AUSTRALIAN ARMY JOURNAL

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SINGAPORE, February 1942. Smoke from the naval base overshadows the doomed city, which fell to the Japanese Army on 15 February, after a seventy-day campaign. It was a heavy blow to the prestige of British arms. In this period the Japanese, far more flexible in their tactics than their opponents, advanced a distance of 650 miles at an average rate of nine miles a day. The 8 Australian Division entered the battle in the last 150 miles of the Japanese advance. The casualties among the defenders totalled 138,708 of whom more than 130,000 became prisoners.

Photograph: Australian War Memorial.
Viet Cong Tactics

Major I. D. McFarlane,
Royal Australian Infantry

IN this article I propose to present a picture of the Viet Cong soldier as 1 Battalion, Royal Australian Regiment, found him during the battalion's tour of operations in Vietnam during 1965-66, to provide illustrations of his tactics, and to describe some tested countermeasures.

The intensity of 1 RAR patrol activity during this period resulted in a preponderance of patrol contacts and few company or larger-sized actions. It was not until 1 RAR arrived in Vietnam that Australian tactics, though taught, had been practised on any worthwhile scale. Consequently the Viet Cong was unfamiliar with them, and appeared to avoid deliberate contact with Australian forces for this reason. Those engagements which occurred appeared to have been chance contacts only; in fact clashes between 1 RAR and the Viet Cong were of the nature of encounters between one guerrilla force and another, were more dangerous to the Viet Cong and far less attractive from their point of view than the less actively patrolled Allied bases and positions.

The Viet Cong Soldier

For ease of reference, it has been customary to categorize the Viet Cong into three groups:

- Local Force—local guerillas
- Mobile Force—regional forces
- Main Force—conventionally formed military units employed on a national scale.

In practice, however, it was difficult for 1 RAR to decide to which of these categories Viet Cong, killed, wounded or escaped, belonged. The normal means of visual indentification was by dress, equipment and arms, but these were so diversified, even in confirmed Main Force units, that it was not until captured documents were translated or prisoners interrogated that categories could be confirmed.

Major McFarlane graduated from the Royal Military College in December 1954 and was allotted to the infantry. He was a platoon commander with 1 RAR in Korea in 1956-57, adjutant of 6 Bn The Royal Melbourne Regt (1957-60), Staff Captain Q GHQ FARELF Singapore (1960-62), and a platoon commander and later 2 i/c 1 SAS Coy (1962-64). Afterwards he rejoined 1 RAR, serving throughout that battalion's tour of duty in Vietnam as OC B Company.
Main Force soldiers were usually better and more uniformly armed and equipped, but this was not always a reliable guide as many confirmed Local or Mobile Force soldiers also were fully armed and equipped with Russian or Chinese weapons. It is therefore not always possible to relate enemy tactics and habits to one particular group.

Much has been written about the fanaticism of the individual Viet Cong soldier, but this did not always tally with 1 RAR experience; in fact those Viet Cong encountered could be categorized as follows:

- **Hard Core Fanatics.** These must have existed but were not captured by 1 RAR.
- **Professional Soldiers.** These were politically well indoctrinated and probably trained in North Vietnam, but on capture and without coercion usually volunteered precise information about the locations, strengths and personalities of units. Though at first apprehensive, on several occasions they appeared relieved to have been captured and even offered to fight against the Viet Cong with the GVN. This category included a Main Force NVA company commander and a company political commissar.
- **Adventure Seekers.** These included young lads (the louts and hooligans of other societies) after a thrill and happy to play at soldiers and shoot at the local garrison from a safe position, but anxious to surrender and disclose all they knew once they discovered the game was more dangerous than they expected.
- **Conscripts.** Young lads who had been abducted and indoctrinated until they remained voluntarily with the force. This type generally had no option but to serve with the Viet Cong as his hamlet or village was under Viet Cong domination. Frequently he appeared only too anxious to avoid contact, yet was reluctant to surrender because of probable Viet Cong reprisals against his family.
- **ARVN.** In some areas (e.g., Ben Cat) Viet Cong “two timing” as ARVN, were encountered but not captured.

**General Characteristics**

The individual Viet Cong soldier proved brave and aggressive when he had set the stage, but a reluctant soldier when surprised or on equal terms with his opponent. The indoctrination the Viet Cong soldier has undergone about his superiority and his ability to dominate all territories he inhabits, appears frequently to result in careless, even foolish, security and movement, and surprise actions have therefore had outstanding results.
VIET CONG TACTICS

With rare exceptions, Viet Cong killed or captured by 1 RAR were found to be carrying documents, either military or personal, surrender leaflets, commendation certificates and inevitably a wallet of photographs—of the bearer, frequently armed and in uniform, and of other male and female companions. His small arms usually included:

- Mauser bolt-action rifles
- M1 or M2 carbines
- K47 assault rifle
- Chicom bolt-action rifle
- Russian semi-automatic rifle
- Browning automatic rifle
- .45 pistol (worn by officers)
- Grenade projectors
- Grenades of most makes
- Thompson SMG
- French SMF.

Viet Cong Tactics

1 RAR took part in operations in the Binh Long, Binh Duong, Phuoc Thanh, Phuoc Tuy, Binh Tuy, Long Khanh, Bien Hoa, Hau Nghia and Phuoc Long Provinces. No pattern of Viet Cong tactics was confined to any one province, apart from that imposed by differing terrain. For example, Hau Nghia Province is generally swamp interspersed with canals, and its main crop is sugar cane; this differs from War Zone D in Bien Hoa-Phuoc Thanh Province, which is basically jungle and flat.

Base Camps and Headquarters

As a general rule the Viet Cong established base camps, cadre headquarters and such like in jungle under the canopies of tall trees. Patches of tall, dense timber, particularly when surrounded by bamboo, were always suspect. Tracks leading into camps were rarely visible from the air. In 1 RAR experience, however, at least two tracks led into camps and both were covered by at least one well-concealed weapon pit or bunker (sometimes built into ant hills from the rear or with a short underground tunnel) about 40 to 50 metres from the camp perimeter.

Frequently a once well-worn track had part-cut but still growing branches felled over it both as a means of concealment from the air and to impede entry on foot. This was usually a good indication of a nearby camp. If there was no new track around these fallen branches, the camp entry or exit tracks would be found elsewhere, perhaps only lightly used. Booby traps were likely on the sides
of obstructions and panji pits or patches might be found between the sentry bunker and the camp. Nowadays panji pits will rarely be newly constructed, as local production of grenades has relieved the Viet Cong of the shortage of simple booby traps.

The camp itself was usually found to consist of a perimeter of continuous trench with small unreinforced bunkers cut into the outer edge. Within the perimeter there might be huts, sometimes partially dug in or with bunkers in the floor, or there might be room for transit parties to erect shelters and hammocks, with small cooking spaces (cooking bricks and firewood) distributed around the area. Usually more pits or bunkers would be found inside the perimeter and the sophisticated dug-in cookhouse with smoke-draught tunnels might also be seen.

The huts had either tin or thatched roofs or a combination of thatch or branches over the tin. Trees overhead were frequently tied together to bow the branches over the roof.

There was usually a small rice cache, fowls and a well. In the scrub on the edge of the perimeter carefully hidden small caches of water, rice and personal effects were frequently found.

Such camps were usually defended by not less than three men who might have a DH 10 mine set up to cover the likely approach. The defenders generally did not fight hard.

Documents, ammunition or toothbrushes which were a good indication of the regular strength of the camp, might be found tucked into the thatch or rafters of the roofs of huts. If huts were burned care was taken to avoid exploding ammunition and grenades.

Frequently the location of camps was disclosed by the sound of chopping or of fowls, or by the smell of food or smoke. Fowls were not always a reliable indicator because of the number of wild or native fowl which inhabit jungle areas.

On locating a camp every effort was made to circle round and position a cut off group on its opposite side, but because the shape of the camp was not known or the complex was too big, the probability of this element becoming involved or being seen had to be considered. If movement through the growth about the camp was likely to prove noisy or if time was short, stealthy movement into the camp was an alternative. At Ben Cat in Binh Duong Province, for example, a section moved into the centre of a platoon camp undetected and opened fire on the Viet Cong who were cooking, sleeping and so forth. Needless to say Viet Cong confusion reigned supreme.

**Headquarters Complexes**

The major headquarters complex encountered by 1 RAR was in the Ho Bo Woods area of Binh Duong Province. The headquarters
area itself was located on the edge of an open field surrounded by open trenches and consisted, besides the tunnel system, of two large concrete-faced bunkers with tin roofs and short tunnels leading off them into weapon pits and, in one case, to a nearby house.

Surrounding these tunnels and bunkers were a series of underground caches. These were very cleverly constructed and concealed. Initially several were found by accident (for example, by a soldier looking for soft ground to dig a latrine). Thereafter they were found by deliberate probing. A variety of covers were used on these short tunnels or holes (e.g., tin dishes filled with earth and growing plants; concrete slabs with sticks set in the cement; wooden trapdoors recessed to hold earth and plants; wooden covers with three to four inches of earth on top). The only indications were by probing or tapping the ground to discover hollow echoes. There were no set tracks leading to these caches. One indication, however, was a nearby mound of earth. One sophisticated wooden trapdoor had wires leading through the lid to grenades wrapped in plastic secured to trees nearby at about ten feet from the ground. The splay of the pins on these grenades had not, however, been closed and the wires had broken without moving the pins. Documents captured in this area had warned Viet Cong commanders to ensure that everything was ready to meet the expected enemy. Failure to close the pins is typical carelessness.

On the edge of the open field were two well-camouflaged bunkers. One of these bunkers had slits on three sides at ground level reinforced with wood, top and bottom. The slits were wide enough for a rifle barrel only and were three feet long. When a Viet Cong sniper was discovered inside one of these, the slit was found to be too narrow to permit the entry of a grenade, and small arms fire into the bunker was not effective. When a soldier began digging down through the top of the bunker, the Viet Cong pulled wires to activate booby traps; the pins on these, however, were still splayed so the wires broke. During the night the Viet Cong, although wounded, escaped by means of a tunnel running from the bunker for some 500 yards.

Inside the main tunnel complex were vast quantities of weapons, including three 12.7mm anti-aircraft machine guns, clothing, documents and equipment.

Tunnel clearance on a scale such as this presented enormous problems. The use of seismograph equipment to locate the direction of the tunnels so that regular air vents could be dug, plus the use of portable mechanical post hole diggers would have greatly facilitated the task. Pistols and battery lanterns were needed by the tunnel workers. Special dogs, accustomed to working in tunnels, were available from the ARVN and should be used on a lead wherever possible.
Where entrances and exits could be found, CS gas can be used to drive out Viet Cong still inside. However, where several levels existed, this was not effective, and when smoke or smoke and CS were used this had to be expelled before searchers could enter the tunnels; asphyxiation even with gas masks can occur from lack of oxygen.

Lower level trapdoors were frequently hard to find and could be anywhere in the top level tunnel. They were usually an air-tight fit and too small for normal Caucasians to use with ease.

There was little alternative to digging out bunkers so well constructed as the one described. M72s were used with no real effect because of the inbuilt inaccuracies of the weapon. A satchel charge or a bore-shaped charge if available would have been of benefit. Flame would have been quickest, safest and most effective. Any retaliatory sniper fire would not occur until last light when counteraction would be hampered by near darkness.

**Rice Caches**

Rice and salt caches were found in profusion by 1 RAR. Most Viet Cong camps had small caches, but the largest were well away from VC camps although close to bullock cart or motorable tracks. From these main tracks, narrow foot pads, frequently overgrown, led to the larger caches. The caches were normally under large trees, and had a thatch-covered tin roof. Great care was taken in the siting and in bowing saplings over the roof, and they were rarely visible at distances greater than 10 to 20 yards.

Where one cache was found, the area was closely searched as they were rarely, if ever, established singly. The caches were of two types: bulk binning in wooden bins set off the ground with a capacity of 500 cubic feet, or in bags also set off the ground. One cache might contain as many as 400 bags. Whether in bins or bags, these caches or their approaches were frequently booby trapped and had to be examined with great caution. A mine detector was invaluable. A common VC ruse was to place a grenade within the bag with the pin or tape secured to one ear of the bag. On lifting the bag the grenade detonated. These were found both in torn and untorn bags.

