expect of the new president in the foreign affairs and defence field. Western Europe, a partner of his predecessor, was quickly dealt with when he made his final Congress speech by the somewhat ambiguous phrase, 'if it can come to terms'.

During the Kennedy era the rather rigid principles of defence policy of the Eisenhower administration were replaced and changed. President Nixon now faces difficult, important decisions of world wide implications. His inheritance from the Johnson government is not a happy one when one thinks of the internal problems, the external situation, Vietnam, and furthermore that the US is party to eight binding defence pacts. In Asia, the critical continent of international conflicts and tensions, the USA has, in spite of all her means, not been able, for a second time, to win a war. The resulting loss of face weighs heavily in Asia. In a democratic country like the USA the internal situation; that is the race problem, poverty, slum clearance and pressing needs for social legislation has stronger effects upon the course of action in foreign policies than would be the case, let's say, in Red China. In Soviet Russia this is different again. There, public opinion, which weighs so heavily in the USA, is made in the Kremlin.

A victorious end to the war in Vietnam cannot, or cannot any more, be achieved by a force of arms. Any end to the war would be hailed as desirable by a large proportion of the population of the USA. President Nixon takes the reins at a time which, in political and psychological respects, can really be called 'post Vietnam period'. In military respects it has been shown that even in a conflict of heavy consequences the most telling air superiority cannot necessarily force a decision.

Assuming a gradual withdrawal of US forces from South-East Asia took place, this would not offer bright hopes for peace. Countries like Burma, Cambodia, Thailand and Laos would, in view of their military weaknesses and the prospect of communist expansion, feel obliged to

change their outlook. In logical sequence, this would thus endanger Singapore and later Australia.

The British withdrawal from areas east of Suez also creates some difficult questions which the Pentagon must solve for the sake of the US defence stance. A vacuum is being created in the Indian Ocean and Persian Gulf areas. A vacuum which Soviet naval and air forces have every intention of filling. As things are in the Middle East at present, one can safely assume that the successors to the British in Aden will be the Soviets.

After the withdrawal of the British the alliance of the USA with Australia will assume a much more significant role in the Indian Ocean/Pacific Ocean areas. The geographical position of the Australian continent in relation to SE Asia, its location between the two great oceans, and proximity to Antarctica, makes this obvious. Australia's eventual role as an advanced military and political base for the USA makes Australia one of the most valuable and, if only for reasons of pure self interest, safest allies of the US.

The fate of the defence treaty of Japan with the USA, which in 1969 will either be renewed or discontinued, should reveal the pattern of the future history of the Far East.

From a global point of view the military situation of the free world has not improved during the past year. If anything it has deteriorated when seen against the potential situation of the communist world.

One can, according to Talleyrand, do a great deal with bayonets (or nuclear weapons) except sit on them for any length of time. The Soviets, in any case, do not feel themselves curtailed in any way in their pursuit of successes in the field of foreign affairs by the numerical superiority of US atomic weapons. The Pentagon, and with it the free world that has so far stood behind the protective screen of the USA, must also face the awkward problem that is posed by the simple military principle that: to attempt to protectively cover everything one succeeds in protecting nothing.

VI

The Soviets are, by virtue of their form of government, in a position to stipulate from above to what extent Soviet citizens may or may not enjoy a certain standard of living. This is commensurate with the government's need to maintain and advance Russia's status as a super power. Rich in resources and almost completely self-sufficient in raw materials the State is able to make phenomenal advances in many different fields.

Eradication of corruption, the surprising technical talent in a high number of individuals of Russia's more than 150 peoples, the thorough

and hard training of science workers and their replacements; all of these factors contributed markedly to the speedy progress of Soviet might and her position in the world as we saw it at the end of 1968.

The world, especially the free world of the West was surprised, shocked and worried by the armed interference of Russia in Czechoslovakia. The Russian course of action should not have come as a surprise to those who think clearly and deliberately without prejudice. The Kremlin has used the opportunity—the US being tied down in Vietnam—to safeguard for its own sphere of interest an area that is, because of strategic position, a key; an area that has in the majority a strong Slavic population, an area that is highly industrialized. The Kremlin has thus enhanced the security of the Western flank of the gigantic empire. The Kremlin does not suffer from scruples. The after effects of traumatic experiences in two world wars with Germany however would have been of some influence.

The professional expertise of the Soviet General Staff, which in this case again proved itself, taught Western military thinkers a lesson, inasmuch as all the talk of de-escalation in a situation of tension can become the gravestone of military and political theoreticians. The exponents of such views have never manoeuvred against Russians when the stakes were high.

The scientific-technological achievements of the Russians in space, in building their mighty air force and navy, and those less known and little mentioned chemical-biological weapons, are even more remarkable because of the speed with which they were achieved. In a defence/political sense the Russian achievements have made the value of West European armaments rather doubtful.

Soviet politics remain always constant in one aspect—as has always been recognized by the experts in the field—Russian intentions are well hidden and almost impossible to predict.

A limited re-Stalinisation in internal and external affairs has become apparent. The line that is followed by the more rigid Brezhnev commands more influence than that of Kosygin, who is flexible and thoughtful.

The explanation, based on the history of the past fifty years, that Russia must look after her Western defences, is a convenient one. The likelihood of aggression from that quarter is small indeed. The claim that the Western borders of Soviet Russia are still threatened does not hold water and is purely and simply good propaganda.

The major success the Soviet Union could chalk up in the pursuit of success in foreign affairs is that her influence in the Near East has

not only increased, but that she has taken up the position that has been vacated by the British in this key area of world politics. Against the many well founded opinions that Islam presents a spiritual barrier against communism, the infiltration of communist Marxism into this part of the world has taken place.

