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Editor: C. F. Coady

Staff Artist: G. M. Capper

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COVER: Detail from war artist Ivor Hele's large painting '2/6th Battalion Attack on Post 11, Bardia, 3 January 1941'.

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ARMY JOURNAL

A periodical review of military literature

No. 250, MARCH 1970

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(Australian War Memorial)

Bulldozers towing a tank of the 2/4th Armoured Regiment through the Puriata River, Bougainville on 30 March 1945.

The Tank is Dead

Major W. W. Lennon
Royal Australian Engineers

Introduction

NO doubt this title will provoke some violent objections. The passing of the horse-drawn and horse-borne era did not occur in quiescent silence either. The demise of the tank does not imply any degradation in strength or status of armoured units; but rather a need to adapt to the products of technology. Just as the introduction of the tank to modern warfare had great impact on tactical philosophy, so will its passing. Perhaps it is more accurate to say that changes in tactics have led to the technological advances which have killed the tank as we know it.

The history of tank development is characterized by continuing conflict between armour and armament and between weight and speed. Ever since the tank was first introduced to warfare, designers have been torn between the need for a light fast tank, and a heavy invulnerable machine capable of resisting and destroying enemy tanks. Many nations have resolved the conflict by employing tanks of different sizes. Others have attempted to satisfy all needs in the one vehicle by achieving compromise on the various requirements. The disadvantages of each approach have often been dramatically demonstrated in military history.

After graduating from the Royal Military College in 1956 Major Lennon attended the University of Queensland for a degree of Bachelor of Mechanical Engineering. Service with 17 Construction Squadron followed until 1962 when he was attached to the Snowy Mountains Hydro-Electric Authority. Posted to 7 Field Squadron in 1963 he became, in 1964, an Interchange Officer with the 25th U.S. Infantry Division (Hawaii). In 1965 he was OC of 20 Field Park Squadron which was redesignated 20 Engineer Support Squadron.

As OC of 1 Field Squadron he served with 1 ATF in Vietnam in 1966 after which he returned to 17 Construction Squadron as OC. In May 1967 he was appointed SORE 2 in the office of E in C, AHQ Canberra, a position he occupied until August last year when he left to attend Staff College, Camberley.

This article, and Major Ranking's 'A Modern Armoured Force is Vital to Australia's Defence' are published concurrently as they present opposite viewpoints on this important subject. The illustrations are from the November-December 1968 issue of Ordnance magazine, the journal of the American Ordnance Association and are reprinted by permission of the editors. Copyright 1968 by the American Ordnance Association.—Editor.

Since World War II, a wide range of tanks have been produced, indicating that the conflicts still exist. As 'general purpose' tanks have been given better armour and better guns, so they have become larger and heavier. The evolution of special tank-killing tanks has generally been abandoned in recent years since it has been necessary to sacrifice too much mobility to enable them to fulfil their main purpose. Recent development and exploitation of other military equipments have given cause for some rethinking on the role and characteristics of the tank. The major characteristics of tanks and tank units in the past have been:

- Firepower.
- Protection.
- Mobility.

Other characteristics are often quoted, but are not essential to the nature of tanks. Alternative methods of achieving these main characteristics should be considered.

Firepower

The value of direct-fire, hard-hitting main armament is evident. The firepower of American and Australian tanks is being used to great benefit in support of infantry operations in Vietnam—in a type of war where many pundits said tanks would be useless. Despite the fact that the enemy have no armoured vehicles and virtually no soft-skinned vehicles, and despite the difficulty of coming to grips with enemy concentrations, the weapons of the tank have been useful. The main guns can deal effectively with enemy bunkers and their accuracy allows a commander to quickly and effectively neutralize any suspected enemy position which he can pinpoint and indicate to the tanks. Even the heavy machine-guns which are carried on most tanks provide the infantryman with a source of sustained heavy calibre firepower which is not otherwise readily available to him.

Probably one of the greatest advantages of tanks over both artillery and air support is that the tanks are usually physically close to the mobile supported unit and consequently target indication is facilitated and communications simplified. In addition, with tanks in support of infantry, response time of their fire support may be as short or shorter than that of the infantry sub-units themselves. Against an enemy with light armoured tanks or personnel carriers, or even

soft-skinned vehicles, the main tank armament finds many worthwhile targets which cannot always be dealt with quickly by other means.

On the other hand, whilst the Vietnam war has illustrated some of the advantages of tanks in a situation where there was some doubt about their value, it has also demonstrated the effectiveness of other forms of direct firepower. The enemy have shown how effectively various sized rockets can be used in both direct and indirect modes. Most of these weapons are man-carried and their accuracy has been proven in combat and in tests of captured weapons. They have been used against vehicles, personnel carriers, strongposts and even tanks with devastating results. They appear to offer many of the advantages of the tank main gun with few of the disadvantages. Allied use and exploitation of similar weapons has been inhibited by the ready availability of other sources of firepower. While a commander can obtain heavy suppressive or destructive artillery or air fire support, or call on tank support for direct fire missions, the absence of other direct-fire weapons is not critical. An American weapon which has partly filled the gap created by the absence of suitable man-carried rocket-launchers is the M79 grenade launcher. This weapon has proven to be useful in a direct-fire short range role, to supplement infantry small arms weapons.

Helicopters have proven to be a valuable source of firepower to the infantryman. Until recently, the accuracy of the fire from gunships was limited by the need for the aircraft to be moving forward rather than hovering. Since the introduction of the Hueycobra and the Cheyenne, the variety and accuracy of helicopter fire support have both increased enormously. Notwithstanding the limitations on endurance and weather capability, helicopter fire support will often be used rather than tanks.

Such modern innovations as gyroscopically stabilized sight systems and laser range-finders have made it possible for light-weight missiles to be used effectively from different types of platforms. Such weapons as Swingfire and Dragon offer lethal tank-killing capability with accuracy and range in the same order as tank main weapons. The light-weight AS12 wire-guided missile can be helicopter launched, and has the explosive effect of a 155-mm shell. The French ACRA wire-guided missile travels at supersonic speed, covering three kilometres in less than seven seconds. Investigation of the use of lasers as weapons indicates that prototypes will be available in the near future. Such developments are rapidly leading to the time when an accurate, quickly

deployed, dynamic weapon system will satisfactorily be carried and operated on smaller and faster vehicles than the tank as it is known today.

Protection

The value of the protection afforded by modern tanks has been subject to question for some time. Operations in Vietnam have shown that even without the presence of enemy tanks and aircraft, allied tanks can be destroyed and disabled.

As soon as a tank is immobilized it loses most of its advantage. Despite development of superior armour plating materials over recent years and new hull designs, it requires only one broken track for a tank to lose its mobility, limit its firepower, and compromise its protection. This is being achieved by the use of rockets and crude landmines in Vietnam. Development of modern 'high-kill' mines will lead to much more efficient and effective anti-tank mine warfare techniques. Though the tracks of the tank resist small arms fire better than pneumatic tyres, the machine can be completely immobilized if the track is cut—whereas a multi-wheeled vehicle might be able to continue to operate with one wheel missing.

Despite the heavy protection afforded by tanks, the two areas most vulnerable to disabling damage are the running gear and the main armament—that is, the tank's mobility and its firepower. The rather lavish protection of the crew of the modern tank is to no avail if mobility and/or firepower are lost.

The development of anti-tank missiles and guns, and even artillery and airborne weapons, has advanced so far that any hope of providing effective conventional armoured protection to a useful tank should be discarded. Protection from such weapons must be sought in evasion or deception, or in some new method or technique which is not yet employed. The bigger and slower the tank, the more difficult will evasion be. Concealment of a large tank from visual, infra-red or electronic surveillance is difficult. Deception is awkward and expensive with large machines—even dummy tanks being bulky and costly. These factors have led to recent consideration of light-weight tanks with high speed and manoeuvrability, where physical shielding has been sacrificed to a certain extent for increased evasive capability. The Sheridan tank for instance weighs only 16 tons and has a maximum speed of 40 mph. One of the fastest tanks in the world today is the French AMX13 which

achieves a speed of 43 mph. It is conceivable that scientists of the near future will develop an anti-metallic protective shield based on magnetic or electric fields. Alternatively, a system of tactical anti-ballistic missiles might be developed for operation from land vehicles. Only a breakthrough of this magnitude would appear to offer a suitable solution to the problem of protection from modern missiles, guns, and other tank destroying ordnance. CBR protection can be provided by many materials other than armour plating and need not impose the enormous weight penalty which exists at present.

Reasonable protection against small arms weapons and shrapnel can now be achieved by use of relatively light-weight materials, which can be carried by other means apart from tanks. This type of protection is only incidental to the other characteristics of the tank, in any case.

Mobility

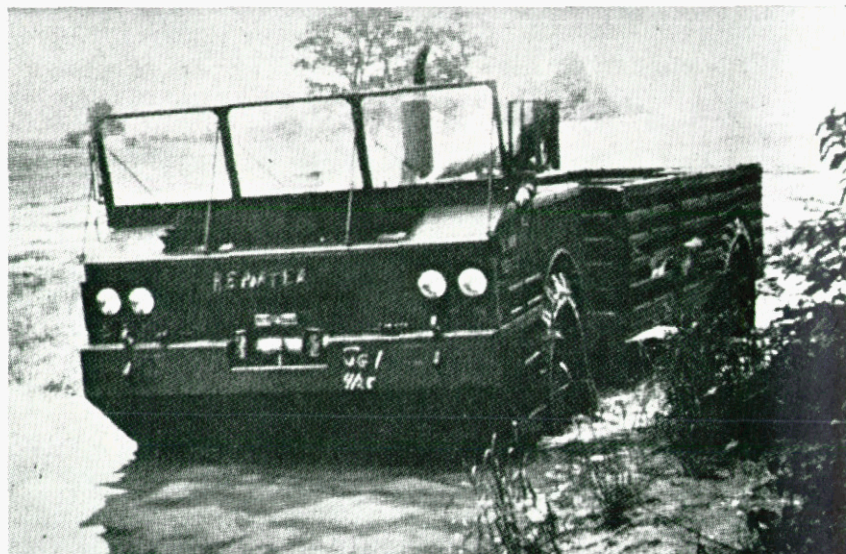
Tanks achieve their mobility by virtue of low ground pressure, the resistance of tracks to damage by small arms fire, adequate horsepower and suitable suspension. Restrictions on mobility are imposed by:

- Densely timbered country.
- Excessively rocky terrain.
- Wet and marshy ground.
- Ravines, steps and excessively steep gradients.
- Damage to tracks.
- Artificial obstacles.

Because of lower ground pressures and invulnerability to shrapnel and small arms fire, tracked machines have generally offered better mobility than wheels. However, tracks are useless if broken; they are very prone to damage in rocky terrain, and they add to the all-up weight of a tank. The sheer size of modern tanks has contributed to limiting their mobility—particularly on highways. Although weight distribution may be kept low, most modern tanks have a bridge classification far higher than other military vehicles and this restricts their movement on highways. Highway movement of tanks can badly damage road surfaces. In some countries, railways cannot accept the weight and dimensions of tanks.

Recent work with new wheeled vehicles has indicated that far greater mobility might be practicable than was apparent a few years

ago. Two of the more outstanding recent examples of such machines are the Caterpillar 'Goer', and Lockheed's 'Twister'. The former vehicle is in service in Vietnam at present in various cargo carrying configurations, and is demonstrating cross-country performance equal to that of

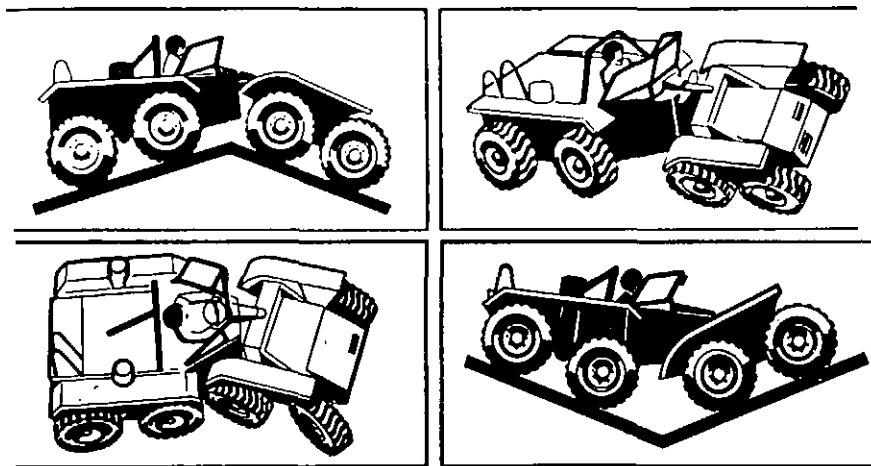


XM520 'Goer' cargo vehicle negotiating flooded rice paddies near Chu Lai, Vietnam.