The Viet Cong were normally handy to caches, and when the work of demolishing or extracting the caches took more than one day, ambushes, fresh booby trapping or the laying of CD mines were to be expected. When troops had to be withdrawn overnight, the use of night harassing fire, preparation by artillery or mortars before returning next day, the use of indirect or different approaches, and increases in strength generally discouraged Viet Cong reaction or lowered his morale so that after contact he withdrew until his superiors had regained control and boosted him up for the next day's attempt.
Itinerant Viet Cong

Viet Cong Intelligence networks are frequently over-rated. On numerous occasions after ambushes had been laid by 1 RAR on tracks and track junctions on the first night of our arrival in an area, enemy parties have carelessly strolled down the tracks with weapons slung and talking. North of the Bombard villages in Phuoc Tuy Province, one such party, led by an officer, walked into a 1 RAR machine-gun post covering the main road. The officer (a company commander of a NVA battalion) was captured unhurt. He explained how his party had moved 10,000 metres that day and did not know of the helicopter insertion of 1 RAR and 161 Field Battery RNZA at that point. He had passed through a village 2,000 metres to the north of this position.

Viet Cong Battle Intelligence

During operation ROLLING STONE, in Binh Duong Province east of Ben Cat, which involved the defence of divisional engineers who were rebuilding a road and had been engaged in this task for some weeks, the engineer camp complete plus 1 RAR moved to a position about 1,500 metres from brigade headquarters. On the night of the move, a Viet Cong regiment attacked the brigade headquarters. Before the attack was mounted, lights, both moving and stationary, were seen about 400 metres from the battalion perimeter. Later one arm of the three-pronged attack passed about 900 metres in front of the battalion perimeter.

During the attack a party of three Viet Cong walked into a 1 RAR section ambush commanded by Private W. Brunalli, which was 300 metres towards brigade headquarters. The Viet Cong were killed or dispersed. About two hours later a further party of ten was engaged at the same place by the same ambush, and as the ambush commander halted his fire a further party of ten Viet Cong entered the ambush area and were engaged. At this stage the ambush section was ordered to return to its company; it was followed by one Viet Cong who attempted to engage the patrol (which had halted) in conversation. This man also was killed.

Viet Cong captured by the brigade stated on interrogation that they had moved 20,000 metres that day and night and did not know who or where they were going to attack. They had no idea that there were tanks to be engaged. Some interesting aspects of this attack are:

- The distance the Viet Cong force had moved in a short time.
- The lack of pre-battle briefing, even though Main Force.
- The confusion in the minds of the Viet Cong who, despite the ambush, did not at any time open fire and in fact even attempted to talk to the ambush patrol.
The proximity of one staging area (lit by lights) to a fairly noisy engineer camp.

- The ease of co-ordinating small ambushes.
- The effects of a cool head, good fire control and surprise.

**Viet Cong Mortar Fire**

It was common practice in Vietnam to engage with harassing fire by night likely approaches and forming-up places, both close and in depth. If chosen with care such targets were of value and could inflict casualties. However, too frequently, the night silence was broken by artillery fire. The Viet Cong have been known to use the cover of the explosions of our guns to hide the primary explosion of their own mortars. Because of poor artillery co-ordination it was not possible generally to confirm this by stopping all artillery fire in the area.

During Operation ROLLING STONE some mortar fire (in 15-round sequences) fell in the engineer camp. Mortar reports from the 1 RAR company nearest brigade headquarters indicated that this fire was coming from brigade headquarters. Because of confusion at brigade headquarters this was not confirmed at the time; next day, however, it was proved that a Viet Cong 81mm. mortar had been located between brigade headquarters and the engineer camp. The Viet Cong had correctly assessed the confusion this would cause.

To save weight, the Viet Cong frequently carried the mortar barrel only. When the time arrived to use it, he dug a short hole in the ground, inserted a rock to absorb the barrel thrust, and used measured sticks to calculate elevation. On once occasion (Ho Bo Woods) Viet Cong mortar fire fell about 800 metres short of 1 RAR for a little over an hour. It did no damage and was finally engaged by air. There were no other friendly units in the area.

Viet Cong harassing mortar fire, unless associated with a ground attack, was generally received between 0400 and 0530 hours and normally in 10 to 15 round sequences.

As a counter-measure, likely Viet Cong mortar positions were selected, and as soon as mortar fire was received fire was returned on that bearing. If no pre-selected position existed, counter-mortar fire was produced on the bearing of the primaries at maximum 81mm. mortar range, dropping, if fire continued, 100 yards at a time.

This was immediate action only and as soon as mortar reports were received, accurate counter-mortar fire was delivered. Each soldier was trained in detecting primaries and a compass was available with each sentry so that he was able to report all suspect fire.
Snipers

Snipers encountered by 1 RAR could be divided thus:

- Casual sniping by itinerant Viet Cong seeing a worthwhile target on the ground or in the air.
- Deliberately placed snipers with telescopic sights covering likely approaches, who selected commanders, signallers and others who appeared by their actions to be key personnel.

Frequently the casual sniper was rendered ineffective by the Viet Cong practice of refilling ammunition, which resulted in split barrels, fall shorts, or low penetration hits. Shots were sometimes heard which were not directed at friendly troops, but were close by and definitely Viet Cong. 1 RAR believed that these were either warning shots or the actions of a not so brave Viet Cong who, based on the firing, would later be able to relate the score of his kills to his comrades.

The deliberate sniper usually operated from entrances to tunnel systems or from trees, with an accomplice at the back of the tree, and so harnessed that after his shot he swung back behind the tree trunk.

Where the precise location of the sniper was not known M79 grenades frequently managed to dissuade him from further activity. On encountering effective sniper fire, retaliatory fire was immediately returned if this did not prejudice security by revealing the size of the allied force.

The high incidence of head wounds from snipers indicated the need for effective face camouflage. Commanders tried also to avoid walking along using maps or radios and to avoid disclosing their authority by the weapons they carried. Radios were concealed as much as possible. One method used by 1 RAR was to wear the WS 25 in the large version of the 58 pattern combat pack. The aerial then lay along the back of the operator. Handsets and cords painted green to blend with clothing would have been an advantage.

Use of Watercourses

The Viet Cong made great use of rivers and streams for the transportation of personnel, rice and other supplies. Rapids were not an important consideration as they were frequently passable, at least during the wet season.

The Viet Cong was found to lay up his sampans either by sinking them or camouflaging them in what might, in the dry season, become dry re-entrants. His landing stages were built either above or below the water level and under heavy tree overhang. He was known to use up to 5 horse-power 'trail shaft' outboard motors on his sampans, and frequently swam large groups across rivers.
1 RAR found that careful searching of river banks was usually profitable, and the use of a boat party and a paralleling bank party provided suitable security. Special attention had to be paid to junctions, heavy overhangs, bends, spits, ridges (his tracks frequently run along ridges, especially if he has vehicles) and dry or wet re-entrants.

First night ambushes were frequently successful, but care had to be taken to ensure that illumination if used was located low and did not cause damaging reflection off the water. The Viet Cong tended to move in the centre of the stream at night so that the range of engagement could be up to 200 metres (many rivers are between 400 and 800 metres wide). Grenades exploded underwater will cause great casualties to swimmers through concussion effects on vulnerable parts of the body.

**Casualty Evacuation**

The Viet Cong went to great pains to remove their casualties, both dead and wounded, from the scene of an action. They were known to use wire loops around the casualties' feet or cloth straps around the body (cf., the origins of the Scarlet Sash worn by sergeants of line regiments). They also used locally made meat hooks. Unless secured immediately, bodies would quickly disappear and only when surprise and demoralization were absolute were they likely to be found. This practice has been pursued to the length that Viet Cong graves have even been emptied soon after a unit evacuated an area.

Troops had to be made aware of this practice so that they did not begin to doubt either their marksmanship or the effectiveness of their weapons. Blood trails had to be followed fast; where a trail stopped the surrounding scrub was combed because that was usually where first aid was being rendered.

**Radio Interception**

Transistor radios were frequently found in the possession of Viet Cong or suspects. Many of these were specially modified to pick up VHF frequencies. Care had to be taken not to move the tuning knob, since this enabled the appropriate investigating authority to determine the frequencies.

Special care was also needed when working with allied units, who frequently sent unit identifications, frequencies, plans, and so forth in clear. The following message, for example, was sent to one sub-unit by his company commander:

You should be in 1 Battalion, that is the Australians' area soon. When you get there make contact with Charlie Company but don't hang around because they will have a platoon ambushing the rice cache tonight. If you can't make contact with them their push is on 52.3.
Some feeble efforts at jamming were experienced, but not sufficient to cause extended concern.

From time to time WS 25s have been captured by the Viet Cong and must be being used both for interception and transmission.

**Use of Tracks**

As mentioned, the Viet Cong use tracks for most of their movement. In 1 RAR's experience, even after contact they preferred to retreat along a track. It was usually sound practice after contact to engage tracks and, in particular, track junctions with artillery or mortars (taking time and space into consideration) as such junctions were frequently used as RVs. Considerable casualties were inflicted in this way (at Ben Cat, for example, ten Viet Cong were confirmed killed and fifteen wounded after one engagement).

In Phuoc Long Province old tracks were followed for some thousands of yards without result. A platoon checking a creek line met freshly cut tracks leading into the area bounded by the old tracks. These new tracks did not meet the old ones, but carefully concealed single pass tracks were found linking the two. To a careless observer this area would have appeared clear of Viet Cong because of the old tracks having fallen into disuse.

The Viet Cong employed many signs on tracks in the form of small concealed pyramids of sticks, porcupine quills, pieces of tin foil and bent branches. These were usually local signs, and were not satisfactorily deciphered by 1 RAR. Destruction or disruption of them must, however, have caused some confusion.

**Command Detonated Mines**

The Viet Cong made frequent and widespread use of Command Detonated mines. These varied in size from the locally made DH 10 Directional mine or the U.S. Claymore to Command Detonated artillery shells or grenades. While he normally employed CD mines to cover tracks, he was also known to lay DH 10 mines on the perimeter of an allied sub-unit and to fire it when there was maximum movement within the perimeter. The DH 10 mine was usually laid about 30 to 50 yards from the road or track in order to make maximum use of the wider spread at that range. He frequently used a light-green two-pair electric cable and ten 1.5-volt torch batteries, fitted in series in a bamboo splint, to initiate the charge.

When APCs were used in the area, the Viet Cong sometimes set his mines (including 90mm. rockets) at a level with the top of the APC. Culverts were a popular site for shells, bombs or locally made HE charges. CD mine operators were often 300 to 400 metres or more away from the mine.

As a counter-measure vehicles were driven at maximum safe
speed consistent with the composition of the convoy. This particularly applied when crossing culverts or bridges, the approaches to which were usually in poor repair. This forced the mine operator to estimate the detonation to the split second.

Troops usually travelled inside the APC with only an M60 gunner, M79 handler and the section, platoon or company commander (besides the vehicle commander) showing any portion of their bodies. While there is some evidence that should an APC hit an underground mine, those inside the vehicle will be badly injured while those seated on top may be thrown off and only slightly hurt, underground mines were less common in 1 RAR experience than ground mines or booby-traps. It was found dangerous for single vehicles (including APCs) to move along unsecured roads or tracks even though a heavily armed convoy was preceding or following it, and they should never halt on bridges or culverts even though surrounded by foot troops. If a mine is exploded the operator is likely to escape in the ensuing confusion.

A belief which arose that a tank or APC moving along the verges of a road would tear up or break CD mine cables proved erroneous. The cables were usually well buried and could only be found by the dangerous and exhausting procedure of examining the road shoulders, culverts and suchlike on foot with probes and wire cutters. Mines were sometimes fitted with anti-lifting devices.

Infantrymen moving on foot were required to treat laneways in scrub, track junctions, and clumps of dense scrub or bamboo on the sides of tracks with special caution. When casualties were caused by one CD mine, the party moving to their aid were also likely victims as CD mines were often sited in pairs or more and accompanied by snipers.