The arrows of further Soviet expansion point towards the Persian Gulf. It should be pointed out here that England draws 80 per cent of her oil requirements from that region. Much of that amount is necessary for defence purposes. The direction of that move is in accordance with the text book solution of finding the point of least resistance or risk; the objective is to gain a foothold in Yemen and thereby, the Indian Ocean.

It should be said in conclusion that due to the degree in which armaments on both sides have been advanced and are ready the Kremlin has no interest in an armed conflict with the USA, and pays close attention to the limits of brinkmanship.

A possible, no, relatively certain, political enemy of Soviet Russia in future will be Red China. Significantly this country refused to be a party to the nuclear weapons non-proliferation treaty. The year 1968 showed the first indications that a struggle for the leadership of Asia has begun in earnest and that this will be part of the pattern of the future. In a decisive engagement the concepts of space, time and masses will perhaps constitute the elements of finality.

VII

At the end of 1968 a new picture of the world becomes increasingly clearer. The dream of humanity—a lasting peace—remains a dream. The time when the lion lies peacefully next to the lamb seems further remote than ever. The non-proliferation treaty has created a political class of pariahs of 'have nots'.

Practical, realistic politics, and military potential, remain Siamese twins. This is not always recognized or logically taken into account.

To the struggle, whether in peace or war, in the air or on the high seas or the continents, a new dimension has been added—the struggle for supremacy in space.

The foregoing minor study of the situation at the end of 1968 has been deliberately restricted to a mere outline. Apart from other points no assessment was made of the existing military weight of the British Commonwealth, African development, and the frankly rather unsatisfactory defence potential of NATO. The opinion of the author on these

issues, even if extensively discussed, would remain as of little importance. Nor would they be in the public interest or the interest of the publisher.

If these sketches gain the readers' consideration and cause thought and argument then the author's objectives have been achieved. □

GUERRILLA WAR

The most frequent and likely kind of war is the one for which the West is least prepared militarily, politically and psychologically. In guerilla war superior fire power loses its old relevance. Guerrillas need only join battle where they enjoy local superiority, but the defenders must be strong everywhere in anticipation of the unexpected. No longer is the ability to occupy territory decisive, for the real target has become the morale of the population and the system of the Civil Administration. If these can be undermined through protracted struggle, the insurgents will prevail no matter how many battles the defending forces have won.

What makes the situation particularly complex is that there is no purely military solution to guerilla war. Pacification requires a government capable of enlisting the loyalty of the population. But such a government is difficult to establish because of the very nature of guerilla war, whose chief targets are often civil administrators. Moreover, for a Western government aiding an Asian or African ally, the criteria of what constitutes stable government may prove elusive. Government can be stable by being oppressive. By contrast, a developing society inevitably creates dislocations. How to achieve both development and stability, both progress and security?

Too often, there is a tendency to fragment the problem. Some argue that the problem of guerilla war is essentially political. Others maintain that military success must precede political institution building. But in truth the problems are inseparable. Political construction must be carried out while the guerilla war is being fought. And in many countries it is essential if civil war is to be avoided. There is no more urgent task for analysis than an inquiry into the nature of stable enlightened government in developing nations.

—Kissinger, H. A. 'American Strategic Doctrine and Diplomacy'. *The Theory and Practice of War*. Editor: Michael Howard. Cassell, London, 1965.

The Feeding of Dogs for Special Tasks

Dr C. F. A. Younger,
Army Food Science Establishment

THE highly developed olfactory and auditory senses of the dog have found a variety of applications in the armed forces of a number of countries, although in Australia dogs are principally employed as guards or trackers.

The basis of training of these and any other dogs is the practical application of elementary Pavlovian psychology. If we wish to train a hound to return to its Master when the hunting horn is blown we start by blowing the correct note on the horn whenever the hound is fed in kennels. He rapidly learns to associate the pleasant experience of feeding with the blowing of the horn and, if we are reasonably skilful, with a particular note. Subsequently, when he is loose and some distance away, we blow the horn, and when he returns we feed him in a small way. Eventually, he will return and we do not need to feed him, but merely to pay some attention. Finally all that is required is to feed him at the end of the day. Although training methods may differ, the fundamental drive which forges the link and understanding between dog and trainer is the urge to eat.

It is interesting therefore to reflect how the overall nutrition of the dog may ultimately affect his performance and behaviour.

Dogs, and similar animals, suffer from the disadvantage of being classed as *carnivores*. The *carnivores* are usually defined as flesh eating animals,¹ whereas, in actual fact, in the wild state they are carcase eating.

Dr Younger qualified M.B., B.S. (Lond) and M.R.C.S. (Eng) L.R.C.P. (Lond) from Guy's Hospital following two and a half years National Service with the British Army (RAEC). After a number of hospital appointments and a year in general practice in London he served as assistant medical officer on Christmas Island, Indian Ocean for two years. Dr Younger came to Scottsdale, in Tasmania, in 1958 and was in partnership in general practice until joining the staff of the Army Food Science Establishment there in 1963. For relaxation he maintains a stable and a private pack of hounds and has made a study of the nutrition of dogs to assist in raising the performance of the pack.

A *carnivore* normally consumes heart, liver, lungs, intestines, and bones, in addition to the muscular tissue or flesh meat, which make up the whole carcass. In doing so he ensures an adequate intake of all the nutrients required to maintain him in peak condition. Amongst the many nutrients, we may cite specifically the vitamins of the B group, vitamin A, and calcium.

It is a popular misconception that dogs require large quantities of flesh meat and to feed thus is a very good thing. Although a dog fed in this manner will not show gross evidence of malnutrition, it is in fact, a bad practice.

