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ARMY JOURNAL

A periodical review of military literature

No. 326, July 1976

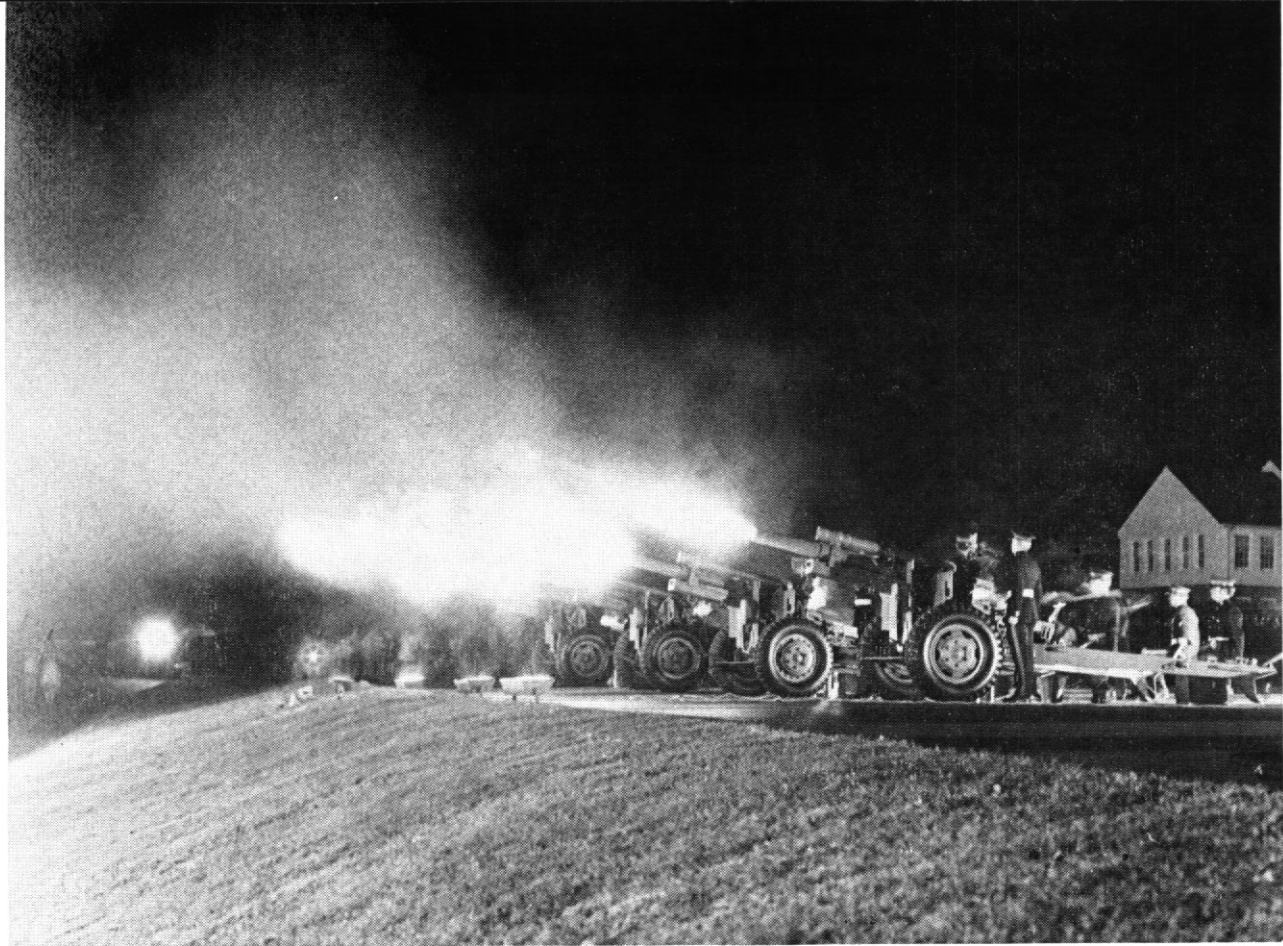
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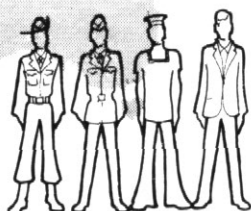
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(The Canberra Times)

105 mm guns firing during the 1812 Overture at RMC Duntroon in April 1976. Detachment Commanders were provided by



EDITORIAL

THE State President of the New South Wales Branch of the RSL, Mr C. J. Hines, said in the May 1976 edition of *Reveille*, "The greatest danger to the future security of our country is the appalling Apathy of the Australian people."

Apathy is the great social disease of the nineteen-seventies. The Silent Majority has made a virtue of selfish introversion. The attitude that what goes on outside one's little world is of no concern is a dangerous one. It is frightening when one thinks that only the prospect of paying a fine stirs some people to cast their democratic vote.

We tend to dismiss all protesters and those dedicated to a cause as "weirdos" and "long-haired louts". Maybe they have something to tell us; we, the Silent majority, who sit back in contented ignorance and genteel stupidity and let the rest of the world run over us. They have something to say, and say it. We may not agree with their point of view, but we should respect their right to it, as they should respect ours.

It is a common attitude throughout the western world. If George Washington were to be reincarnated in America today, he would be surprised and shocked to discover how far the idealism of the eighteenth century — of the Declaration of Independence, the Constitution and the Bill of Rights had been replaced by a sinister twentieth century reality. A man requires a permit to address a public meeting and a citizen may have to wait months before his case is heard in court: two basic rights guaranteed in the Constitution. Such matters are minor in themselves, merely inconvenient products of a bureaucratic age. What is disturbing is that such intrusions into the rights of the people are accepted without question by the majority of citizens.

Happily, one of the great strengths of the United States of America, celebrating its Bi-centenary this month, is the resilience of its people, a young vital people, and their continual questioning of the established order of things. They are able to bounce back from disaster, trying another angle until they succeed. This characteristic of recovery was shown in Washington's retreat to Valley Forge; in the terrible rents that the Civil War made; in the debacle of Kasserine Pass; and in the gradual climb to supremacy in the Pacific after Pearl Harbor.

The American people are quite capable of bouncing back after Vietnam and after the internal soul-searching of the past two years. They will throw off their apathy. Certainly we in Australia should fervently hope that they can. ☞

* * * *

Honest and careful introspection can benefit the Army, and thus the nation, in several ways. First, while it cannot redeem the lives of our fallen comrades, it can at least ensure that their deaths help others survive. If fatal mistakes were made, as they surely were, some of those errors were in our tactics, methods, procedures, standing operating procedures and the like. These errors must be corrected before we venture onto another battlefield. Second, if we allow ourselves to forget Vietnam — to reject it as an aberration — and go back to talking about the wars we won, we are apt to lose much in the way of valuable experience.

Major Marc B. Powe, United States Army.

From "The US Army After the Fall of Vietnam: A Contemporary Dilemma", published in *Military Review*, February 1976.

AWAY WITH THE BIRDS

Major G. L. Hulse

Royal Australian Engineers

WHEN we tune a radio to a radio station we hear a signal. This phenomena can be relied upon with almost absolute certainty. As we do this, we don't give a thought to the early pioneers of the "wireless" and their many hours of exasperation, as failure in design and experimentation made them go back to the wiring diagram. With determination and time, they finally produced a respectable device. But this was not the end of the story. Many millions of dollars were spent in developing the old wireless to give us the modern and indispensable radio. Today we are again standing on the brink of discovery. We as human beings have only recently begun to understand why animals behave as they do, to sufficiently allow us to take full advantage of animal behaviour and development for our own use. Given time, determination and facilities, military animals could provide us with indispensable battlefield support.

Close study and experimentation with animals in recent times has led many authorities in wildlife research to believe that training techniques can be devised which allow animals to be developed both mentally and physically into highly specialised fields. This favours the defence forces because many imaginative roles can be assigned to trained military animals. We already know that trained dogs can find mines and explosives in areas where the most expensive mine detectors ever produced have failed. The dog — with a lot more development — has the potential to give our ground forces the edge on manoeuvrability over an enemy. The trained bird can give us untold advantages over an enemy, especially with its speed and agility. There probably isn't a single form of animal life which cannot be developed to assist in the defence and protection of our country. The technical name for an animal trained for defence is "biological-sensory device" or bio-sensor for short.

Major Hulse has previously contributed to the Army Journal. Since his last article in November 1973, he has commanded 1 Fd Sqn. In January 1974, he went to India and Pakistan as a United Nations Observer. Since January 1975 he has been SO2 (Equipment) in the Directorate of Engineers, Army Office.

The need for bio-sensors becomes apparent when we examine the range of mechanical and electronic devices, and the counter, and counter-counter devices which frustrate the use of manufactured materiel. The cost in developing Surveillance, Target Acquisition, and Night Observation (STANO) equipment is enormous, especially if it becomes obsolete soon after production. Bio-sensors can be cheaply produced and re-trained to overcome developments on the battlefield as they occur. Therefore the bio-sensor device can provide valuable support to manufactured devices for the following reasons:

- Bio-sensors provide a good back-up to manufactured devices whenever the latter cannot be used for technical reasons.
- The risk of losing a bio-sensor device does not denude us of expensive equipment.
- Bio-sensors can in most cases, if not always, be re-trained more quickly and cheaply than a re-modification programme for manufactured devices.
- Bio-sensors would be available to low level commanders and used at the individual's discretion, unlike some STANO devices which would be allocated to areas as dictated by higher commanders. Battlefield bureaucracy, which allocates STANO devices to units and decides priorities could be undercut by the bio-sensor.

This line of argument does not mean that bio-sensors would replace manufactured devices, it suggests that the two could be made inter-cooperative very easily. Two bio-sensors which can be developed to fulfil military roles in the future are the dog and the bird.

Military Dogs

Since 1971 the Australian Army has been actively researching and developing (R&D) military dogs at the Military Dog Wing based at the School of Military Engineering (SME). Part of the R&D programme is the selective breeding of dogs. The aim of this breeding programme is to produce a tough, smart, smallish dog which is easily transported and camouflaged. The breeding programme at SME is being conducted with technical assistance from the Division of Animal Genetics of the CSIRO. The breed of dog from which we hope to develop a "military



(Army Public Relations)

Tracker dogs and handlers in Vietnam, 1971.

special” is the German Shepherd. Experimentation at SME has shown that a dog can be conditioned to accept certain human chosen behaviour by starting its training at 3 weeks of age — yes, I mean 21 days old. The growing pup thus learns a behaviour to perform as a way of life rather than a trick to perform on cue from a dog handler. The coupling of the training and breeding programme has given rise to what is now being accepted outside the Army as the “Psychogenetic Theory”.* Already the programme at SME is producing dogs with the desirable disruptive pattern coat colouring. They are also becoming smaller in stature. The dogs at the SME are being trained principally for mine and explosive detection. They have reached the second generation of breeding.

If the psychogenetic theory becomes a success we will not only produce a very military oriented dog, but we will be able to train the dogs to perform tasks in a manner not previously envisaged. These tasks of the future could include:

• *New Techniques in Canine Training and Development.*
Capt G. L. Hulse RAE, Wentworth Books, Sydney, 1973.

- Searching for mines, explosives and personnel using a pack of dogs along roadways, in buildings and in the field. The pack will be able to be controlled from a single point by remote means such as radio signal to the pack leader or to each dog, or by hand signal from a dog handler.
- Location of the edges of unmarked minefields such as the scatterable mine concept. Then breaching the minefield either as a pack by remote control, or individually by dogs placed on a leash and locating mines along a specific route.
- The location and follow up of enemy troop movement such as infiltrating patrols. The dogs could be used as a pack by remote control, or as individuals close to the handler in a similar manner to the traditional tracker dog.
- The location of snipers and subversive personnel in the field and urban areas. This could include the location of bomb factories, hidden firearms, and carriers of explosives on the street or in vehicles.
- Anti-vehicular dogs can be trained to carry an anti-tank mine or shaped charge on their backs in a harness. Dogs can be trained to go under a vehicle, jettison the ordnance, and escape. This would be risky for dogs during the day, but, at night it would be hard to stop a pack of dogs heading for a few vehicles. If the dog could not get under the vehicle it would jettison the mine near the vehicle and create a nuisance in this manner. This concept is in fact a modern approach to an old idea used very successfully by the Russians against German tanks during the battle for Leningrad. The Russian dogs could not jettison the mines when they ran under the German tanks and died in a blaze of glory.

Although the 5 points mentioned are only a few of the uses to which dogs can be put, the ability to produce dogs to perform these tasks is well within the reach of the Australian Army. It is planned that by the tenth generation of breeding military dogs, we will be able to take full advantage of the inherent talents of dogs to move rapidly, get across obstacles easily, and report on the presence of troops or materiel at a distance from the dog handler. This should give us

greater scope for movement especially at night and provide early warning of danger. The military dog, in time, will enhance our manoeuvrability and give us the edge on surprise over an enemy ground force.

The military dog of the future can not be produced overnight. It takes time. All that is needed in the first place is an animal which is amenable to human training and is capable of development by breeding. Since birds have already been bred and trained by man, it is certainly possible that we can train birds for military use. Given time, we could produce military birds in a similar manner to the way we are producing military dogs.

Military Birds

Birds have been trained by man to hunt game, carry messages, guard premises and ward off undesirable intruders for many years. They have been trained to discriminate between targets chosen by the trainer and other targets — despite very similar appearances. Apparently this discrimination can be made very acute. These past abilities have conferred upon trained birds the potential to provide a military surveillance and target acquisition capability.

