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A helicopter from HMAS Melbourne lands on HMAS Yarra's deck with supplies during Exercise RIMPAC 80.

(Defence Public Relations)
A MILITARY funeral was held in Canberra on Friday, June 27 for the Commanding Officer of 3rd Battalion, The Royal Australian Regiment, Lieutenant Colonel Paul Mench.

Lieutenant Colonel Mench was killed while bushwalking with a friend in rugged country near Canungra in Queensland.

The funeral service was held at the Anzac Memorial Chapel of St. Paul, Duntroon. The Army was represented by the Chief of General Staff, Lieutenant General Sir Donald Dunstan. The Commander of the Papua New Guinea Defence Force, Brigadier General E. Diro attended in a private capacity.

Lieutenant Colonel Mench, 37 graduated from the Royal Military College in 1964 and was awarded the Queen’s Medal for graduating first in his class. Allotted to the Royal Australian Infantry Corps, he served for the next two years with the Pacific Islands Regiment in Papua New Guinea. In 1967, he served with the 6th Battalion, The Royal Australian Regiment in South Vietnam. From 1968 to 1970 he was ADC to the then Governor-General, Sir Paul Hasluck.

He was awarded a first class Master of Arts Degree in 1975 for a thesis on the role of the Papua New Guinea Defence Force. He was appointed Commanding Officer of 3rd Battalion, The Royal Australian Regiment in January 1980.

We extend our deepest sympathy to his widow and family.

The fast patrol boat, which was built by Brooke Marine at Lowestoft, England, was laid down in September, 1978, and launched in February, 1979. The remaining 14 boats of the class, which will be known as the Fremantle class, are to be built by North Queensland Engineers and Agents at Cairns, Queensland. The first Australian-built boat, to be named HMAS Warrnambool is expected to be launched in late October this year and commissioned early next year. It is expected that later launchings will be carried out at a rate of about three a year.

The names of the other boats of the class will be Bendigo, Bunbury, Cessnock, Dubbo, Gawler, Geelong, Geraldton, Gladstone, Ipswich, Launceston, Townsville, Whyalla and Wollongong.

Her Majesty the Queen has approved recommendations for the establishment of three long service awards. The new awards would be the Defence Force Service Medal for regular officers and other ranks; the Reserve Force Decoration for Reserve officers; and the Reserve Force Medal for Reserve other ranks. With the introduction of these awards, members of the Defence Force would no longer qualify for the National Medal.

The National Medal introduced in 1975, replaced a large number of Imperial long service awards with varying qualifying criteria available to Defence Force members. The new awards recognised the distinctive services rendered to Australia by Defence personnel, and also the significant but different, service given by Reserve elements of the Defence Force. The Minister for Defence Mr Killen said that the new medals would form part of the Australian system of honours and awards, and would recognise, in a fitting and enduring way, long service in the Defence Force, with special provision for the Reserves.
THE R.O.D.C.

Dear Sir,

At the risk of branding myself a rigid conservative, I take issue with the views of Major G. L. Cheeseman in his review article, “The RODC: It’s Not Too Late to Change”, DFJ No 20 Jan-Feb 80.

First, Major Cheeseman implies, by his division of the officer corps on page 24, that the Army may have some other ultimate role than to fight, or be ready to fight, wars. Hence, he characterises the “conservative component” of the Army as being “aligned with the traditional military ethos associated with the war-fighting role of the Army”, and criticises the RODC for “stressing the primary importance of the combat role of the Army”. I cannot convince myself that a military force is maintained for any other purpose than to fight, or be prepared to fight, wars — be they general wars, low intensity conflicts or something in between.

Major Cheeseman mentions some things that the “non-combat” component will do: force structure analysis, development of logistics and command, control and communications (C3) systems, development of automated support systems “needed by the operational commander and his staff in battle”, and strategic planning. All of these activities, with the exception of the last, are not ends in themselves, but simply necessary developments to support our war-fighting capability. As for strategic planning, this is only partly a military concern. The military role is to develop a force capable of reinforcing Government options, by providing a deterrent effect, and of fighting to preserve vital national interests should other Government options fail.

Secondly, Major Cheeseman has divided the officer corps into two groups. The combat-oriented group is characterised as “conservative”, “rigid”, committed to tradition and “dogma”, “authoritarian” and of “primitive” type. The second group, in which I infer Major Cheeseman places himself, is “liberal”, “intellectually inspired”, and possesses technical expertise and the intellectual, analytical and communicative skills necessary to function at Russell Hill. This characterisation is a misguided conceit. In my experience, there are many outstanding officers serving in the field, who are educationally well-qualified, intelligent and liberal in outlook, and daily apply these talents to the leadership of soldiers and the direction of our formations and units. On the other hand, it has not been my observation that officers serving at Russell Hill have, or should have, any monopoly on intellectual enlightenment, liberalism, or technical, analytical and communicative skills.