Nothing of any value was allowed to fall into Viet Cong hands. All discarded tins, cable or other materials of possible value were made unserviceable. All blinds were blown and artillery or mortar smoke or illuminating projectiles destroyed.

**Viet Cong Vehicles**

The Viet Cong were known to use 3-ton and 4-ton trucks captured from rubber plantations or other places, and treated with camouflage paint and head-light masking, on back roads dominated by the Viet Cong in the Phuoc Thanh Province. Tractor and bullock cart tracks were frequently found near rice caches. Tractors were in regular use in rubber plantations and eight booby-trapped bullock carts were found well hidden in jungle near Binh Ba in Phuoc Tuy Province.

In Binh Duong Province a track was followed for 3,000 yards into jungle to reveal a herd of about 50 water buffalo. Scrape
marks on the scrub lining the track indicated that these animals had recently been wearing harness. The track was about 30 inches wide.

Between Xuan Loc and Courtenay in Long Khanh Province, excreta, torn trees and harness scrapes at 6 to 10 feet high on trees, grease marks on trunks and footprints, indicated that elephants had been used in that Viet Cong dominated area. The effectiveness of M72 launchers against elephants was not assessed.

**Dogs**

Dogs have frequently been seen in the company of Viet Cong soldiers. On several occasions dogs approached 1 RAR positions and then ran away, followed shortly afterwards by small parties of Viet Cong. It was not possible to assess whether these occasions were a result of coincidence or whether the follow up was deliberate. However, in 1 RAR experience, stray dogs in the jungle should be captured or, if circumstances permit, silently killed.

**Reprisals**

Viet Cong reprisals generally took the form of a reaction against civil aid programmes or were the outcome of a real or imagined breach of confidence. Only one example of a reaction against a civil aid programme was experienced by 1 RAR, and that was at a New Life Hamlet in 1 RAR tactical area of responsibility at Bien Hoa. Over a period of some nine months, aid in the form of medical and dental treatment, rice, flour and clothing handouts and the construction of a schoolhouse had been carried out. The hamlet, previously anti-government, had become pro-government and was passing on minor information about the Viet Cong to the District Chief. Viet Cong activity in the area had dwindled to minimal proportions when one night a platoon of Viet Cong crossed the Song Don Nai and attacked an outpost of nine men. A small group went to the Hamlet Chief's house and advised the locals there that they intended to kill him. Meanwhile the chief, wisely deciding that discretion was the better part of valour, had retired to the jungle. The outpost ambushed and repelled the main force and inflicted some casualties, including two killed and left behind. Despite this victory the Hamlet Chief thenceforward normally spent his nights elsewhere: the hamlet's pro-government sympathies, however, persisted.

In the second case of reprisals, 1 RAR occupied for about three weeks a village in the Long Khanh Province. During that time a strong Viet Cong cadre was pinpointed by village informers and captured. When 1 RAR left, an ARVN force took over the village. Some four months later a strong force of Viet Cong attacked and overcame the ARVN and razed this village of 3,500 people to the ground. Although this was obviously intended as a lesson to
neighbouring villages, and units embarking on future operations in this ‘rice bowl’ area may not experience the same degree of cooperation as that enjoyed by 1 RAR, such ruthlessness is likely only to engender hatred of the Viet Cong among the neighbouring villagers.

**Conclusion**

Obviously not all the Viet Cong tactics have been mentioned here. In particular no mention has been made of his technique of mass attack. Only those tactics encountered by 1 RAR have been discussed.

Although this paper has shown the Viet Cong in a poorer military light than much of the popular information available in Australia, it was not the intention to convey the impression that he is a bad soldier. He has many failings, but at the same time he has many attributes which he who makes an error has a good chance of experiencing.

Most of the Viet Cong successes, however, have been a result of poor allied leadership, unsound tactics, lack of aggressiveness, poor patrolling, broadcasting positions and directions of movement by noise and prophylactic small arms fire and bad self-discipline. Infantry Training, Volume 4, has not yet been superseded.

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**JAPANESE TACTICS**

No new tactics were employed by the Jap during this operation. He again demonstrated his ability to select the best ground for defensive positions and his willingness to fight to hold this ground. It is considered that his greatest failing is his lack of initiative...

In distinct contrast to our troops, the Jap makes no attempt to develop an area by putting in tracks, steps and corduroy to improve living conditions. He is apparently content to live like a rat in a hole and, when forced, to fight like a rat to the death. It is considered that this lack of development results in a mental attitude which causes lack of initiative. He has no tracks, therefore he does not patrol between his localities. This allows infiltration and attacks by our troops.

— 15 Brigade, Report on Operations, 1 Jan to 30 Apr 1944.
Australian Army
Anachronisms

Major M. R. Ramsay,
Royal Australian Corps of Signals

SHOULD an army reflect the society from which it springs? Ideally it should embody the best national traits; its officers should be in the van of national intellect, its soldiers resourceful, confident and respected in the community.

History provides many an example of divorce between an army and its nation. In times of peace an army can become introverted; a deadening lack of challenge can stifle progress in petrified conservatism. The other divorce party, the community, which spurns the army because of its dullness and petty concern with its own affairs, later finds that there is a mediocre and inefficient array of soldiery to meet a usually well-prepared enemy. Results in war following such a peace can be disastrous.

France in 1914 is a prime example. For many years an incompetent officer corps had been too conservative to learn anything of new tactics in the several minor wars near the turn of the century, or to learn anything of the new technology which had produced devastating new fire-power. Its soldiers were regarded as the dregs of French society. There is no doubt that these were the basic reasons for the lack of fighting effectiveness in the French Army at the outbreak of World War 1.

The British Army became estranged from the community in the years before the world wars. Breeding before brains was the officer rule, while the soldier was a loafer in the eyes of the citizen. The results were evident at Dunkirk.

But who are we in Australia to criticize? Probably the Korean War saved the Australian Army from drifting into similar doldrums in the 1950s; the present fighting in Vietnam is making our people aware that the Army has a job to do; but the danger of divorce will constantly recur if the relationship with the community is not continually tended.

Does our Army reflect the best in Australian Society? In many fields it is not doing at all badly.

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In the last few years some attempt has been made to inform the community on Army activities in areas of interest to Australia; the army has been prominent in civil emergencies, such as floods and bushfires; it has encouraged officers in tertiary study and insisted on a reasonable educational standard for soldiers; it has instituted commissions for the best of the national servicemen, a step which will result in two-way benefits as between Army and community. There are many other examples.

The Army, however, does reflect some of the less desirable community traits, and these combined with anachronisms will tend to reduce respect for the Service, hold it to ridicule and separate it from the community whose support it must have.

Most of these anachronisms result from the old imperial ties and the strong British influence in our tiny permanent forces right up to the outset of World War 2. Practices and traditions which were appropriate in the early post-federation period are outworn and ridiculous in the eyes of the younger generation. Instead of strengthening respect for the bonds of the British Commonwealth they weaken it.

The young soldier finds that his attestation consists of taking an oath to resist the Queen's enemies. He then reads in his newspaper that the Queen's Government in Britain is lukewarm about the enemy he is committed to fight at the moment. The oath is a serious matter, and surely he should swear to resist Australia's enemies. The average soldier, particularly the new Australian, who now represents about 10 per cent. of our community, is not interested in the paradox of one person representing two governments which often have conflicting views.

Ceremonial occasions present another paradox to soldier and onlooker alike. The Queen's colour is trooped, but where are the stars of the Southern Cross, under which were born the hundreds of thousands of Australian soldiers who made the Australian fighting tradition? Surely if we must have a Queen of Australia—the title an act of our Parliament confers on her—it is the Australian flag which should be her Colour. Tradition and ceremony have but one military purpose—creation of morale—yet we thoughtlessly cast aside our best traditions for those of others. To the community such practices are the expression of curious military nonsense.

Issue of 'blues' to our soldierly in the 1950s was an example of an army out of touch with the community. Perhaps we were trying to imitate the American Marines or the British Guards; the net result was a waste of public money on a uniform which no soldier would wear because of the jibes of civilian friends.

Efficiency is a duty in any activity where public money pays. It is doubly a duty in the Army where inefficiency may mean loss of
lives. Yet have we considered adopting a system of appointment
titles that are understandable to our most likely allies in battle; and
which do not drive typists to distraction in jumping from upper to
lower case and back? There are simpler ways of titling a deputy
assistant adjutant and quartermaster general!

It is interesting to note that when we do make some attempt
at abbreviating these grandiose titles, it is always the A for
Australian which disappears. Perhaps a CR Sigs is more respect-
able than a CA Sigs or a plain Sigs I. Matters of greater moment
could receive more attention at RMC, OCS and the Staff College if
less attention was devoted to remembering that CRASC (not
CRAASC) presides over HQ CRAASC (not HQ CRASC)!

Resistance to sensible change in our Army is probably conditioned
by half-baked attempts in the past, where we have been too timid
to cut apron strings and strike out on new lines of our own. The
pentropic organization, heralded as an all-Australian triumph, but
in reality a copy of an American idea, failed because it was a
copy, not a soundly reasoned original idea devised to meet our own
requirements. In design of equipment we have too often tried to
rebuild someone else’s work; in design of uniforms we have often
made garish copies of overseas ideas, apparently without having given
our own skilled designers the chance to produce something better.

Perhaps one day we will see warrant officers wearing instead
of the present highly coloured imitation of the British Arms, the
same beautifully executed design of the Australian Arms as appears
on the facade of the A.C.T. Law Courts.

In short we, as an Army, reflect that peculiar quirk of Australian
nature, that quirk which is so inconsistent with our tradition of
individual enterprise. It is the mystic belief that something that
comes from overseas must be better.

It would be a pity if we forgot that Australia has inherited many
fine systems and traditions from Britain, or that the United States
fought with us in the Pacific and halted the Japanese in the Coral
Sea; but it will ruin the Australian Army if useless anachronisms
are not discarded and the vital ingredient of independent thought
made paramount in our relations with our allies and with each
other.
Night Vision for Military Purposes

A. W. Pybus

Introduction

ORDINARILY our seeing process makes use of only that small portion of the electromagnetic spectrum to which our eyes are sensitive. We see by day because there is illumination in this spectral region, the atmosphere is transparent to this radiation, and this radiation can be detected by our eyes.

At night the lower level of natural illumination prevents good seeing, though the eye tries hard to improve its performance. What can we do to help our eyes to see, preferably without helping the enemy?

The search has proceeded along many lines. Some approaches have been partially successful, leading to the development of devices having military interest, but all have disadvantages and limitations. No device, available or contemplated, will turn night into day, nor is any single technique or device likely to be preferable to all others for all military requirements. To appreciate the reasons for the various merits and deficiencies we must have some understanding of the principles on which the devices are based. Though the devices now available and under development take many different physical forms, all can be grouped into a few classes following a few basic principles. We shall have a look at the classes now assuming most importance.

Artificial Illumination

The first class considered depends for its operation on the provision of artificial illumination. These are active systems, so called because we have to supply energy, we have to provide the radiation used. Of course searchlights and pyrotechnics have long been used in conjunction with the unaided eye, and unconventional ways of using these sources of illumination so that they may help us more than the enemy may be devised, but they have known limitations. The enemy is warned of our presence, even if he does not know exactly

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where we are. To improve security, we may use radiation to which the eye is not sensitive and devise a means of forming an image visible to our eyes. In choosing the part of the spectrum to be used we must have regard for the properties of our atmosphere, for it must be transparent to the radiation. It is not uniformly transparent to all radiation.

Gases absorb bands of radiation. Fortunately oxygen and nitrogen, the main constituents of our atmosphere, have no major absorption bands in the visible and infra-red, though water vapour and carbon dioxide do. Between these absorption bands are regions, called windows, where the atmosphere is more or less transparent. In figure 1 atmospheric transmission is plotted against wave-length. This transmission curve is for one particular amount of water vapour and is applicable to sea level. With increasing water vapour the windows narrow and have poorer transmissions. If we go to high altitudes the water vapour will decrease, but absorption due to ozone becomes significant, there being an ozone absorption band close to the centre of the wide 8 to 14 micron window. Now there must obviously be a window in the visible region. We see from the figure there are others in the near infra-red.

