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FRONTISPIECE

When the British forces in Cyrenaica were driven back into the old Italian fortress of Tobruk by Rommel's Africa Korps early in 1941, 9 Australian Division was very short of anti-tank artillery. However, the units found many Italian 75 mm and 105 mm guns lying around, most of them with their sights removed. These guns were pressed into service and manned by infantry crews. They were usually sighted by squinting down the barrel and making a rough visual allowance for windage and the movement of the target. The aim of guns engaged in indirect fire was usually corrected by an improvised fire order, such as "One telegraph post further right and two sandbags up," or simply "Cock her up a bit."

The "Bush Artillery," manned chiefly by clerks, cooks and batmen, operated throughout the siege to the acute discomfort of the Italians. The enthusiastic gunners were not always popular with neighbouring troops, on whom much of the return fire was likely to fall.

AUSTRALIAN ARMY JOURNAL

A Periodical Review of Military Literature

Number 133 June, 1960

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Photo: Australian War Memorial, Canberra.

The Bush Artillery — Tobruk, 1941

AUSTRALIAN ARMY JOURNAL

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Contributions, which should be addressed to the Director of Military Training, Army Headquarters, Melbourne, are invited from all ranks of the Army, Cadet Corps and Reserve of Officers. £5 will be paid to the author of the best article published each month. In addition, annual prizes of £30 and £10 respectively will be paid to the authors of the articles gaining first and second places for the year.

THE PENTROPIC DIVISION

The February 1960 issue of the Australian Army Journal was devoted to an explanation of the organization of the new Pentropic Division. The article referred in its concluding paragraphs to the need for all officers to give thought to the employment of the division.

Action is being taken to publish further articles to give officers a fuller understanding of the division. These articles will include:—

(a) Information on those units of the Combat Support Group which were mentioned only briefly in the first article.

(b) Some details of equipments and the problems associated with the purchase of new types.

(c) A number of articles on the tactical employment of the division.

It is hoped that the first article and those to be issued in following months will stimulate officers to putting their thoughts and ideas about the division into writing and submitting them as papers for publictaion in the Journal.

The introduction of a new organization must not be regarded as the closure of a book; it is the opening chapter only to a field of study which affects everyone in the Army. It is a deep study; a fascinating one, a vital one. It should encourage thought into many channels, giving opportunity to a large number of people to exchange ideas based on their experiences or on their readings of the many ramifications of a profession which is full of changes.

It would be a surprising and a sad thing if the introduction of a new organization did not give rise to the expression of ideas. I hope that the editorial staff of the Australian Army Journal will receive many articles of interest from you, the readers, for whose benefit the Journal is published.

Lieutenant-General.
Chief of the General Staff.

THE PENTROPIC DIVISION

ARMOUR IN THE COMBAT SUPPORT GROUP

RAAC units in the Combat Support Group comprise—

(a) Reconnaissance Regiment (less one squadron).
(b) Armoured Personnel Carrier Regiment.
(c) Anti-tank Regiment.
(d) Forward Delivery Troop (Special).

These units should be available to the division when it is operating independently to enable it to realize its maximum potential under appropriate conditions. If the division is operating as part of a larger force the units should still be available to the division, but would form part of the normal Corps structure.

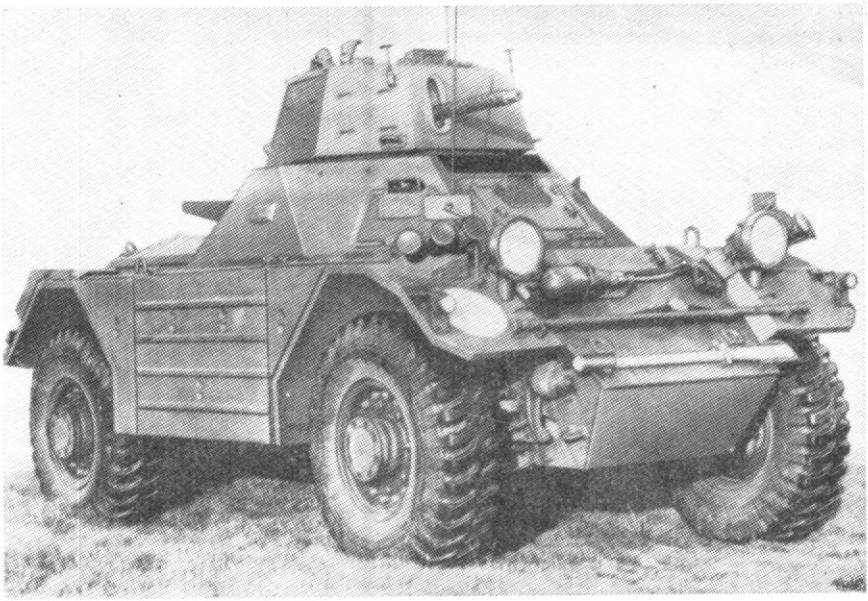
Reconnaissance Regiment

A squadron of this regiment is organic to the division, but its employment in no way differs from that of the rest of the regiment, and it is therefore intended to discuss the organization and employment of the regiment as a whole.

As mentioned in a previous article on the Pentropic Division (AAJ No. 129, February 1960) the unit provided is basically the old armoured car regiment with a few important modifications made necessary by conditions thought likely to prevail in nuclear warfare in South-East Asia. Thus—

(a) Two 81 mm mortars and 14 personnel in two APCs have been added to the headquarters of each squadron. This increment provides additional fire power and dismounted personnel to meet anticipated requirements in close country.
(b) A surveillance troop has been added to headquarters squadron. It should be noted that if only that portion of the regiment organic to the division is being employed it will be accompanied by the surveillance troop. The troop will normally work in close conjunction with the reconnaissance and surveillance platoon of the divisional light aircraft company. It has a ground photo section to supplement normal ground reconnaissance, and a ground radar section of great value for surveillance in conditions of poor visibility.

The reconnaissance regiment is designed for medium reconnaissance (finding and maintaining contact with the enemy) and battlefield surveillance. These roles are normally carried out in conjunction with other agencies such as the Air Force, army aviation and special air service (SAS). However, when the regiment, or any part of it, is not required to perform its primary roles,



Ferret Scout Car Mk 2

it can carry out other tasks including:—

(a) The provision of observation to the front, flanks or rear of a force in any phase of war.
(b) Internal security.
(c) Escort duties.
(d) Traffic control.
(e) Offensive action against enemy airborne troops.
(f) Radiological survey and damage assessment after nuclear attack.
(g) Independent raids.
(h) Assisting with communications under difficult conditions.

In planning the employment of the regiment the following operational characteristics should be kept in mind:—

(a) Silence. With careful driving the vehicles of the regiment can be moved in relative silence. The introduction of a tracked carrier may, however, invalidate this characteristic to some extent.

(b) Mobility. The regiment can move fast on roads and tracks, but its cross-country mobility is poor except under good conditions.

(c) Endurance. The regiment has an appreciably better endurance than an armoured regiment due to the lower petrol consumption of its vehicles.

(d) Inability to overcome strong opposition. The regiment is not designed to overcome strong opposition, although it can fight to a limited extent to gain information and to prevent enemy reconnaissance units from gaining information about our own forces.

(e) *Good Communications.* The regiment's communications enable it to pass back quickly and over a considerable distance any information obtained. Its communications can also be used to supplement normal divisional communications.

The organization of the regiment is as shown in Figure 1.

The regiment is equipped with Ferret Mk 1 and 2 and Saracen, which are well known, and with the Saladin armoured car. Brief particulars of the latter are—

Weight (laden)—11 tons 2 cwt.

Armament—

(a) Main armament—76 mm gun capable of firing an HE shell 5000 yards and engaging hard targets with HESH up to a range of 1600 yards. In addition, the

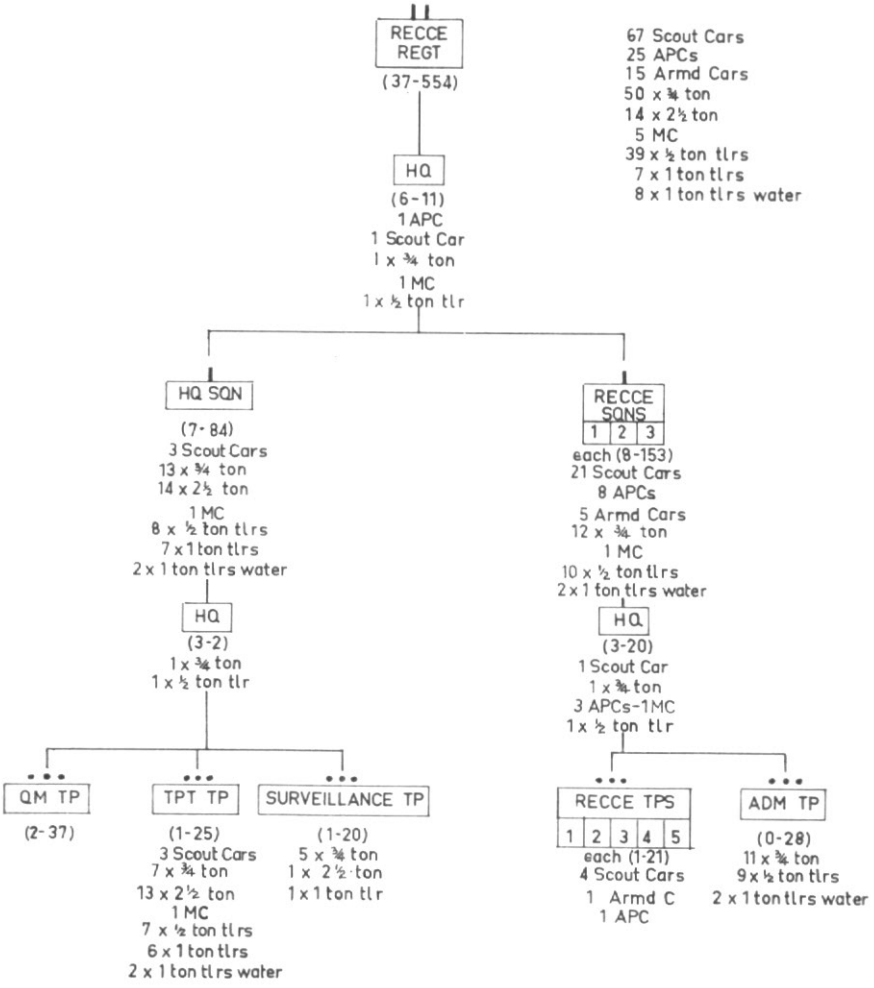


FIGURE 1. OUTLINE ORGANIZATION OF RECONNAISSANCE REGIMENT

gun can fire canister effective to 150 yards and a smoke shell.

(b) Secondary armament—Two .30 Browning machine-guns, one mounted coaxially with the main armament and the other mounted as a commander's machine-gun on the turret.

Speed on roads—45.5 mph.

Range—Road 250 miles approx.; cross country 140 miles approx.

It is intended to replace the Saracens with a tracked carrier as soon as equipment is available. Particulars of one type of tracked carrier are given later in this article, when the armoured personnel carrier regiment is being discussed.

Armoured Personnel Carrier Regiment

This type of regiment is new to the AMF, although regiments were employed by other armies quite extensively in Europe during the latter part of World War 2. The regiment has been included in the combat support group to provide the infantry with the additional protection and mobility required in nuclear or conventional warfare, in which battle groups must fight over a very large area.

The main roles of the regiment are—

(a) To provide the infantry with a protected carrier to transport them with a minimum of casualties over ground covered by enemy fire, either to a point from which they can attack an objective or, if circumstances are favourable, onto the objective itself.

(b) To give infantry the protection and mobility needed for them to take part in mobile operations with armour.

(c) To lift infantry and their supporting weapons over rivers and flooded padi.

(d) To protect infantry from residual radiation.

(e) In unusual circumstances to carry out administrative tasks.

Armoured personnel carriers are lightly armed and armoured and have no adequate means of protecting themselves against enemy attack other than by the careful use of ground and their own machine-guns. They must therefore move in close conjunction with tanks and be supported by them. This support is particularly important when the armoured personnel carriers are stationery and infantry are dismounting.

An APC regiment is capable of lifting an infantry battalion, and its organization is tailored to enable a troop to lift a company or its equivalent and a section to lift a platoon. Details of one type of carrier are given in the next paragraph. In addition, it should be noted that the vehicle is—

(a) A very good cross-country vehicle, being fully tracked and having a low ground pressure.

(b) Armour protected against small arms fire, shell splinters, and residual radiation.

(c) Air portable.

(d) Amphibious.

Details of one type of armoured personnal carrier are—

Weight (laden)—9.9 tons.