There are many species of bird which have been trained by man. Of these species, a bird which appears to have good military potential is the Goshawk (*Accipiter Gentilis*). The Goshawk is strong, courageous, has acute vision and is much smaller than many of its cousins such as the falcon or eagle. Using a bird, like the Goshawk, the ability to back up the inventory of mechanical or electronic STANO equipment would revolutionise the power of unit commanders to continuously "watch" the battlefield, and strike at targets with the minimum of technical assistance from backup units.

Control of the birds can be exercised in the unit, by using two way electronic micro-beacons similar to those used by international wildlife researchers. The birds could be trained to follow a certain flight path or pattern by receiving signals in a similar manner to guiding a model aeroplane. The direction and distance of the bird can be monitored by (currently available) tracking and locating devices in the unit. Control of the bird under electronic silence can be made by teaching the bird a flight behaviour which allows the predictable searching of

various areas possible. A "find" can be indicated by the bird returning to its base and then selecting a diagram corresponding to the target. This has already been done by psychologists in laboratory experiments. This may not give us a "fix" on the target, but would indicate the area in which the target was sighted. Several flights of the bird, or, a flight by several birds could be made to isolate the area of interest. Control of the bird by electronic means is better described by giving examples of two potential roles for military birds. These are — surveillance and target acquisition.

1. *Surveillance.* Using trained birds, a battalion level commander would be able to check his area of responsibility to locate troops, guns, tanks or minefields. A group of the birds could rapidly cover many areas simultaneously. The birds would not replace the need to conduct patrolling by soldiers but would provide "hot spots" to check quickly, and of course early warning of enemy movement. It would be very difficult to camouflage men and materiel from a device which has one of the most highly developed senses of sight in the world. During the day, the birds would be vulnerable to fire if they were recognised as military birds. However, this poses a problem for an enemy to observe every bird which flies near them. At night the military bird would be most difficult to locate and destroy.

In a defensive role the birds could be used to assist in the protection of attractive installations or large logistic units. They would detect troops or reconnaissance patrols moving in the area. Another use of surveillance birds could be in a static role such as in stores, dumps or warehouses. The birds could be trained to respond to the outbreak of fire, burglar or rodent intrusion and alert either a human, or activate an alarm system, and then guide a sentry to the area of interest. Sea birds could provide surveillance of our shore line and coastal waters in a similar manner to the surveillance role of military birds.

2. *Target Acquisition.* Birds can be trained to identify an enemy target and then drop a micro-beacon (with a self destruct mechanism) onto it. The target may be a specific one such as a tank, or into a target area such as a concentration of troops

or a gun position. The micro-beacon could then 'demand' a missile and guide it into the target. Or, a simple tracking and locating device could be used to pinpoint the micro-beacon. A weapon system similar to this is the artillery delivered "terminally guided anti-tank missile system". A micro-beacon homing in the projectile would be of great assistance both to long range and very short range anti-tank weapons. Certainly the "fire and forget" principle would be enforced.

Related to surveillance, the trained bird could be used to locate our own patrols and assist them in navigation. Identification Friend or Foe may be extrapolated from the trained behaviour of the bird especially if it was found that particular "battlefield signatures" were reliably discriminated. Also related to surveillance, trained birds would assist in the location of snipers in the field and in urban areas, and guide fire by either adopting a flight pattern, or electronically by delivering a micro-beacon.



(Australian Information Service)

The Australian Goshawk or Chickenhawk.

Future Development of Bio-Sensor Devices

A growing interest in developing bio-sensor devices for specific tasks is being felt in most major countries of the world. A new awareness that man is starting to understand more about animals in a way which confounds old theories on training and development, has led to various laboratories conducting natural wildlife research and controlled experimentation. Unfortunately, many of the results relate to specific areas of the world and to certain animal species. What we require is the facility such as a bio-sensor laboratory set up for Australian conditions and using Australian fauna. The Australian Army is not alone in this desire. Willing to participate in establishing a bio-sensor type of laboratory are the Dept of Police and Customs, Sydney University, the CSIRO, the Royal Agricultural Society Kennel Control and possibly others. The idea would be to establish a laboratory with a centralised repository of information, exchange of ideas, and expertise. Separate and autonomous wings of the laboratory could be staffed by each of the participating organisations. The cost of such a laboratory under the current financial restrictions may not be a problem when it is considered that it would take some years to get it formally organised and planned. The current interested organisations include three separate government departments, a university, and a civil organisation (with connections to private enterprise). Perhaps the cost may not be prohibitive when divided say four or five ways over a period of years. When read in terms of the amount of support we would get for defence, customs protection, education and private benefit, the cost would be justified.

Summary

This article does not intend to condemn or denigrate manufactured military devices in any way. It invites you to imagine the tasks for which various animal life can be developed and used — by you. We can and should look further afield than just gadgetry to provide STANO devices for the combat soldier. If a nation with a history of ruthless experimentation with animals should ever attack Australia, it is possible that they may be able, by the use of the devices described, to process the natural fauna to behave unnaturally, even aggressively. We should be aware of this, and, by our own research, be able to counteract it, or at least be forewarned of the potentialities.

For the person who is a bit dubious of the determination of a bird under adverse conditions — let me quote this from the RAF's World War II records. The report concerns a pigeon named "White Vision" which was trained to assist the Search and Rescue personnel in finding downed airmen: "White Vision had flown sixty miles over heavy seas against a head wind of 25 mph. Visibility was only a hundred yards at the place of release and 300 yards at the place of arrival".* The bird had flown for 9 hours and was instrumental in effecting the rescue of the downed crew. There are many more such examples of the endurance of trained birds in the reference book.

Conclusion

Australia is blessed with a great variety of animal life. We have good geneticists, veterinarians, psychologists, animal trainers and wildlife researchers. The only thing which we do not have in this country to satisfy animal production, experimentation, and research is a suitable laboratory.

The initiative ought to be taken to authorise an official meeting of all the interested parties to produce a design for such a laboratory. The advantages to Australia in establishing this laboratory would be manifest to all future Australians and not just the Department of Defence.

From our own point of view, Defence would certainly benefit from developing devices which have extreme agility and are virtually impossible to detect. After all, we have already taken a big step in going to the dogs, we may as well be away with the birds too.☞

* *They Also Serve*. Dorothea St Hill Bourne, Winchester Publications Ltd, London, 1947.

FILES

(Born staff officers need read no further)

It is usual for selection boards to ask candidates for officer training why they desire to be officers. It is not unusual for a candidate to include only his less self-indulgent motives in his answer. The recruiting advertisement, on the other hand, makes much of the more worldly merits of such a career.

The recruiting advertisement does not disclose, nor do most such candidates imagine, that at some time they will find themselves seated behind a desk, in command of a telephone, and wrestling with a never ending procession of files.

The former candidate for the good life comes to understand the appropriateness of words such as "wading" or "ploughing" through files. He will consider escaping. He will soon discover that overseas postings are reserved for luckier souls and that chances of returning to regimental life are small.

His next step could be a more objective assessment of the pension scheme and the employment situation elsewhere. The depth of this study will vary from person to person.

Finally, the embryonic staff officer will apply himself diligently to his job. He may, from time to time be tempted to review progress. This is an exercise fraught with danger and not recommended these days for the ulcer-prone or weak of heart. Progress will have been slow and escape may be contemplated anew.

There is no escape for most. It is scandalous that carefully developed histrionic ability goes unused. (There is no point in saying anything that cannot be equally effectively expressed in writing.) It is infuriating that no one will take your unsupported word that you are correct in your assessment of the problem. It is monstrous that others do not share your concern over this or that situation.

Essays concerning the reluctant staff officer are written by people who believe others share their feelings. They are written by people who are also to a certain extent baffled by their problem. It follows that any advice such people may offer is not going to provide a complete answer.

For what it is worth, there is great satisfaction to be had in (eventually) winning. An invaluable aid in this regard is an understanding of the proposition that there can be good reasons and real reasons. Good reasons are given openly in support of an argument. Real reasons are mostly kept from the opposition (for really good reasons).

Realizing and concealing our own real reasons, while attempting to discover those of others is an absorbing and potentially rewarding preoccupation.

In our staff training we are taught the virtues of simplicity, correctness, directness, economy, naturalness and coherence. It is worth a thought that chances of success could be enhanced if in addition we accept that people are human and that life is more art than science. ✖

Contributed by Lt Col T. H. Senden, Army Office, Canberra.

LET'S START USING OUR GUNS



*Brigadier P. J. Norton
Royal Australian Artillery*

C'est avec l'artillerie qu'on fait la guerre"

IT is a fact of history that in periods between wars, this Napoleonic truth is often forgotten. Artillery formations are broken up and used in small packets in support of a variety of minor activities, and for administrative reasons, command of artillery is decentralised to minor formations. The cost is an inability to produce the massed and sustained fire power necessary to win battles. The phenomenon is not peculiar to our Army, it happens throughout the world. Nor is it restricted to the handling of artillery, it is seen in ideas on equipment requirements. It has been said that "In peace the cry is for mobility, in war it is for weight of fire". The stocks of field guns in our ordnance depots are mute testimony to this.

In World War 1, artillery played a dominant role on the Western Front. Yet, early in World War 2, Winston Churchill found it necessary to observe that, "Great renown awaits the Commander in this war who first restores artillery to its prime importance on the battlefield".

We should look at the events which led up to Churchill's statement. Whilst he was referring to the Royal Artillery, the sentiment applies to the Royal Australian Artillery. The RAA and the RA are linked

Brigadier Norton graduated from RMC Duntroon in 1947. He held regimental appointments in Australia and Korea. In 1955, he attended the Long Gunnery Staff Course at Larkhill. Since then he has been Brigade Major 2AGRA, commanded 101 Fd Bty RAA in Australia and Malaya, been Instructor at the JTC, held appointments at SO 1 level and as Col GS, commanded Northern Territory Comd, 1RTB and 2MD. He is currently Commander Field Force Artillery.

by a common philosophy, particularly in the field of command and control. Churchill made his statement with the experience of Dunkirk fresh in people's memories. In the operations that led up to Dunkirk, artillery was not used effectively by the British Army, a fact that was noted by many observers. The reasons for it were clear to most thinking gunners of the time. However, we must go back a little further than Dunkirk.

Along with the rest of the British Army, the artillery had some serious shocks during the Boer War. Yet it came out of that war and entered World War 1 with more or less the same techniques and organisations, except for a basic but effective system of indirect fire.

World War 1 produced vast improvement in artillery techniques and employment. The most significant action for gunners was the battle of Le Cateau, apart from sending the field gunners, finally, from exposed positions on forward slopes to a defiladed position where they could do their job properly, it also demonstrated that, properly handled, artillery could be a deciding factor in battle. Even in 1914, there was nothing new in this fact, but it had to be learnt again in battle.

Up until World War 1 field artillery had been primarily a defensive arm. Its main ammunition was shrapnel for use against an enemy in the open, but of little use against a dug-in enemy to be attacked. By the end of the war it had evolved as a powerful offensive arm. The value of massed artillery was well established even though the methods of obtaining concentrations of fire were slow and cumbersome.

In the period between wars, artillery techniques and philosophy developed steadily, if conservatively. Efforts were made to devise techniques for rapid concentrations of fire from several units, these attempts were hampered by poor communications. It was not until two years after the start of World War 2 that field radio had reached a stage of development which allowed artillery to develop its full potential. The influence of the "armoured school" had its effect on artillery along with the rest of the army. The emphasis on brigade group operations — an all too familiar philosophy — led to a fragmentation of command.

Our artillery techniques and philosophy have developed steadily over a period of 50-60 years. The most serious set-backs we have had to the proper use of artillery, have been caused by fragmentation of

command. It is unfortunate that this always seem to be accompanied by a fragmentation of thought.

The Australian Army is suffering from a bad case of fragmentation of command. The geographical spread of units and restrictions on establishments of some headquarters have resulted in small scattered formations, each one working and thinking at its own level. On the all too infrequent occasions, when higher command is practised, it is done with ad hoc headquarters. Their efforts are not very professional. Our recent involvement in South Vietnam has produced a generation of officers experienced in task force operations, each task force using its very own, private, and dedicated supporting arms. This leads to a mentality which lacks the flexibility to employ supporting arms properly and in mass, where necessary. The solution to this lies in establishing a proper operational command system, which is professional and seen to work, and in educating commanders in the use of their supporting arms. The manpower restrictions on operational headquarters are indeed a false economy. We are training efficient units, but are not providing proper headquarters to co-ordinate and direct their efforts. From the artillery point of view, unless we can establish an artillery command system in peace, we will go to war in the future unable to develop the full potential of our guns. We have done this before and learnt the hard way. The lessons of history are clear and we still have the experience amongst our officers to remedy matters. But experience ages, unless we act soon it may be lost.

There are two serious deficiencies in our tactical training. Firstly, we never consider fully the potential of our enemy and what he will do to our carefully laid plans. We see this in an artillery "paradox" in tactical exercises. When planning an attack we arrange to neutralise all the enemy positions which can influence this attack, so that our assaulting forces can get onto the objective. When we are planning a defence we arrange defensive tasks for our guns which will break up the enemy's attack and prevent him reaching his objective. This approach is quite valid, but unfortunately it is one sided. We never take into account the enemy's ability to do these things to us, which of course, he will.