M113 personnel carriers in swampy going. The vehicle has an articulated body with 'wagon steering' and four large, low-pressure tyres. There is no suspension system but the four-wheel drive will allow 30 mph movement carrying an eight-ton load. The vehicles were originally designed as logistic support vehicles for armoured and mechanized units—and as such they were required to have comparable mobility. The Goer evolved from wheeled earthmoving equipment and speed was not the main aim. Though not armour-protected at all in its present configurations, the Goer has such a respectable load carrying capacity that it could be lightly armoured with a relatively small restriction in its cargo carrying capacity. In the foreseeable future, the vehicle could probably be fitted with heavy machine-guns, rocket or missile launchers, or even cannon, to give it firepower as effective as the armament on current main battle tanks.

Twister offers even more potential for high speed mobility over rough terrain. This vehicle has a fully articulated double body, with

eight driving wheels and independent suspension, and a separate engine in each part of the body. The manufacturers claim a top speed of 65 mph, a twenty-foot turning radius, and ability to traverse extremely rugged broken ground without upsetting the passengers. It has a 400-mile range, is air-transportable, and can be adapted to a wide range of



Schematic drawing of the Lockheed 'Twister'.

configurations. Although it is not yet in military service, United States have commissioned Lockheed to build three military prototypes for evaluation.

Ground effect machines, or hovercraft, have made a significant impact on vehicle mobility, particularly in extremely soft going. Their limitations are such that they will probably have little influence on the replacement for the tank. A combination of wheels (for control) and air-cushion (for load distribution) has been found to be a satisfactory solution to the movement of heavy loads over soft ground. However, the combat vehicle of the future will probably rely on light-weight and manoeuvrability for its mobility and speed, and will not require air-cushion for normal cross-country travel.

One of the most significant technological advances which will affect the design of future cross-country vehicles is the invention of cellular rubber tyres. These are non-inflatable tyres, of coarse grain closed-cell synthetic rubber, with inert gas filling the cells. Experiments

have indicated that tyres made of this material perform satisfactorily, though they are rather more rigid than conventional tyres. At high speeds there have been some problems with overheating, but this difficulty is probably only a temporary one. Puncture tests have shown that the tyres are virtually unaffected by complete penetration by nails, spikes, and bullets. The small number of cells which are ruptured by the projectile do not affect the overall resilience or stability of the tyre. This could mean that the main objection to wheeled combat vehicles is about to be overcome.

What of the Future?

If the tank is indeed dead, what remains? There will probably continue to be a need for vehicles which can carry heavy firepower wherever it may be needed. There will still be a need for highly mobile weapon systems to move in close ground support of vehicle transported infantry. There will still be a requirement for a fast cross-country vehicle to strike at the enemy from the flank where he least expects it; to pursue the withdrawing force; and to provide concentrated but mobile firepower in the counter-attack. Even in counter-revolutionary and limited war, these needs will continue to exist. The combat vehicle of the future will not be stereotyped. It will probably be essentially an articulated vehicle with probably more than eight driving wheels fitted with cellular/solid tyres, capable of high speed performance in most types of terrain. It could have multi-fuel engines with an operating range in the order of 500 miles rather than the typical current tank range of 200 miles. The basic machine will have a low profile, and will be adaptable for use as troop carrier, cargo carrier, recovery vehicle, mortar, howitzer or field-gun platform, anti-aircraft weapon carrier, or as a direct-fire weapon carrier. In this latter role, the vehicle may be fitted with rockets or guided missiles, heavy machine-guns, grenade launchers and other novelties. Combat vehicles will be armoured against small arms fire and shrapnel, probably using light-weight alloy or plastic plates or flexible sheets. At some time in the future these vehicles may be equipped with invisible electronic or electro-magnetic anti-missile shields. Some may be equipped with electronic remote explosive initiators which will destroy enemy mines or incoming missiles or rockets at a safe distance. Science may produce a practical, self-protection, anti-ballistic missile for launching from the vehicle to deal with offensive enemy ordnance.

These combat vehicles will demonstrate many of the traditional characteristics of cavalry units—even more than tanks ever did.

The tank of today is as anachronistic as mediaeval suits of armour. Though it has many obvious advantages, it has evolved to the stage of imminent extinction, because it has become increasingly inefficient in an age which demands more of machines than ever before. It has become the Juggernaut of modern military technology, demanding high capital outlay and enormous logistical support, in return for fire support not much more effective than that of the lone enemy guerilla who destroys the tank with a well-placed rocket. □

It was in the control of tanks that the Germans revealed their greatest gifts. They were tank technicians pure and simple. They were the élite of the Africa Korps, as compact, as neat and efficient as a team of acrobats. They had been trained to the nth degree and as a group, a group that could be controlled very nearly as easily as one tank. They were self-contained. Stukas, tanks, recovery vehicles, petrol wagons, anti-tank gunners, all went forward together and their senior officers were often in the van. Toward the end Rommel evolved a number of still smaller self-contained armoured groups. There were notably his own bodyguard and the Marx Group. They moved about very rapidly and very successfully. The co-operation between the tanks and the anti-tank gunners was their best achievement. The Germans no longer used tanks to attack equal enemy armoured forces. Let me repeat that—they did not attack with tanks. On the Alamein Line and outside Tobruk they avoided tank action unless they greatly outnumbered us. They preferred always to send out scouts by land and air to plot the positions of our anti-tank guns. Then they used aircraft and infantry to attack those guns. They used artillery too. Then when the British guns were silenced or partially silenced, and the landmines lifted, they used their tanks to mop up the battlefield, and break through to the unprotected British infantry. In defence they used very nearly the same methods—that was how we took our vital losses on June 13th. They had another stunt too—using the tank as a scare weapon. As I remember on the night when we ran into the graveyard at El Adem there was only a handful of German armoured cars and tanks in the German thrust. But they got through to the British infantry and there they made a terrific hullabaloo,—shooting off Very lights, firing all their guns, stirring up great columns of dust. They knew that the word would spread through the British lines that the German tanks had cut loose and they exploited the scare for all it was worth. It was effective.

—Alan Moorehead, *The Desert War*, 1940-43 (1965).

A Modern Armoured Force is Vital to Australia's Defence

*Major B. G. Ranking
Royal Australian Armoured Corps*

THE ability to concentrate superior forces at the critical time and place has been a hallmark of successful commanders throughout history. Since warfare emerged from the inter-tribal squabbles when a few dozen men endeavoured to cut each other's throats, to the stage when state and national armies were formed, man has been constantly striving to develop more powerful weapons and improved means of mobility. During the 15th Century B.C., Ethiopia fell to the empire-building Egyptians, not because of any lack of courage on the part of the defenders, but because, to a man, the invaders were equipped with copper weapons and armour against which the stone axes and hide armour of the Ethiopians were of little avail. In contrast, the battle of Kadesh in 1286 B.C. saw a powerful Egyptian army decisively defeated by a similarly equipped Hittite force. The Hittites employed their 2,500 chariots in mass and thereby achieved shock action with consequent disastrous results for the Egyptians, who had deployed their chariot force in 'penny packets'. Operation 'Crusader' and the battle at Gazala during World War II provided an interesting comparison and demonstrated the failure of some modern commanders to learn from past lessons.

The comparatively poor cross-country mobility of the chariot led to its eventual replacement by the more flexible horseman. By about 500 B.C. the highly manoeuvrable cavalry had become the decisive arm on the battlefield. This position of supremacy was maintained until mediaeval times when the increasing weight of personal armour resulted

Major Ranking joined the CMF in 1949 and in 1963 was appointed to command 2/14 QMI. On joining the ARA in 1964 he was posted to 1 Armd Regt, where in 1966 he commanded C Sqn and in 1967 was appointed regimental second-in-command. He attended Staff College in 1968 and in 1969 was assigned to 69 GL Sect as GSO2. He is currently serving in Vietnam as GSO2 67 GL Sect.

in the horseman becoming a ponderous shock weapon with little ability for rapid manoeuvre. With the invention of gunpowder and the subsequent ability of the foot soldier to penetrate armour at relatively long ranges, the employment of cavalry in wild charges to break the enemy line began to go out of fashion: by the time of World War I defensive weapons had achieved complete supremacy. Apart from isolated actions in the Middle East, the cavalry found little to do.

The dismal battles of attrition in France during the first three years of World War I must represent the nadir of military art. The interminable attempts to force a breach by the ponderous advance of massed manpower over a 'moonscape'—every square inch of which was registered by artillery of all calibres and lashed by the cross-fire of countless machine-guns—were foredoomed to failure. The need to develop some device or tactic to break the stalemate should have been obvious to all who were involved in the conduct of the war, but unfortunately this was not the case. Winston Churchill, then First Lord of the Admiralty, had the vision to see the potential of a tracked armoured vehicle, but received little support from his contemporaries who referred to the new machine as 'Winston's Folly'.¹ Indeed, one of Churchill's principal subordinates, the Fourth Sea Lord, stated: 'Caterpillar landships are idiotic and useless. Nobody has asked for them and nobody wants them. The officers and men working with the Landships Committee are wasting their time and not pulling their weight in the war. If I had my way I would disband the lot of them. Anyway, I am going to do my best to see that it is done and stop this . . . caterpillar landship nonsense.'² This resistance to new ideas is not unusual; however, in spite of all opposition, development went ahead and by the end of the war the tank had more than adequately demonstrated its ability to penetrate fixed defences.

Between the wars, development of armoured vehicles and the techniques to use them effectively were continued by Germany and, as was later discovered, Russia. Britain, on the other hand, failed to realize the potential of the weapon she had created and apart from the efforts of a few dedicated enthusiasts interest in tank design and employment stagnated. The Germans maintained their lead throughout

¹ B. H. Liddell Hart, *The Tanks*, Vol, 1, 1914-1939, p. 20.

² Liddell Hart, p. 25.

the war; a lesson which should not be forgotten. It was not possible, even with the enormous industrial capacity of the United States, for the Allies to make up the leeway in six years of war. The knowledge of design, industrial capacity and the training of commanders in the employment of armour, are skills and abilities which result from progressive development. They cannot be quickly created to fill a sudden need.

Armour was engaged in all theatres during World War II, and was often the decisive arm. In the Far East, tanks were used in lesser numbers but proved their worth in many battles. During the invasion of Malaya tanks were used by the Japanese in terrain which the British planners had regarded as impassable. At the Slim River, Japanese tanks punched a gap to a depth of nineteen miles in a night attack. This success was achieved without the night vision aids available today. The campaign in Burma provides many instances where tanks were employed effectively in unfavourable terrain. Field Marshal Lord Slim described one such action during the battle for the fortress of Razabil. 'This was the first time we had assaulted an elaborate, carefully prepared position that the Japanese meant to hold to the last, and we expected it to be tough. It was . . . The guns suddenly paused and the Lee-Grant tanks roared forward, the infantry, bayonets fixed, yelling their Indian war cries, following on their tails. The Dismal Jimmies who had prophesied, one, that the tanks would never get to the line, two, that they would never climb the hills and, three, that if they did the trees would so slow them up that the Japanese anti-tank guns would bump them off as sitting targets were confounded. The tanks, lots of them—the more you use the fewer you lose—crashed up the slopes and ground over the anti-tank guns . . . the old problem . . . how to get the infantryman onto his enemy without a pause in the covering fire that kept his enemy's head down . . . was solved in the Arakan . . . by tanks firing, first, surface burst high explosive to clear the jungle, then delay-action high explosive to break up the faces of the bunkers thus exposed, and lastly solid armour-piercing shot as the infantry closed in.'³

These lessons, learned in 1943, should have great significance for the Australian Army when considering the characteristics of its current and likely future enemies. The ability of the enemy soldier to construct complex and deep fortifications is well known. Past experience has

³ Field Marshal Sir William Slim, *Defeat into Victory*, p. 228.

proved that the employment of tanks in support of infantry, when assaulting prepared defensive positions, will save the infantry a high proportion of the casualties they would otherwise suffer. '... any power fighting in the jungle against an enemy with unlimited manpower used to a low standard of living must have some equalizer if it hopes to win.'⁴ This quote from an article published shortly after the end of the wars in Korea and Indo-China remains valid. The present conflict in Vietnam has seen air power employed in support of ground forces on a scale never before envisaged, and yet the enemy retains his offensive capability. Figures are not available to the writer on the scale of the air interdiction over North Vietnam or along the supply routes to the south, but, although there can be no doubt that the enemy is being hurt, there appears to be no significant reduction to his ability to continue with his war of aggression. Douhet's theory on the use of massive air power to bring an enemy to his knees has once again been proven invalid. Air power, even in a situation of absolute air superiority, is not the complete 'equalizer.' We must maintain the ability to defeat the enemy on the ground with air power as an adjunct to that ability. Future conflicts involving Australian forces will almost certainly be against an Asian power possessing vast manpower resources. The balance can only be restored by firepower. For the direct, intimate support of infantry, armour will continue to provide the best source of this firepower.

Britain's withdrawal from the Far East will place demands upon Australia to play a more important role in the security of this region. To do so in the military sphere we must be militarily significant. As we do not possess the manpower resources to maintain a large standing army, our military significance must rely upon quality, not quantity. We must make maximum use of our technological advantages and gain superiority in firepower and flexibility to redress the imbalance in manpower. This requirement, of course, affects all three Services; however, this paper deals only with factors which involve the Army.