Dimensions—

Length 15 ft 9 in.
Width, 8 ft 10 in.
Height, 7 ft 3¼ in.

Crew—2.

Personnel capacity—10 (excl. crew).

Ground pressure—7.2 psi.

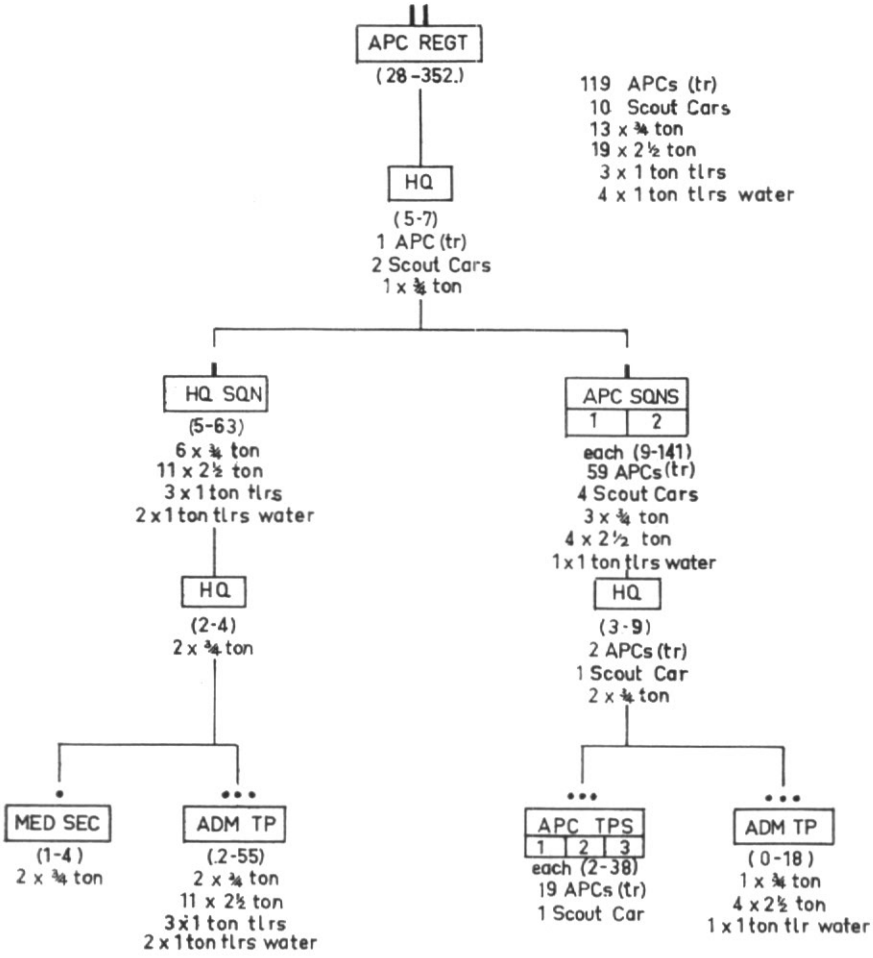


FIGURE 2. OUTLINE ORGANIZATION OF APC REGIMENT.

Performance—

Maximum speed	40 mph
Range	200 miles at 25 mph
Climb	30 degrees
Trench	66 in
Vertical step	18 in.

The organization of the regiment is as shown in Figure 2.

Anti-tank Regiment

It should be noted that when the article on the Pentropic Division was prepared for AAJ No. 129 of February 1960 it was intended to have an anti-tank squadron only in the combat support group. The allocation has since been changed to a regiment.

The infantry battalion is equipped with weapons to provide a good measure of anti-tank defence for infantry localities under most circumstances. However, infantry localities will be greatly dispersed and, in suitable terrain, enemy armour will

Saracen APC Mk 2

not have much difficulty in penetrating between localities. In addition, under some circumstances the anti-tank defence resources of infantry localities may be unable to prevent sniping by enemy tanks or even the penetration of the localities themselves.

The anti-tank regiment, which must not be treated as an armoured regiment, is designed to serve as a flexible and highly mobile unit capable of—

(a) Supplementing existing infantry anti-tank resources within infantry localities for the direct defence of those localities.

(b) Covering gaps between infantry localities by fire from within those localities.

(c) Sniping from concealed positions outside infantry localities with a view to causing early deployment and consequent delay.

(d) Operating in a counter penetration role, with infantry or armoured protection, from previously reconnoitred fire positions. In carrying out this role the guns provide depth to the anti-tank layout of the division and protect gun areas, rear headquarters and maintenance areas.

(e) Providing mobile anti-tank defence for all phases of an attack or counter-attack.

(f) Supplementing the anti-tank resources of the reconnaissance regiment.

The anti-tank gun is to be a 120 mm RCL having a good range and very good performance against hard targets. It will be mounted on a special version of the light-tracked amphibious armoured personnel carrier in use in the armoured personnel carrier regiment. The 120 mm RCL may in time be wholly or partially replaced with an anti-tank

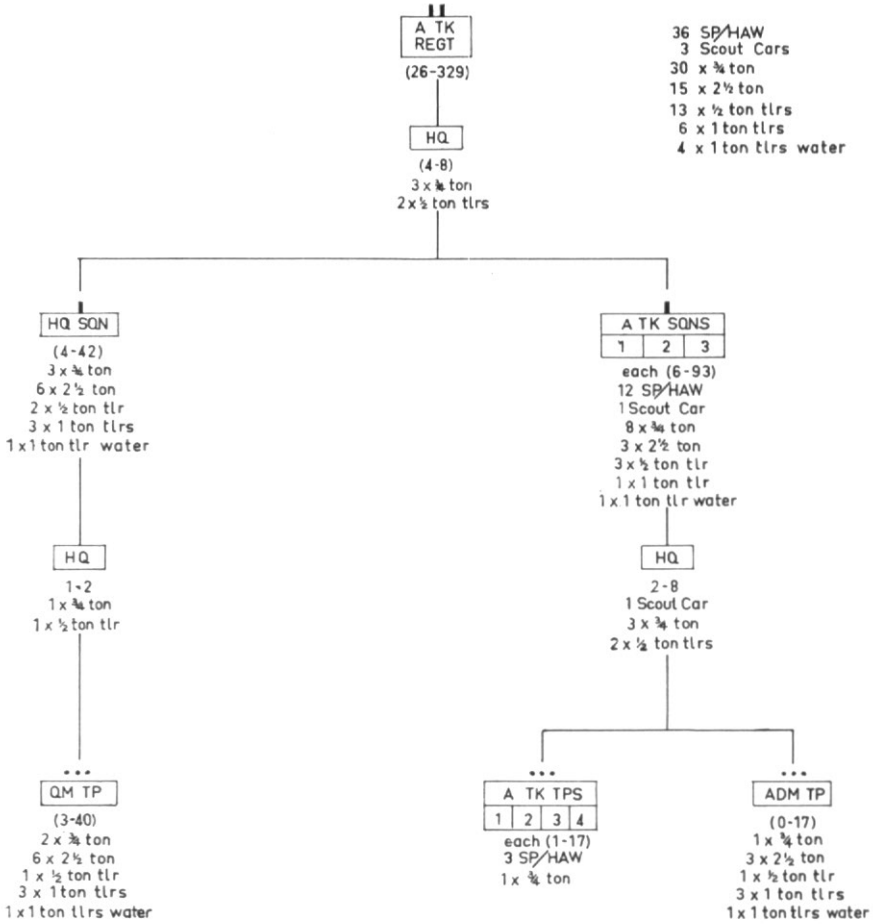
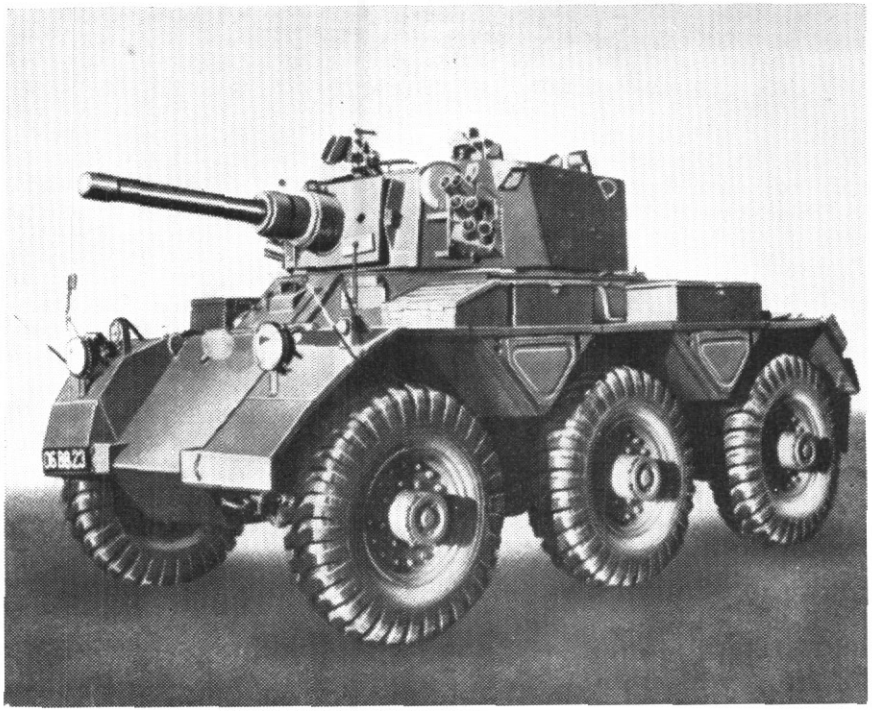


FIGURE 3. OUTLINE ORGANIZATION OF ANTI-TANK REGIMENT.

guided weapon (GW). However, this equipment is not a tank and cannot operate by itself outside an infantry locality except for a short period as envisaged in sub-paragraph (c) of the preceding paragraph. If it is necessary to check penetration between localities by the use of weapons sited outside infantry localities, this task will have to be undertaken by a small force of all arms probably including tanks.

Despite its limitations, the anti-tank regiment is capable of relieving the armoured regiment of many of the defensive tasks it would otherwise have to carry out. Thus the armoured regiment is made available for offensive use. However, to be fully effective the anti-tank regiment must have the weapon system, mobility, and protection envisaged above. Until this equipment is available, various types of interim equipments will have to be used. Whilst training on these equipments should be based on the tasks outlined above, the very severe opera-



Saladin Armoured Car

tional limitations of the interim equipments must be fully understood. Towed equipments or equipments mounted on soft vehicles should not be used operationally in a mobile role and can do little other than—

(a) Supplement existing anti-tank resources in defence or at the forming-up and reorganization stages of an attack.

(b) Be sited and dug-in in depth to protect gun areas, headquarters and maintenance areas.

The organization of the regiment is as shown in Figure 3.

Forward Delivery Troop (Special)

A forward delivery troop (special) is included in the combat support group, but it must in fact form part of an ARG or some equivalent system. It is thus the last link in a chain of units providing fully kitted AFVs and trained RAAC reinforcements as replacements in RAAC units.

The number of crewmen and equipments held is not fixed, but is likely to be of the order of 20 reinforcements and the following replacement AFVs:—

Tanks	5
APCs	2
Anti-tank carriers	2
Armoured cars	2
ARVs	1
Bridgelayers	1
Tankdozers	1

The unit is commanded by a captain, and has a strength of 34 all ranks, including 9 RAAOC and 3 RAEME personnel.

THE SPECIAL AIR SERVICE COMPANY

Special Air Service (SAS) Companies are provided in Combat Support Groups on the scale of one per Pentropic Division. Their role, in support of the Pentropic Division, differs greatly from that of the SAS units which won fame in the 1939-45 war.

Role

The primary role of the SAS companies in the new organization is to provide for the Pentropic division:

- Long-range reconnaissance
- Medium reconnaissance
- Battlefield surveillance.

In this capacity they supplement the Reconnaissance Regiment.

The Reconnaissance Regiment cannot provide long-range reconnaissance and the SAS companies are the only ground forces trained and equipped for this task. The degree to which they supplement the work of the Reconnaissance Regiment will be dictated largely by the limiting effect of the terrain on the vehicles of the Reconnaissance Regiment.

Organization and Employment

The SAS company is neither organized nor equipped to hold ground for protracted periods, nor to undertake normal infantry offensive operations, but the company, its platoons and sections, are capable of limited defensive and offensive action. The organization of the company, which is shown in Figure 4, is sufficiently flexible to allow platoons and sections to operate independently as dictated by the scope and duration of the tasks allotted. It is normal for the company to operate in small groups.

When the going is suitable and the situation demands, the SAS company can operate on a jeep-mounted basis, but will more usually operate on foot in jungle terrain. For mounted operations, provision is made to issue 30 additional vehicles and 30 additional machine-guns.