Our second fault in tactical training is that we never follow any battle through to its end. We plan it in great detail and launch it, then apart from some discussion of counter-attacks, or exploitation, that is

it. The planning before an operation is essential, but it is only the beginning. It is the fighting of a battle after the plans are made that counts. No matter what wide ranging manoeuvres we may go through in the initial stages, most battles develop into a slogging match. It is the side that keeps this up the longest that wins. Once a battle reaches this stage, units which are closely involved have little flexibility or scope for influencing matters other than by pressing on in their own limited field or holding firm where they are. The only force with the flexibility to react quickly and decisively to a changed situation is artillery.

Detailed plans are made on exercises for the layout of defensive positions, ending up in the most sophisticated arrangements within the position, yet we completely neglect the fact that if the enemy attack us and his guns are doing their job, this set-up will be at the best, only partially effective. The same applies to the plans we make for an attack. If a gunner mentions this, other arms will tell him that the gunners should be preventing it with counter-bombardment, and again, we get a paradox. We make careful plans for alternative gun positions and late occupation of main battle positions, to avoid enemy counter-bombardment — we must assume the enemy will do the same. The fact is that once a battle starts, enemy guns will be firing, as well as ours. Properly handled, they will probably be the deciding factor.

The theories of Liddell Hart and Fuller led to spectacular success when employed by the Germans in France. They were equally successful in the opening stages in Russia. It is often overlooked that Operation Barbarossa degenerated into the most monumental slogging match in military history. The side that sustained this the longest won. It is no coincidence that they also understood the application of massed artillery fire.

Our training establishments teach the correct philosophy for the employment of artillery, officers make the right noises about it in discussion. When it comes to applying it, it is clear they do not understand it. In recent exercises, we have seen infantry in trouble and the majority of a divisional artillery standing idle. The philosophy we use is not easy, which is perhaps the reason most other countries of the world subscribe to a different approach. We are in fact using a form of centralised/decentralisation. It requires a high standard of training with our gunners and a flexibility of mind by all who have to use it.

The spread of our army and peacetime economies are a problem, no amount of talk will substitute for seeing the product itself. How many of our officers have seen a divisional concentration of air-burst? It can have a startling effect on people's ideas on the employment of artillery.

Our artillery techniques were at their peak in the Korean War. The artillery of the 1st Commonwealth Division was a complete and effective weapon system. We are attempting to teach this system with a key component missing — centralised command. Napoleon was of course in a strong position to make sweeping statements about the value of artillery in battle, he was also able to enforce his belief in centralised command of guns. His Marshals never attempted to split up the Grand Battery between their Corps.

There have been no tactical or technical developments since Waterloo which have altered the principles of the use of artillery in battle. The developments that have taken place have only made the correct employment easier and more effective.

The basic fact remains, unless an Army understands the use of artillery and develops its full potential, it does not win battles.☞

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MONTHLY AWARDS

The Board of Review has awarded the prize for the best original article in:

the February 1976 issue to:

Captain M. D. O'Neill (The Nature and Consequence of the Relationship between the Regular and the Reserve Soldier) \$10.

the March 1976 issue to:

Major D. L. Byrne and Sergeant R. Payne (Mental and Physical Fitness — A Necessity or a Luxury?) \$10.

PRINCIPLES OF WAR AS METHODOLOGY

Brigadier E. H. Dar, TBt

Pakistan Army

I PROPOSE to examine the principles of war as military methodology. It is not my purpose to discuss each 'single word' principle, nor is the current list exhaustive or repetitive. Their validity is not entirely excluded but I have a more limited purport; namely, what use can be made of the principles of war as an academic discipline to train the military mind?

There are some who maintain that principles of war are no longer fashionable. Writing in June 1973, the editor of the RUSI Journal could not "recall anyone referring to the principles of war for years" and added that he would "certainly blush to introduce them into a discussion of modern defence." He need not have worried. As late as April 1975, *Military Review* was discussing "Do the principles of war apply in limited nuclear war?" and this in a number of articles which this Journal and many others have published over the years.¹ There has never been lack of reverence for the principles of war. Whether there has been enough relevance is another matter.

As an academic subject, principles of war are equivocal and obscure. They are introduced in all seriousness and with enough fanfare. Although there are some who say with more fun than fanfare. But no sooner are they introduced, than they are forgotten. They are not used as methodology to practise estimate of situation or as a system to analyse war or as a discipline to study a particular campaign. This anomalous position is epitomised in a story of the legendary Mulla Nasrud Din who joined someone in searching for a key under a lamp post. And, having despaired, enquired, "but where did you lose it?". "I lost it in my house" was the reply. Asked the surprised Mulla, "Why are you searching for it under the lamp post?". "Because",

Brigadier Dar previously contributed to the Army Journal in March 1970. Since that date, he has commanded an infantry brigade and is at present Director of Military Training, GHQ, Rawalpindi.

came the reply, "light is here". The principles of war in our teaching alternate; at times, as the key and at times, as the light!

Partly the difficulty arises from the semantic nature of the principles. In science, given a specific combination, the result can be forecast with reasonable certainty. Two elements of hydrogen and one of oxygen would produce water. And an algebraic equation $(a + b)^2$ would always equal $a^2 + b^2 + 2ab$ whatever the values adduced to the variables. Yet following General Chauvneau's formulae for attack, "three times as many infantry effective, six times as much artillery, and twelve times as much ammunition", would it always result in domination of defence? Under the laws of war as we know them, von Lettow Vorbeck, the German commander in East Africa during the First World War should have been defeated within the first fortnight. He was cut off from Germany, had inferior weapons and neither any reinforcement nor logistic capability. Yet he survived, remained unbeaten and showed chivalry and resilience which turned his opposite numbers into life-long admirers — during and after the war. The problem of principles of war as methodology is that the relationship of cause and effect is hopelessly obscure, if it is not altogether absent.

If we assume, following Haldane that "military things should be learned not from the generals but from the philosophers" and, therefore, take consolation in the principles of war as something belonging to the art and esoteric; is it still relevant to ask if, in the same analogy, there are single word principles in logic or architecture or music? The nearest approach to this form of thinking is found in China. The Chinese are fond of teaching war in parables and do so in pithy and rhythmic aphorisms. Even they avoid the pitfalls of single word principles. Consider the following:

- a. One point, two sides:
(An objective should be attacked from two directions.)
- b. Four active, one inactive:
(The active elements are speed in preparation, movement, exploitation and pursuit and the inactive element is careful planning.)

Clausewitz in his booklet "The Most Important Principles of War" written, it should be noted, in 1812 — three years before Waterloo and more than thirty years before publication of 'On War', lays down 46 principles. He uses a format in total variance to the 'principles'.

As an illustration his principles of strategy are as under:

- a. The first and most important rule is to use our entire forces with the utmost energy.
- b. The second rule is to concentrate our power as much as possible against the section where the chief blows are to be delivered and to incur disadvantages elsewhere.
- c. The third rule is never to waste time.
- d. Finally, the fourth rule is to follow up our success with the utmost energy.
- e. The first of these rules serves as the basis for the other three."

Finally, is there any difference between the principles of war and the laws of war? Some argue that principles pertain to fighting whereas laws affect war itself. A principle can be violated as its justification is essentially moral but to violate a law results in imposition of a penalty; just as a traffic violation could lead to a fine but false evidence need not lead to conviction. But whereas the principles of war are well known, there is much less certainty and far less discussion of laws of war.

Mao Tse Tung discusses laws of war in his celebrated essay "Problems of Strategy in China's Revolutionary War." Occasionally, he interposes the term principles of war. It is uncertain if he uses both to mean different things. It is more probable that with him the terms are synonymous. His book opens with the statement:

"The laws of war are a problem which anyone directing a war must study and solve. The laws of revolutionary war are a problem which anyone directing a revolutionary war must study and solve. The laws of China's revolutionary war are a problem which anyone directing China's revolutionary war must study and solve."

He argues that laws must be reduced to local needs and constantly revised to suit changing conditions. He thereby contradicts the immutability and omnipotence generally attributed to the principles of war. "All military laws and theories which are in the nature of principles are the experiences of past wars summed up by people in former days or in our own times. We should seriously study these lessons, paid for in blood, which are a heritage of past wars. That is one point. But there is another. We should put these conclusions to the test of our own experiences, assimilating what is useful, rejecting what is useless, and adding what is specifically our own. The latter is very important,

for otherwise we cannot direct a war." Although this lecture runs up to one hundred printed pages it is difficult to extract single word principles of war either to support those already listed or to substitute them with others possessing better turn of phrase.

It is argued that as the principles of war are derived from a critical study of the military history, therefore they provide the best format for study of this important subject. This statement poses immediate problems. Except for Major General Sir Francis Maurice's book *British Strategy* printed in 1924 there is no book exclusively on the principles of war. There is no autobiographical account or military study of a campaign which uses principles of war as methodology. In each book, the reader is left to his own devices. He is not aware how the principles of war were used to plan and conduct a war or campaign; how and why they were violated.

Assuming that principles of war provide a suitable format to dissect a campaign, should they not also show the method on how to plan and direct a campaign? Could principles of war be used as factors in what is known as estimate of a situation? That is to say could the format be so modified as to base it on principles of war. Some points are common, in any case, to the estimate format and the principles of war viz surprise. Again, in the current methodology, whereas each factor is considered in isolation, the principles provide a more unified and all embracing view. This is an improvement as the part is related to the whole and makes it that much easier to grasp and that much more rational in judgement. This approach is more functional as it brings into focus operative elements of war — the living elements, not those into which the spirit has to be infused. Finally, principles of war are just one step in methodology, an ingredient which has to be modified to suit the entire methodology. It is not inconceivable that some parts of the existing methodology may be retained as the principles of war do not replace it in its entirety.

The difficulty arises when diffuse and vague words are used not as bricks in a house but as a banner hung on its loft. They attract attention but do not provide the means to raise a building. Whereas the existing methodology deals with constants — terrain, enemy and own situation etc — the principles of war would introduce at the outset an element which is wholly variable: for instance, concentration. How much is concentration? It is not only the definition but their number

and order of arrangement which poses problems. Finally are these principles and therefore the methodology based on them, valid for all services and at all levels of command? It looks more like "cutting the foot to fit the shoe"!

It is unimportant if we view principles of war as belonging to the realm of art or science. They must serve some purpose. If we consider them theoretically they must enable us to train the military mind and to be able to do so, they should be reduced to some form of methodology. They are less likely to provide a wholly independent and all inclusive methodology. It is more likely that they will supplement and illumine an existing academic format. In either case the military mind can and should put them to better use.

It now remains to summarise the essential elements of preceding argument:

- a. First, the number, nomenclature and definition of principles of war may vary, but their existence is less open to disputation.
- b. Second, it is more valid to say that each country at a given time in its military environments must refine, adjust and adapt principles of war. They are not immutable for all times and in all places.
- c. Third, if principles of war are to be of any value they must partake in or form the basis of military methodology. This is a matter for further research and study. ☞

¹ For instance see *Military Review*, May 1955, June 1955, June 1959, December 1972; *The Canadian Army Journal*, April 1948; *The Army Quarterly*, January 1959; *The Royal Air Force Quarterly*, Summer 1974; *The Australian Army Journal*, May 1972.

THE ESTABLISHMENT OF THE ROYAL MILITARY COLLEGE OF AUSTRALIA

Mr P. H. Kitney

Royal Military College, Duntroon

THE question of the defence of the Australian colonies exercised the minds of members of various Colonial Parliaments quite frequently following the withdrawal of the last detachment of Imperial troops from Australia in 1870. For some years reports and recommendations dealt mainly with naval and coastal defence¹ but in February 1881 the Government of New South Wales established a Royal Commission² under the chairmanship of Sir James Martin "to report upon the whole subject of the military defence of the Colony."³ Colonel (later Major General, Sir) Peter Scratchley,⁴ giving evidence before this Commission, said, "I view the want of officers who are competent to command with absolute alarm, and I cannot urge too strongly . . . the establishment of schools of instruction".⁵ This view was expressed more firmly by the Royal Commission in their report: "As to the education of officers, the committee are unanimous in recommending that a school for instruction with the necessary instructors be formed in order that officers may attain a defined standard of military knowledge."⁶

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WRITER'S NOTE

In my research into the establishment of the Royal Military College of Australia I found some conflict and vagueness relating to references, dates and occasionally, facts. In the early part of my paper, therefore, I have tried, to the best of my ability in the time available to "set the record straight". My footnotes in the early part of the paper reflect this effort, and may appear to be unduly long and apparently irrelevant. This is particularly true of events between 1876 and 1889. I make no apology for having included such detail — rather I hope it will be of some use to the Archivist of the Royal Military College.