Since World War II the Australian Army has continued to develop as a basically infantry force with armour in a limited, supporting role. No emphasis has been placed on the need for an integrated armoured/infantry force, and only token attempts have been made to

⁴ Lieutenant-Colonel S. C. Graham, 'Tanks Against Japan', *Australian Army Journal*, June, 1955, p. 2.

train the two arms in the techniques necessary for successful co-operation on the battlefield. The armies of all the major powers recognize the need for balanced forces containing armoured, infantry and artillery elements, together with other supporting arms and services. These forces have compatible flexibility, protection and manoeuvre potential, and are trained together as a combat team. The aim of this article is to show that such a modern armoured force is vital to Australia's defence.

It is not the purpose of this article to discuss the circumstances whereby Australian forces might be deployed in the future, or the time frames in which such deployments might occur. There do, however, appear to be three possible areas in which we may be committed: mainland Australia, New Guinea and mainland Asia.

Australia is a vast continent with a very low population density—three per square mile—and those areas which are the most vulnerable to external attack are those which are the most sparsely populated. The necessary limitations upon the size of the Australian Army and the vast distances involved make it quite impractical to pre-position forces in the hope of preventing an enemy landing on the mainland. The requirement is for a force which is capable of rapid deployment once the main enemy threat has been established. This need for a mobile force possessing heavy combat power was recognized during World War II when, by 1943, the Armoured Corps reached a strength of three divisions, plus an independent armoured brigade and two tank battalion groups. Admittedly, the problems associated with the redeployment of forces have been eased by the increased capacity of air transport to move large bodies of troops and their equipment rapidly over long distances. Unfortunately, Australia's capability in this field is very limited and is likely to remain so. In addition, only relatively lightly equipped forces may be moved by this means; the heavy paraphernalia necessary for the conduct of deliberate, long-term operations against a well-equipped enemy must follow by other means. The threat to the security of mainland Australia is not one of insurgency; such a situation does not exist in this country and is unlikely to occur in the foreseeable future. If a direct threat to our security arises, then it will involve the overt invasion of our shores by an army equipped and trained for conventional or nuclear war.

The main problems facing a potential aggressor are the difficulties of transporting an invasion force of sufficient strength and the build-up of that force to the stage where it is capable of carrying out its mission

of taking over the country. We cannot, from within our own resources, hope to defeat an aggressor once he has been permitted to develop his full potential. Apart from interdiction of his force before it reaches our shores, the answer to this threat lies in our ability to contain and destroy an enemy bridgehead before it can be built up to the stage where the breakout can take place. To achieve this we must have a mobile force, possessing superior combat power, capable of decisive offensive action against an enemy bridgehead. That is, an armoured force. Provided we possess this ability, then the invasion of this country by conventional forces is unlikely to occur.

The future of New Guinea is far from clear; however, present indications are that Australia will carry the main burden for the defence of the Territory for many years. The indigenous army in New Guinea is trained for specialist tasks such as keeping the peace and border patrolling; it is not capable of countering an overt attack by conventional forces. In the event of such an attack intervention by forces from the Australian mainland would be essential.

There can be no doubt that most of the terrain in New Guinea is unfavourable for the use of armour; however, there are reasonably large areas, particularly near the main centres of population, where armour can be used to good effect. The road system into the Central Highlands is also being developed and, once completed, further areas will be opened up where armour may be usefully employed. These centres of population and production are the areas which an invader must capture if he is to achieve his aims; thus any struggle for New Guinea will be mainly concerned with the defence or capture of these areas. Experiences during World War II graphically illustrate the difficulties in defeating an enemy who has had time to prepare his defences.

In his comments on the operations at Buna-Gona, Colonel Keogh refers to the inadvisability and folly of 'sending inadequately supported infantry against undamaged fortifications manned by a determined garrison plentifully supplied with automatic weapons'.⁵ He was referring, in the main, to the paucity of artillery support; however, the comments, quoted earlier, of Field Marshal Lord Slim indicate the results which were obtained with tanks against the same enemy in similarly difficult terrain. M3 light tanks (General Stuarts) were used by the Australians during the campaign, but were unsuitable for the task. That they did

⁵ Colonel E. G. Keogh, *The South-West Pacific 1941-45*, p. 227.

achieve some success is remarkable, as a maximum of only eleven tanks was available at any one time, and as these were used in twos and threes there was little chance of them having a significant effect upon the battle. The Lethbridge Mission to the South-West Pacific Area reported: 'With relatively small losses to themselves and to the infantry they were supporting, the tanks enabled positions to be won which would otherwise have imposed long delays and very heavy casualties.'⁶ One of the lessons from the campaign showed the need for a heavy tank, mounting a big gun, capable of taking punishment and forcing its way through thick undergrowth. However, these lessons tended to be forgotten by the Australian Army, which persisted in the belief that tanks could not be used effectively in jungle or difficult terrain.

Fortunately, this archaic attitude seems to be changing. Main battle tanks are now deployed with the Australian Task Force in South Vietnam. As the After Action Reports are still classified, their contents cannot be quoted in this paper; however, it can be stated that the wet season, which many predicted would bring the tanks to a standstill, does not appear to have significantly restricted their freedom of movement. The cannister round has proved a most effective weapon in repulsing regiment sized attacks on fire support bases. These discoveries are not surprising to the armoured soldier, and it is heartening to see that the message may now be getting across to those who have the most to gain from the correct employment of armour. During the battle of Long Tan in 1966, reinforcements were carried to the scene in armoured personnel carriers, driving rain precluding the use of air support. This force inflicted heavy casualties upon a Viet Cong unit which was attempting to assault D Coy 6 RAR from a flank. It in no way detracts from the performance of the units involved to conjecture upon the results which might have been obtained had tanks been employed in this situation where a large enemy force had been located and fixed. The Americans have used armour in Vietnam with considerable success since 1965. One typical example of the results armour can obtain occurred in 1966 when the Viet Cong attempted to ambush a column which was escorted by tanks. When the ambush was sprung the tanks moved into echelon formation and advanced into the ambush firing cannister; the result—complete failure of the ambush and some 270 enemy dead left on the battlefield.

⁶ Graham, 'Tanks Against Japan', p. 5.

There are many areas in Vietnam where the use of armour would be impracticable due to the difficulty of the terrain; however, as was proved in Malaya, provided the enemy can be separated from the population and driven into the back country, his ability to achieve his aim is greatly reduced. The relative speed with which armoured forces may be deployed, and the inhibiting effect their presence has upon an enemy who lacks armoured support, makes them a potent weapon in a situation such as that existing in South Vietnam. The inherent flexibility of armoured forces is aided by the use of air transport for replenishment of the echelon. In a counter-insurgency setting, the availability of air transport support may eliminate the necessity to hold open a long overland supply route for operations of short duration. It also facilitates the replenishment of armoured sub-units which may be operating at a distance from the main supply route or forward operational base. Armour should therefore be more readily able to co-operate with infantry in operations in depth. The factors influencing the employment of armour in South Vietnam will apply generally to most of South-East Asia. In a limited war setting the possession of armour confers great advantages upon the Free World Forces when dealing with an enemy who does not have an effective counter. Should the situation in South-East Asia ever erupt into general war, then the need for effective armoured forces to oppose the considerable armoured strength of Communist China is self-evident.

A great many articles have been written in recent years propounding the theory that the day of the tank is over. The more rational of these articles have based their arguments upon the improvements to infantry anti-tank weapons, the use of guided weapons and the employment of aircraft in ground support roles. The concept of an infantry soldier with a one hundred dollar rocket being able to knock out a two hundred thousand dollar tank is most attractive. The ability of the infantry to do this, provided they can get close enough, is not questioned. Unsophisticated weapons of the Molotov cocktail variety will effectively immobilize a tank if placed in the right position. The keys to the question are placement and lethality. It must not be forgotten that the tank forms only part of a combat team, and, provided the team is well trained and its actions co-ordinated, then the task of getting close enough to obtain a strike in a vital area can be made very difficult. In addition, the infantry weapon must, because of its weight limitations, be of the shaped charge type. These weapons are of doubtful lethality, and in

fact, Australian tanks in South Vietnam have taken numerous hits from this type of weapon without suffering any serious damage to the vehicle or casualties to the crew. This ability to absorb punishment and remain in action is a characteristic of the main battle tank; the same cannot be said for the more lightly protected armoured personnel carrier or light cavalry tank, which provide only limited protection.

The guided weapon has come into great prominence in recent years and has many advantages, in particular those of relatively light weight and a high hit probability in good conditions. There are, however, many disadvantages associated with guided weapons. Once again they rely upon a shaped charge warhead for their effect and do not compare in lethality with the kinetic energy projectile. They have a relatively long time of flight, which is a considerable disadvantage when trying to hit a tank which is being manoeuvred tactically. The guided weapon relies upon some system of homing onto the target or is guided during flight by the operator. Both of these systems are open to counter-measures and do not compare with the kinetic energy projectile which, once fired, cannot be diverted from its pre-determined course. In addition, were the kinetic energy projectile to disappear from the battlefield, then it would be well within the capabilities of current technology to design armoured protection to defeat a shaped charge warhead. For these reasons there would appear to be a sound requirement to retain the kinetic energy gun, which has the advantages of reliability, accuracy even under poor conditions, and unsurpassed lethality.

Prior to World War II critics stated that aircraft would drive the tank from the battlefield, but this was not the case. In the closing stages of the war the Allies possessed almost complete control of the air and employed large numbers of ground attack aircraft in tank-hunting roles. These aircraft achieved considerable success, but were unable to prevent German armour from playing a significant part in battles right up until the war ended. It is interesting to note that the Russians have been developing anti-aircraft tanks for some years, and now the Americans are developing this type of vehicle. The chance of an anti-aircraft tank shooting down a fast-flying jet are probably not very high; however, the effect of heavy ground fire upon a pilot who is endeavouring to hit a pinpoint target may be quite significant. It has been stated that the helicopter, hovering a few feet off the ground, can provide the infantry with the accurate, intimate fire support normally provided by tanks. The mind boggles at the thought of helicopters being employed in this

way on a conventional battlefield. In view of the amount of assorted ironmongery being thrown into a fairly restricted area by both sides, grave doubts must arise as to how long a helicopter would survive. The anti-aircraft tank would become extremely effective in combatting helicopters used in this way. In addition, it is difficult to visualize a helicopter being able to provide intimate fire support beneath the canopy in wooded terrain; nor can it remain with the infantry to provide close protection by day and night. Helicopters have a role to play; they cannot, however, replace the tank upon the battlefield.

What then are the requirements for a modern armoured force? First, it must be centred around the main battle tank. There is no escape from this precept. To be effective the armoured fighting vehicle must be able to survive on the battlefield with the infantry. It must be capable of providing the infantry with a variety of effective fire support: high explosive, cannister, machine-gun, and have a bunker-cracking ability. It must be capable of engaging and defeating enemy armour at long ranges. No interim, lightweight, air-portable, multi-purpose armoured fighting vehicle can effectively carry out all these roles. Current main battle tanks are far from satisfactory in a number of aspects. Their weight precludes them from movement by air, and many bridges, especially in South-East Asia, will not support them. The repair and maintenance bills are too high at present, but with improvements in design these bills should reduce in the future. Limited endurance has been a problem in the past, but this situation is improving. It should be possible, within a few years, to produce a tank which will not require replenishment, except for ammunition, for at least three days. The Centurion is proving the value of a main battle tank in South Vietnam but this tank, which was designed during World War II, has seen eighteen years' service in the Australian Army. It is, undoubtedly, good for a few years yet, but in ever decreasing numbers as spares cease to become available. The lead times involved in the development of major equipments mean that the main battle tanks for the period 1975 to 1990 are probably either on the drawing boards or under development at this time. Australia must remain abreast of these developments to ensure that orders are placed in time for a new tank to be available to us when Centurion is eventually phased out.

What are the broad economics of this proposition? The critics of armour are fond of quoting the high capital cost of armoured equipments as a prime reason for Australia relying upon a basically infantry

army. That an armoured force is expensive, both to purchase and to maintain, cannot be denied but cost must be coupled with effectiveness if one is to obtain a true picture. One tank regiment possesses the gun power of slightly less than three artillery regiments, plus one hundred and eighty machine-guns, at least forty-five of which are 50-mm calibre. This roughly approximates the General Purpose Machine Gun capacity of three or four infantry battalions. These weapons are carried on vehicles which offer protection to the crews, have excellent mobility and flexibility, and give to a commander the capacity for decisive, offensive shock action. All of this an armoured regiment achieves with only four hundred and five men as against some four thousand in the infantry and artillery units. Australia is an affluent country in all aspects except that of manpower. Our high rate of national growth should allow us to spend considerable sums of money to ensure our security; however, to divert large numbers of men into such a non-productive field as defence would be quite unacceptable. The foregoing is not intended as an argument for the abolition of infantry or artillery; such a premise would be ridiculous. It is hoped, however, that it will indicate that the armoured regiment does give value for money.