**Active Near Infra-red**

If we can provide a source of near infra-red radiation, and a
means of forming a visible picture with it, we shall have an active near infra-red system.

An ordinary tungsten filament lamp is a suitable source. The hot wire emits infra-red as well as visible radiation, and when a filter is used that transmits the infra-red but rejects the visible radiation we have an infra-red searchlight.

For many years fairly efficient detectors of near infra-red radiation have been available. One type of detector, called a photoemitter because it emits electrons when radiation falls on it, is used as the sensitive element of the infra-red image converter. It can be prepared in the form of a thin screen, and because of the function it has in the image converter it is called a photocathode. The near infra-red radiation from the searchlight is scattered back from the target and received by the imaging device. The radiation is focused by an optical system on to the photocathode from which electrons are ejected according to the intensity of the incident radiation. The electrons are given energy from an electric field and focused on to a phosphor screen at the other end of the tube. The phosphor emits light where it is struck by electrons and provides a visible image corresponding with the infra-red image formed on the photocathode. Tubes operating in this way were used in the Second World War. Those used in the infra-red sight on the Centurion tank are basically the same, though they differ in detail and have a better performance. Families of devices incorporating these tubes have been developed. There are individual weapon sights, or sniperscopes, handheld and helmet-mounted binoculars, tank kits consisting of searchlights, headlights, commander's, gunner's and driver's viewing devices, and a few types of infra-red detectors constituting warning devices.

These active near infra-red instruments have their limitations. The disadvantages stem mainly from the necessity for a source of radiation. There is the obvious disadvantage that if we are able to make infra-red imaging devices, any similarly advanced enemy can make detectors. Since our viewer must operate on the small proportion of the radiation scattered back from the target, and the enemy's detector can use the full beam of our searchlight, his device can be relatively simple. He can make it directional and so has our searchlight as a target. Though it has not proved as easy to shoot out a searchlight as might be thought, and though tactics can be developed to minimize the risk, it is understandable that a passive system is to be preferred. A second disadvantage is that the source consumes power, and this implies weight. Weight may not be a major handicap in some situations but it can, in others, be critical.
Thermal Imaging

Means of seeing passively by night have long been sought. One approach is to use the radiation that all objects, not at absolute zero temperature, emit. The hotter the object the more radiation it emits. When an object is sufficiently hot we see it glowing red, and eventually white. Evidently, as the temperature rises, not only is more radiation emitted but it shifts to shorter wave-lengths. We see on figure 2 that the curve for a hot body is everywhere above the curve for a cooler one, and that the wave-length at which the curve peaks shifts to the shorter values as the temperature rises.

Note particularly that for an object at about ambient temperature, that is about 300° Kelvin or 27° centigrade, the radiation curve has a flat maximum at about 10 microns wave-length. In fact it follows rather neatly the 8 to 14 micron window we have already seen in figure 1. We have, then, established that all bodies at about ambient temperature do radiate, and the atmosphere has a window in the appropriate wave-length band. All we need is a suitable image forming means and we shall have a passive infra-red imaging system.
There has been comparatively small research and development effort on thermal imaging. It has been along two lines:

(1) The optical-mechanical scanning system. Some type of optical mechanical system scans the field of view, and, in turn, focuses the elements of the field on to a small detector. The output from the detectors is amplified, and by TV-type techniques a picture is built up and displayed or recorded.

(2) The direct view system. The radiation is focused on to a screen composed of a material whose properties are in some way changed by the radiation. If it is an optical property that changes, the screen may be viewed directly; if the property is an electrical one, the screen may constitute the target for an electron beam scan, and again TV-type presentation is used.

In both cases the final product is a visible picture.

Some devices of the first type have been partially engineered but none has yet reached the stage of being a military equipment, except for airborne devices which scan in only one direction and rely on plane movement for scanning along the other axis. So far all, except possibly the single axis scan types, suffer from one or more defects. None has, simultaneously, the needed sensitivity, resolution, speed of response, light weight and simplicity of operation, and cooling with liquid nitrogen is needed. Far more work has been done on this type than on direct viewing devices. The latter are inherently capable of being smaller and simpler, but require the exploitation of more advanced technology to achieve this simplicity.

Beyond this atmospheric window there are no major ones until one comes to millimetre wave-length radiation, with radar and radio techniques which are not being considered here.

**Ultra-violet**

At the shorter wave-length end we come to the ultra-violet. There is an atmospheric window here, closing down towards shorter wave-lengths. In addition to absorption loss, there is loss due to scattering by particles — dust and moisture — suspended in the atmosphere, this becoming worse as one goes to shorter wave-lengths. The ultra-violet is not promising for general night vision purposes.

**Visible Image Intensification**

Having started in the visible and looked at other parts of the spectrum let us have some second thoughts about the visible region. Recently far more attention has been paid to making use of natural visible radiation for night vision purposes than to any other methods. The basis is that it is never absolutely dark at night. Those who have been under a dense canopy on a moonless night may very well dispute this, for if you are unable to see your hand waved in front of your eyes, there is no light for most practical
purposes. For some part of the time there is moonlight; if it is 
not overcast, starlight may give useful illumination. Even without 
stars there is sky glow. We seek to make use of this residual light.

The Services have for long done so, using night glasses to aid 
the eye. By the use of large area optics, with just the right degree 
of magnification, quite a useful gain in information can be achieved, 
but night glasses have limitations. Image intensifiers have been 
developed in an attempt to avoid these limitations. The image 
intensifier individual weapon sight, or small starlight scope, is one 
example:

Suppose the photocathode of the infra-red image converter is 
made to be sensitive in the visible region. In fact, photocathodes 
can be much more sensitive in the visible than in the infra-red. 
The emitted electrons may be given a great deal of energy from 
the electric field and therefore many photons may be emitted from 
the phosphor screen for each electron bombarding it. The image 
viewed on the screen can therefore be much brighter than the 
directly viewed scene; we have an image intensifier. The screen can, 
indeed, be quite bright but it does not necessarily follow that it 
contains more detailed information. Turning up the volume of an 
audio amplifier makes an orchestra sound louder, but does not produce 
any music not existing at the amplifier input. Similarly, the image 
intensifier does not present any more detail than is present on its 
photocathode, this being determined mainly by the size of the 
input optics. Appreciation of this limitation seems to be rather 
rare. It is beyond the scope of this article to prove the points, but 
it can be shown that the advantages of the image intensifier over 
purely optical devices such as binoculars are:

(1) that the field of view is not reduced when the ability to distinguis

(2) some improvement in sensitivity is possible because the photocathode can be more efficient than the human eye;

(3) an image may be discerned even when the brightness of the scene is so low that the eye, either unaided or assisted by a purely optical device, can see nothing. No purely optical device can provide an image that is brighter than the directly viewed scene.

Unfortunately the image intensifiers of which we have had experience do not have wide fields of view.

Photocathodes are not much more sensitive than the eye. Advantage (3) is a doubtful asset. Unless very large input optics are used the resolution at very low light levels is poor, target recognition range thus being short. Whether a bright image is an advantage or not depends on circumstances. It is easier to see detail in a bright image than in a dull one, but the bright screen causes the eye to lose its dark adaptation.
The Dark Adapted Eye

This account has mentioned only the main methods of particular interest to the Army. There are other approaches, and many modifications and combinations. A great deal of work has been done; it is evident that much more needs to be done. It is believed that better devices can be developed, but we should not reject means now available to us. Let us take a brief look at two of these.

First, our unaided eyes. In normal daylight we can see fine detail but only when we look straight at an object. We are aware of objects at which we are not looking directly, we can sense their presence over a wide angle; and if we want to see more detail, we can look straight at them. No night vision aid, available or likely to become available, allows us to do this. They have a definite restricted field of view. If an object is not within this, the observer has no knowledge of its presence and therefore cannot decide to take a better look at it. As illumination falls the eye tries to adapt itself to the deteriorating circumstances. This process of adaptation is a complex one. There is a rapid improvement over the first four or five minutes in a darkened room, and then a slow change, for most people extending over an hour or two. One of the mechanisms causing dark adaptation is that those very sensitive light detectors in the eye that enable us to see the presence of objects in the periphery of vision take over from the less sensitive type that are used when we look directly at objects. Objects too dull to be seen when the eye is directed straight at them, then become visible, though with poor detail. To take full advantage of dark adaptation a facility for peripheral vision must be developed. We are not naturally accustomed to using the eyes in this way, so training is needed. Personnel trained in peripheral viewing should be more effective in night operations.

Conventional Optics

The second means readily available to us is the purely optical device, binoculars and the telescope. We have earlier discussed the aspects in which these are theoretically inferior to image intensifier devices. We should not lose sight of their advantages. Binoculars are available, they are relatively inexpensive and the Services have considerable experience in their maintenance. We are by no means convinced that all has been done that could be done to improve their performance but they seem to be regarded as of little importance now that more sophisticated, more glamorous, but far more expensive equipments are becoming available. Binoculars at present available may not be as good as they could be, but they are worthy of being treated with more respect. It must be emphasized that their full advantages will be yielded up only to people trained in their use.
Conclusion

A contact lens to turn night into day is not a possibility within the foreseeable future. Available night vision devices can help us in various ways and better ones will be forthcoming, but all will have limitations of one sort or another. We should have a knowledge of these devices if we are to take advantage of them, but we should also make better use of our eyes and of relatively simple vision aids. Whether we use our unaided eyes or the most sophisticated equipment available, training is essential for successful exploitation.

A COMMON VOCABULARY

Significant changes in military terminology were introduced in the Eighth Army in late September 1942 when it was decided to bring into immediate use a common vocabulary for British and United States forces. Uniformity had been obtained, it was evident, by adopting American terms; to achieve it the veteran partners of the alliance had sensibly swallowed their pride and adopted the diction of an ally who might soon have to bear the main burden, but it was sad to see words and phrases that had become part of the everyday speech of soldiers removed with a stroke of the pen from a time-honoured military vocabulary. Thus, on 21st September, the 9th Division informed all its formations that the Zero hour for an attack would henceforth be known as H Hour, the day on which operations started would be D day, the day before D minus 1 and subsequent days D plus 1, D plus 2 and so on.

Later the rhythmical and whimsical British phonetic alphabet was replaced by the dull and dreary American one. ‘Ack’ became ‘Able’, ‘Beer’ became ‘Baker’; ‘Ink Johnnle’, ‘Monkey Nuts’, ‘Orange Pip’ — from which ‘O Pip’ became the colloquial term for an observation post — and ‘Uncle Vic’, to take a few examples were replaced by unimaginative substitutes. The anti-aircraft artillery, always known as ‘the Ack Ack’, should now by rights have been called the ‘Able Able’, but who could call them that? How difficult it was for battalions to bring themselves to call their Don companies ‘Dog Company’! Whoever would call the Toc O, Tare O, or even Tare Oboe?

— Barton Maughan, Tobruk and El Alamein (1967).
INGLEBUNGYL Range is an uninspiring place at the best of times. A wilderness of sandstone and bottle-brush, briar and low open scrub, crossed and intersected by numerous gullies, it lies roughly between Inglebungyl Camp and the sea, and forms part of that elevated wind-swept coastal plateau that so horrified the first settlers. And here the War Lords, who have a feeling, an affinity almost, for unpleasant places, sited the base area to support the Field Force, creakingly going about its lawful occasions in the mountains to the north.

Thus was formed the 'Complex' — a great area of about a mile and a half long by half a mile wide into which were stacked the ammunition, supplies, vehicles, workshops, hospitals, depots, units and some thousands of soldiers needed to maintain the fighting troops in the field. Scrub was flattened, roads were bull-dozed, marquees and huge canvas shelters erected, storage tanks for petrol established; kitchens, canteens and water-points were put in, camouflage nets scrimmed and draped over almost everything, and then the piece de resistance—a fifty-yard swathe was bull-dozed round the entire caboose, a great barbed-wire fence erected in the middle of this space covered by automatic fire from strong-points and anti-aircraft weapons, and the whole illuminated by search-lights and trip flares! Behind this we were secure.