The officer school did not materialise for another thirty years, but in that time many notable voices had spoken in support of the recommendation. In 1885 Colonel E. O. Hewett, first Commandant of the Royal Military College, Kingston, Canada, in a letter to Captain W. W. S. Bridges, RN,⁷ suggested that Australia "certainly should have" a military college for it "serves so strongly to foster a federal feeling."⁸ Then, at the Imperial Colonial Conference in London in 1887, Alfred Deakin spoke so spiritedly of the need to limit French and German colonial aspirations in New Hebrides and New Guinea⁹ respectively that the British Government was moved to further review Australia's defences. The military part of the review was conducted by Major General Bevan Edwards¹⁰ who recommended that a military college such as that in Canada "would be eminently adapted for the education of the officers of the Australian Forces".¹¹ This proposal also lapsed,¹² but the astute Sir Henry Parkes saw defence as a foundation stone for Federation.¹³

In the early 1890s, Major General (later Lieutenant General Sir) Edward Hutton was commander of the New South Wales military forces for four years and in that time he consistently urged that a college should be established along the lines of West Point or Kingston.¹⁴ With the coming of Federation in 1901 the defence forces of the Colonies were unified and General Hutton was appointed the first commander of the Australian Military Forces. He again recommended the establishment of a military college and although such a goal was now more easily achievable than it had been ten years previously, the reduction in the Defence vote resulted in no action being taken.¹⁵ However, in 1905, the University of Sydney established a Department of Military Studies, the object of which was to provide instruction to students wishing to compete for commissions in the British army and Commonwealth forces.¹⁶

The concept of a military college seemed to gather momentum from 1907. Speaking at the Colonial Conference in London in that year, Deakin said that, although he favoured the proposal for a military college, the Australian forces were too small to assimilate the number of officers who would graduate yearly from such a college.¹⁷ However, in 1907 Deakin did commit Australia to a form of compulsory military training for which legislation was finally passed in 1909.¹⁸ Present at the 1907 Conference was the Prime Minister of New Zealand, Sir Joseph Ward and in November 1908 he asked the Australian Prime Minister,

Mr. Andrew Fisher, if the Commonwealth Government had taken any steps to establish a military college.¹⁹ The reply to this inquiry was prepared by the Chief of Intelligence, Colonel W. T. Bridges, later to become intimately associated with the development of the College. Bridges echoed the remarks made by Deakin a year or so previously, but added "If the Dominion of New Zealand combined with the Commonwealth to establish a joint college the difficulty pointed out (i.e. employment of graduates) would be, to some extent, minimised."²⁰ This reply was forwarded to the Minister for Defence, Senator George Pearce who in turn informed the Secretary, Department of External Affairs that "The reply to the question of the Prime Minister of New Zealand is that no steps have yet been taken towards the establishment of a Military College for the Commonwealth."²¹

In 1909, Defence was very much a live issue. In June, Major General J. C. Hoad, who had succeeded Bridges as Chief of the General Staff in Australia, submitted his proposals for the establishment of a



(Defence Public Relations)

Royal Military College, Duntroon. Duntroon House, now the Officers' Mess, can be seen immediately below the parade ground in the left centre of the photograph,

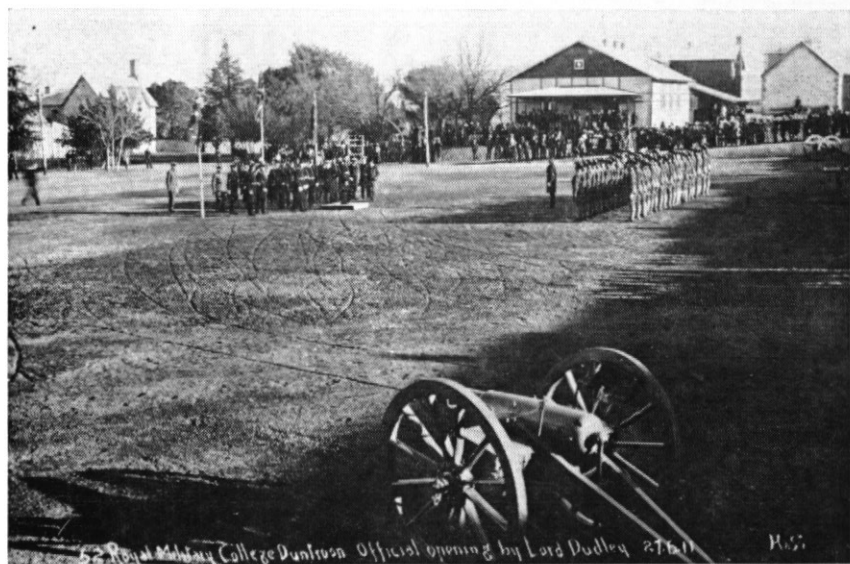
military college.²² However, Deakin, Prime Minister again for a short time, had already judged that the time for action had arrived, but he felt the need to seek one final expert opinion. He eventually determined that the person most qualified in the military field to give that opinion was the then C-in-C in India, Field Marshal Viscount Kitchener of Khartoum. Deakin made an unofficial approach to Kitchener through Sir George Clarke, Governor of Bombay and a former Governor of Victoria, before requesting authority to issue a formal invitation which was accepted in July 1909.²³ Deakin then went ahead with legislation to amend the Defence Act of 1903 to incorporate the establishment of a Military College.²⁴

Kitchener arrived in Australia on 21st December, 1909 and carried out a detailed inspection of the country's Military Forces. His report in February 1910²⁵ led to some reorganisation within the Army and further amending legislation to put his proposal into effect. Kitchener recognised that the success of the compulsory training scheme which he recommended would depend on the calibre of its permanent officers. "Under this (recommended) system," he said, "it is evident that the responsibilities of the area officer make it a national necessity that he should be a carefully selected man, thoroughly grounded and trained in his profession and scientifically educated In the United States of America the Military College of West Point sets an example of a severe and thoroughly military training imposed by a Democratic Government and I should advise that Australia can only expect to produce officers of the type required by the establishment of a Military College similar in ideas, if not altogether in practice, — for that will vary with national characteristics — to West Point".²⁶ Later in his report Kitchener discussed the organisation of the College.²⁷ He thought the annual output of officers would need to be eighteen (to provide the staff required to support his other military proposals) and the minimum length of the course should be three years. To allow for various forms of wastage over the three years he recommended an annual intake of thirty-three cadets — "say 100 cadets as the establishment." His other recommendations covered age of entry (17-19 years), method of selection, fees and scholarships, and initial training after graduation. "It will be evident," he concluded, "that the Director of such a College must be a man of exceptional qualifications, well-educated, and accustomed to do his duty fearlessly and thoroughly. He should be supplied with two assistant directors and an adjutant of similar qualifications to

himself, and a staff of professors to teach the curriculum which should be based on that of West Point. . . . Any political interference with the management of such institution, in which disciplinary training forms an important part, and the efficiency of which is so essential to the defence of Australia, should be strictly avoided."²⁸

Thus was the blueprint for Australia's Military College drawn up. It now fell to the Australian Government, in accepting Kitchener's report, to select a man with the qualifications Kitchener stipulated, and present him with the formidable task of translating the plan into reality. However, Kitchener apparently had some ideas of his own in this respect, also, and made a confidential report to the Government's ministers in which he named those officers he thought would help make the new defence scheme a success. He later confided his opinions to Senator Pearce who was to become Minister for Defence again in April 1910. One officer of whom Kitchener had formed a high opinion was Bridges.²⁹

At the time of Kitchener's visit, Bridges was in London, having been appointed as Australia's representative on the Imperial General Staff in 1909.³⁰ He had kept in close touch with the visit and in January 1910 Major J. G. Legge (who became Commandant of Duntroon in



Royal Military College Duntroon Official opening by Lord Dudley 27.1.11 H.C.

(Hopkins Collection, Duntroon)

Ceremonial Opening of R.M.C., Duntroon, 1911.

1920) wrote to Bridges that "The Minister had decided to refer the question of your appointment and duties for Kitchener's opinion".³¹ This letter had not reached Bridges when, on 19th January 1910 he received a cable from the Minister for Defence, the Honourable Joseph Cook: "Return to Australia soon as possible to organise Military College on West Point lines. Position of thorough independence responsible only to Minister and substantial increase in salary. If desire you may visit West Point on way home".³²

That Bridges should be offered the appointment would have occasioned little surprise to those who knew his service record. However, he must have had some doubts about his fitness for the task because, while gratefully acknowledging the offer, he suggested that a British Army officer with special experience would be more suitable for the position. Cook remained adamant and Bridges began preparing for his new appointment by visiting the Military Academies of Sandhurst and Woolwich as well as Kingston and West Point. West Point had already been designated as the model for Australia's College, but Bridges wisely visited the other institutions to gain a broader understanding of his task. By the time he returned to London from America Kitchener had also arrived back from New Zealand.³³ The Australian High Commissioner in London, Sir George Reid, arranged a meeting between the two which was "altogether very satisfactory".³⁴ Almost immediately afterwards Bridges sailed for Australia.

Bridges reached Melbourne on 30th May, 1910, and on arrival was appointed Brigadier General and Commandant of the Australian Military College. On 4th June, four days after his return he submitted his outline plan for the establishment of the College to the Minister for Defence, Senator Pearce.³⁵ Accepting Kitchener's proposals as a basis for planning, Bridges gave his views on factors affecting the location of the College, the buildings and training areas necessary, the curriculum, the administrative and instructional staff required, the method of selection of candidates and the entrance examination to be undertaken, and a number of other matters. Pearce concurred in all of Bridges' recommendations except that he deferred a decision on the selections of the military instructors, possibly because Bridges himself had not yet fully resolved this point. No doubt Pearce influenced the final selection of the site for the College, as his marginal notes indicate a preference for it to be "established at or near the Federal Capital site".³⁶



(Andrew Collection, Duntroon)

Brigadier (later Major) General (Sir)
William Bridges, First Commandant.

Regarding locality and site Bridges was adamant that the College "must not be near — much less within — a large city.³⁷ . . . The necessary ground for instructional purposes would not be available, nor would it be fair to expose the cadets to the distractions and temptations of a large city. Moreover, to place the College in a State capital would, if West Point discipline is to be maintained, turn it into a prison".³⁸ However, access to a railway was essential, a good climate was specified and the proximity of a town for the provision of food and supplies was most desirable. Reasonable proximity to a State capital (and the Federal capital) would enable the cadets to attend instruction in Coast Artillery and participate in ceremonial parades. Finally, Bridges estimated that at least 1000 acres of land would be needed, desirably on a river, to meet the training needs.³⁹

Appreciating the urgency for the College to open as soon as possible, Bridges proposed two alternatives to cope with the interim period while the permanent buildings, consisting of accommodation

and lecture room facilities for 150 cadets⁴⁰ and houses for the instructional staff, were being constructed. Either existing buildings could be used, if available and suitable, or temporary buildings could be erected on the permanent site. At Pearce's instigation Bridges visited the Federal Territory on 30th June and selected the Campbell property of Duntroon⁴¹ as the site for the College. Some delay then ensued until the Senate finally approved the selection of Canberra as the site for the Federal capital. This decision was taken on 16th September and Pearce approved the selection of Duntroon on 1st October.⁴² A lease of the homestead and 370 acres was obtained to enable developments to proceed while the purchase of the property was negotiated.

While the site was being selected and confirmed, other matters were currently in train. Kitchener had recommended a three years' course in order to provide officers quickly. Bridges thought that, as soon as the immediate needs of the Army had been satisfied, the course should be lengthened to four years in order that the West Point standards could be attained without an unduly difficult entrance examination which would produce a high standard on entry. He saw the first year of the course being devoted mainly to civil subjects, the second year to a combination of advanced civil studies and military work⁴³ (and, by inference, the third year would be mainly military). In the event a four-year curriculum was adopted from the outset and a lower standard of entrance examination was set to give effect to the Government's decision to allow all schoolboys an opportunity of gaining admission to the College.⁴⁴ The first two years were devoted to civil subjects and the final two to military subjects, except that military subjects such as physical training and rifle shooting were spread throughout the four years. Bridges also emphasised that, while the aims of West Point, i.e. moulding of character, establishment of military habits, and training of the mind to acquire and use knowledge would provide the model for civil subjects, the military subjects should be taught on the more technical lines followed by the British academies, Sandhurst and Woolwich.⁴⁵

The reorganisation of Australia into areas, as recommended by Kitchener, had not been carried out at this stage. Therefore, Kitchener's proposals for the selection of cadets, which were based on the new area system, could not be adopted. Bridges' interim solution was to allocate the annual vacancies between the States in proportion to population. If the number of candidates was in excess of the vacancies

available, those "from each State, after passing a preliminary examination and furnishing certificates of character should compete among themselves for cadetships A Board should be established in each State to ensure that the candidates competing are eligible morally and physically. The educational examination to be conducted by some outside authority such as a university".⁴⁶ Bridges' proposals for the entrance examination defined the level as "much the same as that adopted by the (Military) Board in June 1909 for candidates for commissions in the Permanent Forces together with a general knowledge paper. . . . The syllabus should be such as to secure cadets who have been thoroughly grounded and not merely crammed in the fundamental subjects which form a sound general background."⁴⁷ He recommended not more than four or five subjects chosen from English, history, geography, mathematics, science, a modern language and free-hand drawing.