Secondly, a modern armoured force requires an integral infantry element, mounted in armoured personnel carriers and highly trained in the techniques of infantry/tank co-operation. These skills are not developed in a ten-day exercise on the Puckapunyal range. The restricted size of the Australian Army and its many commitments probably does not allow permanent affiliations of armoured and infantry units and, in any event, this may be undesirable. The need is for infantry and armoured units to conduct integrated training at suitable stages during the annual training cycle. This training should be progressive and be aimed at producing efficient combat teams. To achieve this aim it would be desirable to co-locate infantry and armoured units, but logistic problems probably rule this out. The main difficulty lies in moving the armour and therefore the best solution is for 'Mahomet to come to the mountain'. Puckapunyal does not provide the ideal venue for infantry to conduct their large-scale exercises prior to deployment in South Vietnam. There is, therefore, a good case for siting an armoured force at Shoalwater Bay in order that units of all arms may be trained together before moving to an operational theatre.

Thirdly, there is a requirement for artillery which is capable of keeping up with the mobile battle. Certainly artillery can be rapidly

deployed by air but, unfortunately, air is subject to the vagaries of weather with the result that, under the very circumstances when it may be most advantageous to move armour, the air lift may not be available. There is a need for self-propelled artillery with armoured protection for the crews.

Fourthly, there is a need for an anti-tank capability. The best anti-tank weapon is a main battle tank, and in the presence of enemy armour this will remain an important role. It is quite wrong, however, to employ tanks as armoured anti-tank pillboxes within the infantry forward localities. If used in this way they will not be available to support infantry in the attack, counter-attack, counter-penetration, etc. roles. Current weapons available to the infantry give a reasonable anti-tank capability at ranges out to about one thousand metres; it is at ranges in excess of this that the problem lies. Armoured vehicles of the General Sheridan type have a good performance in the long range anti-tank field; however, the lightness of their armoured protection leaves them vulnerable to both tank and artillery fire. There is a case for an improved Entac type weapon which can be ground-mounted and fired by a controller who is dug in with overhead cover. This capability to conduct its own long range anti-tank defence should be given to the infantry battalion. Tanks should be employed to break up enemy armoured attacks in mobile operations, not as static anti-tank weapons.

With the development of increasingly effective surveillance and detection devices, air has become a most efficient means for conducting long and medium range reconnaissance. There is still, however, a need for medium range reconnaissance by ground forces to obtain more precise information about the enemy. There is also a requirement for mobile forces to provide flank protection, covering forces for the advance or withdrawal, and escorts for road columns in areas where there is guerilla activity against the lines of communication. The Australian concept envisages the initial deployment of our forces by air, with the heavier elements necessary to support long term operations following by sea at a later date. For these reasons there remains a need for air-portable armoured units possessing long endurance, good reliability, and capable of producing a large volume of accurate firepower. The cavalry regiment possesses these characteristics and should be retained in a modern armoured force; however, the temptation to regard the light cavalry tank as a main battle tank must be resisted.

The current organization of the Tropical Warfare Division provides one cavalry regiment as the only integral armoured unit within the

division. One tank squadron and one armoured personnel carrier squadron are available from Army Troops. This allocation is quite unrealistic. Current operations in South Vietnam prove the value of a task force commander having the capability to deploy tanks and armoured personnel carriers in support of his operations. The organization should therefore be increased to provide, in addition to the cavalry regiment, one tank regiment and one armoured personnel carrier regiment within each division. This divisional structure would be adequate to meet our foreseeable commitments outside Australia. If, however, the emphasis does turn to a 'Fortress Australia' concept then a complete revision of current policy is required. There will then be a need to create armoured formations up to divisional size—each with its integral mechanized infantry and self-propelled artillery—if we are to take the task of defending this vast continent seriously.

This article has illustrated the value of armoured forces to the Australian Army in all its likely theatres of operations. It has tried to remain within the bounds of practicability and not enter into the field of science fiction. The writer firmly believes that the Australian Army has failed to realize that armour, skilfully employed, can win battles and save the infantry a large proportion of the casualties they would otherwise suffer. There is a need for all arms to co-operate in realistic exercises during training. Learning basic lessons on the battlefield is costly and may be disastrous. It is appreciated that the type of force required for operations in mainland South-East Asia and New Guinea would not suffice for the defence of mainland Australia. It has been indicated that the present divisional organization does not possess sufficient armoured support to conduct successful operations outside Australia and that the armoured strength of the current division should be increased. So long as the present forward defence concept continues then these increases will provide Australia with a viable force for deployment overseas. They will also provide a reasonable base upon which to build, when necessary, the modern armoured force which would be vital to the defence of Australia. □

Ambush

*Captain J. F. Crossman
Royal Australian Armoured Corps*

Prelude

THE intelligence stemmed from the local Regional Force (RF) company commander. The post commander, dwarfed by his American adviser, visited the forward headquarters to effect liaison and discuss the operational picture. After the normal pleasantries, the Vietnamese captain indicated that he might have something of interest for us. It appeared that several of his soldiers had overheard in the local village of T, that the Viet Cong (VC) were using a particular stream to the south of the village to tranship supplies and personnel from the main river across Highway 15, where it was transferred to oxcarts for the nocturnal journey to inland VC storage areas and base camps. This supply route, he said, was vital to the enemy, who were feeling our presence in terms of restricted movement and shortage of supplies.

After the visitors had departed the evaluation of the intelligence began. First, was the information feasible? A study of the map indicated that it was. The stream provided direct access from the tidal river to the highway and as it was on the periphery of our operational area there had been no attempts on our part to interdict it. Secondly, was the task suited to the armoured personnel carriers (APCs)? Again, the map indicated that it was. There were suitable approaches and firm standing, but an air reconnaissance would confirm this.

The task was then issued to the troop leader together with the mission and general outline. The scope of the operation was consistent with a section task, besides which, the proximity of the hamlet made minimum movement desirable. Details of the task were given by the troop leader to the troop officer who was to command the group, and a section of the troop plus a section of infantry were 'warned out'.

Captain Crossman joined 4/19 PWLH (CMF) in 1961 and entered OCS in 1965. After graduation he served with two cavalry squadrons before joining A Squadron 3 Cavalry Regiment (SVN) in 1968. During his tour in Vietnam he served as a Troop Officer, Squadron and TF Liaison Officer. He was awarded an MID in 1969. On return to Australia he served in Battle Wing at JTC before taking up his present appointment as an instructor at the Armoured Centre Puckapunyal.

The troop officer conducted his own map reconnaissance to pick out the detail he would need to confirm from the air. His own crew warned out, his orders group and administration planned, he left for the pad.

Once in the air the troop officer ran through his checklist. During the map study he had selected several tentative ambush positions and approach routes. Now he oriented his map and studied the ground. Yes, he could depart the base moving away from the hamlet, could then *move off the main route into dead ground and follow the ground axis of that track into a lay-up position, keeping that rubber and bamboo between him and the locals.* His group could then lay-up in that secondary growth while he and the other commanders conducted their foot reconnaissance of the ambush site. The area at that creek junction looked promising; he could cover both 'blue lines' from there. He told the pilot to descend. Yes, his callsigns could get within twenty feet of the water, and the standing looked good — plenty of cover too. What about the tide in the area? No point in the infantry having to relocate in the night, or having to extract his APCs. A look at the high water mark and the height of the bank dispelled any worries in that regard. He would check on the tides when he returned to base. Friendly positions? There was that RF post. He must make a note to check on their night ambush positions. And the enemy? The only open approach, he saw, was his own entry point: the enemy would find it extremely heavy going on his flanks through that bamboo. His reconnaissance completed, the ambush commander returned to base.

With the bulk of the information now available the troop officer commenced his planning and the preparation of his written orders. Some of the minor detail could be finalized at the orders group, or the 'marrying-up' prior to departure. Once the orders were completed the officer discussed them with his troop leader before going to his orders group.

He arrived to find his orders group assembled. He glanced around and mentally ran through the group. Every vehicle commander, the forward observation officer, the infantry section commander, the engineer mini-team leader — all present.

The verbal orders commenced with topography and orientation. The enemy situation, past incidents and intelligence were outlined. The mission and general outline were clearly stated. The real essence of the orders came in the detailed execution. While the actual dispositions

of individual elements would depend on the foot reconnaissance, the order of march of the callsigns was given. Preparation of the vehicles, marrying-up, the route, lay-up area, springing of the ambush, illumination, claymores, withdrawal routes, timings, fire support; all were covered in great detail.

Administration dealt with meals, medical, quantity of special ordnance, pyrotechnics, personal equipment: Command and Signals — reporting, DUSTOFF, light fire teams, provision of extra radio sets for the infantry callsigns, checknets and frequencies. After a brief question period the various commanders dispersed to brief their own groups.

At 1825 hours the infantry and engineer elements married-up with the APC elements. The mini-team was assigned to the lead callsign designated by the section commander. The infantry section conducted a final check of equipment and mounted its APC. The engines had been running for one hour.

At 1830 hours a radio check, including manpack sets and rear link was made, order of march given, and the group moved off. The start time had been selected by the group commander for two reasons. First, the civilian curfew came into force at 1900 hours, so most of the local inhabitants would either be back in the hamlet or soon would be. Secondly, the routine clearing patrol moved out at 1845 hours, by which time the ambush group would be at the lay-up point. The noise created by the clearing patrol would help to cover the vital move into the actual ambush position.

A series of orders were issued by radio to the individual callsigns *en route* to the lay-up area. Engine noise kept to a minimum, weapons cocked, safety devices applied, check radio speakers 'off', volume down.

Ambush

About one hundred and fifty metres short of the creek line the group deploys into a defensive lay-up position. The engines are left running and the reconnaissance group moves off on foot to scout the area. A few minutes later the ambush commander is studying the ambush site, positioning callsigns with regard to cover, observation and maximum coverage of the killing zone. The infantry flank and rear protection party locations are decided upon. By use of a manpack set the troop officer then calls forward the callsigns in the designated order. As each arrives, the respective crew commander positions it. The

infantry parties are positioned. The commander's operator, once all jockeying has ceased, orders engines turned off. The time is 1910 hours.

The establishment of the ambush position is now a race against the failing light. Claymores are positioned, callsigns camouflaged, fire lanes cleared, vehicle weapons sited on to the killing zone. The flanking APC commanders ensure that they are aware of the infantry positions. A series of finger clicks send the APC crew commanders back to their seats, relieving the operators who have been manning the vehicle weapons. The time is now 1918 hours and the ambush is on the alert and standing to.

As darkness falls the crewmen do a quick mental check of their callsigns, binoculars properly adjusted, personal weapons handy, nothing loose positioned on top of the APC for a careless foot or hand to disturb, sets on low power and flares ready for firing. The ambush commander asks all stations for a radio check and removes his headset while listening for the replies. One set too loud could make all the difference now. Flicking to the squadron net he reports 'in position'; the pre-arranged LOCSTAT is checked in the squadron command post and sent to higher headquarters. The ambush will remain on full 'stand to' for about one hour. First, because the enemy may have observed the group moving into position and secondly, knowing the darkest period of the night is the period between sundown and moonrise, he often chooses that time to move.

The commander mentally reviews his knowledge of VC habits. He knows that the most favourable times for movement are just after last light, and at high tide and ebb tide — when the current will assist the enemy craft to enter or leave the unloading area. He knows that sometimes they employ large craft to approach the docking area and small craft to unload them. He also knows, from frustrating experience, that they often use small sampans as forward scouts to 'prove' a waterway for their larger brothers. He has checked on the tide timings and notes these as likely movement times: his orders on the springing of the ambush are clear and explicit.

The ambush is now set; the rest is up to the elusive enemy. In the darkness, the river and the mangrove swamps come to life. The sounds of marine creatures mingle with the lapping of the water and the buzz of the ever-present mosquitoes. Each group is now an island connected only by the vital radio link. No light comes from the 'tracks', the panel lights are masked. The only other discernible

sound is the occasional soft whirring of the starlight scopes scanning the gloom under the foliage on the far bank. The troops know that the enemy is likely to remain under that protective canopy to avoid the helicopter gunships.

A friendly position some distance behind the ambush sends up a flare. In the flickering pale light the crews sit perfectly still; the enemy on the river will instinctively look towards the light and the slightest movement will betray their presence. The flare flickers and dies, the troopers relax. The time is now 2005 hours.

At 2016 hours the right hand infantry group whispers urgently that they have heard movement approaching from the west. Starlight scopes and binoculars swing toward the grey ribbon which is the right hand visible extremity of the creek. The flanking infantry group confirms the report. From their lower position nearer the water-line they can distinguish a small sampan under the overhanging canopy on the southern side, with a crew of two paddling slowly towards the killing zone. The troopers in the APCs are tense, crewmen lift their weapons and careful hands grasp and position flares for firing. The crews can now make out the sampan, floating silently and furtively towards the killing zone, as if pulled along by some unseen cable. It is about twenty metres short of the centre of the killing zone.

The ambush commander, having acknowledged the report from the infantry, speaks softly but distinctly into his microphone. He tells the crews to make ready but to keep perfectly silent pending his further instructions. He now has to make a quick appreciation. If this sampan shows the slightest sign of having seen his party he will spring the ambush. But is this one of the enemy's forward scouts? He can make out no load in the sampan through his binoculars. Is it possible that this is an innocent fisherman, delayed on the main channel? The sampan is now in the centre of the killing zone — if he is to spring the ambush he must do it now. He presses the toggle on his breastplate and whispers into his microphone, 'We will let this one through, but keep your weapons on him, if I fire — shoot.' The sampan moves slowly past and the black-on-grey silhouette disappears around the bend, leaving the creek as before.