Flesh meat contains no vitamin A, which is found only in the liver and kidneys. (Vitamin A may be derived from other sources, such as the carotene of fruits and vegetables, but it has been shown that dogs cannot tolerate large quantities of vegetable fibre,² despite some claims that 'cooked vegetables are particularly beneficial'.³ These organs are also a rich source of the B vitamins, containing three to four times the amount found in beef and lamb muscle.

The requirement of dogs for vitamin A are higher than for man. The recommended daily requirements for growth and maintenance are 90 international units and 45 international units per pound respectively.⁴ Thus a 40 lb dog would require 1,800 international units daily for maintenance, compared with 2,500 international units for a man weighing 154 lb. Dogs maintained on diets deficient in vitamin A develop abnormalities of bone which may produce secondary neurological lesions due to pressure on nerves.

Probably the most significant development in dogs deprived of vitamins of the B group, notably pantothenate, is impairment of learning ability which develops in 4 to 15 days, with no other signs of neurological damage. Interest in the nutritional significance of vitamins of the B group in human nutrition has recently been aroused by studies in children in which it has been shown that deficiency of pyridoxin (vitamin B₆) in the early weeks of life affects normal brain development.

Although liver and kidneys are very good sources of vitamins A and the B group, these organs may not be readily available. Also it is

¹ The shorter Oxford English dictionary. 3rd Edition. 1966. Oxford University Press.

² Canine nutrition with special reference to reduced meat consumption. Aust. Vet. J., 1944, 20, 239-243.

³ Handbook of ration scales and scales of issue. March 1968.

⁴ National Research Council, U.S.A. Nutrient requirements for domestic animals. 8. Nutrient requirements for dogs. Publ. No. 300, 1953.



Brutus, a Labrador now serving in Vietnam as a tracker dog, being trained by his handler-trainer at the Infantry Centre, Ingleburn, N.S.W.

unwise to get into the habit of feeding offal of any kind to dogs owing to the risk of hydatid infection, even though this may be overcome by adequate cooking procedures. It is, incidentally, desirable to cook all meat fed to dogs in order to reduce the incidence of tapeworm infection. Cysts of tapeworms are found in beef and pork which is fit for human consumption, and they are quite impossible to detect except by special histological techniques. They are rendered completely harmless by cooking, but if ingested in raw meat, develop into large tapeworms which may be responsible for chronic ill health.

Some other source of vitamins A and B group therefore require to be found. The most convenient source of vitamin A is the fish liver oils. These are readily available, and in view of their potency require to be administered in only small quantities which may easily be disguised in the feed.

Vitamins of the B group are usually obtained in sufficient quantity in flesh meats, even if offal is not being used. However, if for some reason, such as economy, a significant proportion of biscuit is being fed, unless this is of a wholemeal flour type, some supplement will be required. The richest most readily available source of the B vitamins is an extract such as 'Vegetemite' or 'Marmite'. When diluted, both of these have a beefy flavour, and their addition to a normal feed does not present any difficulties.

Dogs which are fed meat without a significant proportion of bone become grossly deficient in calcium. In man, although minimum daily requirements for calcium are laid down, these figures are recognized as being very arbitrary, and it is undoubtedly possible to maintain equilibrium with much lower intakes. Calcium has, in man, been quite accurately described as 'an element in search of a disease'.⁵ The nonsense which has from time to time been written about the sinister implications of low calcium intakes is mostly the product of the unnecessary verbiage of pseudo medical personnel who have never seen a patient in their lives.

However, the situation in dogs and other animals is rather different. Requirements are considerably higher (a 40 lb dog requires about ten times that for a 150 lb man) and symptoms of deficiency rapidly appear. The effects of an inadequate intake are manifested not only in the skeleton, but also in the general health. Adequate blood calcium levels are necessary for the proper function of nervous tissue (gross deficiency

⁵ Clements, F. W., and Josephine F. Rogers. Diet in health and disease. A. H. and A. W. Reed. Sydney, 1966.

causes the development of greatly increased nervous excitability resulting in tetany) and maintenance of muscle tone.

It is difficult to imagine where, in the wild state, *carnivores* would obtain their calcium requirements other than from bone. It would seem, therefore, that bone is a good source, despite claims made from time to time, usually by individuals interested in the sale of pet foods, that bone is poorly utilized. It has been shown experimentally⁶ that at least 20 per cent of calcium from bone is utilized. A further objection which is made to the feeding of bones to dogs is that there is a risk of perforation of the gut. Although I have personally seen two cases of perforation of the gut in humans, caused through the ingestion of pieces of bone, I have never heard of a similar phenomenon in a dog which has actually been confirmed by operation or post mortem.

If bones are not available the calcium requirements must be supplied by one of the salts such as dicalcium phosphate.

It may be queried whether there is any real significance in feeding a dog a diet which is slightly inadequate in one or more of the essential nutrients, such as those mentioned above.

In most cases the significance is probably very little, and dogs fed on such diets will, to all appearances, seem fit and healthy. The effect is only likely to be noticed when striving for peak performance. An analogy may be drawn with an athlete who is able to run a mile in, say 4 minutes 10 seconds. Against average, or even very good opposition he is certain to be outstanding. Against opposition of international standard, however, where a mile in 4 minutes or less is commonplace, he will appear second rate. With a little more attention to detail, such as special nutritional requirements, he could feasibly raise his performance by the small amount required to be in world class.

With a hunting dog, the difference lies between a kill and a near miss. And in the final tally, there is no credit given for near misses. □

⁶ Udall, R. H., and McCay, C. M. The feed value of fresh bone. *J. Nutrition*, 1953, 49, 197-208.