It is certainly true, as it is of many other walks of life, that the Army is comprised of officers of varying talents, inclinations and philosophies, and we should try to employ each officer where s/he can make the best contribution. But that does not mean that we need to divide the officer corps in two: in fact, it would be dangerous to do so. Such grouping would result in parochialism, misunderstanding and planning in isolation. How can an officer at Russell Hill design and introduce C3 systems, logistic systems, new equipment or anything else without the knowledge and experience of the practical impact of these things in the field? There is a need for officers with specialist knowledge of those areas, but I conclude that we must continue to “(position) combat-oriented officers into key positions located within non-combat-oriented organisations” to provide for the necessary balance within those organisations. In all this, there is the suspicion that Major Cheeseman has created a framework in which he feels most comfortable, rather than one which should actually exist.

Finally, as an overall comment on the RODC — unrelated to Major Cheeseman’s views — I think that the RODC is well-researched, reflects a lot of work by some very capable officers and introduces a number of necessary measures. But we should not make the mistake of over-emphasising the careerist aspects of the report. It is inevitable that we have some concern for our personal career needs, but these must not be allowed to overshadow the needs of the service.

Yours faithfully,

J. H. Robbins
Lieutenant Colonel
Australian Exchange Instructor
U.S. Army Command and General Staff College Fort Leavenworth USA
AUTHOR'S REPLY

Dear Sir,

I would have to agree with Lieutenant Colonel Robbins when he says he risks being branded as a rigid conservative. In concentrating on the narrow perspective of the combat role of the armed forces, he attempts to preserve a traditional view of military forces which is no longer fully consistent with the developing strategic, technological and social environment in which Australia's armed forces will be required to operate. To illustrate this point, I will simply highlight a number of key issues which arise from Lieutenant Colonel Robbins's letter rather than attempt a more general rationale.

The view that military forces exist solely to fight wars is based on a more fundamental belief that national economic or political problems can be solved by the use of force. The adherence to this view by the Australian military elite was illustrated by its eagerness to commit Australian forces to South Vietnam and the frequently heard assertion that we would not have 'lost' that war if only the military had had its way. This traditional role of the armed forces has been complicated by changes in our strategic environment. The proliferation of nuclear weapons together with the increasing likelihood that a major conventional conflict will escalate into a nuclear confrontation, for example, require that military forces be now used to prevent or limit wars rather than fight them. It is my view that such a fundamental role reversal can only be achieved if there is a corresponding turnaround in the values which are held by the military and political leadership. The belief that military force provides a viable method of pursuing national interests should be replaced by a personal abhorrence of war and a sense of failure if warfare is allowed to occur. This is not to suggest that Australia's armed forces should be disbanded, rather it means that the use of force should be placed into its proper perspective as a defensive measure and one of last resort.

Even if we ignore the question of values, Lieutenant Colonel Robbins' suggested role for the armed forces raises a number of important questions. How, for example, do we structure our armed forces to provide for a 'deterrent effect', indeed, is deterrence a valid force posture for Australia and if so how is it best implemented? The answers to these kinds of questions will determine Australia's national objectives and desired force posture from which the detailed capabilities, operational roles and organisational structures of our military forces are in turn derived. Such a process of force development is one way: we cannot specify organisational roles until we have specified national objectives. In Australia at present, this basic guidance is not yet fully defined. The advocacy of a specific role for our armed forces without reference to our strategic environment therefore, may preclude the development of more realistic military options particularly as any change from the ego investments of existing organisations and roles is likely to be resisted by a conservative military profession.

In commenting on the polarisation of the officer corps into opposing conservative and liberal groups, Lieutenant Colonel Robbins seems to confuse the future requirements of the military profession with existing practices. The need for military officers who are not constrained by undue conservatism is in part a reflection of the changing role of the armed forces, and the changing values required by the military profession in order to meet this role. This need was clearly identified by the RODC and has been separately described by a number of qualified military and academic observers. I would agree with Lieutenant Colonel Robbins that at present, officers serving at Russell Hill do not have a 'monopoly on intellectual enlightenment, liberalism or technical, analytical and communicative skills'. This is precisely our problem. It has occurred because up to this stage, all officers have undergone a common socialisation process which is predicated on the combat role of the Army and its underlying values. We already have sufficient numbers of conservative officers who will perform gallantly and without question on the battlefield. We do not have sufficient numbers of officers who have the specialised skills to be able to operate effectively within the peculiar environment of Russell Hill.

Finally, I share Lieutenant Colonel Robbins' view that personal career needs should not always be allowed to overshadow the needs of the service, although I think we have to be clear on what these needs are. I would also prefer to
see that the basis for the calculation of our loyalty be extended from a single service viewpoint to the interests of the Australian community at large.

G. L. CHEESEMAN
Major.

MILITARY EXPERIENCE

Dear Sir,

As Colonel Keogh (first editor of the Australian Army Journal) has said: ‘military history means the study of military experience’ I am excited to see three particular instances shown in DFJ No. 21 Mar/Apr 1980.

First, Colonel Clark’s “Ambrosia and the Lotus Eater” shows how comparison studies of the WW II Russian campaigns and Australia’s problems of July 1992 were ignored, resulting in disaster.