Even if the initial move to the start point of a patrol is made by sea or air, the subsequent operations, if on foot, will be slow, and the duration of patrols where local inhabitants are unfriendly will depend on the amount which can be man-packed and the practicability of re-supply.

The special training of all ranks of the SAS company includes parachuting, cliff climbing and the operation of small craft. This enables patrols or sub-units to be moved by sea or air into or near the area in which they are to operate and, when backed up by re-supply on a similar basis, greatly extends the possible range and duration of patrols.

Officers of the company also make a special study of guerilla warfare and the employment of nuclear weapons. This fits the company for employment on harassing tasks behind enemy lines and for the location or confirmation of possible nuclear targets.

While the SAS company is quite often employed on hazardous tasks to fulfil its operational role, it should

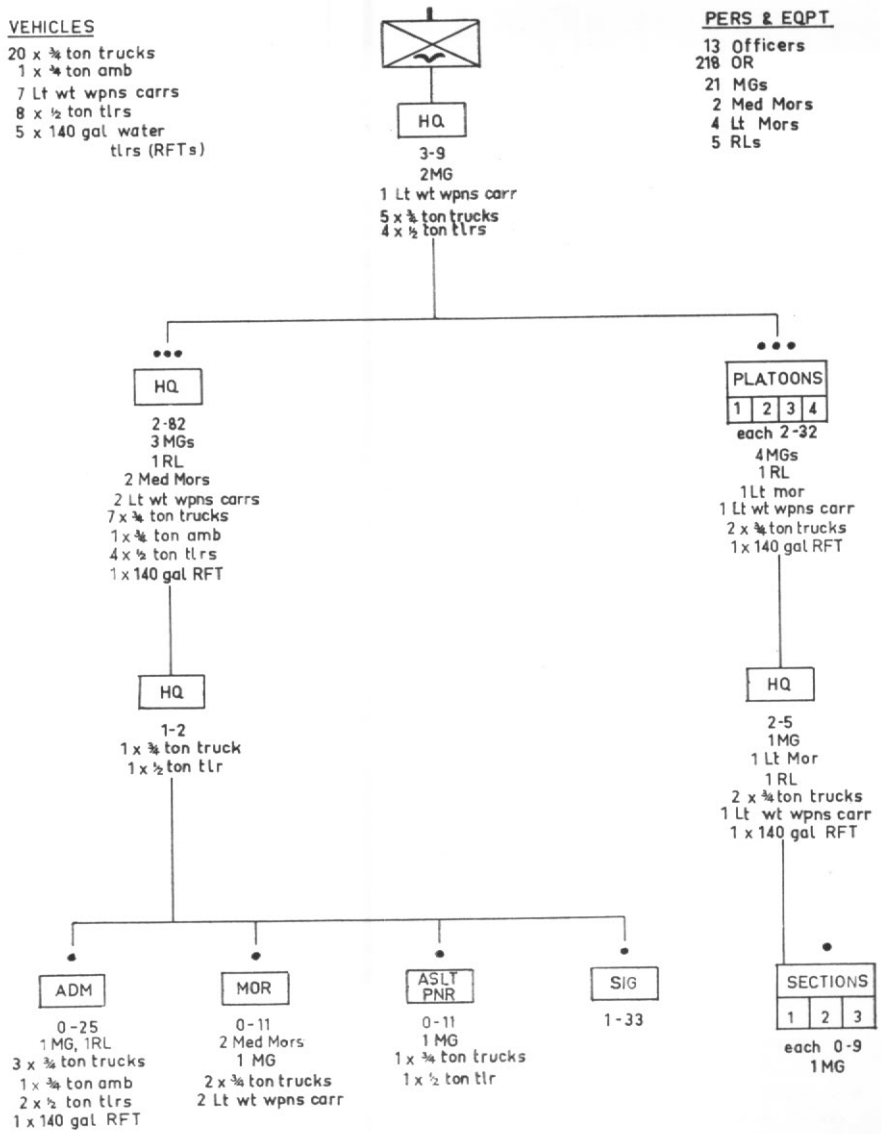


FIGURE 4. ORGANIZATION OF AN SAS COMPANY.

not be regarded as expendable and should not be launched into operations which do not present at least a fair fighting chance of survival.

It should be noted that an SAS company can provide a maximum of twelve patrols for short periods, but this does not permit of any reserve for reliefs. The company is well supplied with communications and can maintain touch while operating deep in enemy territory.

Small craft powered by outboard motors are used for operations where speed is more important than stealth

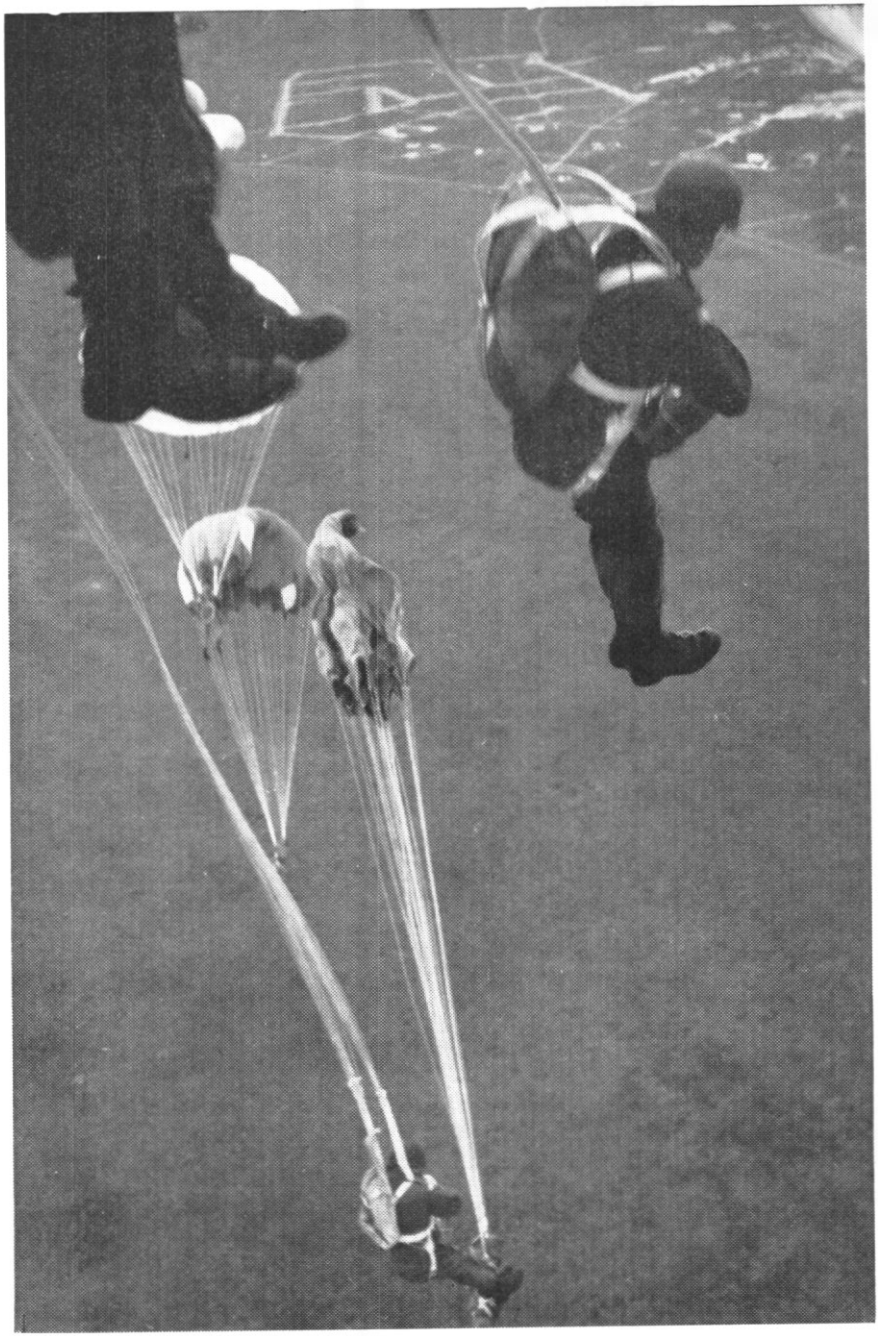
Possible Missions

Missions which might be allotted to the SAS company are—

- Medium reconnaissance in advance of the forward troops when contact has not been made or has been lost.
- Maintaining a watch on an exposed flank and providing limited flank protection.
- Long-range reconnaissance behind enemy lines, including the location or confirmation of possible nuclear targets.
- Small-scale harassing operations behind the enemy lines, such as—
  - (a) Minor tactical demolitions.
  - (b) Destruction of equipment.
  - (c) Disruption of communications.
  - (d) Destruction of headquarters.
  - (e) Battlefield surveillance over areas inaccessible by other means.
  - (f) Internal security tasks.
  - (g) Traffic control when not required for other tasks.

Conclusion

Operating in a tropical terrain under nuclear threat, the rapid collection of accurate information poses one of the greatest problems for a divisional commander. The SAS company gives him a versatile and highly mobile force which can help greatly in overcoming this problem.



A high degree of parachuting skill is essential for SAS men

PRELUDE TO THE PENTROPIC DIVISION

A Review of Military Thought and Literature Leading to the New Divisional Concept

Major Saxon T. Smith, BEc.
Royal Australian Army Ordnance Corps

THIS article is a follow-up to the February 1960 issue of the Australian Army Journal, which dealt with the pentropic division, an Australian version of the pentomic division.

The aims of this paper are two-fold. First, to review field force organization and command doctrine to a point just short of the pentropic division, at which stage the AAJ takes over. Second, to draw attention to some of the non-classified and readily available literature on the subject, and in doing so to pay tribute to a great Englishman, Captain B. H. Liddell-Hart, who more than any other man in the post-war years was responsible for the revolution now taking place in the organization of the field forces of the West.

Up to the Napoleonic wars, European-type Armies in the field moved from place to place en masse by a single route, and fought their battles more or less statically under the direct control of the Army commander.

By modern standards the battlefields were small, and a commander from his normal position in the centre rear of his army could not only see his own troops but those of the enemy and the opposing general as well.

The basic layout for battle was infantry and artillery in the centre and cavalry on the wings. Occasionally the commander stationed cavalry in rear as a reserve, but once battle was joined there remained little opportunity to manoeuvre, and any movement of forces was usually confined to the cavalry. During the battle, which incidentally seldom lasted more than a day, the general issued orders to his battalion, squadron and battery commanders direct or by means of mounted staff officers.

Napoleon changed all that. On the organizational side, battalions, squadrons and batteries were grouped into divisions, which thus became self-contained balanced forces of all arms. On the march, divisions proceeded independently by parallel routes, and this reduced road congestion as well as water supply and foraging problems.

Thus mobility and speed of movement was much improved, and by unexpectedly appearing in the heart

of enemy territory and rapidly concentrating his forces in a selected area, the Emperor used the element of surprise and thus threw his opponent off balance. The enemy was brought to battle at a time and on ground of Napoleon's own choosing.

On the battlefield, the new divisional organization shortened the time needed for reconnaissance and speeded up deployment of forces, since detailed reconnaissance and siting of men and weapons in divisional areas laid down by the commander was decentralized to divisional commanders. Furthermore, the Army commander could now utilize his reserves of horse and foot much more effectively during the battle.

As the size of armies and consequently battlefields continued to increase, Napoleon grouped divisions under Corps commanders, and thereby removed himself one step further from his battalions, squadrons and batteries. His opponents, of course, followed suit.

This represented the high water mark in command organization during the Napoleonic Wars, and it was to continue unchanged into the 20th Century, when the chain of command was further lengthened by the addition of Army Group commanders and headquarters above Army commanders and staffs. It was now a far cry from the leisurely pre-Napoleon days, when the commanding general performed his own detailed reconnaissance of the battlefield, positioned every unit and gun, gave orders direct to his units, then bowed to his opposite number—"Let battle commence."

Clausewitz was the first authoritative voice to note the disadvantages of having a number of commanders and headquarters between units and the commanding general. Information was slow in filtering back to the general, and orders were likewise slow in getting forward to the troops. Flexibility suffered in that corps commanders resisted as far as possible instructions from the general to transfer divisions or units from one corps to another. In other words, the natural friction of war was increased by the intermediate commanders and headquarters.

Clausewitz believed that, basically, the trouble lay in the commonly accepted span of control exercised by Army and formation commanders being unnecessarily narrow. He believed that commanders of units and divisions should be able effectively to manage 4 or 5 subordinates, while an Army commander with a larger staff should be able to co-ordinate from 8 to 10 divisions.