Preparation of the syllabus for the entrance examination was begun under Bridges' direction as soon as Pearce's agreement to his proposals had been received. When completed, it was sent to each State Director of Education for comment, and a revised syllabus taking account of these comments was issued in September 1910. Applications for entry were called for soon afterwards and, when the site had been finally determined and the Department of Home Affairs had advised Bridges that the College would be ready in April 1911, the examination date was set for February. Ninety-eight students applied for entry, of whom twenty-one were rejected on medical grounds and a further eight failed to appear for the examination. Of the sixty-nine who sat, the examination conducted by Melbourne University in February, thirty-two passed, all of whom were accepted for entry into the College.⁴⁸

In his recommendation for staffing the College, Bridges proposed that initially there should be two administrative officers appointed, an adjutant and a quartermaster. (Kitchener had proposed an adjutant only.) Later it should be possible to combine the two appointments but in setting up the College both were needed. The officers for these appointments were recruiting within Australia and took up their appointments early in 1911. To teach civil subjects Bridges recommended that professors and lecturers recruited in Australia (with the possible exception of the instructors in languages) should be appointed and that the Universities of Sydney and Melbourne should be invited to assist in their selection.⁴⁹ By his broad definition of the subjects to be

studied in each year, Bridges had determined the priority of creating the various academic departments. Chairs of Mathematics, Physics and English were approved in September 1910, and a committee consisting of the Chancellor, Vice-Chancellor and four Professors of Sydney University examined the twenty-odd applications for each position. In March 1911 the Professors, all Victorians, were appointed to the Chairs of the College.⁵⁰

Bridges had not specified fully his requirements for military instructional staff, but had recommended that they should be recruited from England or India. Kitchener had proposed two assistant directors; Bridges called the appointments "directors." He was clear on the responsibilities for one of them—"drill, musketry, physical training, etc."⁵¹ and even nominated the officer he thought should be engaged. (He was duly appointed.) Bridges' obvious reluctance to commit himself fully on the question of military staff may have been based on doubts that the Australian Government would accept the West Point ratio of one instructor to four students. His proposal to follow the model of the British academies for military work probably also stemmed in part from this doubt. By the time the staff assembled, the appointments of Director of Military Art, Director of Drill, Instructor in Military Engineering and Instructor in Mounted Drill and Riding had been made, the Directors being British Army officers and the Instructors, Australians.⁵²

Hopes that the College would open in April had been the major factor governing the appointment of staff and the selection of students. However, on 30th March the Department of Home Affairs advised it was unlikely that furnishings would be available before 24th May. At the end of April the opening date was put back to 15th June and eventually to 21st June. Meanwhile, those members of the staff whose appointments had been approved assembled at Duntroon between 7th and 15th April in preparation for the cadets' arrival. In the next two months it was found necessary to add an accountant, a chaplain and a medical officer to the staff. As late as 1st June Bridges wrote to the Minister's office⁵³ suggesting that the entry of the cadets should be further delayed. On 20th June, apprehensive lest an unfavourable impression should be created, he wrote again, listing the deficiencies of the College. Nevertheless, on 21st and 22nd June thirty-one Australian and ten New Zealand cadets arrived to form the first class at Duntroon.⁵⁴

The Governor-General of Australia, Lord Dudley, officially opened the College at a ceremonial parade of the Corps of Staff Cadets on 27th June, 1911. During his speech, Lord Dudley announced that His Majesty, King George V, had graciously approved of the College being known as the Royal Military College of Australia.⁵⁵ An appropriate touch to the day's proceedings was added by the receipt of a cable from Lord Kitchener — "Hearty congratulations on inauguration of college. Hard work will spell success. Wish staff and cadets every good luck."⁵⁶

Thus, in true military style, ended the beginning of the story of the Royal Military College of Australia. Within a few short years the worth of the institution was to be put to a grim test, first at Gallipoli and later on other battlefields during World War I. Bridges, who had played such a vital role in shaping and developing the College and, indeed, in moulding the character of the first intakes of cadets, became the first commander of the Australian Imperial Forces; he was mortally wounded at Gallipoli and died at sea. One hundred and fifty-eight graduates of the College were posted to active service during the war, of whom forty-two were killed in action or died of wounds. Sixty-two decorations were won including twenty-two Distinguished Service Orders, twenty-nine Military Crosses and seven foreign awards. In addition there were seventy-one officers mentioned in despatches, including one officer five times.⁵⁷ Major General Sir Alexander Godley, commanding an Australian and New Zealand Division at Gallipoli wrote to the commandant in 1915 regarding the Duntroon graduates serving under him, "They have all done extraordinarily well, and have most thoroughly justified their training, and the system of the College."⁵⁸ The standards and traditions of the College had been firmly established. ♁

NOTES

Note: The following abbreviations are used in these reference notes:

RMC Report 19- : Report on the Royal Military College of Australia, 19-

RMC Journal 19- : Journal of the Royal Military College of Australia, 19-

L.A. V. & P.: Legislative Assembly Votes and Proceedings.

Bridges Report: Outline of Plan for the Foundation of the Military College of Australia submitted by Colonel W. T. Bridges to the Minister for Defence on 4th June, 1910.

Bridges Papers: Papers of General Bridges held as a collection in the Bridges' Memorial Library, Royal Military College, Duntroon.

RMC Archives: Papers held as a collection by the Archivist, Royal Military College, Duntroon.

- 1 Victoria *L.A. V. & P.* 1877 p49 refers to a report on defences by Sir William Jervois and Colonel P. H. Scratchley undertaken at the request of the Governments of Australian Colonies.
- 2 This Royal Commission should not be confused with a Royal Commission set up in England in 1879 under the chairmanship of the Earl of Carnarvon "to inquire into the state of the Defences of the more important Colonial Ports and Naval Stations and the best mode of placing them in a thoroughly secure condition." The RMC Report 1936, does appear to confuse the two. Notice of the establishment of Carnarvon's Royal Commission is recorded in the NSW *L.A. V. & P.* 1879 — 80 Vol V p 685. Sir Henry Parkes gave evidence before Carnarvon when he visited Britain in 1882 (Sir Henry Parkes — *Fifty Years in the Making of Australian History* Vol II pp 270-1.). There is room for further confusion because Jervois (see note 1) was appointed by Carnarvon.
- 3 NSW *L.A. V. & P.* 1881 Vol IV pp 581-724. It is probable that the decision to set up a Royal Commission in NSW arose from discussions on Defence at the Intercolonial Conference in Sydney in January 1881 — see NSW *L.A. V. & P.* 1880-81 Vol I especially p 342.
- 4 Colonel Scratchley was a member of the Royal Commission. He had been appointed Commissioner of Defences for all colonies except Western Australia in 1878 after he and Jervois had completed their reports (see note 1). Jervois was appointed *Governor of South Australia* in 1878.
- 5 NSW *L.A. V. & P.* 1881 Vol IV p 696.
- 6 *Ibid* p 647.
- 7 Captain Bridges was the father of Brigadier W. T. Bridges, first commandant of RMC, Duntroon.
- 8 The *Sydney Morning Herald*, 20th October, 1885, page 6, column d, contains a letter to the Editor from Augustus Morris which quoted the contents of letter from Colonel Hewett to Captain Bridges. Mr Morris suggested in the article that, on his return from America and Canada in 1876 (he was an official representative of the NSW Government at the Philadelphia Centenary Exposition in 1876 — see NSW *L.A. V. & P.* 1876-7 Vol I pp 919-20) he had "recommended the adoption in the Australian colonies of a system similar to that in operation in the Canadian Military College". This comment has not been verified and it may well be true. However, neither Mr Morris nor the other representatives who went to Philadelphia were called to give evidence before the Royal Commission of 1881.
- 9 Herbert Brookes (ed) *The Federal Story* by Alfred Deakin, pp 20-24.
- 10 *Australian Dictionary of Biography*, Vol 4, p 130.
- 11 NSW *L.A. V. & P.* 1889, Session 2, Vol 1 p 170. In the *RMC Journal*, 1922 p 41, the date of Edwards' report is inadvertently printed as 1899.
- 12 *The RMC Journal* 1951, pp 31-32 refers to a report to the Victorian Government in 1890 by Major General Tulloch, commanding Victorian Forces. It is probable that this was based on Edwards' report as Tulloch had only been appointed to the position in 1890.
- 13 B. H. Wise, *The Making of the Australian Commonwealth 1889-1900*, pp 5-6.
- 14 C. E. W. Dean, *Two Men I Knew*, p 7.
- 15 Letter from Australian War Memorial Director, 1950, photocopy held in RMC Archives, gives the text of Hutton's 1902 report.
- 16 S. B. Clark: Thesis on "The Development of the Curriculum of the Royal Military College of Australia in its Progress to University Status", pp 11-12.
- 17 Papers laid before the Colonial Conference, London, 1907, p 104.
- 18 W. M. Hughes had led the opposition in agitating for compulsory military training.
- 19 J. E. Lee, *Duntroon, The Royal Military College of Australia 1911-46*, p 2.

- ²⁰ Bridges minute dated 28th November, 1908, photocopy held in RMC Archives. The words in brackets are mine.
- ²¹ Pearce's minute dated 30th November 1908, photocopy held in RMC Archives.
- ²² Hoad's memorandum dated 25th June 1909, photocopy held in RMC Archives.
- ²³ J. A. La Nauze, *Alfred Deakin, A Biography*, Vol II, p 586.
- ²⁴ The Defence Act 1903-50, Part XV Military Colleges, inserted by Act No 15, 1909, S20.
- ²⁵ Memorandum on the Defence of Australia by Field Marshal Viscount Kitchener of Khartoum.
- ²⁶ *Ibid*, pp 11-12, paras 35, 37.
- ²⁷ *Ibid*, pp 13-14, paras 46-56.
- ²⁸ *Ibid*, p 14, paras 55, 56.
- ²⁹ G. F. Pearce, *Carpenter to Cabinet*, pp 71-72.
- ³⁰ It is not intended to give full details of General Bridges' career, despite the fact that he is the person who had the most profound influence on the establishment and early years of Duntroon. He was commissioned in 1885 and served under General Hutton on two occasions, in 1894-6 and 1902-4. In January 1909 he became the first Chief of the Australian General Staff, from which appointment he proceeded to London.
- ³¹ Letter from Legge to Bridges in Bridges' Papers.
- ³² C. D. Clark, *A Biography of Major General Sir William Throsby Bridges*, K.C.B., C.M.G., p 168.
- ³³ Lord Kitchener's recommendations on the restructuring of the New Zealand Army led to a second approach by New Zealand regarding the establishment of a military college. Details of negotiations between the two countries are summarised in the *RMC Report 1910-11*, p 24.
- ³⁴ Letter from R. Muirhead Collins to the Secretary, Department of External Affairs, dated 29th April, 1910. Photocopy held in RMC Archives.
- ³⁵ Bridges' Report. This document, together with Senator Pearce's comments, is reprinted as Appendix 1 to J. E. Lee's book, *Duntroon, The Royal Military College of Australia, 1911-46*. The RMC Archivist advised that the original copy of the report has been mislaid.
- ³⁶ *Ibid*.
- ³⁷ The letter from Collins (see note 34) mentioned that the College was to be established in Sydney.
- ³⁸ Bridges' Report.
- ³⁹ Bridges' Report.
- ⁴⁰ The figure of 150 cadets had almost been reached in 1914 when the four classes totalled 147. Thereafter, two wars, retrenchment and the depression, and New Zealand's withdrawal from the College 1921-33 kept the total strength below 150 until 1948.
- ⁴¹ J. E. Lee, *op. cit*, pp 5-9 discusses the pioneering days in southern NSW and mentions the explorations of the Throsby family from Moss Vale in the Canberra and Duntroon areas. Bridges' mother had been a Throsby and was directly related to the Moss Vale family.
- ⁴² *RMC Report 1910-11*, p 18.
- ⁴³ Bridges' Report.
- ⁴⁴ *RMC Report 1910-11*, p 231.
- ⁴⁵ Bridges' Report.
- ⁴⁶ *Ibid*.
- ⁴⁷ *Ibid*.
- ⁴⁸ *RMC Report 1910-11*, pp 23-24.

- ⁴⁹ Bridges' Report.
- ⁵⁰ *RMC Report 1910-11*, pp 21-22.
- ⁵¹ Bridges' Report.
- ⁵² *RMC Report 1910-11*, p 20.
- ⁵³ C. D. Clark *op. cit.*, p 180. Clark says Bridges wrote to Pearce, but Pearce was in London for the Coronation of King George V. It is assumed that Bridges wrote to the Minister's office.
- ⁵⁴ *RMC Report 1910-11*, p 25. The remaining Australian cadet, N. E. Biden, had been granted leave to attend the Coronation with the NSW contingent. He joined the College in October.
- ⁵⁵ *RMC Report, 1910-11*, p 25.
- ⁵⁶ G. F. Pearce, *op. cit.*, p 86. Other versions of the contents of this cable appear in Lee's book and the *RMC Report 1910-11*, but Pearce's version is grammatically sound. Also, he drafted the cable for Kitchener.
- ⁵⁷ *RMC Report 1918-19*, pp 24-32 contains the main lists. The *RMC Reports of 1919-20, 1920-21 and 1921-22* give additions and summaries.
- ⁵⁸ *RMC Report 1914-15*, p 12.

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* * * *

UNSWR REGIMENTAL HISTORY

The University of New South Wales Regiment will celebrate its twenty-fifth anniversary in 1977. To commemorate this event, the Regiment is writing its history, which will be published and on sale in January 1977.

All previous members of the Unit or those soldiers who have documents, photos, mementos or reminiscences of the Unit's activities or members are asked to contact the Unit. Even seemingly trivial information may be important.

Anyone who believes that he may be able to contribute should contact the Regimental Historian, Capt D. J. Deasey, UNSWR, Day Avenue, Kensington, NSW 2033. Phone (02) 663 1212.

The Hearing Damage Risk To Passengers In An M113A1 Armoured Personnel Carrier

Dr. T. B. Guy and Cpl. R. A. Studholme C.S.C***

THE audiological damage risk to unprotected personnel travelling in the passenger compartment of an M113A1 personnel carrier is assessed in this article. The method used (which differs from a previous assessment) was to carry out detailed sound pressure level measurements, then apply accepted audiological damage risk criteria to estimate permissible exposure times. The results show that there is a considerable risk of hearing damage to unprotected personnel even for short road journeys at moderate speeds.