Second, of great personal interest and pleasure to Professor Stanner and to me is Colonel Jeffery’s “Initial Thoughts on an Australian Land Surveillance Force.” Very kindly Jeffery indicates his (SASR) research about four years ago, before Exercise LONG VIGIL into the modus operandi of the North Australia Observer Unit, commanded by Stanner in WW II. The principles of the NAOU’s surveillance of half the continent in 1942 had gone into limbo until Jeffery and his colleagues began their study. Modern technology and communications aside, it now appears these principles have endured and still have some relevance. Indeed, colonel Jeffery wrote in a letter to me in 1977, “It is remarkable how closely our thinking lies.” We hope the Army Reserve unit which is being planned will implement Colonel Jeffery’s plan.

And the third. This is Wing Commander Edwards’ “The Role of Air Power in the Defence of Australia.” He awakens thought on Douhet; then on to the implication today of the evacuation of civilians from Darwin, Cairns, etc. in early 1942. His article is thus the backdrop to the surveillance by the NAOU.

I wanted also to mention the other side of the surveillance picture. The finance and the politics. There is, for example, the political connotations of the proposed new state of the Northern Territory. I recall Professor Stanner writing about this to me in 1978, and of the need to involve the civilian community; of the need to pull in the help of the enormous mining companies. Some think they should specifically contribute to defence costs and also increase their total employees to allow of their ready service in A Res (such as in Jeffery’s surveillance regiments.) There are political, fiscal and monetary aspects all needing to be gone into by the Defence Department. There is the concern over the use of Aboriginal lands for any military purpose, including surveillance, in peacetime. I hope these matters are not shelved at ministerial levels.

Amoury Vane
Captain

DRINKING, ALCOHOLISM AND THE ARMY

Dear Sir,

The authors reply to my letter (DFJ No. 20) on “Drinking, Alcoholism and the Army” by LTCOL Larry Evans (DFJ No. 17) requires a brief comment in the interest of accuracy.

I did not attempt to “define” the alcohol problem in my letter and cannot therefore be blamed for failing to do so. I could do so, but it was not a part of my original comment.

I did not engage in “Exhortations to indiscriminate action”. Facing the fact of personal and social “denial” of the extent of the problem is a first step. I did not tell anyone that “To do anything is better than nothing”. I appreciate the argument that we should do “something”. My response was and is, that the article proclaimed at the start that the aim was “towards a more rational approach”. Reasoning (Rational) process should form or try to reach conclusions. It was in this area that I found the article inconclusive.

The authors reply now says quite clearly that his purpose was to caution us against intervention without first counting the cost. I agree, but as it stood, the article seemed to me to ignore the considerable progress and most successful programmes and policies of intervention that are already in use and achieving positive results.

Caution is commendable but not if it tends to dampen the path of rational positive action.

Yours faithfully,
S. J. Hessey
Major
Chaplain

Letters continued on page 54
REMOTE MONITORING VIA SATELLITE

by
Captain Peter J. DeHaas
Royal Australian Signals

"He is most free from danger, who even when safe, is on his guard".
Pubilius Syrus

INTRODUCTION

REMOTE monitoring is not new to Australia. The reader will recall that, during World War II, 'Coastwatchers' were used with great success in monitoring enemy shipping movements and reporting via HF radio to a central, intelligence gathering organization.

This article proposes a modern and powerful version of the Coastwatcher idea. The proposed system will provide continuous coverage of a much wider area and with fewer people, by taking advantage of two technological advances: remote unmanned sensing devices and satellite communications.

The basic idea is not new as it is in use now for data collection in the USA and Canada. What is newly proposed here is the application to intruder detection to alleviate some of the surveillance problems posed by Australia's geography and small population. Remote monitoring should not be thought of as 'the answer' to those problems but rather as a potentially cost effective enhancement of existing methods.

To illustrate a representative remote monitoring system, the discussion focuses mainly on military land-based surveillance. That application is by no means the only candidate. Other very useful applications could include: offshore surveillance, and data collection for civilian purposes eg., gathering hydrological and meteorological information. A section on "Applications" has been included to briefly address these areas.

Necessarily, this article assumes that a national communications satellite will be available as recommended by the Commonwealth Government Task Force in its report on that subject, dated July 1978. Such a capability will open the door to exciting new approaches to both military surveillance and data collection for civilian purposes without interfering with the primary communications functions.

AN OVERVIEW

Diagram 1 shows the proposed surveillance system in 'black box' format. The system will be briefly described in terms of collection, distribution and reaction. In the 'front line' of the collection subsystem would be a number (and probably a variety) of sensors. Remote sensing devices have progressed greatly in the last decade and cater for a broad range of

Captain DeHaas graduated from RMC in 1973. After serving in regimental appointments in 4 Signal Regiment, Brisbane, and 1 Signal Regiment, Ingleburn, he was posted to the U.S. Army Satellite Communications Agency, Fort Monmouth, New Jersey, in August 1977. Since then, he has undergone training in the engineering development, production and deployment of military satellite communications systems. Captain DeHaas returned to Australia in October 1979 after additional training attachments in Canada and the UK. He is at present at the School of Signals, Macleod, Victoria.
detection applications. For the present, it will be assumed that suitable sensors are available and further discussion will be deferred till later in this article.