Until shortly before the Second World War, the British Army was organized in "fours" all the way from sections to divisions—4 sections to a platoon, 4 platoons to a company, 4 companies to a battalion, 4 battalions to a brigade and 3 infantry plus 1 artillery brigades to a division.

However, the increasing number and variety of support weapons, equipment and vehicles made the "square" division too unwieldy, so the "triangular" or "Continental" organization was adopted as the best method of scaling down the size of the formation. Not only did this reduce the span of control to 3, but during the war the chain of command was further lengthened when Army Group headquarters were established to co-ordinate 2 or more

armies, each of which in turn usually controlled not more than 3 corps, which again commanded about 2 or 3 divisions. To borrow Liddell-Hart's simile, the command structure on both sides looked more like a ship's mast than a pyramid.

Another side effect of these burgeoning headquarters, first noted by Clausewitz, was that not only did they absorb large numbers of officers and men at the expense of fighting units but for some reason they continued to grow steadily in size. A century after Clausewitz, a professor of economics, in his researches on the growth of public service organizations, provided the clue as to why military headquarters grow. The now famous Parkinson's Law shows that steady growth at a predetermined rate is inevitable, that pruning has only a temporary effect on growth, that the only way to stop growth is not to have the headquarters at all!

Thrusting commanders like Rommel, Patton and Montgomery realized that it took far too long for information to get back and orders to get forward—that the reaction time was much too slow. They realized that this inherently negative situation was bad because when the enemy did something, after a lapse of time we did something in reply. In other words, when the enemy held the initiative our cumbersome chain of command helped him retain it, and they were quite aware of the fact that to win you have to seize and retain the initiative.

All three generals realized they had to be well forward, and each solved the problem in his own way. Montgomery, for instance, found a partial solution in a small tactical field headquarters, heavily staffed with liaison officers and signallers, whose mission was to give him quick information on what was happening and to transmit his orders direct to the corps or divisions who were fighting. While his Chief of Staff, de Guingand, ran the "bee-hive," as he called HQ 21 Army Group, Montgomery would come in on the operational chain around division or corps level—no doubt adding to the frustrations of those higher up in the clouds, but speeding up reaction time and giving punch to his operations by direct contact with corps and divisional commanders.

Until late in the war the Axis field force organization was substantially the same as that of the Allies, with the chain of command stretching right back to the Army Group. But in 1944-45, dwindling manpower, equipment and supplies on the one hand and overwhelming Allied air superiority on the other, forced a significant change in organisation of the German Army on the brigade-division-corps level.

Brigades disappeared and divisions were reduced in size and reorganized on the basis of the divisional headquarters controlling varying members of battle groups, usually between 3 and 7. The battle groups themselves, composed of motorised infantry, tanks and SP artillery, varied in size from company to battalion groups, the exact composition depending on the tactical situation or regional availability of men and equipment. The Army commander controlled a number of these divisions direct, the number of Corps headquarters was greatly reduced and there was only one headquarters between the units and

the Army commander, who now fought the tactical battle.

Although the reorganization was introduced too late to affect the outcome of the war, the new divisions nevertheless demonstrated their effectiveness in no uncertain manner under the worst possible conditions. The battle groups were small enough to have a reasonable chance of escaping the attentions of Allied air forces, yet in attack and counter-attack they packed a punch out of all proportion to their size. Complete motorization coupled with the shortened chain of command greatly increased mobility and tactical flexibility and enabled the divisional or Army commander quickly to concentrate his battle groups or divisions, deliver the punch and then disperse before enemy ground troops or aircraft had time to react. Although Germany was losing the war as a whole, this ability to concentrate superior force at a selected spot then disperse rapidly after delivering the stroke, in many instances gave local German commanders the initiative against the numerically superior but relatively sluggish forces opposing them.

There is no doubt that the implications of these new developments were appreciated by many Allied officers, but the great events associated with the triumph of the Allies and ruination of Germany turned the attention of the victors, temporarily, to other matters, while at the same time few were prepared to listen to what the vanquished had to say, assuming, of course, that the Germans wanted to talk about the war, anyway.

There was one man, however, who not only thoroughly understood the lesson but also intended to preach it to those who would listen. Captain H. B. Liddell-Hart, wounded in the First World War, scholar, military historian and writer, adviser on military matters to the British Government, had interrogated most of the senior German commanders at the end of the war and, among other things, obtained from them their views on the light division and shortened chain of command.

In the July 1950 issue of the *Army Quarterly* there appeared a contribution by Liddell - Hart entitled "How to Quicken Manoeuvre and Gain Flexibility in Land Warfare." This short article became a landmark in the post-war military world of the West, for, written in the light of the atom bomb, it laid the foundations of the pentomic and later the pentropic division concept.

Therein he covered, to commence with, much the same ground as this article. His views on span of control, summarised below, are particularly interesting.

- "Threes" are unnecessarily narrow and result in the establishment of an excessively long chain of command.
- "Fours" are too balanced and do not encourage the commander of only average ability to go for concentration of force. This man will tend to dispose his forces two up and two back.
- "Sixes" facilitate two groups of three. Too much balance is inherent in this.
- "Seven"s good for tactical flexibility and concentration of force, but the span of control is likely to be too great unless a deputy commander is available to take a "wing."

- "Fives" is the best compromise.

Having established his preference for "fives," but with a sidelong glance at "sevens," be it noted, he went on to his recommendations, which are again summarized:—

5 men per section
5 sections per platoon
5 platoons per company
5 companies or 1 support company and 4 companies per battalion
5 battalions per division.

On the higher echelon he agreed with Clausewitz that an Army commander should be able to handle 8-10 divisions, and only above this number should corps commanders be considered. One of the most interesting aspects of the article was his reasons for "fives" in the section, platoon and company, for herein in potted form are Liddell-Hart's theories on minor tactics.

Writing in an annex to the article, General Westphal, who had been Chief of Staff in all types of German formation up to Army Group, agreed with Liddell-Hart's views and recommendations and gave details of plans for light infantry and armoured divisions which he worked out in the winter lull of 1943-44. The infantry division proposal was based on a 5-battalion organization with one headquarters and totalling 10,825 men.

No serious student of the development of post-war field force organization should omit to study Liddell-Hart's contribution, for the views expressed therein are the forerunner of most of the ideas on the pentomic division—views which in themselves are a distillation of Clausewitz', the German generals' and his own thought and experience.

"How to Quicken Manoeuvre and Gain Flexibility in Battle" started a literary chain reaction which at a later stage found practical expression in various types of experimental divisions now being tested in Europe and the United States. The following is a selection of this literature.

In the November 1953 *Journal of the Royal United Services Institution*, Major W. N. R. Scotter, MC, in his article "Streamlining the Infantry Division" advances arguments for a 7-battalion division (with a divisional assistant commander) but with no change in the organization or size of the artillery, armour and engineer components.

The *Journal of the Royal Artillery*, April 1956, contained the Duncan Gold Medal Essay 1955 — "The Sooner the Better"—in which Major P. S. Turner, MC, looks at the problem with a gunner's eye. His proposals may be summarized thus:—

- Infantry Division with 7 battalions, each battalion to have 5 rifle companies of 4 platoons per company. Each company was to have 2 MMG but no mortars.
- Reduce the scale of conventional support weapons and replace all tanks and most artillery with atomic weapons, as follows:
  Non-atomic artillery (divisional troops)—7 field batteries of 42 guns, 3 anti-aircraft batteries of 54 launchers and 3 anti-tank batteries of 54 launchers.
  Atomic Artillery (Army troops)—1 SSGW Regt—5 rds/div/day, and 1 atom gun regt—4 guns/div.
- Divisions to be controlled by Army direct.

The *Military Review*, March 1957, contained an article by Colonel F. W. Norris, U.S. Army, entitled "Divisional Command in 1960-70," portion of which is quoted below:—

"We foresee a universal division designed to accomplish any combat role of the Army with only minor modifications to its basic tables of organization and equipment. It will consist of a division headquarters, the general and special staff, and a headquarters unit to protect and administer the headquarters. The combat elements of the division will be a fixed number of battle groups, a number greater than 4 and less than 10. (For illustrative purposes in this study only, it is assumed that a type division will contain six battle groups.)

"Each battle group will be a balanced force of approximately 1500 men, to include infantry, armour and artillery units with necessary detachments of combat and service support troops. Firepower, both conventional and low-yield atomic, will be provided for the battle group by organic rockets, short-range guided missiles, or light artillery, but heavier fire support, both conventional and atomic, will come from a single divisional artillery battalion or from corps or army. Divisional artillery headquarters and regimental (combat command) headquarters will have been eliminated. The conventional medium or heavy tank will not be organic to the division, armour support for the battle group being provided by organic air, transportable "tanks" weighing not more than 10 tons.

"The Division will be completely air transportable and will attain a high degree of cross-country mobility by employment of lightly armoured personnel and cargo carriers. Divisional headquarters will be tactical only. Administrative and logistical support will be provided directly to battle group by the field army support brigade organic to corps. Corps will be both an administrative and tactical headquarters, and normally will command four or more divisions.

Centralized Control

"Operationally, the six battle groups will employ organic nuclear and conventional firepower in the conduct of fluid, highly mobile operations. Control of these operations will be vested directly in the division commander. Technically, this control will be facilitated by—in fact, will be largely dependent upon —a grid system of communications which will provide electronic facilities for transmittal of the commander's will. Intelligence, at the divisional echelon, will be derived from agencies within the division (primarily the battle groups) and from a comprehensive surveillance system centred at corps and army. Battle groups will be dispersed and disposed in depth in order to avoid heavy losses under atomic attacks and to absorb enemy offensives. These units will "mass in time" for critical operations by using their versatile mobility.

"In the offensive, operations will be characterized by initial dispersion, by the rapid concentration of two or more battle groups to seize an objective (in conjunction with atomic firepower and ground manoeuvre to neutralize hostile opposition), and by the rapid dispersal of battle groups after seizure of the objective. At the divisional echelon objectives commonly will be hostile

troops and nuclear delivery capabilities; terrain and communications centres will be of lesser importance.

"On the defensive, the division commander will dispose the battle groups in depth so as to channelize hostile attacks into areas where nuclear and ground counter-attack can be employed successfully. He must anticipate massive nuclear attacks followed by deep hostile penetrations which may isolate or surround his division for considerable periods. Under such conditions, corps or army must conduct the general counter-attack to destroy the enemy and restore the situation."

In the January 1958 issue of the *Military Review* appeared two articles on the organization, employment and administration of the pentomic infantry division. In "Pentomic Infantry Division in Combat" Major J. H. Cushman dealt with the organisation and employment of the division, with emphasis on operational aspects. The organization may be summarized as follows:—

- Divisional and assistant divisional commanders with main and subsidiary headquarters.
- 5 infantry battle groups, each group of 4 rifle companies, 81 mm. mortar battery. Each rifle company has 106 mm. recoilless rifles.
- Armour battalion of 5 tank companies.
- Cavalry (recce) squadron of 3 troops.
- Artillery battalion of 5 batteries of 105 mm. hows.
- Composite battalion of 2 batteries of 155 mm. hows, 1 battery of 8-inch howitzers, 1 battery of Honest John rockets (atomic capability).
- Engineer battalion of 5 companies.
- Signal battalion to provide communications by electronic means through the divisional area on a grid system, also the supply recovery repair and evacuation of signal equipment.

The tactical handling of the division in attack and defence is dealt with briefly, as an introduction to more detailed study to be undertaken in another place.

In "Administration in the Pentomic Infantry Division," Lt-Col M. A. Pullman deals with the administrative support units organic to the division. They are:—

Quartermaster company—supply of rations, clothing, POL, repair parts, bath, collection and disposition of the dead.

Transportation battalion — divisional transport in soft-skinned vehicles, armoured personnel carriers to carry the assault elements of a battle group.

Ordnance battalion—supply, repair, recovery and evacuation of technical stores, excluding communications equipment, arms, armament vehicles and administrative control of ammunition which is drawn by divisional units in organic transport direct from Army established ammunition supply points in rear of the division.

Medical battalion—evacuation of casualties from units, triage, intermediate treatment, preparation of casualties for evacuation from divisional area.

Aviation company—equipped with fixed and rotary winged aircraft, battlefield surveillance and recon-

naissance in conjunction with the cavalry squadron, target acquisition, evacuation of casualties, ferrying forward of urgent stores, transport of commanders and senior officers.

Administration company — reinforcement holding, legal and finance services, personnel records, administration of divisional rest area.

Administrative support is direct from Army supply installations to divisional administrative units. Within the division, these units are organized as "divisional trains" under a division trains commander, who is responsible for tactical but not technical operations. He allots areas, supervises movement, protection, security camouflage and concealment, damage control, tactical training of personnel.