Introduction

It is well known that the noise in armoured full track personnel carriers is very high, mainly due to chassis excitation from the moving track. The noise level within the vehicle is consequently highest at the highest road speed on a hard road surface. The effect of noise on the occupants of an M113A1 personnel carrier (now in service with the Australian Army) has been examined by Piesse (1965)¹ and by Carter (1966)². They found that there was an audiological damage risk to unprotected occupants when the vehicle was driven at high speed on a hard road for a period exceeding 1 hour.

Since this type of vehicle is likely to be in service until well into the 1980s, it is worth taking another look at the noise problem, by making use of the now widely used criteria for hearing damage risk. Furthermore, there is the possibility that personnel travelling in an M113A1 may not always want to use correct hearing protection even when it is provided, because of the conflicting operational requirements of the soldiers who may be passengers. For example to be in readiness for action, it may be difficult for a soldier to wear hearing protection at the same time as other head gear, which he will consider more important to him when he leaves the carrier to go into action. Para-

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doxically, however, if hearing impairment results from lack of hearing protection while the soldier is in the carrier, he is likely to find this a great handicap once out of the vehicle and in action. Another possibility is, of course, that there will be no hearing protection available!

Audological damage whether permanent or temporary affects both crew and passengers alike, but it is more likely that the crew will suffer permanent damage and passengers temporary damage if no hearing protection or inadequate hearing protection is used. If hearing is impaired in this way it usually takes the form of deafness to high frequency sounds such as a ringing telephone. The audiological damage assessment made by Carter (1966)² involved a technique of measuring temporary threshold shift in several subjects (selected from the Army) after being exposed to the vehicle noise. This technique, although accurately measuring hearing loss in these passengers, is rather selective, since the hearing performances in a very large sample of subjects would be necessary to provide a good statistical result for the audio-



(Defence Public Relations)

M113A1 APCs at Singleton Range, NSW.

logical damage risk. An alternative method is used to assess the audiological risk in this study, involving a measurement of noise levels, then running a comparison of these levels with the accepted audiological damage criteria.

A final year cadet project has been carried out at RMC, Duntroon³ in order to assess the noise levels in an M113A1 personnel carrier and the audiological damage risk to unprotected passengers. The vehicle used had worn rubber track pads which allowed comparison between the present noise measurements and those of Piesse (1965)¹ in a relatively new vehicle. The measurements were carried out in such a way as to enable an identification of the extent of noise contribution from each of the main noise sources, i.e. the engine and moving track.

The M113A1 Armoured Personnel Carrier

The M113A1 is a light armoured tracked vehicle designed to transport troops and equipment. The watertight hull is of all aluminium alloy construction, and apart from the crew of two, it can carry ten fully equipped soldiers (as shown in Figure 1). The propulsion unit is a 205 hp Detroit six cylinder diesel engine coupled to a hydraulic torque converter, differential gear box and a three speed automatic transmission. Power to the tracks, which consist of about 64 six-inch links, comes via track drive sprockets. Each track link contains a thick rubber pad, the purpose of which is to absorb some of the shock when a link strikes the ground. When these rubber pads become worn they can be replaced but it will be shown later, that they can affect the noise level within the vehicle, depending upon the extent of wear.

Sound Pressure Level Measurements

The noise levels in a central passenger position were measured with a Bruel and Kjaer type 2203 precision sound level meter coupled to a type 1613 octave band filter set. A 1.0 inch microphone calibrated before each test was used for noise measurements. Figure 1 shows a plan view of the M113A1 passenger compartment in which the microphone measuring position is indicated.

Sound pressure level measurements were made over a range of frequencies with the vehicle stationary and the engine running at different constant speeds and also when the vehicle was moving along hard road surface at different speeds.

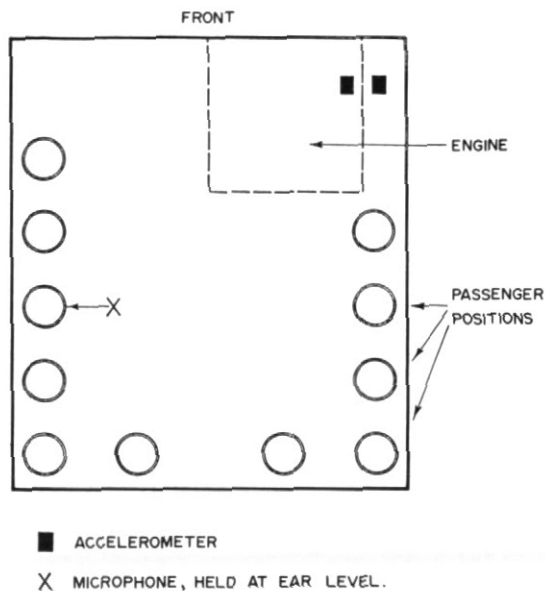


FIG. 1. PLAN VIEW OF THE INTERIOR COMPARTMENT OF THE M113A1

Noise Level Results

Static Measurements

Octave band sound pressure levels in the M113A1 passenger compartment, due to the engine alone are shown in Figure 2 along with a similar result from Piesse (1965)¹. As to be expected all the curves show their highest noise level to correspond approximately with the engine firing frequency. The top curve in Figure 2 is the 2 hour unprotected exposure time curve (CHABA Report)⁴ which is explained below. This curve indicates that at the noise levels at maximum rpm, an exposure time of greater than 2-3 hours per day will result in audiological damage. Thus, it can be seen that the engine noise alone can be high enough to cause audiological damage to unprotected occupants, although it is unlikely that such a long exposure at an engine speed of 2000 rpm will occur. However, this problem tends to become academic when the noise from the moving vehicle is measured.

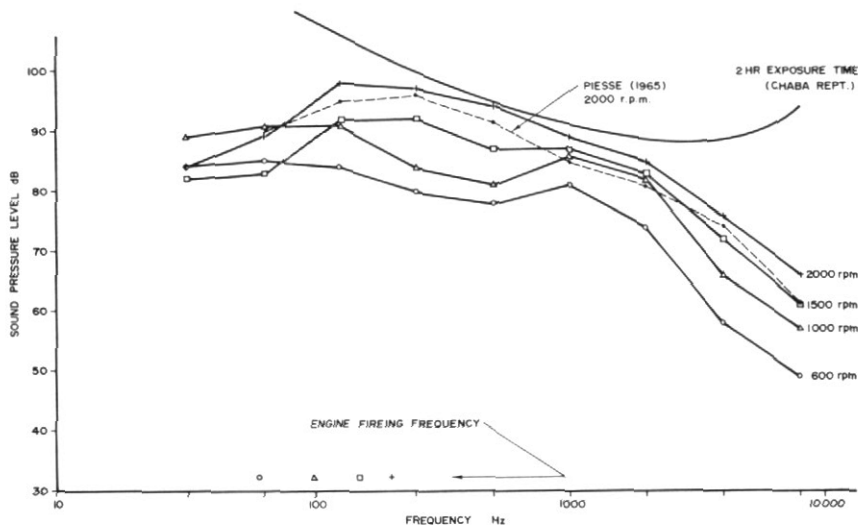


FIG. 2. STATIC NOISE MEASUREMENTS

Moving Vehicle Measurements

Figure 3 shows the octave band noise levels at the passenger ear position while the carrier was driven over a range of speeds on a hard surface road. We see that there is a peak in all the curves at a frequency of about 125 Hz. This is due to a vehicle body resonance at about this frequency which is excited by track link shock forces at all road speeds. Further evidence of the body resonance is given by noting the absence of a similar pronounced noise level peak in the static vehicle measurements of Figure 2.

The track excitation frequency is calculated from vehicle speed V simply from the fact that there are two links per foot of track and there will be two excitation shocks for each link (as with any toothed system). Therefore, if we put V in feet per second, the excitation frequency $f = 4V$. At a vehicle speed of 32 km/h, $V = 29$ ft/s thus the excitation frequency $f = 116$ kHz which corresponds approximately with the body resonance peak in the curves of Figure 3, and explains why the overall noise level in the 32 km/h curve is markedly higher than at lower speeds. This is seen in a more general result for the variation of sound level with vehicle speed which is given in Figure 4. Here a dB "C" level of noise at each speed was measured, since the

"C" weighting is a single noise figure that can be given for noise levels above 85 dB. We see in Figure 4 that there is very little increase in interior noise for vehicle speeds above 32 km/h. These noise levels are very high and indicate that the track induced noise is much greater than that from the engine alone and therefore presents the most serious audiological damage risk.

Estimates of Audiological Damage Risk

There are several audiological damage risk criteria at present in use throughout the world. These criteria generally consist of statistically determined exposure times for unprotected subjects experiencing certain noise levels at various frequencies. Since any noise source other than a pure tone will include a range of frequencies throughout the audible range, the accepted damage risk criteria are directly applicable to noise data such as that plotted in Figures 2 and 3. We have chosen to use the American Standard "CHABA"⁴ criteria to assess the risk of hearing damage to unprotected personnel travelling in the M113A1 passenger compartment.

Comprehensive results of exposure times superimposed on selected results from Figure 3 are shown in Figure 5. This figure also includes the result from Piesse⁵ for an M113A1 vehicle speed of 40 km/h which

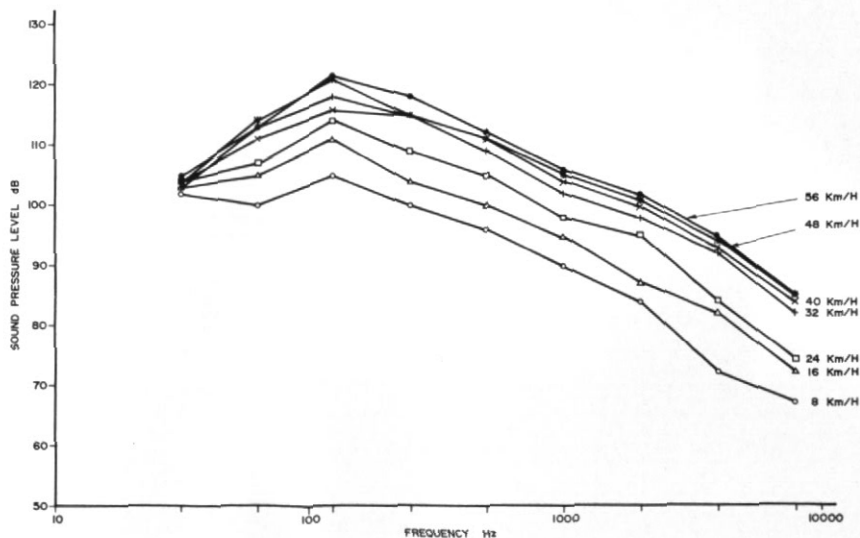


FIG. 3. MOVING NOISE MEASUREMENTS

can be compared to both the damage risk criteria and also the equivalent curve from this study.

The damage risk criteria are prescribed as a set of maximum exposure times, decreasing in sound pressure level as frequency is increased. This is because the audiological damage risk is higher for the high frequencies up to the point where the frequency begins to leave the audible range (i.e. the natural response to high frequency noise declines to zero at a frequency greater than 15 kHz). These exposure times are a daily dose which must not be exceeded if hearing damage is to be avoided in unprotected personnel.

At a vehicle speed of 56 km/h the sound pressure level in the passenger compartment exceeds the 15 minutes duration curve at a frequency of approximately 2 kHz, while at 40 km/h the sound pressure level just reaches the 15 minutes exposure curve at the same frequency. At a vehicle speed of 24 km/h however, the noise level does not exceed the 30 minutes duration curve.

A comparison between the 40 km/h result of Piesse¹ and that in the present measurements, reveals that the overall noise level of the vehicle Piesse used was less than that in our measurements, being some 9 dB lower at high frequencies. There are two possible explanations for this: (a) the rubber track pads on our vehicle were badly worn and those on the vehicle Piesse measured were new; and (b) there may have been more sound absorbing surfaces in the vehicle Piesse measured, such as occupants and equipment, than in our measurements. However, up to a frequency of 250 Hz there is very little difference in the results, although the overall difference tends to indicate that wear in the rubber track pads can increase the high frequency noise in the M113A1. An assessment of the audiological damage risk of the Piesse measurements, according to the CHABA⁴ criteria show even less difference in the final results. Comparing the permissible exposure times for the two 40 km/h results we observe a maximum time of about 25 minutes for the Piesse result and 15 minutes for ours.