REMOTE MONITORING (EXAMPLE)

Next in this surveillance system would be a number of Intermediate Collection Platforms (ICPs), each of which receives data from the sensors in its area and retransmits it to the remote earth station. Line and radio (probably VHF) are the obvious candidates for this task. Line is less flexible and with a greater maintenance requirement but with potential for use of central battery techniques to alleviate the problem of power supply for the sensors. If radio is used and the sensors each have a unique identification code which is transmitted with the 'alarm' signal (eg., code "11" might indicate sensor 1, sector 1,) then the use of only two radio frequencies may be feasible for the complete collection system (See Diagram 1). If so, this will increase the probability of one or more ICPs receiving the 'alarm'.

With VHF, the frontal range with the ICPs as deployed in Diagram 1 should be of the order of 30-40 km (on land). If a greater coverage area is required, the remote ground system will have to be repeated. For example, if one wishes to monitor 160 km of coastline, about 4 remote ground systems will be required. Naturally, the total number of sensors will depend on the sensor detection range. If one wishes to detect tracked vehicles, a separation of 1 km between sensors is reasonable and 160 sensors would be required for 160 km of coastline.

So far, it could appear that there is little that is new in this system as the technology has been available for some time. True, but the reliable and flexible distribution of the information collected is extremely important in surveillance. This capability could be admirably provided by a satellite link. As shown in Diagram 1, remote terrestrial terminals would interface with the collection subsystem. These terminals provide the means for transmitting the sensor data via satellite to any location which already has a satellite communications earth terminal. Other options for the distribution system are, of course, the old favorites, eg., line, HF and even microwave. The cost of emplacing and maintaining line and/or microwave links would be prohibitive for the distances under consideration (could be several thousand kilometers), especially as these provide little or no flexibility once emplaced. Existing line/microwave systems (if available) would also suffer from this 'static only' disadvantage. Remote HF would be a more reasonable approach. HF radio links are, however, less reliable due to propagation characteristics which vary with time of day. To provide reliability approaching that of a satellite link, a remote HF terminal would be very costly indeed. HF is also a very crowded frequency band providing little capacity and with a considerable frequency clearance problem to prevent interference to and from the many civilian users of that band in remote areas of Australia, eg., Royal Flying Doctor Service and Northern Territory Aerial Medical Service stations.²

A satellite link provides a highly flexible and reliable method of distribution and overcomes or at least alleviates most of the problems associated with the line, microwave and HF options. The nature of the proposed satellite distribution subsystem is examined in some detail later in this article.

In summary then, this surveillance approach consists of a collection network (sensors and ICPs) plus a satellite distribution network. Last but certainly not least, is the reaction system.
As with a tactical obstacle (wire, minefields, etc.) which must be covered by observation and fire power, this surveillance method must be supplemented by a fast reaction system; otherwise, the value of the intelligence gained will be lost. What constitutes a reasonable reaction time depends of course, on the desired application of this surveillance approach.

In this surveillance system, the initial reaction will be to positively identify the nature of the intrusion which caused the ‘alarm’ (simple sensors cannot do this). Depending on the circumstances, this initial reaction could be executed in a number of ways, eg., the nearest local police, CMF (A Res), or in times of known threat, SAS, RAN or RAAF patrols. Mechanisms for alerting these initial reaction ‘forces’ will be required and it may be desirable to provide them the means (eg., a Digital Message Entry Device) to report their findings via the existing remote monitoring system. Subsequent reaction is so dependent on the existing circumstances, that it is beyond the scope of this discussion.

To conclude this overview, the essential requirements/design characteristics of the proposed surveillance system would be similar to the following:

- **Reliability.** The main factors which contribute to maximum reliability of this system are: a high probability of accurate detection by the sensing device (covered later) and, reducing to a minimum the possibility of a system failure. The main contributors to the downtime of the complete system are central station failure and satellite transponder failure.\(^3\) (In orbit failure of the satellite is assumed negligible). Transponder redundancy can be achieved by reserving capacity on a back-up transponder on the same satellite. To minimize the downtime of the receive station, full redundancy should be provided, ie., at least two identical receive stations geographically dispersed to minimize failure due to natural/other disasters. Finally, the system should be capable of rapid, automatic detection of any subsystem failure so that prompt corrective action can be taken.

- **Near-Real Time Response.** The time between detection by the sensor and receipt of the ‘alarm’ signal at the central receiving station, will be a matter of seconds. As stressed earlier, the reaction system should also have the capability for a fast response.

- **Reduction of False Alarm.** A remote monitoring system using military sensors, must have a minimum number of false alarms. This characteristic would form a major portion of the sensor design and selection effort. (Developed further later in this article.)

- **Operational Flexibility.** This system must be capable of accommodating a variety of sensors and functioning in a variety of terrain and climatic conditions as a self-contained system with a minimum maintenance requirement.

- **Unattended Operation.** When deployed, the remote ground system will require very little manpower to provide continuous coverage of large areas. Hence, this approach conserves one of our nations most valuable and costly assets.

- **Transportability.** For operation in remote areas, transportability of the collection subsystem as well as the remote earth terminals, could be a prime design objective. Capability for road and air transportation as well as air drop, should be considered.