And those interested in a specimen operation order for a pentomic division in the attack should look up the March 1958 issue of the *Military Review*.

Assuming that corps commanders will in future only be appointed when the number of divisions in an Army reaches double figures, we see that the theory and practice of the chain of command has moved in a full circle and returned to the earliest and greatest days of Napoleon's military career, when only divisional commanders stood between the "Little Corporal" and his "moustachios."

"While a ship may symbolize the Navy and an airplane or long-range missile the Air Force, the only completely adequate symbol of the Army is *man—the front-line* combat soldier. He doesn't float, fly or fission. He is not a superman, but he must be a little better than most men, a little tougher in character, with stamina, guts, determination and discipline, and he must be dedicated to his profession, to insure that our Army will be victorious in the future as it always has been in the past. It is he who gets most of our attention, not only in the Infantry but throughout the Army as a whole."

—*Major-General Paul L. Freeman, Jr.*,
Commandant, U.S. Army Infantry School.

RECRUITING FOR THE CMF

Lieutenant-Colonel C. L. Thompson, MBE, ED,
Reserve of Officers

THREE things affect recruiting and the ability to retain young men in the CMF today:—

1. A national purpose that emanates from a threat of danger or from inspired leadership at the political level.
2. If the above is lacking, the stimulus of adequate rewards and the intangible benefits such as being part of a worthwhile team effort.
3. The satisfied customer—that is the "knack" by which the Army provides interesting training for all ranks without imposing an unreasonable demand on the CMF soldier's time.

The following thoughts are written in the hope that some constructive thinking can solve this vexed problem.

If the CMF is to provide the new Battle Group with young men of the right calibre and in sufficient quantity, then a substantial and well-planned "Recruiting Drive" must be undertaken. If we are to succeed we should accept the challenge presented by the following facts:—

(a) In spite of National Service the CMF has not obtained the right type of soldier to remain on as a volunteer. There has been, of course, the hard core of members from which we have obtained our junior officers and NCOs, but, generally speaking, the CMF has failed to attract recruits to train as "privates."

(b) Ceremonial parades, tattoos, martial music, displays of equipment, etc, do not in themselves win recruits.

(c) Even when we have won recruits of the NCO or officer potential, the turnover has been very high.

Recruiting is not easy in times of peace; especially today when the threat of war in the public eye seems so remote. In 1938 the signs of war were real. Today the tempo of our time and the many fields of endeavour and pleasure offering do not prompt a young man to look towards CMF service as a part-time calling or hobby.

Our young men are better educated and better informed than a generation ago. Their courage is no less patent than their fathers. Some of our CMF units have produced an amazingly high standard of effort with the co-operation of these young men when they have put their minds to a job. But parents today are ever watchful of their children's interest. Therefore, the fields of higher education, especially at night school, usually place such

a gripping demand on time that young men are unable to take on army training. Nor will parents encourage their sons to join up when victory in the economic race goes to the young man with a qualification.

Army recruiting programmes must, therefore, not only win over the young man but also the parent to what seems to them to be a worthwhile cause. The battle for a recruit is one for the heart of the young man, and should draw him to the Training Depot by two forces—namely—

(a) The desire to join and the family approval;
(b) The desire to remain once he has joined up.

Some new approach must be found if we are to win the next round. I feel sure that we are knocking our heads against a brick wall if we employ the same old thread-worn techniques used in past recruiting campaigns. Attractive pay rates and appeals to employers to grant men leave for camp are still necessary, but something more, like a breath of fresh air, must reach the community.

As a suggestion, therefore, the following are put forward as recruiting ideas:

(a) *Annual Camp Overseas*
With our growing air resources and the need to practise our Battle Group in quick movement, there should be no difficulty in "Air Lifting" our units to, say, Malaya, Borneo and New Guinea for Annual Camp. Some political aspects may have to be overcome if these overseas lands are to be used, but if the Government is really serious about making the CMF work some effort in this direction is warranted. In any case, there are ample locations within twelve-hour air travel that could be used.

(b) *Finance for Home Purchase*
A reward for continuous and efficient service over a period of five years, commencing at 18 years of age, would be the provision of home finance along similar lines to the War Service Loans available today. This, surely, would give members a stake in the country and a reward for service in the CMF.

(c) *CMF Pay to be Non-Taxable*
Justice must be seen to be done. The taxing of CMF pay is a sore point with officers and senior NCOs. Members who give their time in the service of their country as a part-time measure should not be taxed on the income earned.

(d) *Special Training Academy for the CMF*
To encourage officer promotion and advancement there should be established special organizations to cater exclusively for CMF officer promotion. These organizations or centres may take months or even a year to train a member for officer promotion. They would do this by night courses and week-end instruction, especially designed to give the potential officer the very best. During this period the candidate would be seconded from his unit so that he could give the fullest time possible to the training.

To summarize the above, we could envisage the recruiting campaign highlighting these features, namely:

JOIN a CMF Battle Group and spend your next Camp in MALAYA.

Home Finance for CMF Members who have FIVE years efficient service.

All CMF pay is NON-TAXABLE.

Do YOU want to be an OFFICER in the CMF? Gain a place at the Officer Academy.

The satisfied customer is our best source of recruitment. Therefore we must make sure that our members get the very best of training. The best "motivation" to keep a member happy in the CMF is in achieving a sense of fulfilment. We need to get "in tune" with their thinking and opinions. For example, there has been much discussion lately about unit traditions, colours and other ties. This seems to be an important subject by the old officers, but if we were to take a "gallup" poll of what the junior officers and the NCOs want, we older officers would be very surprised and alarmed to find that our young men in their twenties are left cold by such grumblings. They want efficiency and teamwork, and are quick to point out the "Colonel Blimps."

It sometimes happens that in mess life young officers are accused by their seniors of lacking certain qualities; but the young officer is quick to notice lack of gentlemanly conduct, especially when it comes from his seniors who should know better. Nothing "browns off" a young soldier more than to hear, see or learn about unruly conduct in mess life. Our Commanding Officers should be fully aware of their responsibilities in this matter.

One sore point amongst the majority of serving officers is the time required to be spent in training at week-ends. Some units last year had members away for upwards of four to six week-ends running on various activities. We would do better to accept a lower standard of training than to have our officers leaving the service because they find the demands of week-end training unreasonable. This is a fairly valid cause of grievance with young officers and their wives when home duties are being neglected through continual attendance at week-end training. I am sure a more careful selection of the timing in military training programmes would ensure the same result without the unreasonable demands often placed on officers today. It is far better to have a one hundred per cent. attendance once a month on week-end training than a varying fifty per cent. on a much more intense programme.

The most serious aspect of the time complaint is that it hurts most our best officer material, in that they are also progressing in the community as well as the CMF. Their resignation from the service could leave the CMF to be officered by mediocre personnel.

The points mentioned above are listed in this paper as examples of life and conduct within our own units that should be improved upon if we want to attract and retain the very best of our young men. We should put our own home in order before we go to the public for recruits.

In our public relations between the CMF and the community we must cultivate a sense of pride in doing a worthwhile job and generally build up the atmosphere of service tradi-

tion, rather than unit tradition. We want our CMF members to be respected by the community.

In short, our recruiting will not work unless it is backed by a great sincerity of purpose, which sets high ideals and standards. In return it is hoped that the Government will reward our volunteers with the tangible evidence of a grateful nation.

All the "give aways" mentioned above will cost money, but so long as we are getting value for it everyone will be satisfied. Our aim should be to give our heroes their rewards whilst they are alive. That must be the theme of our recruiting drive if it is to excite our young manhood to give their service in defence of Australia.

There is no question but that the talk of "peaceful co-existence" is a measure of convenience, a tactical move to disarm the West in a well-thought-out long programme for world revolution. Officially, Russia is committed to the doctrine of world revolution. World revolution and peaceful co-existence are by definition mutually exclusive. On Russia's choice of these alternatives depends ultimately whether there is going to be more or less world tension. The democracies have every right to demand to know, when Russia talks about "peaceful co-existence," whether she means to renounce world revolution. The West's terms for peaceful co-existence are Moscow's official recantation and renunciation of world revolution. All else—the suspension of nuclear tests, inspection zones, disengagement zones, disarmament—merely touches the surface.

—Lin Yutang in "The Secret Name."

Strategic Review

THE SITUATION IN LAOS

Condensed from an article in An Cosantoir, Eire

LAOS is not exactly a household word in this country. Nevertheless, this South-East Asian state and its affairs have been in and out of the headlines since the end of World War I. In 1954 events in neighbouring Vietnam brought the world the nearest it has yet been to all-out atomic war, and now the situation in Laos is being referred to as "another Quemoy."

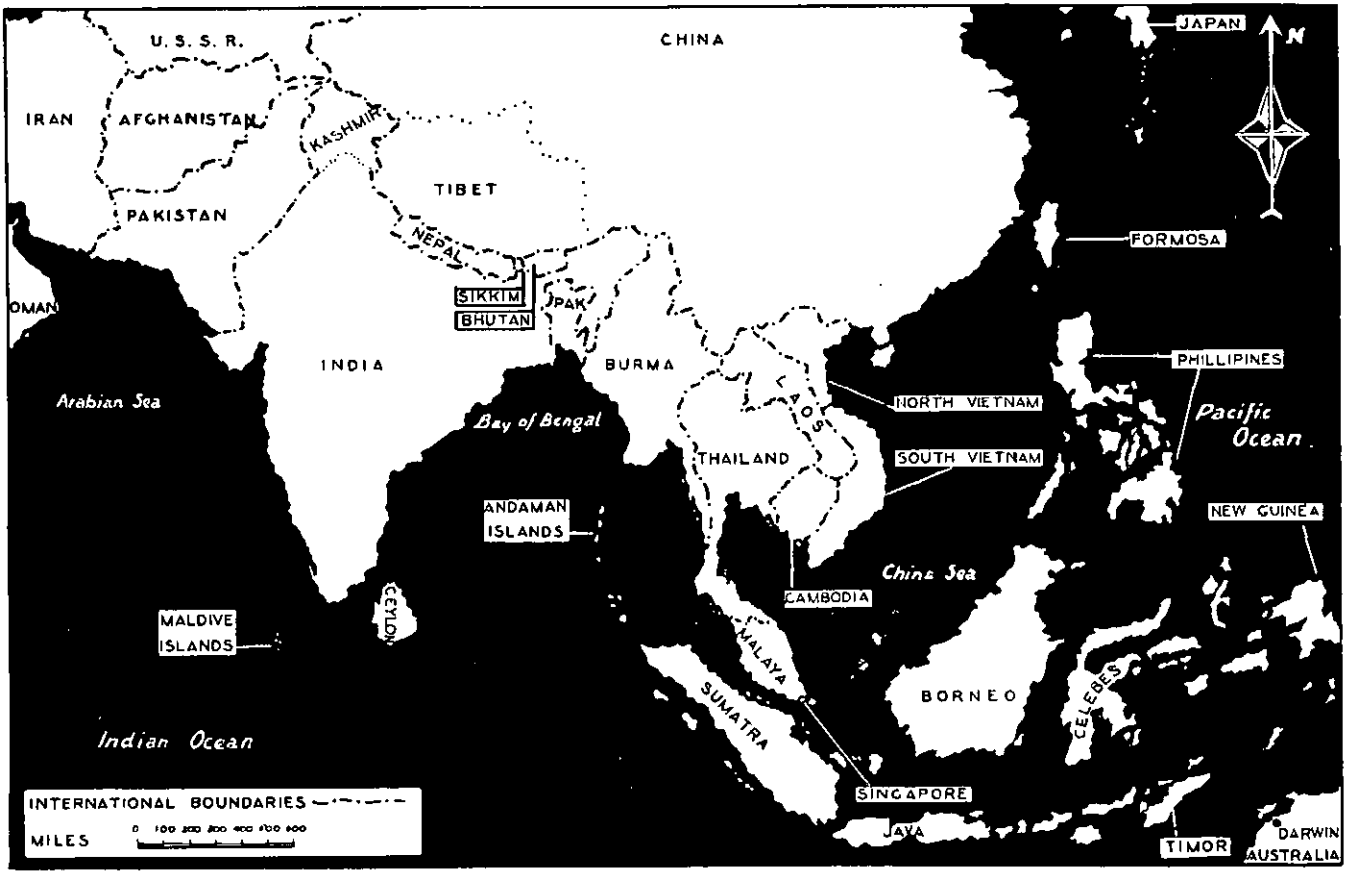
Laos is a mountainous, land-locked country, small by Asian standards, but in fact almost as large as Great Britain. It has a population estimated at between 1½ and 2½ million. There are no railways and few, poor roads; transport is mainly by air, water and elephant. Opium is the principal export. The under-developed economy is strongly supported by the United States, and lately foreign aid has been sluiced to it.