Discussion and Conclusion

Although the general unprotected exposure time estimated in our measurements appears to be considerably less than those estimated by Carter², it must be remembered that the CHABA⁴ report had not been published or recommended as the American audiological damage

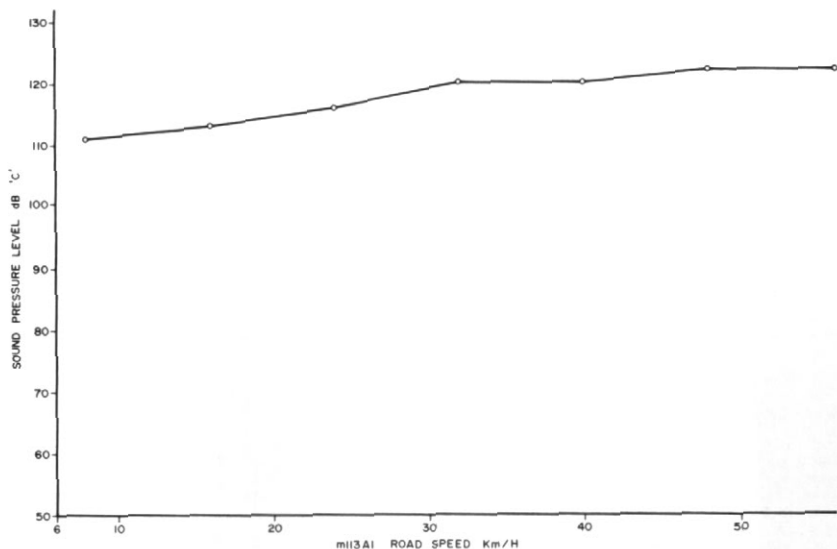
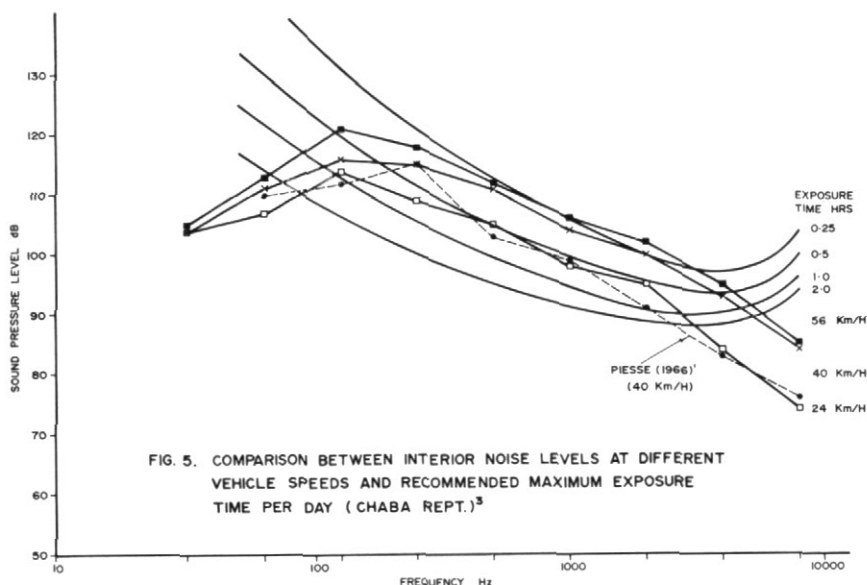


FIG. 4. SOUND PRESSURE "C" WEIGHTING LEVEL WITHIN THE M113A1 WITH VEHICLE ROAD SPEED

risk criteria until after Carter's work had been done. Our approach and results are different, but not conflicting, since it may be assumed that our result applies in a more general way.

Sound pressure level measurements made within an M113A1 armoured personnel carrier indicate that although noise caused by the engine alone is high, it is unlikely that the engine speed will be maintained at 2000 rpm (which gave the highest noise level) for the period needed to cause audiological damage to unprotected personnel.

In a moving vehicle though, the possibility of hearing damage to unprotected passengers in the personnel carrier appears to be quite high, even at moderate vehicle speeds. The essence of the hearing damage risk criteria used in this study is that after being subjected to the noise levels and frequencies for the times shown, then a period of 24 hours or more is required to allow the auditory sensors to recover. If repeated exposure to greater noise levels or if shorter recovery intervals take place, then permanent damage to hearing will result. For example, passengers without adequate hearing protection riding in an M113A1 at road speeds of between 40 km/h to 56 km/h for a duration of 15 minutes to 30 minutes have a high probability of suffering at



least temporary hearing damage. If this exposure level is repeated over a period of time then the damage to hearing will become permanent.

It is therefore concluded that the audiological damage risk to unprotected personnel in these vehicles is much greater than previously thought and since it is obviously more profitable to treat the noise source, it is recommended that:

- the rubber track pads not be allowed to wear to a great extent;
- research into methods of isolating the passenger compartment from track induced vibration be carried out;
- that consideration be given to the possibility of vibration isolation at the engine mounting;
- and finally, that all personnel riding in the M113A1 wear adequate hearing protection at all times.

Acknowledgements

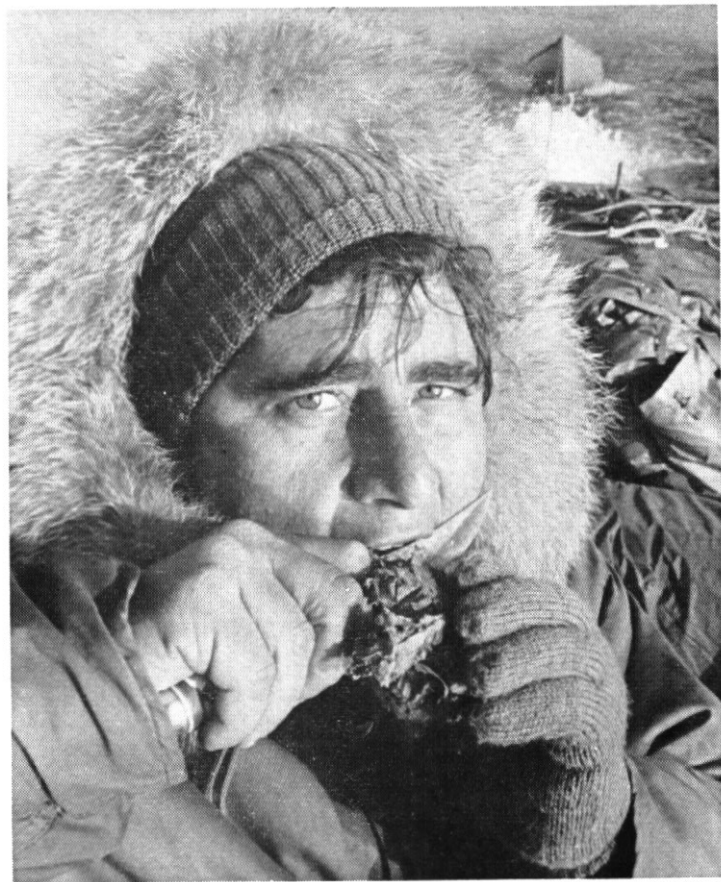
The authors gratefully acknowledge permission to publish this article from the Commandant RMC and the help given by RMC staff particularly Major R. K. Hill, M.C., Instructor in Armour, RMC.

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(Defence Public Relations)



(Defence Public Relations)

Australian NCO eating raw caribou meat in the Canadian Arctic during Exercise Winter Sun. The fur trim on the parka is wolf, which has a very low freezing point.

EXERCISE

WINTER SUN



Training in Canada

Major R. D. Letts

Royal Australian Regiment

Introduction

1975 saw the commencement of what is hoped to be an annual exchange between the Canadian Armed Forces and the Australian Army. On August 26, a Composite Company made up from the Canadian Airborne Regiment and the First Battalion Princess Patricia's Canadian Light Infantry, arrived in Brisbane to take part in Exercise Summer Haze. On August 28, a Composite Contingent from the Third Task Force based at Townsville, arrived in Calgary, Alberta for Exercise Winter Sun, which was to last for six weeks.

The Australian Contingent of 150 all ranks, was made up of a small Contingent Headquarters, Support Company 1 RAR, and elements from the Cavalry, Artillery, Engineers, Signals, Aviation, Ordnance and Supply and Transport Units of the Task Force.

The Exercise was sponsored by 1 Combat Group based at Calgary, (A Combat Group is a similar formation to an Australian Task Force) and our host Unit was the First Battalion, Princess Patricia's Canadian Light Infantry (1 PPCLI).

Major R. D. Letts graduated from RMA Sandhurst in 1960. Whilst in the British Army he served with the 1st Royal Green Jackets and 22 SAS Regiment in Europe, Malaya, Borneo and Aden. Since transferring to the Australian Army in 1969 he has served with SAS Regiment in Vietnam, 1 RTB, 1 PIR, The Royal Papua New Guinea Constabulary, and is currently Second-in-Command of 1 RAR.

The flight from Townsville to Calgary via Nadi and Honolulu by Canadian Armed Forces Boeing 707 was a pleasant one. Though we were arriving in the Canadian "Fall" the snow capped peaks of the Rockies could be seen in the distance as we touched down at Calgary.

1 PPCLI gave us a warm welcome and we were soon made to feel at home in the 1 Combat Group Base at Currie Barracks. The Base boasts comfortable stone buildings set amidst acres of lawns, spruce, firs and aspens. The Junior Ranks Club, which would outshine most Sydney Leagues' Clubs, holds twice weekly dances backed by the best groups in town. There is an all ranks snack bar, which serves beer but not spirits. And, emancipation, soldiers are allowed alcohol in their lines!

The training programme, which the Canadians had arranged for us, was a *stimulating one*. Firstly the whole Contingent took part in ten days of Winter Warfare training culminating in a one week exercise at Frobisher Bay in the Eastern Arctic. On return from the Arctic the non Infantry detachments were attached to their counterpart units within the Combat Group for exchange training. Support Company 1 RAR followed on with UN Peace Keeping, Internal Security training and finally ten days adventure training in the Jasper National Park.

Training for winter warfare was a new and challenging art for the Australian Soldiers. Like jungle warfare, the key to winter warfare is learning to survive and fight in the winter environment. Napoleon and Hitler have demonstrated the fate which befalls the ill prepared, whilst the Finns and Russians have shown how the winter environment can be used to great advantage.

Our preparatory winter training at Calgary commenced with Arctic survival techniques. We were issued and made familiar with winter clothing which has been closely adapted from Eskimo traditional dress. The first layer comprises the long sleeved and long legged thermal underwear. The next layer is made up of a flannel shirt and windproof trousers. To these layers can be added a sweater, parka, two layers of gloves, sun glasses, (for the prevention of snow blindness) woollen balaclava, and thick socks under double layered "mukluks" to protect the feet. All clothing must be loose fitting to build up pockets of insulating warm air. The arctic sleeping bag is made up of two heavily downed bags, one inside the other with yet a third nylon inner. Next



we were introduced to the ten man arctic tent and were taught how to load and pull toboggans.

Ten days after our arrival in Canada we boarded an Armed Forces Boeing 707 and flew in perfect weather diagonally across the Continent to Frobisher Bay, Capital of the Eastern Arctic. Unfortunately, Frobisher Bay was enjoying one of the best late summers on record and was completely devoid of snow. This restricted our training because the temperature, which was hovering around freezing point, necessitated the arctic tents, which we could not move without toboggans, and these had to be carried if there was no snow. However, during our seven day stay, we were able to get some experience with the equipment and practice Arctic routine in the ten man tents. The Royal Canadian Mounted Police lent us some canoes and two of their Eskimo special constables, who took the Contingent out in groups to collect clams and to watch them Seal hunting. Another group went on a two day expedition fishing for Arctic Char, and managed to catch sufficient for a Contingent barbecue. Other training activities included field firing and navigation training, and lectures on the Arctic and its peoples by local experts.

The Eskimos we met at Frobisher, their semi-modernised way of life, and their relations with the white population merit a separate article. The Eskimos are properly called the Inuit. At present they are in transition between their traditional way of life and being assimilated into white society. Unfortunately, the authorities have no control over any white Canadians who wish to come to the Arctic and the Inuit have had their share of exploitation. Drink and drugs have also taken their toll. With cash incomes from the much in demand Eskimo carvings, dog teams and igloos have been replaced by skidoos and prefabs. With all this the Inuit remain a fine people with their own culture and still retain their excellence as hunters and fishermen.

The Canadian Armed Forces have established an Army Reserve Unit known as the Rangers. This unit stretches right across the North, and is designed to supply any Army unit operating in the North with local guides who have a detailed knowledge of the terrain. The Rangers include both Eskimos and Indians.

From Frobisher Bay, the Contingent returned to Calgary for United Nations Peace Keeping and Internal Security Training. After lectures and presentations on recent Canadian UN experience in Cyprus and the Middle East, Support Company 1 RAR tried its hand on Exercise "Cyprus Currie", a standard test exercise for Canadian Infantry units about to depart for UN service.

The diggers soon learnt what painstaking work and how boringly routine most UN duties are. During the exercise both "Turks" and "Greeks" tried to exploit the Australian OP Points and the diggers found it extremely difficult not to directly retaliate. Generally, however, Support Company 1 RAR found there was very little which was new to UN Peace Keeping operations. The major requirements are good SOPs, strong discipline, alert observation, and sound junior commanders in charge of OP points. On a higher plane the Canadians were emphatic that any contingent dispatched for UN operations should be completely self contained in every respect despite any UN assurance of local support. The story is recounted of an Indian Gurkha Unit which arrived in Sinai as instructed with only personal equipment and weapons. The Gurkhas were without tentage, rations, transport and ammunition for several weeks.

The UN training was followed by Internal Security Training. The Canadian Armed Forces gained considerable experience of Internal



(Defence Public Relations)

A patrol from Support Company 1 RAR.

Security Operations in their own country with the kidnapping of the British Trade Commissioner by the Quebec Separatist Movement on 5 October 1970. For three months following the kidnapping, over two thirds of all Canadian Field Force Units were mobilised on internal security operations in aid to the civil power. Our training covered road blocks and traffic control, searching techniques for vehicles and personnel, guarding VIP's, Cordon and Search Operations, riot controls equipment, formations and drills, and improvised mines and booby traps. Canadian laws on Aid to the Civil Power are considerably more liberal than in Australia. In Calgary, a month before our arrival, when a sniper threatened police with a rifle from a house window, an Army APC stood by to blast down the house if required.