- **Low Power Consumption.** The remote ground system will probably be forced to use battery power supplies (perhaps augmented with a solar power capability). Long battery life would be essential as well as minimizing the power consumed during quiescent periods. All high power consumption components should be turned on only when the system ‘alarms’.

- **Vulnerability.** Unmanned systems in remote areas would appear to be very vulnerable to sabotage etc. With proper design, however, the sensors will ‘alarm’ prior to their destruction. If that is the case, the sensors will have served the purpose for which they were deployed.

- **Low Cost.** This system must be designed for minimum costs if it is to be considered a viable surveillance alternative. Most of the ground segment costs will be incurred by the collection subsystem and the remote transmit earth terminals. These equipments (especially the sensors) will have to be made as simple and inexpensive as possible. The space segment costs on a national communications satellite should be almost negligible because this system will only use a very small fraction of the available Defence space segment. It will also be possible to minimize the cost of the receive earth terminals if existing military terminals which support Defence communications through the satellite are used.

It is hoped that this discussion has not appeared too Utopian. If it has, the fact that a
very similarly designed commercial system already exists should help to convince the reader otherwise.

**AN EXISTING SYSTEM**

Diagram 2 shows the overall experimental system configuration. The system which began operating in October 1977, consists of eleven platforms in the US and two in Canada that automatically acquire hydrological sensor data and transmit it to a geostationary ANIK I satellite (a TELESAT Canada Satellite) which then relays it to the receive stations. There are two receive stations; one in Southbury, Connecticut, owned and operated by COMSAT General, and the other in Shirley’s Bay, Ontario, Canada, operated by TELESAT. The Southbury earth station is the primary station and is attended 24 hours a day. The Shirley Bay, Ontario, earth station serves as a back up data collection receive facility. In case of failure of the primary station, the users can access the back up station for data retrieval.

The eleven US data collection sites, operated by the US Geological Survey (USGS) are equipped with analog sensors that measure water quality (i.e., water temperature, conductivity, acidity, etc.), and digital sensors that measure water level. Out of eleven selected sites, five are located in Harrisburg, PA, five in Portland, OR, and one in Reston, VA (USGS Headquarters).

The performance of the experimental remote monitoring system was closely observed and analyzed during numerous system and component tests. The link performance was found to be very solid and the data received at the two earth stations was consistently good. All the transmission impairments (e.g., terrestrial interference,) never exceeded the values assumed in the system design, at least to the extent that no appreciable performance degradation was noticed. Even in those cases where propagation conditions were not ideal (e.g., branches of a tree partially blocking the radio path) there were no cases of poor transmission performance. In the early stages of the operational life of the system some minor equipment problems were identified in some remote platforms namely, premature discharge of some batteries due to defective construction and excessive frequency drifts of two platforms due to initial mistuning. The receiver equipment performed flawlessly, but minor computer program ‘debugging’ continued into the operational phase of the program. In summary, COMSAT’s program proved the technical feasibility and the operational value of a remote monitoring system that uses communication satellites as space segment.

There are, of course, some fundamental differences between the design of this existing experimental system and what was proposed as part of a possible surveillance system earlier in this article. The main reason that this section was included was to prove that the concept of remote monitoring via satellites is not far fetched. In fact, the technology has already been successfully demonstrated.

**MORE ON SENSORS**

So far, any discussion on sensors has been deferred to assist in the development of this article.

Technology has produced a large variety of sensors for a large number of possible applications. The picture shows some sensors which are already available for military use. These equipments are fully militarized and have an average lifetime of about 45 days and detection ranges of the order of 30-40 m for personnel and up to 500 m for vehicles. The probability of detection is between 80-95% for the sensors shown. (Unfortunately, sensors have not yet developed to the point where they can distinguish between “friendly” and “enemy”).

That raises the question of false alarms. Obviously, if the system is deployed as described earlier, one does not want an ‘alarm’ for stray cows moving through the surveillance area. A sensor for the military application considered here must be carefully designed with the following in mind:
• What must be accurately detected eg., persons, vehicles, ships or combinations thereof;
• What environmental conditions can be expected. (This will enable a prediction of the background 'noise' which can be ignored by the decision circuitry of the system); and,
• Required detection probability.

Another area of concern would be the limited average sensor lifetime of about 45 days when equipped with self-contained batteries. This is more difficult to tackle and will require some careful design effort. Some options could be:
• Use line to interconnect sensors and ICPs to central battery equipment located at, say, the remote earth terminal and use this to provide power to the sensors and ICPs;
• Use solar power techniques to recharge the batteries for longer life;
• Use fuel cells; or
• Deploy limited lifetime sensors and ICPs only when a threat is imminent and expected within that lifetime.

The detection range of the sensors may also have to be improved for the type of application considered here. Alternatively, it may be possible to deploy a large number of small, low cost sensors to give the desired coverage.

These sensor problems, while requiring careful attention, are not considered to be insurmountable and are well within the scope of current technology. The reader may ask, however: "Why use sensors at all and not some other device such as radar?"