This, however, was our downfall. We were too jolly strong. The enemy in fact couldn’t get in. Immediately I hear someone say 'But surely that's the idea isn't it?' and although in principle I agree let me go back a little in history. You see the base side of the Field Force had been more or less a sitting duck in exercises ever since they had started and had been regularly done over. The Complex was always so large with the troops spread so thin that it had ben generally penetrated every night and occasionally by day, with consternation, pandemonium, loss of sleep and general bad temper everywhere, while invariably the last night of each exercise had been quite chaotic, with vehicles 'blown up', tents let down, heads bashed, mayhem universal and commonly the Commander himself abducted and held to ransom. And this it was resolved would never happen again.
Thus was produced the Maginot thinking of the Inglebungyl Complex. We locked ourselves in. We never saw an enemy. We roasted in our pillboxes. We fired at wallabies that set off our trip flares. We set out on patrols and we came back empty handed. The enemy was clearly impotent. We, in fact, had the game sewn up. And meanwhile the winds blew, the rains came, the sun scorched, the mud became dust again and the flies, the mozzies and the sandflies descended in swarms and the Exercise dragged on and on. So here we were all over again—loss of sleep and general bad-temper everywhere.

I knew things were getting bad when my batman, an old digger, morose, taciturn, just somewhat dishonest, the survivor of many campaigns and numerous exercises, and who had been happily bringing me my morning tea and shaving water since the beginning of the Exercise, tripped base over apex on the guy rope of my tent, scalding himself in the process, and exclaimed for all the camp to hear 'You—! There's so many obstacles around this bloody camp it's no wonder the poor enemy can't get his flippin' nose in. Jesus wept!'

And so it was no surprise to me when my CSM, at the break-up of the morning conference, asked if he might have a word. The company sergeant major was a man whose world was the Army, and whose life the Company, who had spent more years than I had been commissioned, as a platoon sergeant, guiding, directing and moulding junior subalterns, and whose advice I was more than ready to listen to. And so with a yell to the runner ‘for a couple of cups of tea I waved the CSM to a camp-chair, busied myself with my pipe and waited for him to commence.

'Well sir,' he began ‘without any more ado, ‘it’s the troops’ morale. I don’t know if this bloody enemy’s gutless or even if he exists, but I do know that our blokes are just fed up with manning them ruddy pillboxes and listening posts day and night. We might as well be back ‘ome with mum.’ And then hurriedly, ‘or that’s what the blokes are sayin’ anyway. And the worst off of course are the poor ruddy gunners—at least our blokes are workin’ all day and manage to get out of the Complex, but the artillery troops are really pretty fed up, sir.’

I could see the CSM had been brooding about this problem for days, and with a little astute encouragement might provide some ideas on how to solve it. To lead him on I scraped vigorously at the bowl of my pipe with my knife and, without looking up, said: ‘But surely that’s their job CSM? The Light Battery I agree aren’t getting to shoot their mortars, but the anti-aircraft gunners—I mean they’re meant to sit and observe aren’t they? After all that’s what they’re paid for. And there’s nothing to stop them drawing the odd bead on a Viscount or a 707 is there?’
'Well sir'—and here he coughed meaningly—'Gunners are mostly a shower, as I think you'll agree, but these fellows here are really a fine bunch. An' I'll agree it's their job to observe—but it's what they're observin' that's gettin' 'em down.' And here he stopped and buried his nose in his steaming mug of tea with a resounding slurp.

This tack had me a little confused, but I had time to spare and so I waited until he had passed the sinewy back of each massive hand across his whiskers and then queried: 'Observing, CSM? Aeroplanes and enemy I should think surely?'

But he was not to be put off. 'And if there aren't any aeroplanes or enemy?'

'Well frankly CSM'—and here I spoke shortly for somehow I seemed to be getting on the receiving end of this—'what else is there to observe?'

He looked up. An expression of Immense distaste passed over his whole countenance, his moustache bristled, the eyes crinkled up as one who has stared at ten thousand sunsets, and through narrowed lips he spat out one word 'Wimmen!'

'Good God, CSM!' Here my rigid self control almost gave way entirely. The vision conjured up was horrifying. Women! The scourge of the Regular Army! What officer was not driven to distraction by the wives and girl-friends of his soldiers? Those importunate telephone calls day and night! What company commander did not know the full and sordid details of Mrs. Bloggs' latest and most exotic disease, and how if Bloggs were to go away on an exercise her tortured nerves would snap and he would be to blame?

Trying hard not to show how badly my nerves had been shattered, I attempted a laugh that came out, however, as a weak ghostly strangled cry and repeated foolishly 'Wimmen, CSM?'

But he was damned right, you know, for when we went on a tour of the company it was quite clear that the picquets (until they discerned our approach) were steadily observing all right, with binoculars studiously raised; but not the scrub the other side of the bull-dozed strip or the clear blue sky for raiding aircraft, but rather the Married Quarters that lay a mile and a half across the bush. Or rather the married blokes were observing the quarters, while the single ones had the Migrant Hostel well and truly in focus. Oh why did I have to have the only locality on the forward slope; the only position in sight of these disturbing temptations?

But it was no good bewailing my fate. The Exercise still had a clear fortnight to run and obviously something drastic had to be done. And so, even more disturbed in my mind, back I trudged.
to the tent, called for more tea and once again turned to the CSM.

'Well that's it sir, I'm afraid. All them quarters you can see belong to our blokes. We've got a few trouble-makers of course who spread the word around they saw Mrs. Bloggs takin' some good lookin' chap 'ome; you get other blokes who just keep lookin' and dreamin'; and then you get the young fellars an' what with that migrant 'ostel—well!'

'But what the hell can we do CSM? We're on the forward slope—I don't see how we can blot these things out. We can't very well erect a camouflage screen. We can't take their binoculars away from them—I don't very well see how we can stop them seeing these women.'

'Ah hah! An' there you 'ave it sir! Why should we?' And here the old CSM took on an immensely crafty look and so help me I'll swear he winked. 'Now let's be honest sir'—stabbing at my chest with a gnarled forefinger—'a little bit o'nookie never did nobody no 'arm. And it'd solve all your problems 'ere. Everyone's gone stale. You don't mind bashing about in the bush for weeks on end, but not sitting on your tail—an' especially when you can see your missus every day but you can't talk to 'er. No, the answer's quite simple—get the blokes home at night.'

This was heresy and I reacted quite conventionally. 'But CSM! You know that's impossible. The Commander has vetoed leave, and even if I were to condone—and Heaven forbid that I should—soldiers shooting through, you know as well as I do that the Complex is so impregnable that it would be well-nigh impossible for them to get back in again. Really CSM!'

But the CSM was an old soldier who had handled officers for many years, and while this outburst was going on seemed to be having great difficulty in getting his pipe to light. However, when he had succeeded and produced a healthy burbling sound, drained the remainder of his cup of tea, and again wiped his moustache, he looked up and said 'We did it in the Desert—had a splendid set-up in Cairo. We did it in Syria and we did it in Japan. In fact in Korea we even 'ad the Yanks fly the diggers across to Nippon. They thought they were casualties.' And then absently with a half laugh. 'Funny lot the Yanks.'

This was too much I'm afraid, and on a rising note I exclaimed 'Anyhow CSM, I do not intend running that sort of set-up here. Thank you for bringing this problem to my notice and I will speak to you later on what steps I will take.'

Actually I was in a complete quandary. Sex, of course, had reared its head on numerous occasions during my time as a junior officer, but generally it had concerned only one or two
chaps—never the whole company. I fought with the problem all day. The CSM was undoubtedly right in a way; the soldiers were surly, morose and argumentative, the food was lousy, they had to spend too long on picquet, the beer in the canteen was too expensive—all sorts of complaints, and underlying it all what I realized now was the one true factor—sex!

Red-eyed and weary I arose next morning no nearer a solution, and after cutting myself shaving snarled at a bad-tempered batman 'Get me the CSM!'

Quite unabashed the CSM began straight off: 'It's quite simple really, sir. I'll spread the word and can assure you not a soul will speak out of place. I suggest twenty a night and we'll draw lots at Mess Parade.'

'But how are you going to get them in and out, CSM,' I interrupted. 'They obviously can't march and we've only got open trucks.'

'Don't you worry sir. No trouble at all. The Complex, as you're aware, is sealed at night with no traffic in or out. But recall we send a convoy out under armoured car escort at last light which takes all the air-drop stuff to the RAAF Base at Richfields and this same convoy returns at first-light next day. Now in this convoy we always have at least one truck full of bread which is packed in tea chests. So we simply adds one vehicle with twenty extra tea chests, an' we're got a bloke in eachchest. The escort only goes to the highway, then when the convoy gets to the quarters the vehicle falls out. It rejoins 'em again on their way back next morning an' Bob's your uncle.'

I was beaten. More thoroughly demoralised now than the troops, I could think of no alternative solution whatever. So in a quavering voice I weakly muttered: 'All right CSM—organize it for tonight.'

And it worked! And the following night, and the next. The jump in the troops' morale was amazing. No-one bitched. They whistled and sang and joked as they worked away at servicing vehicles or digging weapon-pits. There was no queue at sick parade. The swearing and grousing died away. There were no more surly faces when I did my rounds, and even the Commander at his morning conference remarked what a cheerful bunch I had.

But Lord how my morale suffered! My worries, my nerves, my temper! Constantly concerned that the lid would blow, certain that some idle digger would talk or miss the truck on the way home or an inquisitive sentry would check the number of tea-chests against the load of bread, I became more and more morose, more withdrawn, evil-tempered and quite unbearable. The subal-
terns bolted their meals and fled before I appeared at Mess, the sergeants caught the rough side of my tongue, while even the wily old CSM kept well away as oft he could. This simply could not go on.

So the troops' morale was way up, the company commander was steadily going round the bend while the enemy—well the enemy still seemed to be doing nothing at all.

But the commander of the Enemy was a very old soldier. He was far from silly, anything but gutless and he was very very sly. And furthermore he had evolved a Plan! He explained it all to me in my underground Command Post in the last week of the Exercise and you had to admire him for it—it was damned good indeed. A bit uncomfortable, mind you, tied to a chair and with a ruddy great scarf tied around my mouth, but as he explained it could be worse, and looking at the Commander, most securely pinned and obviously about to die of apoplexy, I was inclined to agree. We had plenty of time to converse for he didn't intend leaving until dawn with his ten bully boys, my Commander and a brief-case full of secret documents, and as he confided that he'd already planted his bombs in the petrol dump, the Complex Command Post and at the ammunition point, conversation served to fill in the long hours of waiting.

We'd been together for years, he and I. Studied tactics together, dozed through the same lectures, attended the same TEWTs, but I must confess I'd never really appreciated his brilliance nor his schemes methodical mind until that night. In his shoes I've no doubt I would have probed and harassed and mortared and skirmished, and really convinced myself that I was doing something worth while. But his understanding of the Principles of War was far deeper than mine, and as he elaborated the most important of them all was 'The Selection and Maintenance of the Aim'. This was the 'Master Principle,' he loftily told me, and after this was 'Offensive Action', a necessary fore-runner of victory, with 'Surprise' and, of great importance, 'Economy of Effort' — which, in this sort of guerilla warfare, he tended to think was a cardinal principle. His aim was not to harass or skirmish but to destroy. And so he had bided his time, probed and listened, observed and noted and planned and lo! here he was; no-one was aware the Complex had even been penetrated; he would leave and no-one would know; the Complex with all its reserves would be largely destroyed, and he would have the Commander and all our secret plans to boot. And all this with only ten men and 100 pounds of plastic explosive! Undoubtedly a well thought-out and executed plan.

And so I did as I was told—at gun-point one has little option—picked up the telephone and stood the company down,
told the CSM on no account was I to be disturbed and then passed my old friend the Enemy Commander's detailed instructions to the picquet at the strong-point commanding the entrance to the company locality.