There is a barely audible hiss of breath from the crews and a few fidgety movements as tensed limbs are moved. The ambush commander cautions his men against noise. If that was the vanguard then bigger game is surely not far behind. The ambush will remain on full

'stand to'. The wait is not a long one — at 2025 hours more movement is reported. Again the crew is of two enemy, but the sampan is considerably larger and there appears to be cargo in the centre of the boat. The vessel is moving much faster than the previous one.

The ambush commander issues more orders. The right hand flank will engage the enemy in the stern of the sampan, while the left of the killer group will attempt to hit the VC in the bow. On the ambush being sprung by the commander, infantry groups on right and left will hit the enemy with M79 buckshot rounds. The officer knows that the instant the first shot is fired the enemy, if not hit, will be in the water.

The tension mounts as the boat draws closer. The ambush waits, perfectly still, for this is the critical period; one sound, one premature action, and their efforts will have been wasted, or worse, for the enemy is also armed.

As the sampan approaches the killing zone the commander sights along his pre-aimed .50 calibre, waiting for the boat to cross his muzzle. His left hand still holds his communications button to send . . . FIRE! His right thumb depresses the V pads on his machine-gun and the ambush is sprung. His operator strikes the base of the prepared flare and the first illumination round whistles into the air.

The stutter of automatic weapons and the abrupt coughing of the M79s echo across the waterway. Lines of tracer reach out towards the sampan, some ricocheting and spending themselves in the night. The noise increases as personal weapons add to the firepower. The fiery splashing of M79s can be seen on the far bank as infantry gunners pepper the possible escape routes through the mangrove.

A constant stream of rounds pours into the craft. In the light of the flare the sampan drifts slowly on the tide: the cargo is now quite visible — a large mound covered in plastic sheeting. There is also a smaller, darker bundle in the stern. Of other enemy there is no sign.

The fire continues for perhaps thirty seconds before an order on the radio cuts it. The illumination continues, the four APCs taking it in turn to put up the small parachute flares. As the sampan swings in the tide dazzled eyes search the shadows, but there is nothing. Dead? . . . perhaps. The ambush commander squeezes a small firing device atop his vehicle. The pre-positioned claymore explodes in midstream, sending a glittering cascade into the air. As the waterspout slowly subsides the troopers again scan the water . . . nothing.

The twenty-foot vessel is starting to settle now. Obviously some of the bullets have hit close to the water-line. On an order two crewmen dismount. In addition to their weapons they carry a small grappling hook — equipped with a float fabricated from a fruit juice can — tied to signals wire. It is crude but effective. On the third cast they succeed in grappling the partly waterlogged sampan and pull it to the shore. Quickly they examine the contents. A body, a wallet with some documents, an AK 47, some magazines and webbing. The green plastic is pulled back to reveal hessian bags. Through rents in the sacks polished white rice trickles onto the floor of the sampan; about 7 bags, roughly 700 lb . . . nothing else. The crewmen secure the sampan to the mangrove and cover it with brush. As they return to their APC the illumination ceases, and darkness returns to the little stream. The silence is complete.

While the vessel was being recovered the troop officer had been busy. After firing the initial flare, his operator had informed squadron that the ambush had been sprung. The group commander now submits a more detailed report to the squadron command post and has to make a further appreciation. He has two courses open to him. He can ask the squadron forward observation officer to fire the pre-arranged artillery further down the stream, in the hope of hitting other boats. It could possibly channel other sampans below him towards his location. Secondly, he can maintain the ambush in the hope of catching other sampans later. He consults his watch. The luminous hands show 2043 hours. It is early; perhaps other enemy vessels downstream may not have seen the flares or heard the gunfire. He decides to remain in position, informs the squadron commander of his decision, and orders a partial 'stand down'.

It is unlikely however that there will be further activity on this stream tonight, but the ambush commander is well satisfied. The captured rice would have fed an enemy platoon for many days. The lesson has once again been brought home. Imagination, thorough preparation in detail, patience and a cool head are the best weapons in the soldier's arsenal against the guerilla. □

The Significance of Stalingrad in World War II

G. M. Brown

IN late January and early February of 1943, the remains of the German Sixth Army, under newly created Field Marshal von Paulus, surrendered to the Russians in the ruins of Stalingrad. Thus ended a battle which had begun in August 1942, on the orders of Adolf Hitler, Supreme Commander of the German *Wehrmacht*. In association with the victories of the Western Allies in Africa — especially that at El Alamein — the German defeat at Stalingrad is widely considered to have been the 'turn of the tide' in Europe, with Stalingrad itself being considered the turn of the tide on the Eastern Front. While a few people (such as von Manstein in his *Lost Victories* — London, 1958) take a different line, the following seem to typify common opinion concerning the significance of the Battle of Stalingrad:

With the victory of Stalingrad, the Soviet Union had won her battle of survival, and now the war entered an entirely new phase.¹

Thus ended Hitler's prodigious effort to conquer Russia by force and destroy Communism by an equally odious form of totalitarian tyranny.²

Truly the tide had turned in those November days of 1942 when Montgomery emerged victorious from the field of El Alamein; when Eisenhower's host set foot on the shores of North Africa; and when, after an epic defense, the Russians encircled their besiegers on the banks of the Volga.³

Coupled with El Alamein and the British-American landings in North Africa, it marked the great turning point in World War Two.⁴

At almost the same moment that Hitler moved to Vinnitsa, the Russians, too (although undoubtedly without knowledge of this), gave recognition to the fact that the centre of gravity had shifted irrevocably southward, and that the war would be decided at Stalingrad.⁵

Other authors also subscribe to similar views of the significance of Stalingrad, and also to the view that Hitler's refusal to withdraw

Mr Brown received most of his education at the Christian Brother's Colleges, Albury and North Albury, and is now in his third year of an Arts Degree at the University of Newcastle. Interested in Ancient, German and Military History he shared the 1969 Sarah Wheeler History prize for the outstanding performance in History II.

Sixth Army sealed not only its doom, but also that of the Russian campaign. Hitler's decision has been branded as illustrative of his stubbornness, stupidity in the face of reality, and military inconsistency. His generals, trying to minimize their shortcomings, have been in the forefront of that group of critics which argues that, by leaving Sixth Army in Stalingrad, Hitler lost not only the Army but the whole European conflict.

These two threads of controversy — whether Stalingrad *was* the 'turn of the tide' in Russia, and whether Hitler's decision was the correct one — are bound together. For the sake of clarity, however, they will here be treated as distinctly as possible.

The relationship between Operation 'Barbarossa' and the rest of the European-African war is very complex. It would appear, however, that had Hitler been able to, at least, neutralize the Red Army for a considerable period, and thereby transfer the bulk of the *Wehrmacht* to face the Western Allies, he would have been in a position of some strength.⁶ Faced by the full power of the *Wehrmacht* it is — to say the very least — doubtful whether the Allies would have been able to mount a successful invasion of Europe — the essential prerequisite for defeating Germany.⁷ Hitler would have thus been able to force the Allies to accept the *status quo*, from which juncture he would have been able to build up his strength with all the resources of occupied Europe at his disposal. Thus, the outcome of 'Barbarossa' was vital to that of the war.

¹ *Russia at War*, A. Werth; London 1964, p. 585.

² *The Second World War*, W. Churchill; London 1959 (abridged ed.).

³ *World War 1939-45*, P. Young; London 1966, p. 246.

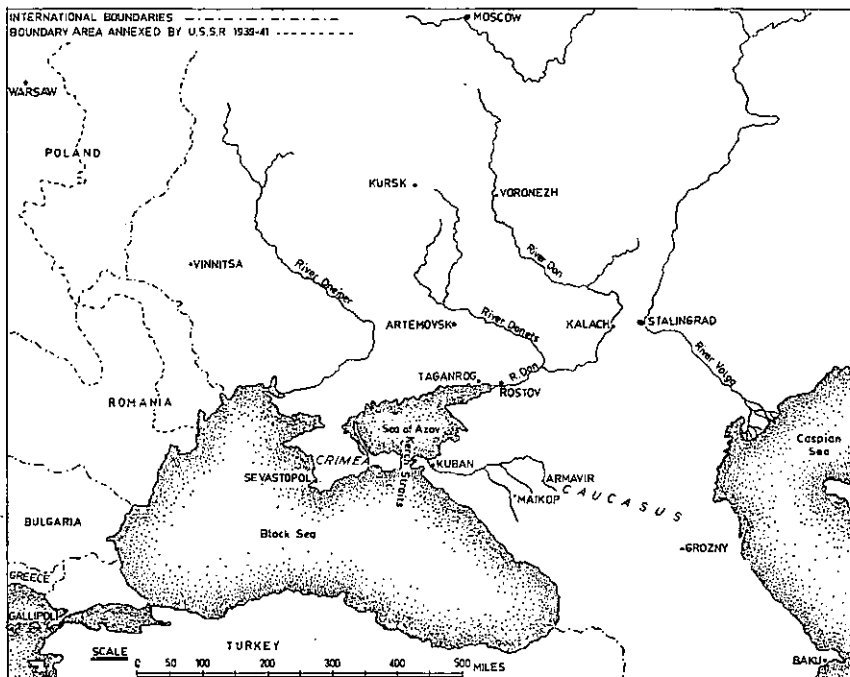
⁴ *The Rise and Fall of the Third Reich*, W. Shirer; London 1967, p. 1114.

⁵ *Barbarossa: The Russian-German Conflict 1941-5*, A. Clark; London 1965, p. 251.

⁶ Hitler's ultimate intention was undoubtedly the destruction of the Russian people—except as slaves to the *Herrenvolk*—but he had shown himself more than once before ready to sacrifice goals to expediency—consider the Russo-German pact of 1939.

⁷ This assuming that nuclear weapons were not employed. There is little reliable evidence on this subject—especially on the state of German science and technology. (After the 1944 invasion, a U.S. team went to Europe to study this question and reported—as far as has been released—'nothing significant', but it was not till 1945 that the Allies penetrated the Reich (where one might expect Nazi nuclear plants to be found), and it is possible that by that time the evidence had been destroyed.) Furthermore, there is the problem of whether the Western Allies—who held a nuclear monopoly—would have used such devices in Europe, even against the Nazis.

Within the context of 'Barbarossa', if Stalingrad was in fact the 'turn of the tide', then clearly it must have been a defeat of sufficient magnitude to prevent Germany creating, in the foreseeable future, the conditions outlined above. Stalingrad must have prevented the transfer of the *Wehrmacht* from East to West till about February 1944, when preparations began in earnest to meet the invasion of Europe.



In order to make a fair examination of the Stalingrad campaign, it is first necessary to glance at the 1942 German summer operations leading up to that campaign. *Führer* Directive Number 41, of April 1942, stated the basis of the German summer campaign as follows:

The purpose is . . . to occupy the Caucasus front by decisively attacking and destroying Russian forces in the Voronezh area to the south, west or north of the Don

The third attack in the course of these operations will be so conducted that forces thrusting down the Don can link up with forces advancing from the Taganrog-Artemovsk area These forces should eventually make contact with the armoured forces advancing on Stalingrad

In any event, every effort will be made to reach Stalingrad itself, or at least to bring the city under fire . . . so that it may no longer be used as an industrial or communications center.⁸

⁸ *Hitler's War Directives*, Ed. H. Trevor-Roper; London 1966, p. 180.

In 1942, however, the Russians adopted the policy of trading space for time, thus nullifying to a significant degree the wide enveloping movements envisaged and attempted by the Panzer formations. The Russians retreated eastwards — out of the nascent pockets — resisting only at certain key points. Both Hitler and his generals made the error of interpreting this as symptomatic of a Russian collapse, like that of 1941, except that this one was to be final. This error is evidenced in the exchange between Hitler and his Chief of the General Staff, Halder, on 15 July 1942:

Hitler: The Russian is finished!

Halder: I must say, it is beginning to look uncommonly like it.⁹

The result of this misinterpretation was *Führer* Directive No. 45 of July 23, which sounded an optimistic and daring note:

In a campaign which has lasted little more than three weeks, the main objectives outlined by me for the southern flank of the Eastern Front have been largely achieved

The next task of Army Group A is to encircle enemy forces which have escaped across the Don in the area south and south-west of Rostov and destroy them

After destruction of enemy forces south of the Don, the most important task of Army Group A will be to occupy the eastern coastline of the Black Sea For this purpose . . . formations . . . already designated will be brought across the Kerch Straits as soon as the advance of the main body of Army Group A becomes effective, and will then push south-east along the Black Sea coastal road. A further force . . . will force a passage of the Kuban, and occupy the high ground around Maikop and Armavir

At the same time, a force composed chiefly of fast moving formations will give flank cover in the east and capture the Grozny area Thereafter, the Baku area will be occupied by a thrust along the Caspian coast

The task of Army Group B is, as previously laid down, to develop the Don defenses and, by a thrust forward to Stalingrad, to smash the enemy forces concentrated there, to occupy the town, and to block the communications between the Don and the Volga.¹⁰

Hitler has thus split his forces into two entities with different areas of operation — Army Group A, which was to conquer the Caucasus, and Army Group B, which was to hold the long Don flank. One unit of Army Group B — Sixth Army — was destined to take Stalingrad. This division of strength was made in the belief that the Red Army was now so weakened that it was possible to take both Stalingrad *and* the Caucasus simultaneously. Army Group A was 1,000,000 men strong and included the First Panzer Army; and Army Group B boasted some of the best units on the Eastern Front, including Sixth Army, and powerful

⁹ Quoted in Clark, p. 217.