In answering, it needs to be re-emphasized that the system proposed in this article is not a stand-alone surveillance capability but a technique which can be used to enhance (not replace) existing methods. In comparison with other technical surveillance systems, remote sensors perform very well as a glance at Table 1 will indicate. To keep this presentation to a reasonable length, this comparison will not be developed further and the reader is encouraged to assess Table 1 for him/herself. (ELINT — Electronic Intelligence such as radar characterization; COMINT — Communication Intelligence such as radio monitoring).

OTHER OPTIONS

There is however, another option not considered in Table 1 which requires at least a mention: The use of a surveillance package (eg., photographic) on a domestic satellite. At first sight, this option might appear to be a very reasonable alternative to the system proposed here removing the need for development and fielding of the remote ground system while, at the same time, providing excellent coverage. True, but such a capability would be what is referred to as "single point sensitive" ie., disable the satellite (jamming or by "Killer" satellites) and that surveillance capability is completely lost. In the proposed system, even if the satellite link was intentionally disabled, the ground monitoring system would still be intact and usable. At worst, the ground system would have to be manned at selected points to provide a manual distribution network using, say, manned HF radio eg., SAS patrols.

Another option is the rather obvious one of continuing with present surveillance methods such as RAAF and Naval patrols. If these are the only methods used, then the following penalties could be incurred:
• lack of continuous coverage,
• low probability of detection due to above,
• effectiveness is dependant on weather, and
• subject to considerable personnel loss and high platform attrition when air situation is unfavorable.

Enhanced with a remote monitoring system however, present methods would develop more muscle and should be able to concentrate more on reaction rather than pure reconnaissance. It may also result in overall cost savings.
### SURVEILLANCE SYSTEMS COMPARISON

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**TABLE 1**

**COST**

Let's assume that, in a moment of madness, one wished to apply the proposed remote monitoring system to 12,800 km (8000 miles) of coastline to say, detect tracked vehicles. Assuming a separation of 1 km between sensors (i.e., a detection range of about 500 m) 12,800 sensors would be needed. Assuming further that there are three ICPs (two forward and one back) and one remote earth station for each 30 km of coastline (Diagram 1), rough quantities would be:

- Sensors: 12,800
- ICPs: 1,280
- Earth Stations: 427

To apply a very preliminary costing, the remote earth terminals used by COMSAT cost about $10,000 each. Assuming three times that amount for militarization would result in a cost of $30,000 per terminal for a reasonable quantity. Look now at photograph. A fully militarized air delivered repeater (ICP) as shown there is expected to cost about $4,000 for a production quantity. Sensors can be expected to vary from $500 to about $3000 each depending on type and characteristics. Using these cost estimates for production quantities leads to the following preliminary system cost analysis:

- **Sensors:**
  - @ $500 ea: $500 x 12,800 = $6.4M (Min)
  - @ $3000 ea: $3000 x 12,800 = $38.4M (Max)

- **ICPs:**
  - @ $4000 ea: $4000 x 1280 = $5.12M

- **Earth Stations:**
  - @ $30,000 ea: $30,000 x 427 = $12.81M

- **Minimum Cost:** $24.3M
- **Maximum Estimated Cost:** $56.3M

The above figures (all in US dollars) have been reluctantly included to permit a very rough equipment cost comparison with other surveillance systems. Even for this unrealistic deployment, the maximum estimated cost (of equipment only) still appears to compare...
favourably with the cost of one Orion aircraft which, fully equipped, costs about $20M. Again, it is not proposed to replace the Orion or any other system, with remote monitoring via satellite. Remote monitoring, however, may not be that expensive when weighed against the price already paid for existing surveillance equipment. When one considers further that remote monitoring will be specifically designed for unattended operation and minimum maintenance, the operational costs (eg., manpower and maintenance) may be minute when compared to say, the cost of operating a fleet of Orion aircraft or naval patrol craft.

SOME POTENTIAL APPLICATIONS
To complete this presentation, some thoughts on other possible applications of remote monitoring are included in this section. Coastal surveillance has already been addressed (albeit somewhat unrealistically). It appears that remote monitoring may be an excellent way to provide continuous surveillance coverage of selected coastal areas. Offshore surveillance could also be a very practical application to enhance the coverage of the 2.5 million square miles of ocean within the 200 mile limit. Perhaps, in this application, it may be possible to deploy a whole network of waterborne sensors and ICPs (ie. the collection subsystem) while retaining the remote earth terminal on land. Alternatively, offshore surveillance could be integrated with a coastal remote surveillance capability for coverage-in-depth to increase the probability of detection. If an off-shore detection system is deployed, the meagre RAAF and RAN resources likely to be available could be used very effectively in reaction rather than tasking those resources with the almost impossible role of detection.

Some other potential military uses of remote monitoring could be:
- enhancing the surveillance area of covering forces and screens,
- tracking enemy movements along his L of C,
- monitoring of our road convoy movements in remote areas, and
- monitoring enemy movements around flanks, etc.

Perhaps the reader can identify some other areas.

Meteorological and hydrological data collection have been mentioned as possible `civilian' remote monitoring applications for (respectively): near real time collection of weather information (eg. to measure rain fall rate, barometric pressure, temperature, etc.) and water level and/or quality monitoring (eg. at dams or during flooding). A particularly attractive application may be to equip rivers which are subject to flooding, with remote water level sensors to give accurate, real time, status information to say, civil emergency organizations. Similarly, sections of roads or railways which are subject to flooding could also be equipped with remote monitoring systems to provide reliable, near real time route status information to organizations such as the RACQ and NRMA.