* * *

One so seldom gets the chance to propound one's views to a really captive audience that the opportunity should be seized, and where one has oneself just been subjected to a diatribe on the contrary point of view it becomes quite pleasurable. And so, as I told my old friend the Enemy Commander without fear of contradiction, for his ruddy great scarf was firmly tied around his mouth and he himself was tied to a chair with his ten bully boys trussed upon the ground, his contention that the 'Selection and Maintenance of the Aim' was the most important Principle of War was seriously open to doubt, and I held to the view that 'Surprise' was paramount. 'Security' was another Principle of some importance, with many ramifications, and the rendering impotent of his demolition charges could fairly be laid to his quite unnecessary neglect of elementary security in boasting of his efforts in the placement of these. Further, I stated, warming to my theme, there was much to be said in favour of a further Principle—'Thoroughness in Reconnaissance'—as I was able to example, rather forcefully I thought, by his present predicament, which I held was largely due to his neglect of this precept. His idea of evacuating his party, captive and loot in the tea-chests he had observed in the back of my trucks had been sound indeed, but a really thorough reconnaissance would have shown that tea-chests do not necessarily hold tea, nor are they necessarily empty.
A New Approach to Battle Drills

Major P. R. Phillips,
Royal Australian Infantry

Too many soldiers in our army know more about foot and arms drill than they do about battle drills. Even the infantryman is more adept at forming two ranks from three than at carrying out the basic battle drill—Run, Down, Crawl, Observe, Sight, FIRE! Yet the latter is more purposeful military knowledge and far easier to learn.

Battle drills of the barrack square variety are, of course, the battle drills of the flintlock era. Drill has some value still as a means of developing corporate discipline and as a form of traditional ceremonial. There is, however, much to be said for drastic updating of drill so that it teaches more functional skills and uses fewer of the many training periods devoted to its mastery.

This article does not set out to deprecate the value of drill, but rather to plead the need for a new approach to battle drills. It will also suggest how we can borrow from the Regimental Sergeant-Major's wisdom by teaching battle drills as drills and by using drill methods of instruction, even in the field. Although this article discusses battle drills only for infantry, battle drills could be efficiently applied by all corps. It should not be forgotten also that, against a guerrilla enemy, all troops should be equally as skilled in the drills of local protection as infantrymen.

Battle drills are essentially concerned with the protection and deployment of sections and platoons. The term could be equally well applied to individual battlecraft or to the deployment of a battalion. The former, however, is best included under the heading of fieldcraft and the latter under Standard Operating or Battle Procedures. Battle drills are the first and vital stage in collective training for infantry operations.

Battle drills are defined for the purpose of this article as any method of deployment and protection used by a section or a platoon.

Major Phillips is a 1955 graduate of the Royal Military College, Duntroon. He was allotted to the infantry and, among other appointments, has since served with 3, 2 and 6 RAR. He attended the 1966 Course at the Australian Staff College and after graduation was posted to 3 RAR.
and which is a sequence of team actions which applies in most circumstances. Here then is a list of the drills through which a platoon commander might lead his sections in training:

(a) Drill for adopting single file from arrowhead.
(b) Drill for picqueting obstacles or clearings.
(c) Drill for short halts.
(d) Drill for long halts.
(e) Drill for moving into platoon harbour.
(f) Drill on contact in open country.
(g) Drill on contact in close country.
(h) Drill on being ambushed on foot.
(i) Drill on being ambushed in vehicles.
(j) Drill for laying an immediate ambush.
(k) Drill on siting hostile aircraft.
(l) Drill for boarding an Iroquois helicopter.
(m) Drill for attacking a guerilla camp.

The reader may well say that there is nothing new in this list and that the drills listed can be found in *Infantry Training*, Vol. 4, Part 2, and other official publications. The point, however, is to recognize them, realize that they are drills and teach them as drills. It is no insult to a soldier's intelligence to teach these actions as drills. On the contrary, he will readily appreciate the need to have an instinctive team response which will save time and give his team an initiative against the enemy. Nor should the platoon commander be afraid to teach too many drills. Today's soldier is no dull rustic, and even one hundred years ago the common soldier was expected to carry out most difficult manoeuvres in response to seventy different bugle calls.

The success of any battle drill depends on:
- Sound instruction.
- Practice.
- Aggressiveness.
- Speed.
- Common sense.

Sound instruction is the key, and here we can draw on the drill instructor's art, distilled from centuries of military experience, in teaching drills. Remember that battle drills, like drill, are merely a sequence of set movements in response to a set word of command. The command is not given as a staccato shout, nor is it necessarily given by the commander. The drill on contact in close country is initiated by the shout of 'Contact Front' from the leading scout. The pilot's thumbs up is the sign to leave an helicopter. Most battle drills, however, are ordered by silent signal from the commander.

Just as one would not teach foot drill from a sand model nor arms drill by lecture, so the battle drill must be taught as a lesson
in the field. The lesson content of battle drills has, unfortunately, to be culled from prosaic and musty publications which, as an instructor's guide, compare unfavourably with drill and weapon manuals. It is suggested that the lesson should be built up by establishing:

(a) The sequence of individual or team actions.
(b) The word of command or signal and who is to originate it.
(c) The setting which best adds realism to the lesson.

A normal lesson plan can then be programmed, using the time-honoured drill sequence:

(a) Explanation.
(b) Demonstration.
(c) Squad imitation.
(d) Practice.

Battle drills are important, but it is pointless giving collective training in them to troops who have not reached a reasonable standard in fieldcraft, including scouting and field signals, and marksmanship. This mistake occurs, specially in CMF units, when enthusiastic instructors, perhaps flushed with knowledge newly won from a course at the Jungle Training Centre, try to rush their students. The results, to use the drill analogy again, resemble those of a platoon whose members cannot march in step being taught to change formation on the march.

Battle drills can easily be made the most interesting item in the training programme. They are well suited to vigorous competition and can produce the confidence which comes from mastering a team skill. If soundly presented, these drills can be learnt quickly and, with supervision, can be kept up in subsequent field training.

A warning should here be given of some pitfalls in the teaching of battle drills. First, they must be in step with current army doctrine and unit policy. Most importantly, they must be simple. Complicated drills are unlikely to save time in battle and will make peace time training unnecessarily difficult. Care should also be taken that drills are not stereotyped because they will often have to be changed in action to forestall an enemy counter-measure. Troops can be conditioned to handle changes in battle drills by occasional experiments. Both troops and platoon commander could profit, for example, from a period spent practising US Army battle drills, using the US two-team squad system. Drills which are too restrictive of individual initiative should be avoided. Drills for contact situations, especially, should leave room for initiative and stress the need to gain and pass back information.

The use of drills can save time and lives. By giving to a
soldier an immediate, positive and instinctive response, they engender confidence and overcome fear. Platoon commanders, however, should beware not to confuse drills with tactics. Contact drills, in particular, are too often allowed to develop into assault drills. This is fundamentally wrong because no drill can replace a commander’s responsibility to appreciate, plan and give the necessary orders to deal with a tactical problem. Battle drills offer no ‘easy way out’ but, without them, deployment and protective measures will be slow and uncoordinated.

Battle drills belong at section and platoon level. Above this, there is sufficient time and adequate communications to meet each situation by verbal orders or the problems which might be presented are covered by Standing Operating Procedures. Even at the lower levels, however, commanders must be prepared to step in and exercise command where a drill is not achieving its aim.

The Australian Army has a forte for patrolling and sub-unit actions which we must retain. This demands of our junior leaders a high degree of skill in minor tactics. And the basis of minor tactics is battle drills—instinctive, aggressive reactions which will provide the leader with time and confidence to use his tactical ability and exercise his command. Our present approach to and manuals on the subject of battle drills are confused and inappropriate to what should be an important subject. Sound and simple battle drills are an essential element of combat training.

THE RIFLE

I strongly believe that the rifle must be made the basic symbol of pride for the infantryman. The award of the rifle must be made to mean something to each recruit. There should be ceremony attached to the award of this weapon. The recruit must be made to look forward to the day of this award as the goal of his training period. Then, when he earns it, the recruit should be handed his rifle by his general before his fellows, not by a supply sergeant behind a counter.

— General Mark W. Clark. From the Danube to the Yalu (1954).
General Scratchley
and the Australian Engineers

Staff-Sergeant D. H. Eicke
Royal Australian Engineers

Introduction

It is now more than 106 years since the Corps of Engineers was first founded in the Colony of Victoria by Captain Peter Henry Scratchley, at a meeting held at the Duke of Rothsay Hotel, Elizabeth Street, Melbourne, on the evening of Thursday, 15 November 1860. This meeting adopted the Rules and Regulations of the Corps of the Victorian Volunteer Engineers, and thus brought into being the first engineer formation to be raised in Australia. From this humble beginning it was not long before most of the other colonies had raised their own engineer arm. New South Wales was next in 1869, then followed Queensland, Tasmania and Western Australia. There were, however, no known engineers in South Australia before Federation.

There can be no doubt that the need to raise a body of military engineers in the various colonies was largely brought about by the influence of the Royal Engineers then serving in Australia. Although no complete Royal Engineer units as such were ever employed, many individuals have left their mark in Government, exploration, survey, defence and other construction programmes.

With Federation came the amalgamation of the volunteer engineers of the States into the Corps of Australian Engineers, which, in 1907, with the granting of the title 'Royal', became the Corps of Royal Australian Engineers as we know it today.

It is unfortunate that the first 100 years of the Engineer Corps have passed without any published record of its growth and achievements. Perhaps some day a comprehensive history of the RAE will be written. In the meantime it is perhaps permissible to introduce the man who was instrumental in founding the corps, and to record some of the events leading up to its foundation.

The Founder of the Corps

Peter Henry Scratchley, the founder of the Corps of Royal Australian Engineers, was born in Paris on 24 August 1835, the youngest son of Dr James Scratchley of the Royal Artillery. Of himself and his early life Peter Scratchley has recorded that:
At about eight years old I had typhus fever, during which I was sixteen days dumb, caused, as mamma always said, by my having sworn very much... during my delirium. I continued ill for thirty-three days. I was a miserably thin and slight boy and very short. About this time my eyes got bad and I suffered from ophthalmia for two years.

The father died early in 1848 and on his death Mrs Scratchley returned to England, where her two elder sons had settled, one in the church and the other as an actuary. The question soon arose as to what was to be done with the boy Peter. His mother wished him to enter a civil profession but, fortunately as it turned out, the wiser counsels of an elder brother prevailed, and it was decided to remind Lord Palmerston, the British Prime Minister, of an offer he had made earlier to recognize Dr Scratchley's professional services by obtaining a nomination for one of his sons to Woolwich. Palmerston and James Scratchley had been together in the same form at Harrow, and the Prime Minister, who had already shown his warm friendship for his old school fellow, promptly responded to the reminder. Thus it was that the young Scratchley, still less than 15 years of age, received his nomination as a Gentleman Cadet at the Woolwich Academy.

He is described by his friends at this time as being a somewhat reserved and thoughtful boy, not given to saying much, yet quick and observant. Delicate health had retarded his studies, and at the age of 13 he was decidedly backward, knowing little but French, which, however, he spoke fluently. Before entering the Academy he was sent to study with a tutor and made rapid progress. No doubt he formed at an early age the habit of steady resolute work and that marked attachment for duty which remained with him throughout his life.

Towards the end of his course at the Academy, he was prevented from reading for a considerable time by an accident which nearly deprived him of the sight of an eye, and confined him to a darkened room for many weeks. Notwithstanding this drawback to his studies he passed out of the Academy at the head of the list and obtained a commission in the Royal Engineers (gazetted 21 April 1854) and was promoted 1st-lieutenant on 20 June that year.

At the Academy he made many friends, some of them destined to be lifelong. Among them was Charles George Gordon (Royal Engineers), with whom an early acquaintance ripened in subsequent years into intimate friendship. Their paths in life, however, were widely different: the career of Gordon, brilliant and meteoric, almost eccentric in its orbit and terminating in violent death; while that of his friend, although less conspicuous, was none the less marked by steadfastness of purpose and devotion to duty.

After obtaining his commission Scratchley was attached to the 4th Company, Royal Engineers, and left England on 24 July 1855.
for the Crimea. He arrived there on 13 August and remained until 11 June 1856. He was present at the siege of Sebastopol and though barely 20 years of age, his work there in the trenches and at the final assault upon the Redan was distinguished by coolness and skill.

After Sebastopol, Scratchley was employed in surveying the enemy’s works and destroying their dockyard establishments. He was selected to accompany the expedition to Kinburn on the Black Sea, and was present with his company at the capture of that fortress. Subsequently he was engaged in constructing defensive works for the better protection of the British troops, a task in which he was still occupied when peace was concluded. For his service in the Crimea he was awarded the Crimean Medal, with clasp for Sebastopol, and the Turkish War Medal.