REVIEWS



A DICTIONARY OF BATTLES, by David Eggenberger, George Allen and Unwin Ltd., London, 1968, pp. x + 526, 105s. (Stg.).

Reviewed by Dr R. J. O'Neill, Senior Lecturer in History of the Faculty of Military Studies, University of N.S.W., at the Royal Military College, Duntroon.

SO many times have most of us wanted in an impatient instant to put our hands on the date of such and such a battle, on the details of its conduct and on the circumstances surrounding its cause. In his *Dictionary of Battles* David Eggenberger has provided such a work, in one volume which is convenient to use and yet comprehensive in its range from the Battle of Megiddo in 1479 B.C. to Operation 'Junction City' in Vietnam, February 1967. Between these limits, Eggenberger includes accounts of 1,560 battles and there are also some 150 brief entries which refer to parts of larger battles. Not only are land battles covered, but also the major naval and air encounters of history.

Each article contains, on the average, some 100-200 words and includes the strategic situation prior to the battle, the date of the encounter, the commanders of the opposing sides, the numbers of troops taking part, the tactics of the opponents, the casualties suffered and the results of the battle. Thus the *Dictionary of Battles* is no mere almanac of dry facts but a series of readable, intelligent descriptions of action and interaction on the field of combat. Where individual battles are part of a larger war, such as Stalingrad in World War II, they are dealt with in a general description of that war and then in an individual article on the battle concerned. In this way it is possible to understand a good deal about a battle without necessarily being familiar with the general historical background to each conflict and so the *Dictionary* should be of great use to the general reader as well as to the specialist in military history. In this way, Eggenberger has overcome one of the most common objections to such reference works which frequently require so much background knowledge that their content is of use only to those whose need for them is small.

The general scheme of Eggenberger's contents seems to be quite comprehensive and it is difficult to make serious quarrel with his decisions on what to omit. There are some curious and apparently arbitrary exclusions such as the battle of Beaune-la-Rolande in the Franco-Prussian War. One would think that given his inclusion of Coulmiers, he would go on to relate the course of the battles for Orleans. However, these are quibbles and do not detract from a work which has at least plumbed the

depths of colonial wars to include campaigns such as that of the British in Ethiopia in 1868. Unfortunately, those colonial gains which were made by military force but without a major battle, such as the French conquest of Tonkin, are not eligible for a mention.

As is inevitable in a book of this nature there are minor slips in matters of detail. Field Marshal von Rundsted's christian name was Gerd, not Karl and that of Marshal Malinovsky was Rodion, not Radion. Hindenburg's part in the planning of the German breakthrough at Gorlice-Tarnow in 1915 seems to be confused with that of Falkenhayn. However, the clarity of the two colour maps deserves praise. The maps cover a wide range of engagements and skilful design has enabled entire campaigns to be followed on the map, rather than through hundreds of words.

Altogether, Eggenberger has produced a reliable, comprehensive and convenient source book for students of military history and his work is recommended particularly for those who are seeking background information on which to base deeper studies. □

THE WAR WITH JAPAN: A CONCISE HISTORY, by Charles Bateson, Ure Smith, Sydney, 1968, pp. 395. \$7.95.

Reviewed by G. P. Walsh, Lecturer in History in the Faculty of Military Studies, University of N.S.W., at the Royal Military College, Duntroon.

CHARLES BATESON, journalist and historian, has filled a long felt need with this short and comprehensive history of the war with Japan, 1941-45.

Mr Bateson opens his account with an excellent and exciting chapter on the Japanese attack on Pearl Harbour which is perhaps the best chapter in the book. After a discussion of the Japanese armed forces and their plans for achieving their Greater East Asia Co-Prosperity Sphere, he then deals in turn with the Japanese military successes in the Philippines, Malaya and Burma. Chapter six deals with the Coral Sea and Midway Battles, and chapter seven with the struggle for New Guinea, where the Australian Army distinguished itself. The remaining seven chapters, commencing with one on the first Allied offensive at Guadalcanal in August 1942, tell the story of the Allied thrust to victory. The author tells his story well and does not shrink from the historian's task of drawing conclusions from the evidence. In the final chapter Mr Bateson examines briefly but critically the decision to drop the Bomb. He says unequivocally that the final Australian campaigns in Bougainville, New Britain, New Guinea and Borneo were unnecessary, as were the assaults

on Tarakan, Brunei and Balikpapan which were dictated 'largely by political motives and international jealousy.' And he reminds us that:

Victory in the Pacific was not, as, for example, MacArthur's propagandist communiques made it appear at the time, and as many American writers have made it appear since the war's end, a wholly American victory. It was an Allied victory, although the United States played the predominant role with its principal and decisive advance, not MacArthur's drive to the Philippines but Nimitz' sweep across the central Pacific. Indeed, the first successes against Japanese troops were won by the Australians in the South-West Pacific. They held the arena after the fall of Malaya and the Indies as in Europe Britain had held the arena after the fall of France.

Many difficulties confront an author attempting to write a concise history. Such a history may be the essence of an author's longer and more detailed work; it may be an extension of an author's interests or specialist publications in a general field; or it may just have to be the result of painstaking basic research and digestion. Mr Bateson's book belongs to the last category which is perhaps the most difficult to pull off. Something, apart from detail, is usually sacrificed in a concise history and this book is no exception. Bateson's history is generally well-balanced, but politics suffers. The political setting and conduct of any war is extremely important, for, after all, war is just an extension of political action. It is significant and unfortunate that such books as Herbert Feis', *The Road to Pearl Harbor* (1962) and Robert Divine's, *The Reluctant Belligerent* (1965), are missing from the list of suggestions for further reading. Nevertheless, Mr Bateson has overcome most of the pitfalls of writing a concise history and performed his task fairly well.