¹⁰ Trevor-Roper, p. 193-4-5.

armoured units as spearheads. Army Group A — eventually commanded by Field Marshal von Kleist — was dependent for the bulk of its supplies on lines of communication passing through Rostov-on-Don, an important centre not far from the mouth of the river. Rostov was covered by the mass of Army Group B which, by the time of the Russian assault on Sixth Army, was deployed east and north-east of the town at a considerable distance, on both sides of Stalingrad. At the same time, Sixth Army itself was heavily engaged in bitter street fighting in the city area, while other formations guarded the northern and southern flanks. A large proportion of these forces were satellite troops — chiefly ill-equipped Rumanians. On these flanks fell the weight of the powerful Russian armoured and motorized forces, on 19 November 1942. The defenders were shattered, and within a few days of the initial attack, Sixth Army was in peril. The trap was sealed with the capture — by a ruse — of the Don bridge at Kalach, over which had come ‘every pound of rations, and every bullet for Sixth Army’.¹¹

In their vast assault, the Soviets employed seven Armies — though it should be remembered that a Russian Army was the equivalent of a full-strength German Corps. These forces encircled Sixth Army and exerted heavy pressure on the ‘rump’ of Army Group B, which was reduced to a disorganized collection of *ad hoc* units fighting — or fleeing — on their own initiative. The Red Army had inflicted a severe defeat on the *Wehrmacht*, one which looked like costing the Germans at least 220,000 men — the entire establishment of Sixth Army — and all their equipment. (Sixth Army, according to Alan Clark’s *Barbarossa*, consisted of 13 infantry, three panzer, three motorized and one anti-aircraft division.) Görlitz, in his well known *History of the German General Staff*, calls Stalingrad ‘a second Jena’.

Hitler and his generals were thus faced with an unpromising situation when Sixth Army was encircled. The problem was then — in popular parlance — to make the best of a bad lot. There were a number of possible courses of action to the Germans, the most obvious, and, indeed, the ‘commonsense’ one — being to mount a relief attack (with or without a co-ordinated breakout attempt by Sixth Army), and to ‘get the hell out of here’.¹² A variation on this was to break through

¹¹ Clark, p. 282.

¹² *Hitler's War on Russia*, P. Carrell; London 1966, p. 634. It is significant that this book ends at the surrender of Sixth Army's remnants in Stalingrad.

to Sixth Army and attempt to supply it by a land corridor. However, after the failure of attempts to reach Sixth Army by land (Operations 'Winter Storm' and 'Thunderclap') and the inadequacy of the *Luftwaffe's* capacity to supply it by air, it was considered that Sixth Army had to be got out at all costs. To leave it there would result in its inevitable destruction; therefore, ran the opinions of most of the generals, it had to be withdrawn. Yet, as is well known, Hitler refused to permit withdrawal — all he ever permitted were attempts to open a supply corridor.

As we have seen, many have since claimed that Hitler's refusal to permit a withdrawal cost the *Wehrmacht* victory in Russia, and hence the war in Europe. These critics range from German generals and Allied wartime propagandists to those who recall the barbarity of Nazism and the evil genius of Adolf Hitler. All stress his 'pathological aversion' to any withdrawal. Criticism of Hitler because he *was* Hitler is, however, too often based on non-historical prejudice; moreover the motives behind Hitler's decision cannot be properly ascertained. It is the decision and its results with which the military historian is concerned, and which the bulk of the rest of this article discusses.

As a result of the encirclement of Sixth Army, almost a quarter of a million men were trapped by a powerful foe, and the entire German position on the Don was in jeopardy. But, in fact, there was more at stake than Sixth Army, or the German position on the Don. What was at stake was nothing less than the fate of von Kleist's Army Group A — with among its million men the First Panzer Army — deep in the Caucasus, and faced by Russian forces powerful enough to ensure that any withdrawal was slow and cautious — or else a rout. This vast German force was, as we have noted, dependent on the communications passing through Rostov; and it was on the shattered and disorganized Army Group B that the defence of this vital centre rested. Should it have fallen, then Army Group A would have been cut off and destroyed — a death blow to the *Wehrmacht*, which could not have borne this loss on top of the losses in Army Group B all at one stroke. A terrible responsibility thus rested on the battered Army Group B, but as the situation developed, it was clear that Rostov could be held long enough to permit the safe and orderly retreat of Kleist's divisions. One must ask: what tipped the balance in Germany's favour and enabled Army Group B to hang on to Rostov? The answer to this question shows us the utter folly implicit in any withdrawal of Sixth Army from Stalingrad

while it had any fighting value. (And, of course, there was no good reason to withdraw it once its fighting value had gone.)

The Russians used seven armies against Sixth Army's flanking forces, and after brushing aside the shaky defence, these forces formed a ring of steel around Paulus' troops. Russian forces not used in the siege were thrown against Army Group B, which proved barely able to hold them off long enough to permit the extrication of Kleist's divisions from the Caucasus. Had Sixth Army been withdrawn, however, the powerful Russian forces around Stalingrad would have been freed to turn on Army Group B, and Rostov would have fallen much sooner than it did. Furthermore, in any battle ensuing from the withdrawal of Sixth Army, Paulus' troops would have been next to useless, as they were worn down by months of street fighting and a siege. The value gained by the release of Sixth Army would have been heavily outweighed by the consequent release of Russian forces around Stalingrad. Yet because Sixth Army stood and fought — in a good defensive position — the Russians tied up many of their units in a long and protracted siege. Zhukov's offer of good surrender terms for Sixth Army were, one might suspect, prompted more by military need than humanitarian considerations. For the Russians mistakenly pursued one objective single-mindedly — the destruction of Sixth Army. Thus, while Sixth Army held out, it performed a vital service for Army Groups A and B:

... throughout January, Zhukov was pursuing the Germans with his left hand tied behind his back. Over half the Soviet infantry and thirty per cent of its artillery were still in the Stalingrad area at the conclusion of the siege¹³

Had Stalingrad surrendered or Sixth Army been withdrawn, then other objectives would have to be found for the Russian forces, and what more obvious — and, more importantly, less defensible by the *Wehrmacht* — than Rostov?¹⁴ Sixth Army, by enduring a terrible siege,

¹³ Clark, p. 315.

¹⁴ It is unfortunate that Russian sources cannot be consulted on this, or related, points. Such sources are either unavailable or highly unreliable. Events in the wartime period are variously reported by the Russians depending on who is 'in' at any time. For what it is worth, Khrushchev is reported to have said: 'After the Party Congress, we shall probably have to reevaluate many wartime military operations and present them in their true light.' Changes like this destroy the reliability of Russian sources. Quote from Khrushchev's speech 'On the Cult of Personality', in *The Stalin Dictatorship*, T. Rigby (Editor), Sydney 1968, p. 59.

saved Army Group B from total liquidation and Army Group A from isolation and eventual reduction. This is the extent of the correctness of Hitler's decision to leave Sixth Army in Stalingrad — by doing so he cut his losses to a minimum. He traded Sixth Army and the gains of the 1942 summer offensive for what was left of Army Group B and an intact and powerful Army Group A. The loss of an infantry army — albeit with mobile forces attached — was less damaging than that of Army Group A, for the panzers under Kleist were vital to the future conduct of the war. Without them, the much feared mailed fist of the *Wehrmacht* was but a shadow of its former self. One must, therefore, admit that — whatever the reasons behind it — Hitler's decision to leave Sixth Army to be destroyed was militarily correct. This does not imply, however, that his initial decision to attack the Caucasus and Stalingrad simultaneously was correct. Germany lacked the resources for such an operational combination; and the loss of Sixth Army and of all the ground gained in 1942 was the minimal result of the miscalculation leading up to Directive No. 45. Hitler kept his losses at a minimum, but this does not disguise the fact that his original decision was unsound, in the light of the strength of the Red Army and of the *Wehrmacht* at the time of the operation.

Stalingrad was thus a severe defeat for the *Wehrmacht*. However, it remains to be seen whether it was a defeat of such magnitude that it can be called the 'turn of the tide', whether it resulted in the inability of the *Wehrmacht* to transfer forces westwards as outlined earlier. The phrase 'turn of the tide' connotes inevitability, so that to say that Stalingrad was the 'turn of the tide' is to imply that after Stalingrad, the defeat of the *Wehrmacht* on the Eastern Front — and hence in Europe — was inevitable. There is evidence which at first examination seems to support such a contention. After all, the military history of the *Wehrmacht* after Stalingrad is one of defensive battles, a few local successes, abortive offensives and then disaster upon disaster, culminating in the final debacle on the Oder in 1945. Surely, it is argued, this is evidence enough to support the claim that Stalingrad was decisive? After Stalingrad, Germany never won a great victory, though there was some brilliant defensive fighting. She was thus tied down in the East, and therefore unable to stop the invasion of Europe by the Western Allies — the spectre of a two-front war was come to haunt Hitler and his Germany. However, this line of attack is in fact invalid, as may be seen if we look ahead to July 1943, to the battle of the Kursk salient —

a German offensive which speedily became a disaster, thus making up part of the 'evidence' mentioned above.

In July 1943, the Germans attacked a Russian salient centred around the city of Kursk with a force of seventeen panzer divisions, precipitating an immense armoured battle. This the Germans lost, being forced to retire by well-prepared Soviet defenders; the result being a great reduction in the numbers and strength of the panzer forces. However, the important point at present is not that the Germans lost (this was almost inevitable when we consider the meticulous preparations made to meet them by the Soviets), but that there was a German offensive at all. The most damaging contradiction of the 'turn of the tide' theory of Stalingrad is the battle of Kursk. For how could the *Wehrmacht* — supposedly fatally defeated in November of one year — mount a full-scale offensive with seventeen panzer divisions in July of the next? Kursk was no Ardennes offensive, a last ditch attempt to turn the tables on an invading enemy, but a full-dress offensive with immense forces. It was the good fortune of the Allied cause that the Germans chose the wrong place to deploy the force, for it was quite capable of inflicting a terrible defeat on the Russians, thus forcing them to talk peace, or at least stall for time. Obviously a Germany which could deploy seventeen panzer divisions in one operation was not a defeated Germany. The simple fact of the Kursk offensive is enough to give the lie to the 'turn of the tide' theory of Stalingrad.

If Stalingrad was not the 'turn of the tide' we may well ask; what was? The answer — if there is one — seems to be the battle of Kursk, for it was at Kursk that the panzer arm was crippled. The panzers were essential to the conduct of the war — they were the spearhead of the celebrated *blitzkrieg*, the forces which cut through enemy lines for miles rearwards, disrupting communications and opening the way for permanent occupation by follow-up infantry. They also cut off enemy offensives and sealed off units behind the German lines. The power of the panzers may be appreciated by noting the damage they caused — even in their lesser numbers — at the Battle of the Bulge in 1944, where they were still able to halt the Western Allies for six weeks. But they were no longer able to destroy the enemy, for their old power had been broken at Kursk. Clearly it is fallacious to count heads and claim that the loss of about 220,000 men at Stalingrad was a decisive blow. In World War I it probably would have been — in World War II, however, it was the destruction of the Panzer's strength which spelt the end, and this strength was first seriously weakened at Kursk, not Stalingrad.

Stalingrad, therefore, was not the decisive battle some have claimed it to be, though it was a severe defeat for Germany. It was the result of the misjudgements of Hitler and his generals, and the blame for Stalingrad—if we must attach blame—rests on Hitler and those generals who thought as he did. However, the credit for the salvation of Army Group A must also go to Hitler, for it was his decision to sacrifice Sixth Army which saved the men in the Caucasus. If any battle is to be given this designation, then Kursk, not Stalingrad, was the 'turn of the tide'. □

Yet though the Western Allies had temporarily lost the initiative which British strategy had won for them two years before, though their reserves had been committed and their hand—formerly so skilfully concealed—been disclosed, the stalemate was about to be broken by a greater optimist than Eisenhower. By his fanatic refusal to yield ground Hitler had already allowed the Western Allies to destroy two great German armies—one in Tunisia in 1943 and the other in Normandy in 1944—as he had enabled the Russians to destroy another at Stalingrad and blockade another in the Baltic provinces. Ever since his reprieve in September, he had been husbanding the new army of young fanatics he had raised by his drastic autumn call-up, not to create the central defensive reserve which, with her foes closing in from east and west, was Germany's supreme need, but to form the wherewithal for a second *blitzkrieg* which should do against the Americans and British what its predecessor had done against the French and British in 1940. Rather than rely on the interior lines that were his country's chief military asset and play the patient defensive game which had enabled his hero, Frederick the Great, to snatch victory from defeat, the Führer had decided to stake everything on a single throw, 'to win or lose it all'. And because he despised the Americans and believed them to be more likely to break under such a blow than the Russians, he had resolved to leave the Eastern front to look after itself and make his desperate bid for victory in the West.