After his return from the Crimea he was employed for more than twelve months on engineering works at Portsmouth, and in 1857, after the outbreak of the Indian Mutiny, was ordered to the front with the 4th Company, Royal Engineers. He embarked for Calcutta on 2 October, served throughout the Oude Campaign and was present at the actions near Cawnpore as acting adjutant of Royal Engineers. He was with the 4th Company in operations with the Commander-in-Chief’s army, and accompanied the columns under Brigadier-General Walpole through the District of Stayah. He was attached to a company of Royal Engineers during the operations before Lucknow, and the defence of Fort Jellalabad, and accompanied the storming party which attacked the Begum’s palace. He was orderly officer to General Sir Robert Napier (Lord Napier of Magdala), the Chief Engineer, during the siege and capture of Lucknow, and served in the subsequent operations with General Grant’s force in Oude as adjutant of the Engineer Brigade, being present at the action at Baree. As Commanding Engineer he accompanied the flying columns that were sent to clear the country of rebels, and took part in the famous assault which resulted in the capture of the strong Fort Kussin Dampoor. During later operations in Oude, in 1858-59, he commanded the 4th Company, RE, and took part in the passage of Gofra. He was mentioned by Lord Clyde, General Wyndham and General Wetherall in their despatches, included by General Napier in the list of officers deemed deserving of honourable mention, and at the close of that campaign was awarded the Indian Medal and Clasp for Lucknow.

In 1860 the Government of Victoria applied to the Imperial Government for an engineer officer to superintend the erection of defences in that colony, and Scratchley, who had been promoted captain the previous year and was then 25 years of age, was selected for the task. His diary, under the date 13 March 1960, records:

Received orders thus: Captain Scratchley with a detachment, to be taken principally or wholly from the 4th Company, Royal Engineers, will proceed to Melbourne, Victoria and report on his arrival to the Governor for employment on colonial defences.
On 13 June, Scratchley and his detachment of twenty-one engineers arrived in Melbourne aboard the Ottawa. For three years and a half thereafter he was actively engaged in devising a system of defence for Victoria, during which period he took a prominent part in the volunteer movement, being given the title of Commanding Royal Engineer of Victoria and Military Storekeeper. He was a member of the Defence Commission and acted as honorary Lieutenant-Colonel of the Volunteer Artillery and Engineers.

His evidence given before the Royal Local Commission appointed to report on the best means of defending the colony shows that he had correctly grasped the situation, but the works and plans he devised failed to secure the sanction of the Victorian Parliament, due to a change in the Ministry. He subsequently returned to England at the end of 1863.

Next year Scratchley was promoted to the brevet rank of major and for six months commanded a company at Portsmouth; at the end of that period he was appointed Assistant Inspector of Works for the Manufacturing Department of the War Office, and after a short period became Chief Inspector, an office which he held for twelve years.

In 1874 he was promoted lieutenant-colonel and two years later was selected by Lord Carnarvon, upon the recommendation of the Secretary of State for War, to act in conjunction with General Sir William Jervois in the important work of advising the Australian Governments upon the best means of defending the Colonies against foreign aggression. He left England in March 1877, and after Sir William was appointed Governor of South Australia, became Commissioner of Defences in all of the Australian colonies except Western Australia. The office of Commissioner of Defences although responsible was scarcely an enviable one. Scratchley was continuously harrassed by the ever-changing policies of the colonial Governments, and it happened more than once, after he had taken much trouble to prepare a scheme of defence which was approved by the party in power, that the Government went out of office and the next Ministry refused to sanction the expenditure until the estimated cost was reduced. Sometimes fresh plans were insisted upon and when, after much trouble and delay, these had been prepared the original scheme was preferred. By 1885, however, in spite of these setbacks, and largely as a result of the efforts of Colonel Scratchley, Melbourne had become one of the best defended ports in the British Empire. In addition Scratchley had managed to design and construct harbour defences in Sydney (including Botany Bay) and Newcastle, to greatly improve those at Hobart, and to effect some improvements in Brisbane and Adelaide.

He retired from the army with the rank of major-general in 1882, and upon his return to England early next year was appointed adviser
on defences for New South Wales, Victoria, Queensland, Tasmania and South Australia, in which capacity he rendered signal service to the Imperial and local governments.

In November 1884 he was appointed Special Commissioner for Great Britain in British New Guinea and immediately set out for Australia to consult the colonial governments about their assistance towards financing the cost of his administration. In August 1885 he went to New Guinea to take possession of the new territory. Port Moresby was made the seat of Government, questions of land tenure and cultivation were examined, and good relations were established with many of the natives and with the missionaries. Events were shaping well, when, on 4 November Sir Peter (KCMG 1885) set out on what proved to be his last tour of inspection — a visit to the camp of Mr. H. O. Forbes, the explorer, at a place called Sugar, situated about 50 miles from Port Moresby at the foot of the Owen Stanleys. He returned from this camp on foot — although a horse was available to him he preferred to walk — and during the last two days of the trek back to Port Moresby took a dislike to his food. He reached Port Moresby after an eight days absence, and on the 13th boarded the Governor Blackall, looking much the worse for wear. After a voyage to Mitre Rock, which marks the terminus of the east coast of New Guinea, his condition began to deteriorate, and about midnight on 1 December he died of malaria.

His body was brought back to Melbourne aboard the Governor Blackall, and laid in state at 'Critchill', the family residence, believed to have been located on the west side of St Kilda Road between Milton and Dickens Streets. He was buried in St Kilda Cemetery after a funeral service at the All Saints' Church of England in Chapel Street, at which the Dean of Melbourne officiated, and which was attended by the Governor of Victoria, representatives of the Governors of New South Wales, Western Australia, Queensland, Tasmania, and New Zealand and a distinguished company of Government, Service and consular officials, as well as private citizens. At the end of the service a salute of 17 guns was fired and repeated at sunset at one-minute intervals from the saluting battery at Government House in the Domain. On 30 April 1886 his remains were transferred from the St. Kilda Cemetery to the old Charlton Cemetery, Woolwich, England. After the funeral the following letter was received by the Victorian Premier from Lady Scratchley:

Dear Sir,

I feel that it is due to you, to Colonel Sargood, to Colonel Disney, and the officers of the Defence forces, that I should write and thank you for the sincere tribute of respect and regard paid to the memory of my late husband on the occasion of his funeral. The evident care and attention bestowed on the management and the demeanour of those who attended it, evinced the sincere feeling of regard in which he was held, and I shall ever treasure with a sense of gratitude the honour that was paid to his memory. May I ask you
to convey to the officers and all concerned, my grateful thanks for their services on that occasion, and believe me to remain yours etc.

Lilias Scratchley.

Major-General Sir Peter Scratchley's memory is perpetuated in Australian history by Fort Scratchley, at Newcastle, New South Wales, and by Mount Scratchley, one of the highest mountains (12,500 feet) in Papua in the Owen Stanley Ranges.

Foundation of the Corps of Royal Australian Engineers

The earliest steps towards the raising of an Engineer Corps in Australia appear to have been taken on 12 October 1860, when a deputation of seven Melbourne citizens waited on the Honourable the Treasurer of Victoria, Mr McCulloch, and Captain Scratchley for the purpose of submitting a proposal for the formation of a volunteer Engineer Corps.

The deputation consisted of Messrs Hodgkinson, Wood, Ross, Knight, Taylor, Merrett and Roberts, and was introduced by Mr Hodgkinson who explained that a number of gentlemen had proposed that an Engineer Corps be formed to consist of architects, engineers, surveyors and skilled artisans. He considered that an Engineer Company formed on these lines would in a very short time acquire sufficient proficiency to make them available for the raising of fortifications.

Mr McCulloch informed the deputation that he had only that morning heard of the proposition, and that the Government would be guided in arriving at any decision by the opinions of Captain Scratchley and Captain Dean Pitt. The Government, he said, was anxious to provide every facility for the establishment of a Volunteer Corps, but it could not see what advantage would be gained from a Volunteer Corps of Engineers. Although the Government would not positively decline the acceptance of the services of such a corps, he would say that there was a feeling against it.

Captain Scratchley: 'If the Company is to be established at all, it should be at once, as a great deal of training would be required.'

Mr. McCulloch: 'Would it be an advantage?'

Captain Scratchley: 'No doubt it would be.'

Mr. Woods: 'I do not imagine that the gentlemen who have offered their services have done so in the light of amusement, but have come forward to do their utmost as Volunteers. I believe that the best way in which their services could be utilized is in the formation of a Corps such as that proposed'.

Mr. McCulloch: 'I do not want to be misunderstood; I fully appreciate the services of the gentlemen who come forward as engineers; the Government has not lost sight of the necessity of erecting fortifications but has not carried them out as the money has
not been available. It is intended to place a considerable sum on the estimates, and if such a sum is sanctioned by the Legislature, the works can be carried out. I would like to know whether a Corps like the one proposed would be an advantage in carrying out such works; and also what numbers of personnel would be required.'

Mr. Woods: 'I have no idea. Possibly 50.'

Mr. Knight: 'They would be equal to privates of the line, drilled and instructed in throwing up fortifications. The objections to them would apply to all Volunteers, for what is the use of any Corps if Melbourne can be annihilated by a shot at a great distance. It is to protect the Volunteers that the proposal to raise a Corps of Engineers is made'.

Mr. McCulloch: 'I can quite understand in what way they could be useful, but how can they be trained, that's what I want to know?'

Mr. Hodgkinson: 'They would be instructed in the erection of field works and batteries, and learn the principles of fortification.'

Captain Scratchley: 'It will be necessary to have only a limited number of officers, and I myself will attend to their training.'

Mr. Knight: 'A number of artisans are ready to be employed and there should always be a good working party; from conversations I have had I am certain that they are willing to go to work.'

Mr. McCulloch: 'If Captain Scratchley sees no difficulty in organizing the Corps and giving them instruction, then most of the objections would be removed, but I believe that most of the difficulty would be in giving the instruction.'

Captain Scratchley: 'Let me put a hypothetical case, namely, that supposing the Corps consisted of 200 or 300 men they would be subject to preliminary training, and after a certain number of them had passed an examination fitting them to become officers, the Corps would be independent of anybody; the management resting with the officers. The general plans would be submitted to the Government for approval, but the carrying out of these plans would rest with the officers of the Corps.'

Mr. Knight: 'I think that is what is required to give the Corps practical bearing and I have no doubt that in a month of two 200 men could be raised.'

Mr. McCulloch: 'After what Captain Scratchley has said I will submit the proposition to Cabinet.'

The deputation then withdrew.

Within a few weeks, the following advertisements appeared in the Melbourne Argus:

MEETING

PROPOSED CORPS OF VOLUNTEER ENGINEERS

The approval of the Government having been given to the foundation of the above Corps, a meeting of intending
members will be held this evening (Wednesday) at the Duke of Rothsay Hotel, Elizabeth Street. Chair to be taken at half past 7 o'clock.

J. G. Knight, Hon. Sec.

MEETING
PROPOSED CORPS OF VOLUNTEER ENGINEERS
A meeting will be held at the Duke of Rothsay Hotel on Thursday evening next, at half past 7 o'clock, to receive the rules of the proposed Corps.

J. G. Knight, Hon. Sec.

This advertisement was repeated in the Melbourne Argus the following day, Thursday, 15 November 1860, the day on which the meeting was held. The Rules and Regulations were officially promulgated on 9 March 1861.

With the adoption of the Rules and Regulations inaugurating the Corps of Victorian Volunteer Engineers the foundations were laid for what was to become the Corps of Royal Australian Engineers as we know it today.

In 1860, the Duke of Rothsay Hotel was located at 12 Elizabeth Street, Melbourne, and Mr. Thomas Orkney was the proprietor. With the advancement of Melbourne the hotel later became No. 26 Elizabeth Street, and was in the vicinity of Craig's Building which today is the Commonwealth Bank of Australia.

It is said to be most appropriate that the Corps of Royal Australian Engineers should have its beginning in a pub.