The maps to support what is otherwise a reasonably good narrative are the most disappointing feature of the book. Many of the maps are quite useless or just superfluous. One map is reproduced three times! Twice as end papers and once as showing the 'Pacific Ocean Theatre'. (Figure Two). Furthermore, the maps show little other than location. Even on this score they are sadly deficient, as they omit to show places which are scenes of battles referred to in the text. This is inexcusable. It is surprising that the author and the publishers show such a lack of understanding of the use of maps to support an historical and military narrative. Maps are, after all, a form of language, an effective shorthand means of depicting a situation or supplementing the written text. Maps are an important component in any military history and even more so in a concise account. They are more important than illustrations, yet there are four times as many illustrations as there are maps in Mr Bateson's book. Any concise history dealing with the Pacific war should be supported by good maps executed in the best tradition of military historiography, even if this means that some of the illustrations have to

be sacrificed. It is a great pity that the effectiveness of such an otherwise useful book is reduced in this way. □

MACARTHUR AS MILITARY COMMANDER, by Gavin Long. (Batsford, London: Van Nostrand, New Jersey, 1969, 63s.)

Reviewed by Ronald Monson, Publications Officer at the Australian War Memorial and former war correspondent with the Daily Telegraph.

GENERAL Douglas MacArthur throughout the great years of his military career was surrounded by a band of flattering publicists of his own choosing who presented him to the world as a god-like being—an image he did nothing to shrug off.

Indeed he knew he was cast in the heroic mould, and with his matchless histrionic talents he played out his assigned role with the smoothness of a Hollywood performer.

Intolerant of criticism, he saw his few detractors in high office in Washington and the Services—most of whom still stood in awe of him—as self-seeking plotters out to destroy him. He took the full credit for all his great achievements and was not above having his minions distort facts to give him credit where none was due.

To winnow fact from fiction and arrive at a just assessment of MacArthur as a military commander—which the editors of this, the sixth volume in the Military Commander series, required—called for a clear-sighted historian, completely free of bias.

Fortunately such a man was available—but the call for his services came almost too late. Gavin Long, the general editor of the 22-volume official history of *Australia in the War of 1939-45*, of which he wrote three volumes, became ill while he was writing *MacArthur as Military Commander*, and he knew he was dying of cancer as he started on the final four chapters of the book. His great courage and fortitude kept him going until his task was completed. His chief concern with the military biography of an outstanding general who had preceded him into the silence was to get at the truth of the matter.

After describing MacArthur's performances in three wars Long concludes: 'It seems likely that MacArthur will be written into history as an advocate of politico-military doctrines and as one-time ruler of Japan rather than as a great captain.' Even his claim to these two niches in the halls of fame are threatened, Long believed. 'Already, in both these roles, his influence has been proving less potent and his policies less far-seeing than many had fancied,' Long wrote. 'But he was a man of his time—a time of great emotional and intellectual confusion among his fellow countrymen.'

As Chief of Staff of the U.S. Army during the Depression years between the two World Wars, MacArthur interlarded his official pleas for military preparedness with denunciations of 'pacifism and its bedfellow Communism'.

'Pacifism,' he declared in a speech in June, 1932, 'hangs like a mist before the face of America, organizing the forces of unrest and undermining the morals of the working man. Day by day this canker eats deeper into the body politic . . .' For voicing such sentiments, he wrote later, he was slandered and smeared almost daily in the press.

'It was bitter as gall and I knew that something of the gall would always be with me.' But he resolutely set his face against any form of appeasement. When the Chinese hordes poured into Korea in October 1950, nullifying the complete victory MacArthur had already won over the North Koreans, MacArthur was prepared for all-out war with Red China, whatever that might entail. To him, in war there was no substitute for victory.

But he over-reached himself in his long communique of 24 March 1951, in which he taunted Red China as lacking industrial power and being unable to maintain 'even moderate air and naval power.' He intimated that he was prepared to meet the commander-in-chief of the enemy forces in the field in order to find 'military means of realizing the political objectives of the United Nations in Korea, to which no nation may justly take exception, without further bloodshed.'

In short he was calling on China to surrender to him—just at a time when his superiors in Washington were preparing to discuss a settlement. As a result President Truman sacked him, the war in Korea reached the stalemate that MacArthur had predicted, and after more than two years of bickering both sides, as Long succinctly put it, agreed that there was a substitute for victory. Truman, the former gunner who never rose to a higher rank than a major in the reserve, had shown that the Supreme Commander Allied Powers was fallible.

However, Long wrote, while MacArthur had become an embarrassment to the President and had to go, the blame for the unfortunate manner of his dismissal rested less on MacArthur than on the unfirm and vacillating leadership in Washington. 'Undoubtedly, President Roosevelt would have managed things better,' Long says.

Before assessing MacArthur as a military commander Long takes him through his peacetime service in the Philippines where his father, General Arthur MacArthur had been Commander of the American forces

and Governor-General at the turn of the century, to active service in Mexico, through the two World Wars, his government of Japan, and to his triumphs and downfall in Korea. Long says MacArthur was a lucky general. Much of the responsibility for the speed of his defeat in the Philippines in 1942 was his for having failed to make adequate preparations against invasion, though he had spoken of the possibility of a Japanese invasion as early as 1939. He had been Military Adviser of the Philippine Commonwealth since 1935. In other countries, Long says, a commander who had been through such a debacle would not have been given another active command. 'MacArthur', he adds, 'was too eminent a figure and too much a popular hero to be thrust aside without violent repercussions at home, and loss of national prestige.'