Whilst the non Infantry Component remained at Calgary studying their counterpart arms and services, the Infantry Component moved two hundred miles North to the Jasper National Park for ten days

adventure training. To many of us, the two most impressive features of Canadian life were the Royal Canadian Mounted Police and the organisation of the National Parks. Jasper National Park, set amidst the Rockies, covers an area of 4,200 square miles. The camping sites are well spread out so that each individual site has its own area of wilderness, screening off other campers. There are well marked hiking trails throughout the park. Fishing is allowed but the rich variety of wildlife is protected. Wildlife in the Park includes Black Bear, Grizzlies, Moose, Elk, Coyotes, and Mule Deer. Every evening at the main campsite Amphitheatre, the Park Naturalists give slide shows and talks on the flora and fauna of the Park. These presentations are of high standard and are always extremely well attended.

The adventure training run by the Canadian Airborne, included two days rockclimbing, a three day mountain trek, and a one day canoeing expedition. Our Airborne instructors were from the French Commando. The linguistic barrier did not prevent a very close bond from developing between the diggers and the French Canadians. The rock climbing, which was terrifying to start with, was a great confidence builder. Ironically we were also instructed by the Canadians on the "Australian" rapell! Fortunately we survived the climbing with only one minor accident. The most frightening part of the climbing was when dislodged rocks or even small boulders came crashing down the cliffs.

The Indian canoe was a novelty to all of us. It is completely open on top, and one is supposed to kneel when paddling. They are normally two man canoes, have no rudders and are less stable than canoes used in Australia. The rear crew member is supposed to steer by either "pulling" or "furling" his single paddle whilst stroking.

The mountain treks were much enjoyed particularly as it was up on the glaciers that many diggers saw snow for the first time. Most groups saw some wildlife though surprisingly the majority of wildlife seen passed through the base campsite. Black Bears especially, were particularly bad at scavenging. One digger staggering in the darkness from the Canteen tent to the toilet bumped someone coming the other way. The digger obliged with a "Sorry mate"! to look up into the eyes of a Black Bear!

After Jasper the Contingent concentrated at Edmonton, the base of the Airborne Regiment, for the return journey to Australia. The

Airborne Regiment is a small task force, with its own artillery, engineers, signals and logistic units. It's role in the defence of Canada is to cover the North. The distances involved are such, that the only way a force could be quickly deployed in some areas is by parachute. In these areas the Parachute Force would have to build an airstrip before it could be extracted.

The most rewarding part of the visit to Canada was to discover how much similarity there is between Australians and Canadians, and the relative positions both politically and geographically that each country holds. Though both countries can naturally be affected by economic and political developments in the United States, each nation is determined to hold an independent outlook on world affairs. The contingent was overwhelmed by the quiet warmth of hospitality given by Canadians both civilian and military. There was no requirement to work to establish a relationship, it seemed as though the relationship already existed.

It is probably opportune to mention some observations on the unification of the Canadian Armed forces. Unification took place in 1968 and now all members of the Armed Services wear a "neutral" green uniform and the same badges of rank. From the administrative support point of view unification seems to have been a success. The Army even gets an allowance when in the field to equate with Flying Pay! However, from the operational point of view, unification seemed to make very little difference with a separate outlook still apparent between the maritime, ground and air arms of the Service.

A further interesting aspect of the Canadian Army Forces is the other programme of unification between the English and French sections of the Force. All publications are printed in both languages. Also there is a programme of cross posting French speaking English Canadians to French Canadian Units and English speaking French Canadians to the "British" Canadian Units. All headquarters are supposed to be able to work bi-lingually. No doubt this home experience is another reason the Canadians fit so easily into UN Contingents!

The Contingent departed from Edmonton for Australia on October 7. The exchange gave us a valuable grounding in Winter Warfare, UN Peace Keeping, and Internal Security. It enabled us to re-establish the bonds forged between Australians and Canadians during

the Second World War and in Korea. On a personal level, all members of the Contingent will remember Canada for the beauty of the scenery, the warmth of the people and the professionalism and friendliness of the Armed Forces. ☞

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LETTER TO THE EDITOR

Industrial Relations in the Army

Comment about industrial relations in the Army is easy to provoke in these days of disruption and changing attitudes in the community.

The Army enjoys less problems than industry in personnel matters, but to ensure this situation continues, thought and effort will be required by leaders at all levels.

Leadership training in the Army aims at increased productivity through caring for the interests of the soldier. This style of management, because of the demands and conditions of the Service, has been practised for a number of years. Common experience of hardship and danger in action conditions leads to a bond of understanding and respect. Leadership qualities cannot develop under better circumstances. This is the great advantage the military manager has over his civilian counterpart.

Constant improvement in the soldiers' welfare, living conditions, terms of service, as well as an interesting and meaningful training must be the aim of the leader. Good leadership is the key to good industrial relations.

This does not mean that old methods should be discarded merely because they are old, or that new methods must be adopted merely because they are new. *Successful* methods must be developed constantly. It is common to criticise a system to cover up an individual's failings. It is up to the leaders in the Army to make the system work.

1 Fd Hyg Coy
Ingleburn NSW

Sergeant L. R. Nunn, RAAMC

BOOK REVIEWS



STRATEGY AND SOCIETY by Corelli Barnett, The Spenser Wilkinson Memorial Lecture, 1974, Manchester University Press, 1975.

Reviewed by John McCarthy

University of New South Wales

Faculty of Military Studies, RMC Duntroon

ANYONE familiar with Corelli Barnett's *The Sword Bearers* and the *Collapse of British Power* will recognize the argument developed in this lecture. He should welcome its publication for there are good ideas on every page of it. Briefly, Barnett reminds us of Clausewitz's dictum that the study and prosecution of war should not be confined in a narrow military perspective: more important are its political and social ingredients. Barnett adds what Clausewitz could not have foreseen: the technological and industrial bases of a state rank equally important. A defence policy which ignores this lesson and concentrates on merely military means to achieve a policy will more than likely end in disaster.

One might argue that this conclusion is simply the result of common sense. Or should be, but not so. Barnett can muster inside eleven pages sufficient examples to show that such a fundamental inter-relationship has been either unrecognized or ignored in the twentieth century. To mention two of them. Barnett says that it was not the strategic mistake of declaring unrestricted submarine warfare which cost Germany the 1914-1918 war but rather the industrial decision to convert the whole of the German factory system to the production of

munitions in 1916. It led to economic and consequent social collapse in Germany while on the military front the army was still defending an intact line. Now one may argue against Barnett's thesis, but it remains true that the 1916 programme was undertaken without considering its domestic, social and political repercussions.

Chamberlain's foreign policy from 1937 serves to illustrate a further strand of Barnett's argument. Quite rightly it is pointed out that Chamberlain pursued a policy towards Germany which had no relationship to British actual preparations for war. And when war did occur the Royal Air Force, which in theory should have been able to launch its strategic bombing offensive, found itself limited to minor raids and the scattering of leaflets. Thus Barnett concludes that a foreign policy followed without regard to the military means of securing the ends of that policy is as doom-laden as a military policy which discounts or ignores politics or social developments. Barnett can see both mistakes being made in the formulation of British defence policy today.

One wonders why, yet reflection suggests one possible answer. Most high-ranking military officers came through a tunnel-visioned military education system. A military objective to be gained through military means was all important. Not for them the niceties of politics, the ramifications of social change, the capacity of factories to meet their demands and the ability of universities to produce graduates with necessary skills. If such things were seen dimly as factors of national power, then they were little understood. The military mind was a mind apart. But then so was its political, social, managerial and educative counterpart. In university departments today, for example, it is quite normal to study international relations, history and politics without any felt need to understand strategy at all. Thus it should not come as a surprise to learn that third year honours students at a prestigious university had spent some months reading about the problems of Australian inter-war defence and foreign policy without knowing what a battleship was, let alone its function. Needless to say, the politics of Munich were discussed without any reference to Douhet.

Clearly attitudes will have to be widened. As Barnett argues, 'establishment' orthodoxies must be challenged not only among the military but among the universities as well. If narrowness of vision was not good enough for Clausewitz in 1832 it will scarcely do for us today. ☞

THE WAR OF ATONEMENT by Major General Chaim Herzog, Weidenfeld and Nicholson. 300pp. \$18.

*Reviewed by Frank Cranston, Defence and Aviation Correspondent of The Canberra Times.**

MASSIVE MILITARY VICTORY

IN the general euphoria surrounding events in at least the Israeli-Egyptian relationship in the Middle East and recalling the great political victory which Egypt achieved as the result of the Yom Kippur War of October 1973 it is sometimes difficult to remember the tremendous victory which the outcome of that struggle represented for Israeli arms.

Few nations outnumbered by up to 10-to-one in equipment could expect to survive an undeclared assault on two fronts while having to deploy a considerable force to watch yet a third threatening if dormant sector and still expect to win. Even fewer would have expected victory when their armies were not even mobilised when the attack came.

Within less than a week as the Israeli forces destroyed the Syrian army sent against them, as well as forces from Iraq, Morocco, Kuwait and Jordan in the north; shattered the Syrian air force or so cowed it that it would not venture over the battle fields and destroyed the Syrian navy. For the loss of little more than 100 tanks (many more were damaged in various degrees but later repaired) the Israelis counted more than 1300 of the enemy's armoured vehicles left on the battlefield: hundreds of them now serve with the Israeli army.

On the southern front, the Egyptians, fighting with great valour and with the backing of the most sophisticated weapons, exported by the Soviet Union carried out the enormously difficult task of crossing the Suez Canal. The Israelis were nevertheless able to overcome an enormous tactical disadvantage, knock out their enemy's air defence system and finally to trap and threaten with annihilation one of his armies and render the other ineffective.

Most observers of the time noted that the Soviet Union called for the intervention of the United Nations only when it became obvious that the Egyptians had again been beaten.

* Reprinted from *The Canberra Times*, Fri 13 Apr 76 with permission.

Herzog is justifiably proud of the achievements of the forces with which he once fought but is not blind to the very real faults which allowed them to be so seriously disadvantaged in the first place, of initial vacillation and ineptitude.

In particular he is critical of the Minister for Defence, and Israeli folk hero, the flamboyant, eye-shielded (and former AIF officer by secondment) General Moshe Dyan, who engineered the 1967 victory. Instead of the strong, almost omniscient figure of the popular prints Herzog presents an indecisive interfering bureaucrat whose advice, had it been followed, could have led to military disaster. ☞

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THE INDIAN OCEAN AND THE THREAT TO THE WEST, FOUR STUDIES IN GLOBAL STRATEGY, edited by Patrick Wall, London, Stacey International, 1975.

Reviewed by K. I. Taylor

Editor, Army Journal.

“THE problem of writing an account of contemporary history is to know when to stop.” Thus Patrick Wall introduces the last chapter of the book, updating the preceding chapters.

For a book published in 1975, that is before Angola, Timor, and the latest events in Rhodesia, and at a time when Labor Governments were firmly established in both Canberra and Wellington, the text is still remarkably current. This has been achieved by capable writing and a great deal of wise foresight on the part of the contributors, which, in the light of events, enhances their credibility.

The book is divided into five chapters: an American view by Anthony Harrigan, a former newspaper editor and author of several books on military and national affairs; a West European view by Patrick Wall, an ex Royal Marines officer and a Conservative MP for over twenty years; Middle East factors, a paper by the London-based Institute of the Study of Conflict; an Australian view by W. A. C. Edie, former Senior Research Fellow at the Department of International Relations, Australian National University; and a concluding chapter on recent developments, again by the editor, Patrick Wall.

It is concise (180 pages), readable, and has clear and explicit maps which cover aspects of Africa and the Middle East from the European withdrawal since the early post-war years to Soviet and Chinese diplomatic presence and the Soviet intelligence services representation.

The Glossary and Index are useful, but one would like to have seen some reference to one puzzling abbreviation -mbd, which no doubt an economist would immediately understand as "millions of barrels a day". A bracketed note at the first mention would have saved the layman irritation.

The book is well produced in clear print on good quality paper. Why then has it been spoiled by bad type setting? In several places the lines are uneven or not parallel, another unnecessary irritation for the reader.

The editor has chosen his contributors with care to put over his argument — that there is a very serious threat to the oil supplies of the West from principally Soviet influence in the area, a threat of blackmail rather than a complete denial of supplies. Anthony Harrigan argues for an increased US naval presence, citing Berlin and the Mediterranean as places where even token Western forces have deterred Soviet ambitions. The Institute's Paper sets out very clearly, and with commendable objectivity, the threat on the western shores. Mr Adie deals authoritatively with the eastern.

The Chinese presence is seen by all contributors as being an economic one, an attempt to assume moral leadership of the Third World, the bulk of which borders the Indian Ocean, and a counter to Soviet ambitions. If the West fails to see the threat posed by the Soviet Navy, China has no such doubts.

This book will add strength to the arguments of the already converted. Whether it will convince the undecided is a matter for conjecture. A chapter by an eminent advocate of the "other side" would have added credulity and purpose to the excellent arguments so clearly put forward. ☞

Those readers wishing to obtain a copy of ARNHEM — A CASE STUDY reviewed in the April Issue should be able to do so through Collins Wholesale Book Depot, 115 Elizabeth Street, Melbourne.

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PLUS CA CHANGE . . .

We trained hard — but it seemed that every time we were beginning to form up into teams, we would be reorganised. I was to learn later in life that we tend to meet any new situation by reorganising, and a wonderful method it can be for creating the illusion of progress while producing confusion, inefficiency and demoralisation.

Attributed to Gaius Patronius, AD 66.