—Field Marshal Viscount Alanbrooke,
(from *Triumph in the West* by Sir Arthur Bryant) (1959).

In Defence of Appreciation Format

Lieutenant-Colonel E. H. Dar
Pakistan Army

Introduction

IT is not uncommon to be sceptical of military methodology. There are some who would treat it as an exact science; which should provide a solution, if not the drive, to any or all tactical or strategic problems. There are others who, either in ignorance or indifference, treat methodology as mythology; to be delved into with grave concern on the rather few and enervating occasions when an officer is nominated to attend a staff or a higher course of instruction.

War is not always amenable to scientific discipline and analysis. The part which is tangible and belonging to the physical—like terrain, relative strength, communications, logistics, air and naval capability, nuclear potential could, perhaps, with benefit be subjected to methodology and logical analysis. However, the part which is not always discernible—the inexact—like morale, leadership, psychological and political factors, are difficult to analyse and much more difficult to relate to the mosaic of war. 'There is no human affair', says Clausewitz, 'which stands so constantly and so generally in close connection with chance as War. But together with chance, the accidental, and along with it good luck, occupy a great place in War'.

Thus, if we accept the theory that methodology should and could provide solution to military problems, we would be making a grave error, 'For in war as well as in art there is no fixed rule; talent cannot in either be replaced by a regulation'.¹

If, on the other hand we completely ignore methodology we would be committing an equally serious mistake. 'Strategy is the application of

Lieutenant-Colonel Dar was commissioned in 1950 in infantry. He has held a number of instructional and staff appointments in the Infantry School, the Pakistan Military Academy and General Headquarters. He has recently been transferred to staff after commanding an infantry battalion.

common sense to the conduct of war'. The difficulty lies in its execution, for we are dependent on an infinite number of factors like wind and weather, fogs, wrong reports etc. If, therefore, theoretical science alone will never lead us to victory we must nevertheless not entirely disregard it. General von Willisen very truly says: 'It is only a step from knowing to doing, but it is a still greater step from not doing to doing'.²

Thus it follows that military methodology—even though it inspires attitudes of the extreme—is nevertheless a subject deserving of more sympathetic and empirical treatment. It is proposed to discuss in this article one aspect of military methodology: the appreciation of the situation.

Appreciation and Aptitude For War

In the first place the process of appreciation should be distinguished from its application. The inability to arrive at quick decisions, or its tardy execution, need not lead to the conclusion that the mechanics of appreciation are faulty or that a decision could be taken without one. The appreciation should provide a variable set of hypothesis in respect of that part of war—which is science—and can therefore be subjected to an academic discipline. It should, on the other hand, attempt to eliminate or reduce the imponderable and the intangible in war; that is, the part which is art and is difficult, if not impossible, to comprehend in terms of scientific analysis. What the mechanics of appreciation cannot and will not do is to lay down rigid and immutable laws which would automatically bring success. It may be possible to achieve this result in theory when the belligerents are given to mechanical reactions only: perhaps—if war was waged with computers. But in that case it may not be necessary to wage a war. We could determine the outcome and divide the spoils without, as it were, soiling our hands in mud and blood.

However, the enemy is also aware of the laws of war, has a will of his own and does subject the other side from the outset to the interplay of various possibilities and probabilities, good and bad luck and occasionally 'sheer bad luck'. Therefore, appreciation is not something static. It is given to continuous change. The average officer finds it difficult to keep on appreciating all the time. He would rather make a

¹ Von Moltke's *Tactical Problems* (from 1858 to 1882), p. 162.

² *ibid*, p. 134.

grand plan, sweep the enemy away and then celebrate. That is what he achieves in the portals of staff college. He finds it difficult to relate his instruction to the realities of the war which is part science, part art.

The difficulty in some cases lies in an understandable inability to change the form and norm of appreciation with each change in level of command. The method so beloved of the battalion commander need not be applicable at divisional level.

At unit and sub unit level—the part which is science—is predominant. The physical factors are simple to comprehend; the terrain is limited, the forces involved easy to calculate, the manoeuvre is simple and the logistic tonnage easy to calculate and provide. The effect of the intangible is neither catastrophic nor impossible to overcome. The remedies are equally simple. Therefore, when relating the appreciation format to unit and sub unit level, what is so essential is the ability to reduce the operational environment to straightforward facts and a few logical pointers leading to a suitable plan. It is not necessary to consider all the factors in absolute detail and depth. The constants, considered pragmatically, would suffice. What is required at unit level is a condensation of the standard appreciation format.

The format at higher formation level, in the field of 'operational strategy' for instance, is less amenable to fixed forms. To subject an appreciation at corps level to the format given in staff duties in the field is to constrict thought process and therefore to face increasing resistance in arriving at a rational conclusion. Therefore, the formation commanders find their own method of expressing their thoughts in writing. Thus no two appreciations reproduced in the official despatches of the war in desert are alike. The appreciation approved by Auchinleck and reproduced in his biography by John Connell is different in format from other appreciations written or approved by the same commander and reproduced in his official despatches. The loose form and the freedom at higher formation level is inevitable because the battle has to be viewed as a whole, over a vast area, within considerable time span and innumerable intangible factors. The corps and army commanders therefore rarely make use of the standard appreciation format.

Because critical decisions are involved, the appreciation at higher formation level is more given to the written form—generally a short and severe narrative, culminating in recommendations. The appreciation at lower level is often mental and rarely in written form. This is equally true of mobile operations, even at higher level, and generally of a battle

in progress. But each phase of the battle has, however, been subjected to the appreciation process *prior* to the battle and may well be subjected to further appreciation should the conditions change or warrant such an exercise.

Appreciation as an Intellectual Discipline

An appreciation is both subjective and objective. It is objective in so far as it relates to the external—the physical and tangible factors. It is subjective in that at no stage is the author's personality divorced from the intangible factors. He brings into play, in every aspect and at every stage of appreciation, an individual approach, reflective of his physical condition, intellectual endowment and moral aptitude. It is for this reason that, given the same ground, relative strength of forces and operational environment, no two solutions are likely to be the same.

If alpha represents plan; a, b, c, d various factors, and x, y, and z the qualifications adduced by each commander, the mathematical rendering of appreciation would be as under:

$$(a^x + b^y + c^z \dots)^{xyz} = a$$

The subjective aspect (x, y, z) in each case brings about a different solution.

Therefore, an appreciation format is relevant only in its general application. It should be sufficiently flexible to absorb individual techniques and methods and to restrict interplay of prejudice and foibles.

This leads to the final point that the appreciation, in its ultimate analysis, is an intellectual effort and therefore a subject for profound academic training and discipline. Perhaps for a man of genius no academic discipline is required. He invents his own methods: although it is uncertain if he does so without vigorous intellectual training. Genius is, after all, diligence.

Therefore instruction in some format is necessary. Not as an end in itself but as a means to an end. Format need not be the master. The ability to express logically and clearly is essential. It has to be acquired. Quick mental calculations follow knowledge of mathematical tables, not vice versa. Nor is a loose or untidy work (from the point of view of minor staff duties) anything except a reflection of the originator's laziness and lethargy. Whether this is a soldierly virtue is difficult to say. According to Dr Johnson, 'A soldier's time is passed in distress and danger or in idleness and corruption'.

Appreciation is, therefore, an intellectual discipline which operates in two extremes. At one end is the tangible aspect—the factors which it is possible to evaluate; the ground, relative strength, time and logistics. At the other end are the intangible factors, the capacity for leadership, emotional response, morale, the fog and friction of war. The format facilitates calculation of the former and attempts to reduce the effect of the latter. The format is the starting point in intellectual training of a military commander. The able, the efficient and the great free themselves easily and speedily from all forms of constricted thought process. For the average leader it is still necessary to look back on his academic training. Perhaps with practice he has developed the ability to assess a situation quickly, and respond to changes in operational environment without rigidity. Perhaps he is still rather slow. This should not disturb us unnecessarily. The Army is, after all, a very happy family; consisting of some who move fast, some who are apt to be slow and others who just refuse to move. □

The success of a commander does not arise from following rules or models. It consists in an absolutely new comprehension of the dominant facts of the situation at the time, and all the forces at work. Every great operation of war is unique. What is wanted is a profound appreciation of the actual event. There is no surer way to disaster than to imitate the plans of bygone heroes and to fit them to novel situations.

—Winston Churchill, in his study of Marlborough.

The Last Days of the British Cavalry

Ernest M. Teagarden

IT was July, 1906. The British House of Commons and the spectator galleries were crowded when Richard Burdon Haldane, War Minister in the Liberal government of Henry Campbell-Bannerman, rose to present his scheme for army reorganization and modernization. In a speech that lasted three hours, he laid before Commons a project to convert the Regular Army into an Expeditionary Force of six divisions — approximately 150,000 men. Of this total, 50,000 would be men serving with the colours, 70,000 would be reservists, and 30,000 would serve on a Militia basis. After the requirements for the Expeditionary Force had been met, Haldane told Commons, there would be redundant units in both the infantry and the artillery. He proposed to reduce these services by approximately 20,000 officers and men. Only the cavalry was to be left untouched.¹

Haldane had placed the cavalry in a unique position. It was the only one of the three major branches of the army — infantry, cavalry, and artillery — to survive his rigorous 'efficiency and economy' programme without a reduction in numbers. It was, in fact, to increase its establishment immediately upon mobilization of the Expeditionary Force for war. He considered the second-line Yeomanry regiments suitable for use as divisional cavalry and intended to employ them as such if war came. They would provide an additional 3,140 mounted men for the Expeditionary Force.² Haldane's scheme was implemented and the British Regular cavalry, apart from regiments stationed in India, Egypt, and South Africa, became part of an Expeditionary Force organized for rapid mobilization and quick dispatch to any trouble spot in the British Empire or in Europe.

Mr Teagarden is Chairman of the Division of Social Science and Business at the Dakota State College, Madison, USA. Holder of a Ph.D. degree in history and economics he served with the US Army from 1945 to 1947. He has written a number of articles on military history and book reviews for eminent historical journals.

In June the Army Council had approved of a divisional structure for the cavalry brigades incorporated into the Expeditionary Force.³ During peacetime one cavalry brigade was assigned to the Aldershot Command, two cavalry brigades were assigned to the Eastern Command (the 2nd Brigade at Canterbury and the 3rd Brigade at Colchester), and one cavalry brigade was assigned to the Irish Command on the Curragh.⁴ Upon mobilization for war the brigades were to be assembled into a cavalry division for overseas service. The composition of the division on war footing was as follows:

- 1 Headquarter Unit
- 4 Cavalry Brigades:
 - 1 Headquarter Unit per Brigade
 - 3 Cavalry Regiments per Brigade
- Cavalry Divisional Troops:
 - Cavalry Divisional Artillery:
 - 1 Headquarter Unit
 - 2 Horse Artillery Brigades
 - Cavalry Divisional Engineers:
 - 1 Headquarter Unit
 - 4 Field Troops
 - 1 Wireless Telegraph Company
- 1 Cavalry Divisional Transport and Supply Column
- 4 Cavalry Field Ambulances⁵

In addition to the cavalry division there were four mounted brigades, each composed of one headquarter unit, one or two cavalry regiments, one horse artillery battery with a mounted brigade ammunition column, one or two mounted infantry battalions, one mounted brigade transport and supply column, and one cavalry field ambulance unit.⁶

¹ *Hansard's Parliamentary Debates*. 4 CLX (1908), 1086-1087.

² *Parliamentary Papers*. Cmd. 2993. July, 1906, 'Memorandum by the Secretary of State for War on Army Reorganization, 30 July 1906.' Appendix.

³ *Minutes of the Army Council*. 21 June 1906, p. 6.

⁴ *Army Order 28 of 1907*. 'Reorganization of the Regular Army in the United Kingdom.'

⁵ *Expeditionary Force, War Establishment for 1909-1910*. Issued with Army Orders of 1 December 1909, pp. 13-14.