In the military operations that took MacArthur and his forces on their epic sweeps from Papua to Morotai and Luzon, Long says that his judgments were sometimes right; sometimes ill-advised. 'The credit for the successes rests as much on Admiral Halsey on the spot and on the Joint Chiefs of Staff in Washington as on MacArthur,' he writes.

'The prescience with which he may at times seem to have been endowed was generally the outcome of the cracking of the Japanese naval code before Pearl Harbor; even then his responses were often too slow or too cautious.

'In adversity he displayed a lack of fibre and resilience. In France in 1918 at times when his division was in sharp action it was as part of an increasingly victorious army. In his next campaign in the Philippines, when he was 62 and commanding forces doomed to defeat, he did not prove an inspiring leader.

'Then and in the South-West Pacific Area before the tide turned he was petulant and reproachful, constantly blaming his superiors in Washington, and his subordinate commanders and their troops.

'When in 1942-43 he had under his command some of the best infantry in the world he was markedly distrustful of their performance.'

Although he does not say so, Long undoubtedly had in mind the implied slurs by MacArthur cast on the performances of the Australian troops slugging it out with the Japanese on the Kokoda Trail in October 1942.

On 21 October General Blamey passed on to Major-General A. S. ('Tubby') Allen, then commanding the 7th Australian Division, the following message from General MacArthur: 'Operations reports show that progress on the trail is NOT repeat NOT satisfactory. The tactical

handling of our troops in my opinion is faulty. With forces superior to the enemy we are bringing to bear in actual combat only a fraction of available strength enabling the enemy at the point of actual combat to oppose us with apparently comparable forces. Every extra day of delay complicates the problem and will probably result ultimately in greater casualties than a decisive stroke made in full force. Our supply situation and the condition of the troops certainly compare favourably with those of the enemy, and weather conditions are neutral. It is essential to the entire New Guinea operations that Kokoda airfield be secured promptly.'

Allen resented the message, and after further messages and exchanges Blamey relieved him of his command. In *South-West Pacific Area—First Year. Kokoda to Wau*, in the *Australia in the War 1939-45* series, Dudley McCarthy relates that later in Australia Allen had the opportunity of explaining to MacArthur the conditions under which the men had been fighting, and said how much MacArthur's signals had distressed him. In real or assumed surprise MacArthur said: 'But I've nothing but praise for you and your men. I was only urging you on.' Allen replied drily: 'Well, that's not the way to urge Australians.'

MacArthur's courage could never be called in question, but from the outset of his combat career Long makes it clear that while he sought action he sought decorations just as avidly. As a captain on the General Staff in 1914 he was sent to Vera Cruz when the United States was on the verge of war with Mexico. MacArthur, seeing the American commander on the spot General Wood was short of essential transport, set out on his own initiative into Mexican territory and with the assistance of a Mexican whom he hired he seized five locomotives and after a series of running fights got them back to the American lines. MacArthur wrote later that General Wood recommended him for the Medal of Honour, the highest American decoration, but the War Department turned him down. MacArthur's father had been awarded the Medal of Honour for his gallantry in the American Civil War—the award being made by Congress 25 years after the event.

Since his boyhood young MacArthur had zealously pursued the type of esteem his father had earned—and he was determined to show his mettle in action, and to see to it that he got the medals that would show to the world that he had proved himself at the cutting edge of war. From his mother he gained great moral support when he had important decisions to make during his early military years. At West Point he worked hard and passed out top of his class. He was extremely handsome, a good athlete, and had been born in the military purple. With his capabilities and his ambition he was destined for high places.

When the United States entered World War I on 8 April 1917, MacArthur was a major of Engineers on the Staff of the Secretary for War, Newton Baker. Baker made him head of the Department's Bureau of Information, Press censor, and liaison between the Army and the newspaper correspondents. He made a better job of it than the men he later appointed to serve him in similar capacities. Some 29 leading correspondents signed a letter to Baker praising MacArthur's 'unfailing kindness, patience and wise counsel' and predicting that 'rank and honours will come to him if merit can bring them to any man.'

Despite his junior rank it was the 37-years-old MacArthur who was asked by War Secretary Baker to suggest the man who should lead the American Expeditionary Force overseas. MacArthur suggested General Pershing—and Pershing got the job. It was also MacArthur who named the first National Guard Division to be sent to France the Rainbow Division—one that covered the whole of the United States 'like a rainbow.'

MacArthur sailed for France with the Rainbow Division as Chief of Staff to its commander, General Mann. He had been promoted colonel of infantry—not engineers—in the National Army. On 26 February 1918, before the American Expeditionary Force had been in action, he persuaded the commander of the French Corps to which the Rainbow Division was attached to allow him to accompany a French raiding party that was being sent out to capture some German prisoners for identification. He crawled out over no-man's-land with the raiders under artillery and machine-gun fire, and helped them overcome a German post and get their prisoners. On his return the Corps commander immediately pinned the Croix de Guerre on his tunic, and later he was also awarded the American Silver Star. Very shortly afterwards in a raid organized by his own division he was in the forefront of the attack, which was carried out under heavy fire, and the attack succeeded. MacArthur and the commander of the company involved were both awarded the newly-instituted Distinguished Service Cross.

In July the Rainbow Division helped the French repulse a series of German attacks east of Reims, and MacArthur had, as usual, been forward during the fighting. He was awarded a second Silver Star. Later the same month the Rainbow Division was in heavy fighting on the Marne and again MacArthur was frequently up with the forward troops.