Laos is a monarchy. The Government is, in theory, democratically elected, and the present administration is strongly pro-Western. However, Western style democracy has as yet made little impression on the jungle tribesmen who form the bulk of the population.

Indo-Chinese War

In accordance with the Geneva agreement of 1954, which ended the Indo-China war, Vietminh forces were withdrawn from Laos, and the followers of the Pathet Lao party (their Laotian supporters) were concentrated in the two border provinces of Phong Saly and Sam Neua. Special minority status was given to these two provinces pending their absorption into the Laotian administration. Pathet Lao troops were to be "integrated" as soon as possible with the Royal Laotian Army.

These arrangements did not work. The two provinces were not absorbed into the fabric of the state, and being on the border with Communist North Vietnam were an obvious lever for making trouble. The forces of Pathet Lao were grouped into two battalions, but far from being integrated into the regular army were surrounded and virtually interned by Royal Laotian troops. In May 1959 the Government felt strong enough to disband and disarm these two battalions. In the process, one of them broke out and took to the hills of Sam Neau, where it has since become the hard core of the resistance.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SOUTH VIETNAM
ANDAMAN ISLANDS
NEW GUINEA
China Sea
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JAVA
TIMOR
DARWIN
AUSTRALIA

Unfortunately, the strategic position of Laos and the current international situation have taken a hand in complicating and inflaming this minor "brush-fire." Laos is so placed that if it becomes Communist, either through subversion or direct military action, the western flank of South Vietnam, the anti-Communist bridgehead maintained at great expense by the United States, would be turned. Simultaneously, Communist forces would be on the Mekong frontier of Siam, and might force this anti-Communist nation and kingpin of SEATO into at least a neutralist attitude. Burma, Malaya and the strategic key to the whole of South-East Asia—Singapore itself—would be one step nearer a direct threat.

China Intransigent

Politically it seems true that of the two major Communist partners, China is today the more intransigent and the less inclined to negotiate. A "hotting up" of the Cold War on the eve of East-West Summit talks might well suit her purpose. Moreover, China's two frontal assaults on the US defence in the West Pacific—at Korea and Quemoy—were both checked. Faced with a similar check in Europe, Russia attempted an outflanking move in the Middle East. The possibility of such an outflanking manoeuvre in Indo-China might appeal to China's leaders.

It is apparent that the US and China both have vital interests in the area, and they are, in fact, the principals behind the shadow boxing of the Laotian Government and Pathet Lao. In this situation, the inability of the Government of Laos to control events and the probability that Pathet Lao is being assisted by the North Vietnamese render possible the direct intervention of the principals. An appreciation of the forces available and courses of action open in that event is of interest.

Manila Treaty

Laos is one of the three "designated states" of the Manila Treaty, which set up SEATO, the organization specifically committed to defence against Communist agression in South-East Asia. The designated states (South Vietnam and Cambodia are the others) are not signatories to the treaty, but the organization's member states are bound to go to their assistance, if needed. SEATO, although often compared to NATO, is, in fact, much less highly organized, and the US, whose word goes, has no intention of becoming entangled in the complexities of regional defence in South-East Asia.

Nevertheless, if the decision is taken to have SEATO support Laos this support would initially have to be provided by air-and-carrier-borne forces of the United States 7th Fleet. This fleet normally consists of from two to four "attack" carriers plus auxiliaries; but if needed it can be raised to six carriers capable of launching 250 bombers and fighter-bombers carrying conventional or nuclear weapons. It has under command a division of Marines. There are probably four more infantry divisions distributed throughout the Pacific and available if needed. In addition, the USAF Tactical Air Command—distributed in 35 wings (each of 50-75 front-line aircraft) throughout the world—can rapidly be transferred to any theatre of war.

Lebanon Yard-Stick

In such a situation the vital factor is not so much the size of the force deployed as the speed with which it

can go into action and establish a bridgehead. In 1958 in Lebanon the first units were ashore 27 hours after M. Chamoun's appeal to President Eisenhower, and 10 days later two complete divisions had been landed. This response by the Mediterranean 6th Fleet was considered satisfactory at the time. No doubt it could be at least equalled by the 7th Fleet in Indo-China.

Communist Forces

On the Communist side the main military force in South-East Asia is the North Vietnamese Army. This consists of twenty divisions, including two artillery divisions, one pioneer division, and one anti-aircraft division. It is commanded by General Giap, the victor of Dien-Bien-Phu, and its ranks are filled by conscription of all suitable men from 18 to 30. There is a Chinese military mission of 5,000 men in the country, and 20,000 Chinese technicians and railway workers are employed in North Vietnam. A Chinese brigadier is assigned as liaison officer to each Vietnam division.

This is a formidable force. No doubt its communications are land-locked and inadequate compared to those of its possible adversary, but its superior position, poised on the borders of Laos, more than compensates for this. So far only elements of the North Vietnamese forces have been infiltrated into Laos, but if the decision is taken to have this army support the Laotian insurgents as an organized body, then a difficult problem is at once posed for SEATO and its principal backer, the United States.

It would not be possible to win such a war "on the cheap" by air and naval power alone. There is no substitute in the form of fighting involved for highly trained professional troops on the ground. Even assuming such a force could be assembled in time, the strategic, tactical and numerical advantage enjoyed by the potential enemy would be so great as almost certainly to necessitate the employment of tactical nuclear weapons. Such an action would result in the free world being involved in another Korea on a gigantic scale.

War Unlikely

Fortunately this contingency is unlikely. An all-out crossing of the Laotian border would certainly not be undertaken by North Vietnam without the consent and approval of China. China in giving this consent would be well aware that she was exposing herself to the possibility of involvement in a nuclear war. It is true that of all the major powers, China is the least deterred by such a possibility; nevertheless, she can hardly view the prospect with equanimity, nor can she be sure of the Russian support so essential to such an undertaking.

Conclusion

In summing up it can be said that both the United States and China have important interests in Laos; that both have sufficient forces under their control to undertake large-scale military action in defence of those interests; but, for the present, such action is unlikely because it would suit neither party.

As in all South-East Asian countries, the real bastion against Communist aggression in Laos must be orderly government and internal stability. Nevertheless, the Chinese record is such that it cannot be taken for granted that no military threat exists. In recent weeks this threat has shown more and more sign of becoming a reality.

SOME OBSERVATIONS ON THE SECOND INDUSTRIAL REVOLUTION

J. Shilkin, ED, B.Com., AMIE Aust,
Deputy Director of Army Inspection

THE three or four decades before and after the year 1800 saw such changes in equipment, organization and commercial policy that this period is rightly described as that introducing the first Industrial Revolution. By the end of the 19th century the world was seeing and indeed receiving the effects of this industrial revolution caused in the main by the joint introduction and application of those two great forces, Steam and Electricity.

Today the world watches in wonderment the technological drama being unfolded by the meeting of four great forces, Automation, Electronics, Atomics and Cybernetics. So much so that it might well be said that the second industrial revolution has already been ushered in. Such a concept is surely well based when renowned personalities speak in such outspoken terms on the significance of the new times. Einstein on automation said: "Ultimately automation based upon atomic power will make our modern industry look as primitive and outdated as the Stone Age looks to us now." Churchill remarks, "Nuclear power could unfold a future beyond the present dreams of mankind." The eminent scientist Sarnoff observes: "The very fact that electronics and atomics are unfolding simultaneously is a portent of the amazing changes ahead. There is no element of material progress we know today that will not seem from the vantage point of 1980 a fumbling prelude."

What are these four forces which are assuredly going to dominate mankind's progress over at least the next half-century? First of all—*Automation*, which is merely the making automatic of mechanization, the name originally being coined as a nickname. There is nothing new about automatic operation. Many industries more than 50 years old have had automation in its truest sense. For example, the printing of newspapers, the manufacture of tin cans and of cigarettes have been automatic processes for many years past. What is new about modern automation is the extension of automatic operations to hard, heavy, awkward and unyielding shapes which formerly defied automatic handling and processing, the adaption of electronic or other controls and the application of feed back ap-

paratus and servo mechanisms in such a way as to ensure maintenance of accuracy within predetermined limits. Thus one sees today heavy automobile cylinder blocks flowing automatically from station to station through all the complications of engineering operations with the same apparent ease as the processes of filling and sealing milk bottles and yet with even greater accuracy and perfection.

Cybernetics may be defined as the study of control and communication in animals, machines and society. Many officers of the Australian Defence Departments are already familiar with the ever-widening field through their association with the development of Electronic Data Processing. Pre-eminently it multiplies man's ability to do mental work, and already with this science just emerging from its swaddling clothes its effects and usefulness in facilitating management decisions as a result of mathematical computation are profound and far reaching. Indeed, in cybernetics lies the key to the mastery of the second industrial revolution and the conversion of the hostile potentialities of nuclear energy into friendly usefulness.

Atomics is of course the science concerned with the application of nuclear energy, which vastly increases the amount of energy to do the world's work.

Electronics deals with the behaviour of free electrons, the practical application of which is already so familiar to us in the form of radio receivers and transmitters, television and the innumerable cases of gadgetry and electronically controlled mechanisms.

Where is human society heading with these technological changes which are bringing to a close the age of the factory craftsman and the accounting clerk, and which are ushering in a new mode of living? What lies in store industrially, socially and politically? Is there to be a vast change in our civilization; will organized labour take kindly to the new technology; are we to experience a Luddite outlook, which avers that this growth of the machine age is inimical to the best interests of humanity? These are questions which might well be discussed.

The fear has been expressed by many labour leaders that the new technologies may bring in their train unexampled unemployment, that if capital investment in them were to increase whilst the need for manpower dropped the consequent rise of capital's share of the national income would cause widespread unemployment. It is argued that the automatic factory, requiring long runs and mass markets will succeed only in destroying its own foundations. When a Ford executive pointed out to Walter Reuther long lines of automatic machines and remarked—"Not one pays dues to the United Automobile Workers' Union," Reuther replied—"And not one of them buys new Ford cars either." Thus it is argued that automation leading to unemployment can only have an adverse effect on the standards of living and create tension and discontent in society.

On the other hand, it is an historical fact that every advance in machine production has eventually meant more work. The late Lawrence Pomeroy, Past President of the Institution of Automotive Engineering, described the United States of

America as a place where everybody was working overtime to make labour-saving devices. Whatever may have been the causes of great periods of unemployment since the Industrial Revolution, there is no evidence of a significant technological component amongst them. Automation is bound to proceed and widen sooner or later, whether we like it or not. Our choice does not seem to rest between automation and full employment but between prompt automation with the possibility of moderate temporary unemployment and delayed automation with the certainty of grave perennial unemployment until our progress has caught up with that of our competitors.

The four new forces of the second industrial revolution will assuredly release hand, brain and energies, and enable new commodities to be created. If men choose not to create new commodities the labour released will not be unemployed but rather will it be employed in leisure. Is there anything harmful in this? Disraeli has stated, "Increased means and increased leisure are the two civilizers of man." It may be that the effects of indolence will bring harm to human society. On the other hand, it is a fact that one hundred years ago 60 hours was a normal working week, and the reduction of working hours brought about by the Industrial Revolution cannot be said to have been harmful. Indeed, it is interesting to observe that at least 15 per cent. of American production today is devoted to leisure commodities.

How will the new and expanded production be absorbed? This question is answered by the example of the giant industrial firm of Dupont, which records that 50 per cent of their saleable products were unknown to them 10 years ago, and estimates that in 10 years' time 90 per cent. of their sales would be for products of which they have no knowledge now.

The second industrial revolution could well alter population patterns following on decentralization of industry brought about by the availability of new resources of power and mechanisation. Alternatively there may be growth and concentration of industry in the hands of fewer and fewer industrial giants. Such a monopoly growth need not necessarily be disadvantageous, since inevitably large-scale concerns will become surrounded by hosts of smaller concerns, each producing one or two components or offering specialized service facilities.

The thought has been expressed that there is a hidden danger in the growth of automation, since a small number of engineers will have ultimate control of the automatic factories. With the threat of pushing the stop and production buttons they could hold society to ransom. But this power is no more than that which has traditionally been held by organized labour and as such can be expected to be contained within just and sensible limits.

Manufacturing industry of the future will have a voracious appetite for raw materials. Indeed this is already quite noticeable, and international manoeuvring in the field of raw materials supplies is already a phenomenon known to us all. Since the supply of essential raw materials is not evenly spread between nations, there is a decided risk that the pressure of industrial growth

will accentuate international difficulties, leading to behind-the-scenes negotiations and agreements which could well lead to open hostility between the "have" and the "have not" nations. Thus the advent of the second industrial revolution will provide a strong challenge to statesmen throughout the world to so arrange affairs as to provide minimum friction between the nations in the matter of raw material supplies for industry.