Even if some of these potential applications are found to be impractical or not cost-effective, they should be useful in stimulating thought towards uses of remote monitoring technology.

CONCLUSIONS
If, while the reader was wading through the detail of the previous pages, some interest was aroused in harnessing the technology of remote monitoring by satellite to enhance our surveillance capabilities, then the purpose for which this article was written will have been achieved.

It was not intended to provide a water-tight specification of a remote monitoring system. There are obviously a number of areas which require a much more careful treatment than could possibly be included in these few pages, eg., choice of satellite frequency bands to minimize ground segment costs. Nevertheless, remote monitoring via satellite does seem to offer some very attractive capabilities. It is hoped that the reader will remember that a national satellite opens the door not only to some exciting communications possibilities, but also to some excellent remote monitoring techniques which can admirably overcome some of the difficulties imposed by Australia's geography and sparse population.

TECHNICAL DESCRIPTION OF AN EXISTING REMOTE MONITORING SYSTEM
A diagrammatic representation of the monitoring system as described in the text is shown in Figure 1. The objective of this Annex
is to briefly describe the main technical parameters of the complete system, the data collection platform (DCP) and the receive station.

Random Time Multiple Access (RTMA) was selected as the multiple access technique. Other options that could be used include: Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA) and code Division Multiple Access (CDMA). FDMA was not selected because of the low DCP information rate. TDMA and CDMA were not selected because they would add greatly to the complexity of the DCP requiring time synchronization and very stable oscillators, respectively. RTMA was not the most efficient access technique, but since the satellite capacity was so much larger than what was required to support this system, the inefficiency was not significant.

**THE SYSTEM**

The technical characteristics of the system are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of DCPs Deployed</td>
<td>13 (11 in the U.S., 2 in Canada)</td>
</tr>
<tr>
<td>DCP Transmit Frequency</td>
<td>5950 MHz (5970.5 MHz)</td>
</tr>
<tr>
<td>DCP EIRP</td>
<td>33.5 dBW</td>
</tr>
<tr>
<td>DCP Antenna Diameter</td>
<td>1.2 m</td>
</tr>
<tr>
<td>RF Power</td>
<td>0.7 W</td>
</tr>
<tr>
<td>DCP Transmission Mode</td>
<td>Burst</td>
</tr>
<tr>
<td>Burst Duration</td>
<td>244 msec.</td>
</tr>
<tr>
<td>Message Transmission Rate</td>
<td>1, 2 or 4 messages/hour</td>
</tr>
<tr>
<td>Bit Rate</td>
<td>1 Kb/S</td>
</tr>
<tr>
<td>Modulation</td>
<td>Non-Coherent FSK</td>
</tr>
<tr>
<td>Space Segment</td>
<td>TELESAT's ANIK 1</td>
</tr>
<tr>
<td>Receive G/T</td>
<td></td>
</tr>
<tr>
<td>U.S. Station:</td>
<td>29.8 dB/°K</td>
</tr>
<tr>
<td>Canadian Station:</td>
<td>26.0 dB/°K</td>
</tr>
<tr>
<td>Link Bit Error Rate</td>
<td>Better than 10⁻⁵</td>
</tr>
<tr>
<td>Probability of Mutual Message Interference</td>
<td>1% (maximum)</td>
</tr>
</tbody>
</table>

With RTMA, there is a chance of message interference which can be reduced by transmitting the same message more than once. One repetition was selected for this application as the best compromise between lower interference probability and an acceptable power drain. For interested readers, the interference probability is obtained as follows:

\[ P = \left(1 - \exp\left(-\frac{4dN}{T}\right)\right)^2 \]

where \( d \) = burst length
\( T \) = average time between consecutive bursts from a DCP (not including the repetition)
\( N \) = number of DCPs in the network
DATA COLLECTION PLATFORM (DCP)

Figure 2 is a pictorial representation of the DCP.

The DCP consists of four major components, namely; radio set, RF section, antenna and mount, and batteries. The technical characteristics of the Data Collection Platform are as follows:

Input Capability
DCP Carrier Frequency
Long-Term Frequency Stability
Short-Term Stability
Antenna Type

EIRP
Output Power
Modulation
Frequency Deviation
Bit Rate
DC Power Drain
Power Supply

A description of the four major components is given below:

- **Radio Set.** A special purpose microprocessor using CMOS electronics, which is the heart of the radio set, initiates all control and keying signals, controls the interface with the sensors, formats and encodes the transmitted messages and controls the memory. In addition to the normal microprocessor benefits of programmability, reliability and low cost, the use of low power electronics minimizes the battery power requirement. A special test set has been designed that can access the microprocessor memory and change any parameter in the stored program. The radio set also contains the FSK modulator. The baseband data frequency modulates the output of a 5 MHz reference oscillator followed by a frequency multiplier to bring the carrier frequency up to 100 MHz. Another oscillator tuned on the back-up frequency (back-up transponder) is included in the radio set and can be switched in from the test set.