⁶ *ibid.*

The reorganization and modernization of the cavalry arm brought forth some new ideas on strategical and tactical deployment. The ideas were quickly developed into a practical programme. First, there were units of strategic cavalry which would operate in the advance of the field army. Second, 'screen' cavalry units were organized to function between the main body of the army and the enemy force. Third, the Yeomanry were reorganized as divisional cavalry and assigned to work with the troops and at headquarters. The strategic cavalry was composed of four brigades of cavalry and of two brigades of horse artillery; the 'screen' cavalry had two brigades consisting of two battalions of mounted infantry, a cavalry regiment, and a battery of horse artillery each; and the divisional artillery was made up of fifteen squadrons of Yeomanry, each Yeomanry regiment furnishing a troop to go out on mobilization with the Regulars.⁷

Douglas Haig, then a brigadier, became Director of Staff Duties on 9 November 1907. Haldane had called him home from India for this purpose.⁸ It was Haig's duty, together with the staff of his directorate, to provide a standard doctrine for war training and for the war organization of the entire British Army. The result was the *Field Service Regulations, Part I—Operations—1909* and *Field Service Regulations, Part II—Administration—1909*. Haig, an ardent cavalryman who was thoroughly dissatisfied with the state of the British cavalry after the South African War, defined, in Part I, the tactical characteristics of the newly remodelled cavalry. He wrote:

Ability to move rapidly and to cover long distances in a comparatively short time gives cavalry power to obtain information and to combine attack and surprise to the best advantage. The fact that it is armed with a long-range rifle has endowed it with great independence, and has extended its sphere of action; for cavalry need no longer be stopped by difficulties which can only be overcome by the employment of rifle fire.⁹

The tactical and strategical functions of cavalry were outlined in Part I of the *Field Service Regulations*. When the opposing forces are at a distance, Haig pointed out, the protective cavalry was expected to afford the commander of the force it was covering three basic services: information concerning enemy movements; information concerning resources, roads and tactical features of the area in advance of the

⁷ *Parliamentary Debates*. CLXIX (1907), 1307-1311.

⁸ Haldane, R. B., *An Autobiography*. (London: Hodder and Stoughton) 1929, p. 199.

⁹ *Field Service Regulations—Part I—Operations, 1909*, pp. 14-15.

main body; and development of opposition to enemy enterprise in front of the main body.¹⁰ As the cavalry advanced, clashes with opposing cavalry forces could be expected. By that time the independent cavalry units on strategical assignment should have returned to the main body and would be available to assist in deflecting hostile advance troops, reconnaissance, and obstructing the enemy's main columns.¹¹ As the enemy forces drew near the cavalry was to be withdrawn from the front line and placed into a position of readiness where it could deploy to exploit a success gained by other arms or to support a repulse. It also was available to act in accordance with the plans of the commander-in-chief.¹² When the enemy had been driven from the field it would, in all probability, be necessary for the main force of infantry and artillery to group and replenish ammunition and other supplies. The pursuit was then to be taken up by the cavalry with as large a force of mounted troops as possible. No respite was to be allowed the enemy. A portion of the cavalry was to pursue the enemy directly while the remainder attacked the enemy's flank and intercepted him at bridges and other vital points.¹³ In the event that a retreat was necessary cavalry and other mounted troops, in co-operation with a strong artillery force, was to check the enemy's advance and secure bridges and other important points on the line of retreat.¹⁴

Haig stressed the merits of versatility and co-operation among the various cavalry units. Whether the prime purpose of the cavalry unit was to carry out divisional and protective duties or be assigned special missions it must be ready to co-operate with other units even though temporarily assigned to specific duties.¹⁵ The *Field Service Regulations* governed the field operations of the cavalry after 1909 and this 302-page handbook was carried in the pocket of cavalry officers when the Expeditionary Force went to France in 1914.

Tactical and strategical direction was of value, however, only if officers and men of satisfactory quality and of sufficient quantity were available. With the end in view of improving recruiting, the Army Council, on 25 May 1906, lowered the enlistment requirements for

¹⁰ *Field Service Regulations — Part I — Operations, 1909*, p. 94.

¹¹ *ibid.*, I, p. 133.

¹² *ibid.*, I, pp. 138-139.

¹³ *ibid.*, I, p. 158.

¹⁴ *ibid.*, I, pp. 159-160.

¹⁵ *ibid.*, I, p. 93.

colour service from nine years to seven years. As partial compensation for this reduction, reserve service was lengthened from three to five years.¹⁶ The cavalry's reputation of being the most selective branch in the army undoubtedly was an aid to recruiting. So were their historically glamorous names — hussars, lancers, dragoons — and their distinctive regimental uniforms. Cavalry units zealously guarded their individualism. All efforts to attire cavalymen in similar, if not identical, uniforms had met with failure.¹⁷

A private income for a cavalry officer was mandatory, for his salary in no way compensated for the expense incurred. Field Marshal Sir William Robertson estimated that 'without some £300 a year in addition to army pay it was impossible to live as an officer in a cavalry regiment at home.'¹⁸ In regiments such as the Household Cavalry even £300 was inadequate. Possibly the higher income of cavalry officers did not make for a superior cavalry officer but they did, at that time, ensure that he came from the higher social strata which had been long regarded as the exclusive preserve for officer material. There was no definite preserve for the rank and file but, traditionally, a large percentage of recruits came from agricultural areas where a knowledge of horsemanship 'set the stage' for cavalry enlistment. The depressed economic state of Ireland provided for a greater percentage of cavalry enlistments than the population would warrant. Regardless of the point of origin recruits were obtained in sufficient quantity to enable Haldane, in December 1909, to implement the War Establishment plans.¹⁹ The Expeditionary Force became a functioning organization.

The only trained civilian reserve for the Regular Cavalry was the country-based Yeomanry regiments. These disorganized, resplendent, local corps were deemed the *elite* of the Auxiliary Force. At the outbreak of the South African War they numbered 11,891 officers and men plus a permanent staff of 167 — the smallest establishment in the Auxiliary Forces.²⁰ The Yeomanry had served the British public in the Nineteenth Century as a mainstay in the suppression of riots, and, as a

¹⁶ *Army Council*, 25 May 1906, p. 6.

¹⁷ H. O. Arnold-Forster, *The Army in 1906*. (London: John Murray, 1906), p. 122.

¹⁸ *Field Marshal Sir William Robertson, From Private to Field Marshal*. (Boston: Houghton Mifflin Co., 1921), p. 30.

¹⁹ *Parliamentary Debates*, 5 (Commons), XIV (1910), 1171.

²⁰ Statistics quoted from Colonel John K. Dunlop, *The Development of the British Army, 1899-1914*. (London: Methuen, 1938), p. 52.

result, sometimes gained a reputation as a tool of the land-owning class.²¹ Units had fought in South Africa where it was blatantly evident that there had been much emphasis on excellent horsemanship and magnificent uniforms but little on weapons training and tactics.

Not every man of necessary age and physical condition could enlist in the Yeomanry. Each trooper provided his own horse and, although an allowance of £2 per man was granted the unit, it was usually not sufficient to pay for uniforms, a band, and the maintenance of a permanent staff. Many regimental commanders provided stables and drill halls from their personal funds. The mere fact that some out-of-pocket expense was met by each trooper and/or the unit commander tended to turn the Yeomanry into something of a hobby. The prestige of the Yeomanry regiment gained from limited entrance made for a rather high *esprit de corps* not always found in the Militia or Volunteer organizations.

The training requirements for the Yeomanry were not high. Each recruit had to do twelve drills and a modified weapons course followed by six squad drills, mounted or dismounted, and five squadron drills mounted. Annual training was restricted to eight days per year, undertaken on a regimental basis. Pay during the training period was 7s per day — considerably more than was paid the other auxiliaries.²²

'Military opinion is unanimous in holding that the . . . Yeomanry . . . as at present constituted and serving under existing conditions, are quite unfit to take the field against European troops.'²³ This statement is found in a memorandum on the British military forces in 1907, issued the same day that Haldane laid before the House of Commons a comprehensive plan to entirely revamp the Auxiliary Forces. The plan proposed to make the Yeomanry and the other branches of the Auxiliary Force not simply a collection of semi-independent units but a co-ordinated and effective field force. It took time and considerable Parliamentary skill to get House of Commons approval of Haldane's scheme but this was eventually accomplished.

²¹ A rather notorious use of the Yeomanry to suppress assemblies occurred in 1819 at Manchester when the Yeomanry charged a peaceful demonstration. Eleven persons, including two women, were killed. This was the 'so-called Peterloo Massacre.'

²² Dunlop, pp. 53-54.

²³ *Parliamentary Papers*. Cmd. 3297, February 1907, 'Memorandum upon the Military Forces in the United Kingdom.'

The Territorial and Reserve Forces Act of 1907²⁴ transferred the local Yeomanry regiments to the newly created Territorial Force. The training and equipment of all units was supervised in each shire by the County Association. With the exception of the units destined to become part of the Expeditionary Force, all Yeomanry units were to be embodied for home defence in event of war. The Yeomanry ceased to be used in the suppression of riots and those units attached as cavalry for the infantry divisions of the Expeditionary Force had to serve overseas.²⁵ The training programme for recruits was practically unchanged but the annual training was set at a minimum of eight days and a maximum of eighteen days. Training was made to conform to Regular Army standards.²⁶ Enlistment requirements and soldiers' pay were equalized for all branches of the Territorial Force. The prestige of special enlistment qualifications for the Yeomanry ended in 1908.

During the parliamentary debate on the Territorial and Reserve Forces Bill some members of the House of Commons expressed concern about the effect of uniformity on the morale of the individual Yeomanry units. There was also dissatisfaction expressed about promotion possibilities for Yeomanry officers under the Territorial Force scheme, and the loss of investment by those commanders who had built drill halls with their private funds. Not all complaints and questions came from the Yeomanry commanders and their supporters in Parliament. There was reaction from the Regulars, who, through their semi-official journal, the *Army and Navy Gazette*, questioned the feasibility of using Yeomanry, with their limited training, as divisional cavalry on the outbreak of war. The *Gazette* also was fearful that if the Yeomanry would prove successful, a movement to reduce the Regular Cavalry would result.²⁷ Haldane, however, had made up his mind on these matters and he had a solid majority of Liberals supporting him in the House of Commons. The Bill became law and the Yeomanry, together with the Volunteers, became part of the Territorial Force.

The Cavalry Division with its allocation of Yeoman cavalry went to France in 1914. The remainder of the Yeomanry were at first

²⁴ 7 Edward VII., Cap. 9.

²⁵ *ibid.*, prior to 1888 the Yeomanry were liable only for local action.

²⁶ *ibid.*

²⁷ *Army and Navy Gazette*. 10 August 1907, pp. 753-754. This paper was opposed to almost all of the Haldane programme. Another service paper, the *Broad Arrow* reacted similarly.

embodied for home defence but eventually followed the Expeditionary Force overseas. After the Battle of the Marne the British cavalry occupied a far less important place in military operations. Trench warfare, the machine-gun, the rapid-firing field gun, the heavy howitzer, and the shrapnel shell reduced its effectiveness on the modern battlefield to almost nil. The British Army was slow to realize this. The *Memoirs of Captain B. H. Liddell-Hart* are full of examples of high-ranking officers who preached the doctrine that cavalry was destined to bring mobility back to the battlefield. Haig himself, even after what he had seen at Passchendaele, did not entirely reject this view. Fortunately, the merits of the tank and the armoured troop-carrier prevailed despite the delaying tactics of the cavalry school. Their superiority became so obvious as to make opposition senseless. The usefulness of the British Cavalry as a major effective fighting force ended on the banks of the Marne. □

MONTHLY AWARD

The Board of Review has awarded the \$10 prize for the best original article published in the December 1969 issue of the journal to Major J. Fletcher for his contribution 'Intelligence: a Principle of War'.

REVIEWS



BAYONETS IN THE STREETS — The use of Troops in Civil Disturbances. Edited by ROBIN HIGHAM.

(University of Kansas Press, 1969).

Reviewed by Dr T. B. Millar, Australian National University, Canberra.

THE education of every Australian officer includes the procedures for the use of troops in aid of the civil power, yet it is not something which is considered even remotely likely, except possibly in Papua-New Guinea.

The United States has always been a much more turbulent society, conceived in rebellion and raised amid conflict. The right of the people to bear arms in self-defence has fostered the opportunities to use them for offensive ends. Today the quantity of crime, category by category, in New York City is several times that in the whole of the United Kingdom, where the population is some five times as great. From Washington on, civilian control of the military — rigidly preserved — has sometimes reduced the incentives of governments to use the military to quell civil disturbances. On other occasions the reverse has been true, as inexperienced politicians gave in to pressure and panicked.

Bayonets in the Streets is a collection of specially commissioned articles on this subject. They grew out of recent American experience, from Little Rock in 1957 to Chicago eleven years later. But the articles themselves cover a much longer period, from the use of trainbands under Myles Standish to the 'Whiskey Rebellion' of 1794, and subsequent episodes where regulars were used as well as militia or National Guardsmen. Only a few, of many thousands of cases, are discussed, with some overlapping especially of recent dramatic confrontations. Legal, constitutional and sociological issues are considered, and attempts made to discover the elements in the American character (or characters) which have produced so much civil disorder. A declassified report by Major-General Charles P. Stone on the 1967 riots in Detroit includes his conclusions about riot control.

A book by so many authors (ten) cannot be a coherent whole. This may be less coherent than many collections, and it would be good to see a single major work appear. Most of the contributors to this volume are detached observers — occasionally rather too detached perhaps — but this is a welcome change from the selective, over-involved, headline-seeking emotionalism of so much press and television coverage. It is a book for the specialist. It will not satisfy him, but it will whet his appetite. For others it will give a useful introduction to a matter which could become, before the end of this century, a vital determinant in the stability of the United States and thus affect its role in the world. □