Profound sociological changes are inherent in the new technologies. For example, the present unbalance in modern society caused by the growth of an ageing population, coupled with the longer school life for the younger generation, could be corrected by virtue of the increased capacity to produce goods for all. Whether or not children of the future will lose moral fibre by their failure to appreciate the old striving for material welfare is a moot point, but there is little doubt that with abundant, cheap and accurate production the standard of living must improve substantially.

The factory of the future will not have the need to mass workers through a complicated system of status and hierarchies, hence better industrial harmony will be achieved. In this connection it is interesting to dwell on the fact that the invention of the reciprocating steam engine challenged the economic as well as the moral justification for slavery and succeeding in ousting this practice. Nevertheless, whilst industry's behaviour towards its work people has changed considerably in the last 100 years its understanding of them has hardly changed at all. It has been said that corporate bodies have no soul. If this is so, then there can be little doubt that whatever problems may be solved by the advent of the second industrial revolution, the one big problem unsolved could well be that of human behaviour in a society when the principles of private or national conscience have been extinguished by the industrial octopus. The remedy may lie in the fact that having satisfied its material needs, society may use its leisure to devote more study to the spiritual and aesthetic needs of its communities and so rearrange its educational policies that sanity and responsibility will be encouraged.

The economic factors associated with the second industrial revolution are and will continue to be profound and complex. The automatic factory requires much more capital per operator, and problems of economic balance between different sections of the nation's economy are thus bound to emerge. One hesitates to comment further on this particular aspect in a necessarily restricted publication of this nature.

From the viewpoint of defence there is no question that progress in an industrial sense must be pursued and all the benefits of modern technological improvements be available for the strengthening of the nation's war potential. Preparedness is the watchword, and hence the full significance of the second industrial revolution must be appreciated and its forces drafted into the service of the nation. It is true that the new sciences can create new and horrible capacity for destruction, but one must accept the task of maintaining such a power of destruction in war as will deter aggression. The Prime Minister of Australia, the Right Hon. Mr. R. G. Menzies, has rightly said: "It is hard to under-

stand those who would seek to abolish nuclear and thermo nuclear weapons as the first step to disarmament and peace." Our national leaders are faced with the responsibility of understanding and acting upon trends throughout industry as a whole and in discharging this responsibility satisfactorily full cognizance will need to be taken of the role and indispensability of the engineer and the scientist in the life of the nation.

Standardisation and simplification are two fundamentals without whose further development and consolidation the new technologies cannot proceed. Today standardization is recognized throughout the world as the underlying principle of mass production, as a stabilizer of costs in a period of rising prices, and as a tool for management to eliminate the necessity of making repeated decisions. It has played an influential part in developing the labour-saving, higher-efficiency industrial processes of today, and its importance to the nation's economy of the future cannot be over-emphasised. A necessary feature of the future development of industry must be international co-operation in the matter of standardization, and there is in fact already close co-ordination between various nations in this important field. In many fields of science and engineering a number of outstanding organizations share the responsibility for the development of standards, and their work is co-ordinated internationally through various arrangements and agreements. In our second industrial revolution standardization will mean greater volume of production at lower costs, more efficient inspection and consequently better customer satisfaction. In defence, whether it be in peace or in war, standardization might well be regarded in the nature of a "secret weapon," the application of which to such things as nomenclature, to uniformity in dimensions, to methods of test, ratings of machinery and apparatus, standard processes and operations, and to optimum number of types, sizes and grades of manufactured products, could well mean the difference between independence or conquest by our enemies.

The first industrial revolution which made England rich and great arose out of the efforts of self-taught men—in fact, men who were kept out of the universities of the time by statute—and by students who had been to private academies. The official education policy of the country did little to encourage the learning of science and technology. In fact such fields of study were looked down upon. Even today there is neglect in the prosecution of education for science and engineering in the Western nations, and discerning people cannot help but become increasingly anxious about the failure of the West to match the recent technological progress of the Russians.

Inventive genius and technological progress cannot be expected to happen quite naturally. An intelligent educational system catering for the requirements of modern technology and applied research is essential if survival as a first-class nation in the struggles of the second industrial revolution is to be safeguarded. For pure research, too—the discovery of fundamental new knowledge and basic scientific principles—our educational system must give ample stimulus and support. A

nation which borrows its knowledge from others will be hopelessly handicapped in the race for innovation and accomplishment. In ever-widening education lies the answer to practically all of the problems which the second industrial revolution will bring, and it is to be hoped that our leaders will become fully alive to the urgent need to recognize the claims of science and technology in the nation's educational programme.

The evolution of human society does not proceed like a well-conducted military operation. Developments are not based upon studied appreciations, well-chosen plans and systematic manoeuvring. While many are battling for one objective, the rest gallop off to some new conquest. Whilst millions of square miles of our own planet are still unexplored and uncultivated, we are planning the capture of the moon. Children still struggle in their classrooms and unravel the mysteries of decimal arithmetic whilst vast computing machines are solving instantly problems few mathematicians could even unravel. Under such conditions the years that lie ahead can only be full of promise for mankind if mankind masters his new forces intelligently and humanely.

Man is and will remain the essential element in war. Men, not machines, win or lose the battle. Machines cannot wage war; they can only increase the effectiveness of man. The importance of the individual increases with the complexity of the weapons he must employ. The importance of the man will increase until we reach the stage of having weapons which can think and improvize; which can meet reverses with resolution; and which can match hardship and danger with devotion and courage, and carry on to final victory. There is no such machine on the horizon.

—General Lyman L. Lemnitzer, US Army.

PLANNING FOR EFFICIENCY

Condensed from the Royal Bank of Canada Monthly Letter

IT has been proved under all conditions of war and peace that people succeed best who form definite ideas of what they are going to do before they start to do it. But no precept is more generally neglected. We drift into situations, and find ourselves at the mercy of circumstances.

Planning is not a virtue in itself, but it brings many virtues in its train. It is one way to avoid entropy, which is the tendency of all created things to seek rest, to "run down." Planning—which involves looking ahead—takes us out of the complacency that accompanies seeing things only as they are, not as they might be. It protects us from thinking that this is the final chapter in our business career, our personal relationships, or our happiness.

People who set themselves to succeed in a project by planning its course are greatly helped because so many have no aim or plan. The planners take the measures necessary to influence and make sure of the fulfilment of their aims. The only link between a desire and its realization is the blueprint showing the parts needed, how they are put together, and the order in which to handle them.

Planning Develops Poise

There are many benefits accruing to the person who looks ahead and anticipates events and decides how to handle them. He develops a harmonious adjustment within himself. He has poise. He has such a command of himself and his projects that his tasks are performed easily. He keeps his head when others around him are losing theirs.

Consider the difference between a "big" man and a "small" man in business. The big man has a big view, comprehending not only his own job but all the surrounding jobs that contribute to it and stem from it. The small man is wrapped up in his specific chores: if he is a works foreman he wants to standardize on a few long runs to keep down costs; if he is a sales manager he wants many short runs to give him variety with which to appeal to more customers. The big man sees not only the immediate effects of a policy on a special group but inquires into the long-run effects of that policy on all groups that may become connected with it.

These are days when long-term good workmanship, as well as long-term leadership, demand constant improvement applied as a policy and not merely the meeting of needs and

coping with crises piecemeal. The wise person will plan so as to be a bit ahead of the generally advancing state-of-his-art.

This requires that we be creatively minded. Having trained ourselves to be sensitive to problems, present and future, we must then develop fluency with ideas for solving them. This tends to give us flexibility, one of the beneficial results of planning.

The creative mind is not governed by the laws of mechanics or physics. It doesn't start to function when you press a button marked "on." It must first sense a problem to be solved, and then dig up the facts, mull them over, recognize a possible solution, plan how to apply it, and try it out.

The routine mind waits for a button to be pushed. It is hurried by events into finding immediate answers to immediate questions. Crises come upon it bumper-to-bumper. It is never out of trouble, and has no time to catch a glimpse of the future. It doesn't know ahead what problems are coming up, and consequently it does not know what can be by-passed or postponed safely. Confucius was wise when he said: "We should make plans so that we may have plans to discard."

The alternative to any plan which fails to work is always another plan. To prepare for the expected is also to prepare against the unexpected. Then the worst that can happen will not throw us for a complete loss. Hurry and surprise are the two most dangerous situations in business and personal life. If we look ahead we can avoid them, because we shall then be prepared to take a new course or to gain the time needed for rearrangement of our plans.

Having made out plans to accommodate various contingencies, we need owe nothing to fortune except opportunity. The "breaks" come to many of us, but the advantage goes to the person who is ready for the breaks.

Make Sure of Your Ground

The person who wishes to plan ahead will first of all make sure of where he is now, and where he wishes to go. Then, if he takes the advice of Field Marshal Montgomery, he will work backward from his objective to ensure that he starts his advance in the way best suited to the needs of the master plan. He will foresee difficulties, and he will not minimize them. He will keep track day by day or week by week of how fast he is going, in what direction.

The planner will keep his vision clear. He will not become so enamoured by devices and gadgets and paper work that he loses his perspective. Too many of us become hypnotized by methods. Like the philosopher in Francis Bacon's "Advancement of Learning," we gaze upwards to the stars and fall into the water. If we had looked down we might have seen the stars in the water, but looking aloft we could not see the water in the stars.

The executive in particular, but all of us in general, must cultivate the habit of paying attention to one project at a time. We may develop this habit along the lines used by a filing clerk. When we plan something, file it away under the date when it is to be taken up, close the file drawer on it, as it were, and go on with a clear mind to something else.

Every plan should have two parts: strategy and tactics. A comprehensive scheme is needed, within which you may manoeuvre to meet changing circumstances. If you are an executive, you may assign responsibility for various actions, but you must not allow any subordinate to tinker with your master plan. If your plan is a personal one, you have great liberty in shifting ground tactically, but you should think seriously and thoroughly before allowing your grand strategy to be upset.

Perhaps no blunder is so common as that which arises from missing the proper moment for action. But how are we to recognize the moment unless we have prepared our minds by looking ahead? A Greek orator of two thousand years ago put it to the men of Athens like this: "Philip, knowing his own designs, pounces on whom he pleases in a moment: we, when we hear that something is going on, begin to bustle and prepare."

Planning allows us to make a wise alliance with circumstances. When our plan brings success, we are in position to follow it up; if it fails, we are ready to screen retirement while we put an alternative plan into action.

Planning in Detail

It may be said that, as a general rule, any event succeeds or fails in proportion to the thoroughness of the preparation given it. Sketchy suggestions and half-baked plans do not appeal to the wise executive, and they should not find a place in the planning of persons or committees engaged in any sort of responsible activity.

When a group is struggling towards a decision, the man who will take the pains to think out and elaborate his plan in a clear consistency is likely to have his suggestion gratefully embraced. His planned ideas will dominate the undisciplined thoughts of his coworkers. He has examined the facts, he tells what they mean, and he recommends what should be done about them.

Only after planning in detail is a man ready to take the risks of important actions. Troubles are less if we have anticipated them and planned how to meet them. Even if we seem to be surrounded by difficulties, looking ahead enables us to balance alternatives. We say to ourselves: "If I take this road, or that road, such-and-such issues will confront me; if I stand still, these other things will come upon me." Then we make a choice based upon exact knowledge.

The mere act of putting things down on paper—the what, when, where, why and who of any problem or project—will of itself give us guidance and generate ideas. Our personal analysis of adequate facts, brushing aside the non-essentials, will give us a clear-eyed view, so that we may plan our course and estimate the time and energy and material needed. In this appraisal it is most necessary to ask repeatedly: does this really matter? The question tends to sharpen our opinion about the relative importance of factors.

Nothing can be more significant in planning than assurance that the facts are accurate, properly interpreted, correctly linked together, and free from bias. To make this judgment, we need background. Before entering tomorrow, let's turn on the

light in the back room and look at what useful records and memories we have stored there. A business man compares today's assets and liabilities with yesterday's, and makes plans for tomorrow by studying the movement thus indicated in conjunction with the conditions of today.

Choosing facts upon which to base plans is not a matter of pecking like fowl in a barnyard, finding a grain of fact here and there. We must be selective, to isolate essential actualities from the opinions and rubbish in which they may be imbedded.

Some facts are incidental, unimportant: merely good for casual conversation. Others are vital to our *master plan.* If they are part of or affect anything within the circle of our strategy, we must pay attention to them. If they are outside that area, we should not dissipate energy and attention on them.

Putting Plans to Work

And then, having collected facts, analyzed them and considered various paths that might be followed, and formed a plan from it all, there remains to make something of it: action.