After several days fighting MacArthur, convinced by the sound of explosions and the movement of vehicles that the Germans were pulling back, took it on himself to go down the line ordering each regiment of

the division to advance in the morning. Then he went back to Divisional headquarters at dawn and told General Liggett, the U.S. Corps commander, and General Menoher, the new commander of the Rainbow Division, what he had done. He then went to sleep. The attack went in and the division suffered 5,518 casualties in what was to prove its costliest battle. The division gained little ground. After the battle MacArthur was awarded another Silver Star, made a Commander of the Legion of Honour, and given a second Croix de Guerre.

In September MacArthur, then a Brigadier-General, led his brigade in the St Mihiel offensive. When that operation was successfully concluded MacArthur was awarded two more Silver Stars. For his 'field leadership, generalcy and determination during three days of constant combat in front of Cote de Chantillon,' General Menoher recommended for a second time that MacArthur be made a Major-General. Secretary of War Baker later endorsed the recommendation 'the greatest front-line general of the war.' MacArthur later wrote that the words were 'quite unrealistic and partial.' He added: 'I was also recommended for the Medal of Honour, but the Awards Board at Chaumont disapproved. It awarded me, however, a second Distinguished Service Cross, the citation of which more than satisfied my martial vanity.'

Honours continued to come MacArthur's way. Although his combat experience in World War I extended over less than nine months the Distinguished Service Medal and many foreign decorations were added to his seven Silver Stars and two Distinguished Service Crosses. As Long reports: 'In a few months he had been awarded more American decorations than Pershing himself, and in this field had left all his American contemporaries behind.' An American correspondent described him as 'the d'Artagnan of the AEF.'

As Long points out in a footnote, it took the most highly decorated Australian in World War I, Lieutenant-Colonel Harry Murray, years of service in battle to win his V.C., D.S.O. and two bars, and D.C.M.

The truth is that despite his dash and courage, his intelligence and his commanding presence, MacArthur just did not have the experience of high level staff work that was required of a man who was to direct large forces in the field over long periods in World War II. The men he had gathered round him could not help him there. They were too concerned with building him up as a star among generals. 'The exaggerations and sometimes mendacity of the (MacArthur) communiques were obviously aimed at the American public in general and Washington in particular, and apparently the intention was to give the impression that successes

were being won more swiftly and at less cost and that enemy losses and sometimes enemy strengths were heavier than they were,' Long says.

He adds that the communiqués could not deceive the forward troops and indeed demonstrated a degree of indifference on the part of the flatterers surrounding him towards the feelings of the men who were doing the fighting. 'The regrettable publicity policy of GHQ was directly controlled by Colonel L. A. Diller, one of the little group who escaped with MacArthur from Corregidor,' Long continues.

'It seems to have derived largely from the defensive and mistrustful attitude of this group towards Washington, MacArthur's own abnormal sensitiveness to criticism and appetite for favourable publicity.

'When he sent Eichelberger forward to command the Americans at Buna he told him that if he captured the village he would not only award him decorations but would release his name for newspaper publication.

'And he apparently said this in all earnestness, and not as a little joke.'

Although MacArthur's five years as *de facto* ruler of Japan are not a part of the story of MacArthur as a military commander, Long rightly holds that during that period he revealed new qualities and reached his highest stature. Of course MacArthur revelled in the high office he was so ably exercising, and he was aware that his position of grandeur was no illusion. When his senior diplomatic adviser William J. Sebald urged him to occasionally meet heads of diplomatic missions in Tokyo, MacArthur replied: 'It would serve no useful purpose, and why, as the sovereign should I? President Truman doesn't do so, nor does the King of England or any other Head of State.'

Long's final assessment of the remarkable man who held the spotlight throughout his career, and never stayed for long out of camera range or out of hearing of his correspondents, is that he regarded himself as a man of destiny. In the last paragraph he wrote at the end of his distinguished career as a journalist and historian, Long said of MacArthur: 'Throughout the last ten years of his military career his desire for adulation made him prey to devoted followers who flattered his conviction that he was infallible and that people in Washington were conspiring against him. But this was a minor though damaging foible measured against his other qualities: his courage, his patriotism, his ability to inspire subordinates and others, including anxious Australians in 1942, and the persistence with which he pursued his notion that he was destined to lead a crusade against political decay within America and appeasement beyond its frontiers.' □

Letters to the Editor

Air Support

Sir,—I have just returned from Vietnam after relinquishing command of 161 (Indep) Recce Flt.

I read the article 'Air Support at Unit Level' by Lt Col Garland in the March issue of the *Army Journal* some time ago and I note that, as yet, there have been no comments by others on the subject. The basic theme of the article is disturbing, and requires some comment for the benefit of those who might follow the author's approach.

While the techniques and procedures which Colonel Garland recounts are fairly accurate descriptions of the standard Recce Flt SOPs there are several points made in the article which promote a wrong impression. They particularly concern responsibility, accuracy of information and flying safety.

The absence of any reference by the author to pilots, or their responsibilities in carrying out the tasks under discussion, should cause concern to those who formulate tactical doctrine. It is difficult to decide that the omission was unintentional. Whether the author believes so or not, by inference his article rather classifies pilots as some sort of unthinking taxi driver. This is not, and never has been, the manner in which Army Aviation is intended to be utilized. Those readers who now see the passenger as being the person responsible for accurate locations, positioning of the aircraft over the target area, co-ordination of airstrikes etc., should reflect upon the matter carefully. It was to combat such ideas that Air OP pilots came into being about 28 years ago. In the tasks he discusses, one wonders what the author thinks the pilots' responsibilities actually are.