INITIATIVE

The value of the 'initiative' in war cannot be overstated. It surpasses in power mere accession of numbers, as it requires neither transport nor commissariat. Holding it, a commander lays his plans deliberately, and executes them at his own appointed time and in his own way. The 'defensive' is weak, lowering the morale of the army reduced to it, enforcing constant watchfulness lest threatened attacks become real, and keeping commander and troops in a state of anxious tension.

Resupply in Vietnam

Major R. G. Phillips,
Royal Australian Army Ordnance Corps

ONE word, 'expedite' — far more easily said than done — serves to sum up the work of the logistic units in Vietnam. It means unloading cargoes into lighterage at sea when the monsoon is at its height and the tide tricky. It means warehousing and moving what is needed. It means keeping track of a 100,000-item inventory in the American system and a 27,000-item inventory in the Australian. The American inventory, piled into storage areas all along the crescent contour of Vietnam, would give headaches to the stock technicians at Woolworths. Fortunately the Australian inventory is contained in one compact complex at Vung Tau on the peninsula of Cape St. Jacques. However, as we demand some 1,500 items on the American system, the stock complexity of that system still produces some headaches even among the Australians.

The logistical activities of the theatre are controlled by the mammoth 1st Logistical Command. The Log's mission can be boiled down to a single sentence: Supply Free World forces in the 600-mile-long II, III and IV Corps sectors of Vietnam with the items they use in common.

Vietnam presents some classic examples of problems in military logistics — problems which have plagued all those involved within this embattled Asian republic. Perhaps to trace the growth of the commitment in Vietnam would put the problems more clearly in perspective.

At the outset of 1965 the war in Vietnam was a relatively small-scale Free World operation requiring only a limited and centralized support; then, as now, Saigon was its nerve centre; then the US Navy handled the supply role. In the middle of 1965 the decision was made to increase American efforts to help the Vietnamese stop

Major R. G. Phillips enlisted from the CMF in 1940, was commissioned as a reinforcement officer to the 2/48 Battalion in January 1942, and served with infantry, armoured, ordnance and engineer units until discharged from the AIF in February 1946. He has since served with the RAAOC in a variety of postings, including service in Korea, Japan and South Vietnam, where his current appointment is DADOS AFV.
communist aggression from the north by pouring into the country
many thousands of additional combat and support troops. These
were forces from the United States, Australia, New Zealand and
Korea. Nearly all these forces arrived in Vietnam with little more
than what they carried on their backs. Additional stocks of food,
fuel and ammunition, plus most of the organizational equipment
were following behind.

The 1st Logistic Command, at that time numbering scant thousands,
was allocated responsibility for processing their arrival and assuring
orderly movement of the newcomers to their 'homes', located from
the Central Highlands to the Mekong Delta. After that it was to
begin immediately the task of obtaining, storing and cataloguing
all required items of supply, and then shipping and transporting
them to the places they were needed.

Practically overnight, the number of supporting troops grew from
about 20,000 to over 100,000; now the number exceeds 300,000. For
the undermanned Log, this meant 'on-the-job growing', expanding
its efforts while organizing and training thousands of new assignees.
Logistical Command planners began a full-scale programme to build
from scratch an entire logistical system for Vietnam, a system which
underwent numerous changes in the space of only a few months.
Meanwhile the Log still had to keep abreast of the many requests
for supply and maintenance items flooding in from newly-arrived
units as well as from its own swelling ranks.

Within six months no less than six major ports had been created
and three general depots established. A vast delivery system utilizing
aircraft, trucks and marine vessel was formed, and a task force was
developed to reduce shipping bottlenecks that challenged the early
stage of the escalation. These accomplishments required extensive
round-the-clock efforts by logistical soldiers. Their success is measured
in the fact that not one combat operation has ever been postponed
or cancelled due to a lack of needed supplies. This statement has
been substantiated by an investigation team from the Department
of the US Army.

For example, in January 1965 Cam Ranh was a small fishing village
on the South China Sea with a population of about 200 Vietnamese.
One of the world's finest natural deep-water harbours, it is today
one of the three key ports in Vietnam, a bustling general depot
complex boasting an American population of some 15,000 personnel.

At Qui Mon, Nha Trang and Vung Tau shallow harbours and
treacherous coastal sand shelves make deep shore-side piers unfeasible,
if not impossible. However, ports were 'made' by junks, barges and
other lighterage craft to off-load ships at anchorage. Simultaneously,
storage areas were located on the sandy beaches of each of these
seaside towns. Pipelines were installed to drain petroleum tankers,
and additional Vietnamese workers were brought in to work with the Log's personnel to move the increased tonnages. The number of ships now runs upwards to 175 monthly. This increase is constantly watched and every endeavour made to avoid bottlenecks.

These improvements have boosted military cargo-handling capability from some 30,000 tons a month at the start of 1965 to 12,000 tons of incoming supplies daily.

Steel-planked airstrips were constructed in a matter of hours to handle priority resupply shipments flown into the base camp 'islands' in the middle of enemy territory. Where roads were not too dangerous for convoy travel, trucks rolled across country to carry food, fuel and ammunition to the troops.

Planning for the current and future depletion of all supplies is a task determined by experienced logistical personnel. Besides planning and requisitioning there is the unloading, storing and shipping of the needed quantities. But there are times when the system does run short. These shortages can be attributed to any one of a number of factors, ranging from an unexpected increase in demand, which can seriously reduce stockpiles on hand, to delays in shipping or production.

To counter-balance such imperfections, certain managerial techniques have been borrowed or formulated, all with the aim of 'ironing out the wrinkles' of imperfection. The key word for these techniques is 'expedite', or in other words to get whatever is needed to whoever needs it wherever he happens to be as fast as possible.

Expeditors, at the command's Saigon headquarters and in the various support commands from the Delta to the Highlands, devote their efforts to localizing supply and maintenance problems, finding critically needed items, either in or out of the country, and arranging their quick transport to the requesting unit. Often these logistic experts find potential trouble spots and eliminate them before they become a reality, most frequently through studying reports and making constant field trips to various units.

The threat of storage areas being attacked and destroyed, even in areas considered to be secure, is very real. In April a mortar attack at Saigon's Tan Son Nhut air base destroyed a large storage tank containing more than 400,000 gallons of aviation fuel. Even while the fire was raging, petroleum experts at the command's headquarters a mile away had begun work to set up temporary storage containers. Portable plastic bladders were put in place, increased tank truck loads were ordered and pipeline pumping was stepped up to offset the loss. The result again was that no military operations were curtailed for lack of needed supplies.
Expediting most of the critical supplies in Vietnam, as in the case of the Na Trang Valley battle in October and November 1965, and the attack on Tan Son Nhut, generally involves the redistribution of assets. When one area runs short, another area might have more than it currently needs. This may boil down merely to shipping required items from one area to another, a feat usually easily accomplished. It may also involve purchases from civilian sources, generally located in Vietnam or other relatively close Asian countries. Telephone communication with the US Army depot on Okinawa further determines if the items can be found there by using data processing punch card inventory records and a physical search. If necessary the request is passed from Okinawa to the Army's Pacific headquarters in Hawaii for further searches in Japan and Korea or eventually in the United States. Once located the items, depending on priority, will then be rushed by air to Vietnam.

There is also the possibility that required supplies are en route to Vietnam by ship. In this case the vessel can be diverted from its scheduled routing to deliver its now 'hot' cargo, by coordination with traffic management agencies, in quicker time than originally anticipated.

In all cases the complex 'detective system' must solve its own case in three to four days. A unit needing a gun barrel cannot wait; consequently what is likely to be required must be moved to the appropriate stockpile before it is needed.

The ability swiftly to locate an item is an integral part of the system. In most cases when a need arises the item is first sought at the nearest storage area. Often the critical item is required by a battalion. If the item cannot be found at brigade or divisional level the request moves to the rear. There it is speeded successively from smaller to larger back-up support commands all the way to the key depots of Cam Ranh or Saigon. Storage areas operated by the logistical command all along the route are thoroughly probed for the required commodity through the use of automatic data processing and actual physical searches.

Another time-cutting delivery technique is the famous 'Red Ball Express' which originated in World War II and has now been adapted to the needs of Vietnam. Designed to speed needed replacement parts to deadlined vehicles and other equipment in the combat zone, 'Red Ball' generally has the critical item in the requester's hands within three weeks and often in as little time as 10 days, although it must come all the way from the United States. This is a considerable drop in time from the 90 to 150 days consumed in normal resupply shipments from the United States.

To keep abreast of items which are growing short because of high demand, the Logistical Command also receives weekly Periodical
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Logistics Reports (PLR) from each of the major units which it supports. Copies are sent to both the Log Headquarters in Saigon and the requesting units nearest support command, usually located at one of the Logistical Command’s ports. The individual support command has 72 hours in which to review the supply problem and fire back a suggested solution. This answer is reviewed in Saigon by the appropriate staff directorate at the 1st Logistical Command’s headquarters to make sure the recommendation guarantees a satisfactory solution.

With thousands of tons of military supplies arriving at Vietnamese ports daily, there is a continuous growth of units with differing needs. Due to daily movement of tons of supplies from warehouses and stockyards and a growing inventory numbering some 100,000 items, it is not unusual for some item to escape being recorded now and then. When an item for one reason or another is simply not available as a replacement, field expedients must be fashioned. These must be equally workable, if only for a temporary period, until the standard replacement arrives. In other cases, where production lags behind demand and consumption, a substitute is sought in sufficient supply to do the job of the hard-to-obtain one. Logistic experts, all experienced in their particular field, know what will work in another item’s place. They also see to it that information on substitutes and expedients is disseminated to places where it will do most good.

This then is the American system of supply in Vietnam which we are dependent on for many of our requirements. Elaborate and efficient though it is, our lead time for major equipments and end items is still in excess of 200 days. Ninety days is the accepted lead time for spares and general stores; in the expendable stores range, only 36 per cent of the inventory is stocked, and our availability on these items has never been better than 22 per cent.

On 17 March 1966 Australia entered into a ‘working arrangement’ with Commander United States Military Assistance Command Vietnam (COM MACV), the implementation of which was divided into three stages. Because of the constant escalation within the theatre and the inability of the logistical system to keep pace, it will be 30 March 1967 before we start Stage 2 of the Agreement which even then will only be on a limited scale. For example, only 101 of our 535 major equipments will be US direct support.

I consider that with fourteen days delay on Priority 1 demands from Australia, up to 28 days delay on Priority 2 demands and a six-weekly resupply ship from Australia, the Australian forces will be far better off than their American counterparts even if the US system outlined above was working.

Many innovations have been re-introduced and developed to cut down the back log of vouchers in the Depot and consequently the
delay time to units. Some of these are:

(a) Monthly bulk break to units in the Task Force.
(b) A self-service store for expendable items of Australian origin and those items covered by the capitation rate.
(c) Centralized clothing store for units in 1 ALSG.
(d) Introduction of a Weekly Logistic Report (WLR).
(e) Introduction of machine accounting which will give the depot immediate and automatic resupply.

To keep a modern army mobile, well fed and lethal, requires far more than the old-fashioned logistics concept of 'beans and bullets'. It has become a science and an art, demanding much of many men. The Australian logistics group in Vietnam is doing its best to meet all demands and to cultivate that responsiveness which the fighting troops have come to depend on.

SINGAPORE, FEBRUARY 1942

When we entered Singapore we were surprised to see that the aerodromes, harbour, and city had not been destroyed by the enemy. Seizing a junior enemy officer we questioned him. 'Why did you not destroy Singapore?' we asked. 'Because we will return again,' he replied. Again we asked, 'Don't you believe Britain is beaten in this war?' He replied, 'We may be defeated 9 times, but in the final round we will be all right — we will win that.' This one junior officer prisoner of war spoke with the voice and the belief of the whole Anglo-Saxon nation.

In a little more than three and a half years later the curtain fell on the Japanese Army's government of Malaya... In military operations we conquered splendidly, but in the war we were severely defeated. But, as if by magic, India, Pakistan, Ceylon, Burma, the Dutch East Indies, and the Philippine Islands, one after another gained independence overnight. The reduction of Singapore was indeed the hinge of fate for the peoples of Asia.