Just as plans for the city beautiful will never see the light of day as buildings, parks and roads without physical effort on the part of countless people, so plans for a business project or for happiness in life will come to nothing unless we use our energy to carry them out. An objective to which we have planned our course is something to work toward, and the emphasis now is upon the word "work." Ella Wheeler Wilcox remarked wisely in one of her poems: "The fault of the age is *a mad endeavour to leap to heights* that were made to climb."

Any highly successful executive will tell you that he has to do more than bring forth ideas. He has to plan how to make the ideas effective, but, most important, he has to push the plans through to successful completion.

In this part of his work he will meet many frustrating experiences. His assistants may be unimaginative, unable to catch the spirit of his plan. His workmen may be incompetent, lazy or careless. Many unhappy occurrences, business and private, may discourage him. But his master plan will have included the bringing of all controllable circumstances up to the peak required for satisfactory performance of the duties needed for success of his plan.

Just as soon as the plan is launched it must be ready to sail. Much trouble was caused during the war by what the naval experts called "teething troubles" in gun mounts, whereby ships went into action with incomplete firepower. A new plan, like a new ship, must be ready to fire at once and with all its armament. As Captain Russell Grenfell remarks in *The Bismarck Episode:* "It is no use a ship steaming into action flying a kindergarten flag meaning 'I am still in the infancy stage. Please only fire half your guns at me.'"

Any plan we launch in business or private life is subject to the full fire of competitors and adverse circumstances. We must feel intensely in the value and practicality of our plan, and this feeling must be backed up by complete preparation and abundant energy.

The man who is content to sit back and pass judgment on ideas submitted to him is not qualified for today's executive function. It is true that the man at the top must possess judicial ability in a marked degree, but he also needs imagination and enterprise if he is to survive. He must be able to deal with complexity, and this necessitates skill in thorough-going and patient analysis.

The man in management today will grasp quickly the essentials of a problem, apply his imaginative mind to finding a solution, decide swiftly and surely what is to be done, make it clear to all concerned what he expects of them, and then see that his subordinates get on with the job. The management man will have vision, and will find it quite unthinkable that he should follow outworn paths, content merely to criticize.

All this means that the executive must sketch his plans with a broad brush, and fill in only such details as are necessary to guide his people and keep the plan on the tracks. He will delegate the tactics, having laid down the strategy, and keep his mind on the progress that is being made toward his goal.

Seeking Efficiency

Everyone knows of his own experience how often a plan is held up while someone or some process is delayed waiting for something to get done. One essential factor in efficiency is completeness, and this demands that the parts of a plan fit together with a minimum expenditure of energy, time and space.

An engineer knows that the secret of making an effective machine is the degree to which we can get harmony into the engine. Our blueprints must tend to reduce stresses and resistances to the lowest ratio. Nature itself shows us that increased result comes from lessened effort.

Efficiency, therefore, does not mean hustle. It means that work toward carrying out a plan will move steadily. Too many people and organizations operate at fifty per cent. efficiency because of the dead weight of routine unconnected with the job in hand. Too many offices are bogged down in sheets of paper. Plans are delayed because desks are made storage places for documents and records.

What is the cure for these obstacles to progress in bringing a plan to fruition? First of all we need a healthy self-evaluation. We should look upon improvement as a commonplace necessity. H.R.H. The Prince Philip said to the National Union of Manufacturers: "Healthy self-criticism and an abiding willingness to learn seem to me to be the most important requirements of any manager."

Then, having put our own house in immaculate order, we need to convey the spirit of betterment all down the line. Assistants and supervisors must become imbued with the spirit of the top executive, so that they seek new techniques and methods that will help them to do their jobs more efficiently. Their efforts must mesh with the executive's planning.

On Looking Ahead

Many things have already been set down in the book of the future but not yet precisely dated. Thinking people are trying to put dates

on them, to anticipate them, and to work toward them. They are determining what to do now by looking at the world of ten or twenty years hence. Unthinking people are buried in today's work, without planning for the next stage of their progress.

It is a truth known to every one of us that we are tempted to procrastinate planning for the future by the sheer burdensomeness of the prospect. But if we can, through planning, divide the accumulation into small units, the task becomes a great deal easier and the prospect less frightening.

Some people are tempted in the other direction: they over-organize, thus strangling their prospects. When the Korean war broke out in June, 1950, certain people in the United States recalled what had happened upon outbreak of the preceding war. The editors of "Fortune" reported that one hotel announced that it had laid in a 10-year supply of liquor; one government agency bought a 247-year supply of loose-leaf binders.

That is not rational planning any more than is the action of a highly-trained specialist who becomes preoccupied with the secondary issues of methods and techniques and has lost sight of the aims and purposes for which his company is planning.

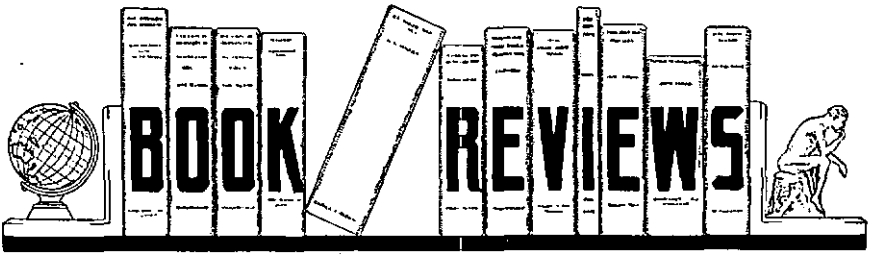
Every plan that involves the work of a number of people is sure to gather barnacles. It is the job of the efficient planner to scrape them off and get his plan back to the fine steering it requires.

Even in personal planning, it is necessary for a person to turn his attention now and then to close scrutiny. Are his goals still precisely defined, so that he really knows what he is trying to do, or have they become misty, befogged by immediate problems and transient things? Has he found out his strengths, so as to make the best of them, and, even more important, his weaknesses, so as to compensate for them? Has he taken inventory from time to time so as to check his progress, improve his performance and assure his success?

The man who plans well and tackles his plan with courage, intelligence and energy is on the way toward becoming a superior man. He will gain his ends because his beginnings are made with the assurance that comes of knowing the facts, the processes, the hazards and the reward.

Under an orderly plan there will be more problems solved, fewer trials necessary per problem, fewer false reactions per problem, less time used, and no random work done.

The planning itself can be an enjoyable experience, even though its purpose is only to reach something else. If it were not so—if the meanings and enjoyment of things were only in ends—composers of music would write nothing but finales.



DOCTOR GOEBBELS—HIS LIFE AND DEATH, by Roger Manvell and Heinrich Fraenkel. (William Heinemann Ltd, 317 Collins Street, Melbourne.)

At 8.30 pm on 1 May 1945 a pistol shot echoed through the Fuhrerbunker in Berlin, the shot that brought to a close the fantastic career of Joseph Goebbels, the last Reich Chancellor of Nazi Germany.

Historically and pathologically, Joseph Goebbels has many claims to be considered the most interesting member of the Nazi hierarchy apart from Hitler himself. But his place in the early history of the Nazi movement is often obscured by the legends he created or fostered in order to give the impression that his contribution to the initial Nazi political successes was much greater than it actually was. The authors have been at great pains to separate fact from fiction, and, as far as possible, to give us an accurate account of Goebbels' life and death.

Joseph Goebbels was born of poor parents at Rheydte on 29 October 1897. His natural disabilities of a delicate constitution and diminutive stature were increased by muscular lameness resulting from poliomyelitis contracted at the age of four. Because these disabilities prevented him from taking part in the recreational pursuits of other children, Goebbels was thrown very much upon his own resources, and at an early age developed an unusual capacity for reading and study. Even as a small child he began to set down his thoughts and ideas on paper in the form of a diary. These early writings clearly reveal the beginnings of that consuming vanity, that overweening self-assurance, which were to take him to the heights of power and finally to death by his own hand.

Goebbels' parents made great personal sacrifices to give him a secondary education, and managed to give him some little assistance with his university course. He was further assisted by a religious organization which, incidentally, had difficulty in recovering the loan when he had become comparatively wealthy.

After obtaining his degree of Doctor of Philosophy, Goebbels unsuccessfully tried his hand at authorship. These writings show the revolutionary tendency in his political and social thinking, and the beginnings of his anti-Semitism, which obsessed him for the rest of his life. Always short of money, he nevertheless managed several love affairs,

all carefully recorded in his diary. But the egotistical accounts he gives are vastly different from the accounts subsequently given by his partners.

At length Goebbels, a revolutionary without a cause, found the Nazi Party. At least he found employment with the Berlin faction which opposed the line being followed by the Munich faction led by Hitler. For a while he enthusiastically subscribed to the political and social proposals of his employers. Then he met Hitler and immediately fell under the spell of his compelling personality. Further acquaintance increased his admiration. Hitler had no complicating policies to be expounded, explained and argued. He had one thing and one thing only—the will to power. And that, Goebbels found, was just what he had been looking for. For his part, Hitler saw in Goebbels the very qualities he was searching for in someone to make the Party leader in Berlin.

Hitler chose wisely, for, despite his vanity, Goebbels was an extremely able man, perhaps the ablest of all the Nazi leaders. As a party organizer he stands in the front rank, while as a propagandist, as distinct from an honest publicist, he stands supreme. Steeped in duplicity, utterly devoid of scruple, keenly sensitive to audience reaction, he played upon the emotions of the German people as a great musician plays his chosen instrument. To Goebbels' skill as a propagandist Hitler in great measure owed his rise to supreme power in Germany. He rewarded his henchman by making him Reich Minister for Public Enlightenment and Propaganda.

Goebbels never lost his devotion to Hitler. When the long series of German military defeats set in, he saw clearly enough what was wrong. But every time he went to remonstrate, to try to bring Hitler to see the situation in true perspective, he came away with renewed faith in his leader. Towards the end, when all was clearly lost, he refused to join the deserters seeking safety in flight. And his wife, whose devotion to Hitler was even more fanatical than his own, also refused to leave. In his last will and testament Hitler named him as Reich Chancellor. A few hours later Goebbels and his wife poisoned their six children while they slept and then took their own lives.

This is a book about an evil man, about an evil period in history. But it is a fascinating book, a book which holds the readers' interest if only to discover what new devilry the Nazis would perpetrate. Although it is primarily a book about Goebbels, it gives many revealing pictures of Nazi methods and the Nazi leaders in their public and private lives. It is essential reading for all who would understand that terrible period of history, and for all who would appreciate the evil results which follow when all the organs of education and public expression come under the control of a single, ruthless authority.

—E.G.K.

THE MAN THEY COULDN'T KILL, by Denis Holman (William Heinemann Ltd, 317 Collins Street, Melbourne).

When Bob Oldfield was six years old he went with his pal Jimmy to play in an old junk yard in a Lon-

don suburb. Among the treasures they unearthed was a rusty Mills hand grenade of World War I vintage. Jimmy knew about grenades; his father had fought in the war and had told him about "pulling the pin out and counting three before you threw it." They couldn't pull the pin out so they tried banging it with a stone. When that failed they went to Jimmy's home and got to work with a hammer and chisel. At the stage when about two more blows would have done the trick Jimmy's father arrived home from work. Subsequent examination showed that the grenade would have exploded.

That was the first of Bob Oldfield's narrow escapes from sudden death, a story that runs through twelve years' service in the Royal Navy. In his first action in World War II he walked through a compartment in HMS *Ajax* in which an 11-inch shell from the *Graf Spee* exploded about two seconds after he had closed the bulkhead door behind him. Transferring to submarines, he finished his war service with an escape from HMS *Saracen* sunk in the Mediterranean by depth charges.

His lighthearted story of a long series of lucky escapes gives some interesting vignettes of life in the Royal Navy in peace and war. It makes good, easy recreational reading. —E.G.K.

STRATEGY IN THE MISSILE AGE. By Bernard Brodie. (Princeton University Press, Princeton, NJ, USA.)

Reviewed by Major Howard H. Braunstein, Armour, in the April 1960 edition of the MILITARY REVIEW, USA.

Dr. Bernard Brodie—former Professor of International Relations at Yale University and now a senior staff member of the Rand Corporation—reviews the great historical strategic ideas from those of Clausewitz through Douhet, to the military strategy of World War II and today.

The author considers the problems of the strategic retaliatory force, civil defence, limited war, counterforce or pre-emptive strategies, and of missile bases in Europe, but unlike so many works on modern military affairs, does not present a programme or defend a policy.

The study is a balanced analysis of the requirements of strength for the 1960's, including especially the military posture necessary to prevent war. The author treats the problem of the cost of preparedness in relation to the requirements of the national economy.

A timely analysis of fundamental military problems presented by modern warfare, this research study should provoke widespread discussion, not only among military specialists but among intelligent readers in all walks of life.