The Recce Flt's visual reconnaissance and airstrike experience alone, in Vietnam, amounts to more than the total operational flying hours of any other Australian flying unit, anywhere, over the same period. It has never been indicated to me that users are unwilling to accept as accurate the location of targets and description of sightings by our Army aviators. Moreover, grid references and information not verified by the pilot are suspect. While there may be a few individuals who disagree with that,

they are a disappearing minority and they do not include the battalion commanders with whom I was privileged to serve during my tour with 1 ATF.

Some quotes, taken at random from the article, and comments on them, follow:

The initial identification and marking of the target was done by the Bn 2IC . . . the 2IC was able to physically mark the extent of the target by dropping white smoke grenades on the extremities of the area . . . (Page 6). Each target . . . was then individually marked by the Bn 2IC using white smoke grenades (Page 8).

As in all flying sequences it is the pilot's responsibility as captain of the aircraft to permit, or not to permit, the dropping of any object from the aircraft. When he is properly positioned he will either drop the WP himself (not white smoke, as it is slow to develop and dissipates beneath the canopy) or tells the passenger when to do so. This is necessary for reasons of guaranteed accuracy and flying safety—both are the pilot's responsibilities.

By making a series of low passes over the area the 2IC was able to . . . (Page 6).

The 2IC orbited the contact area (Page 8).

The 2IC was required to act as FAC (Page 9).

During the periods of reconnaissance flown by the 2IC, many enemy positions and installations were located (Page 12).

As expected, these and similar statements resulted in the exchange of some light correspondence between past and present members of the flight. Surprising though it may seem there was always a recce pilot in the Colonel's aircraft too.

On the arrival of the airborne FAC and the strike aircraft in the strike area, the 2IC briefed the FAC on all details and requirements for the airstrike (Page 7).

The 2IC assisted the FAC in the direction of the airstrike by making corrections as each aircraft dropped its ordnance (Page 8).

During this period, the Sioux aircraft of the flight were fitted with one FM radio and a crystal controlled UHF set which did not include the normal frequencies used by the FAC and strike aircraft. This meant that the FAC had to tune to a frequency in the range of the Sioux FM set, which was normally used to talk to ground troops. In the case of 7RAR, this was the frequency of their air/admin net.

Since Nov 68, the Sioux in Vietnam are later models fitted with ARC51BX (UHF). This radio permits the pilot to operate on a common frequency with the FAC and the pilots of the strike aircraft. As before, the ARC 54 (FM) is available to the pilot, or passenger, if any, for communications with ground troops. All the aircraft operate on UHF, and for sound reasons (not the least being flying safety) the pilot talks

to the other aircraft while the passenger (often the CO) talks to his call signs. Both the pilot and CO have private intercom and both can hear each other's external conversations, if they wish. The result is a tidy, co-operative effort which has met with continuing success.

Airstrikes occur several times each day in the TAOR and our pilots take part in all of them. A small percentage of these strikes are made in support of battalion operations. The low level assistance during these strikes is usually provided by the pilot in DS of the requesting battalion. If a passenger is carried he is usually the CO. From Dec 68 to May 69 pilots of the flight located, marked, corrected and assessed damage to targets for FACs in 218 airstrikes, resulting in:

- 377 bunkers damaged or destroyed
- 432 bunkers exposed
- 104 pits damaged, destroyed or exposed
- 2,370 metres of trench damaged, destroyed or exposed
- 42 work benches damaged, destroyed or exposed
- 5 caches damaged, destroyed or exposed
- 89 tunnel entrances damaged, destroyed or exposed
- 65 structures damaged, destroyed or exposed
- 22 breather holes damaged, destroyed or exposed
- 13 huts exposed
- 162 huts damaged or destroyed
- 1 KBA
- 8 KBA (possible)

(Incidentally, it is of interest to note that all corrections and indications passed by the Sioux pilot during airstrikes are now received directly by the strike aircraft. Similarly, the BDA (Bomb Damage Assessment) made by the Sioux pilot is received direct by the strike aircraft, and is repeated to them by the FAC in his aerial debrief).

To the best of my knowledge the concept of employment of the second-in-command, expounded in the article, has not been tried elsewhere, before or since. That is not to say the concept is invalid but it is a fair indication of its popularity. However, aviators continue to carry out the tasks under discussion, as required, whether the 2IC or anyone else is in the aircraft or not, because that is what we are trained to do. We aviators would prefer the CO or BC to ride with us if anyone has to, and it is often vital that they do so; particularly the CO. The point is that it doesn't matter whether anyone is sitting in the passenger seat or not, aviators are doing these tasks successfully to the satisfaction of user

units, as they have done in the past. I believe they will continue to do so, revising their procedures whenever necessary.

All units have officers with varying degrees of experience and the Recce Flt is no exception. If a particular task requires a pilot with depth of experience in the matter he can, with warning, be provided. If a battalion operation requires the same DS pilot for 2 or 3 days for continuity in phases, he can be provided. It is not, of course, practicable or desirable to provide permanent pilot/unit affiliations.

Fortunately, I can reassure the author that the problems with which he seems to have had a lonely struggle are constantly the subject of the closest liaison and friendly discussions in Vietnam between the aviators and users. The result of these mutual efforts has been the evolution of highly professional co-operative pilot techniques which have adequately met the changing pattern of operations.

The colonel seems to summarize his philosophy on the whole question in the last sentence of his article—'However, the fact remains that an officer from the battalion is required in an airborne role to carry out these tasks'. The statement is not factual and reflects an attitude with which I must disagree entirely.

Australian Army Aviation Corps,
Amberley,
Queensland

H. A. F. Benson, Maj.

MONTHLY AWARD

The Board of Review has awarded the \$10 prize for the best original article published in the June 1969 issue of the journal to Lieutenant-Colonel R. J. Stanley for his contribution 'Opportunities in Cadet Training'.