- **RF Section.** The RF section includes a phase-locked oscillator-multiplier, power amplifier and passive frequency multiplier. The 100 MHz output of the radio set is multiplied up to 1.5 GHz using the phase locked multiplier. The 1.5 GHz signal is amplified up to a level of about 10 Watt and then multiplied by four in a passive diode multiplier to produce an output at 6 GHz of about 1 Watt. The RF section is enclosed in a separate cylindrical container mounted on the back of the antenna.

- **Antenna Subsystem.** The antenna subsystem consists of a 1.2 meter diameter parabolic reflector, cylindrical shield for side and back lobe control, flexible planar radome to avoid ice accumulation on antenna dish, and a 6/4 GHz wave guide feed. The feed is single polarized, rotatable and has adequate bandwidth for reception at 4 GHz as well as transmission at 6 GHz. The antenna is supported by a 10 to 20 foot tower and the antenna mount permits azimuth and elevation adjustment.

- **Batteries.** The platform is powered by 2 Gel-Cell 20 amp-hr. 12V batteries with a design life of three months. At one of the sites a solar panel was added for test purposes. The average battery voltage remained constant throughout the test.

RECEIVE TERMINALS

This system uses an existing communications receiving station’s RF subsystem, ie. antenna,
low noise amplifier, up/down converter and power amplifier. The IF equipment, however, has been specially designed for the remote monitoring function and is referred to as the Data Collection Receive Equipment (DCRE), shown diagrammatically in Figure 3.

The DCRE is comprised of a 70 MHz modem and a data processing unit.

The following is a brief description of these two units:

- **70 MHz Modem.** The 70 MHz modem consists of a pilot carrier generator, pilot tracking frequency converter, and signal demodulator, as well as the DC voltage supply for these subsystems. The pilot carrier generator transmits a stable reference to the satellite. When received by the pilot tracking converter, this reference is used to remove satellite-induced frequency shifts in the DCP carrier. The signal demodulator receives the DCP carrier from the pilot tracking frequency converter, removes the DCP link-induced frequency shifts, and demodulates the FSK data. Included in the signal demodulator subsystem are data recovery, clock recovery, and start-of-message (SOM) synchronization circuits. The data, clock and SOM information is then delivered to the communications processor. A part of the 70 MHz modem is a real-time system monitor. This monitor displays DCP-ID and carrier frequency of each incoming DCP message in real-time.

- **Data Processor.** The data processor interfaces with the 70 MHz modem output. The data processor consists of a HP 21-MX minicomputer with peripheral devices shown in Figure 3. Among the data processing functions are arrival time tagging of each incoming DCP message, data archival on magnetic tape, error detection and data reduction, update of DCP data files (stored on magnetic disk), and data retrieval on demand.

The USGS has the option to retrieve the data using 110 baud speed data terminals, or IBM 2780 terminals operating at 4800 baud speed. The computer has one data modem for each data rate.

**SOURCE**

A great amount of the information included in this endpiece has been extracted from the COMSAT paper referenced in the text.

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**AWARD: ISSUE NO. 22 (May/June 1980)**

The Board of Management has awarded the prize of $30 for the best original article in the May/June 1980 issue (No. 21) of the Defence Force Journal to Major G. G. Pound, RAA for his article Lies, Statistics and Military History.
THE SINO-VIET CONFLICT
A BACKGROUND

By Flight Lieutenant L. J. Egan

SYNOPSIS

The strains in Sino-Vietnamese relations since 1973 are manifestations of historical animosity, China's desire to be the pre-eminent power in Asia and Vietnam's drive for leadership in Indochina. Additionally, the Sino-Soviet dispute and China's opposition to Soviet hegemony in Peking's sphere of influence has intensified the conflict. China's policy shifts have included measures to assist her ambitious modernization aims by rapprochement with the West, opposition to growing Soviet influence over Vietnam, a reinstitution of policy concerns for overseas Chinese; particularly those in Vietnam, and 'punishment' for Vietnamese actions in Indochina which China believes supports Soviet global aims.

One of the most politically significant developments in South-East Asia during the early 1970s, has been the gradual breakup in the communist alliances formed to defeat Western aggression in the region. This breakup has precipitated the emergence of a most serious rift between China and Vietnam. The conflict not only reflects historical animosity but also conflicting regional and global geopolitical perspectives of the antagonists. To form the background of an explanation of the shifts in China's policy towards Vietnam since 1973, a brief resume of Sino-Vietnamese relations will be covered.

HISTORICAL BACKGROUND

Historically, the relationship between Vietnam and China may be categorized as uneasy; a relationship that vacillated between friendship and conflict. Vietnam was integrated into the Chinese empire throughout the millenium from the 1st century BC, and following the overthrow of Chinese rule, she continued to be deeply influenced by her powerful northern neighbour. In later years when Vietnam was not directly ruled from outside her borders, she paid tribute to China's dynastic rulers to ensure a semblance of domestic independence until the imposition of French colonial rule in the latter half of the 19th century.

More recently, Nationalist Chinese troops occupied much of the North of Vietnam, ostensibly to drive out the Japanese and to prevent French access following World War II. However, the Vietnamese communists, under the guise of 'nationalists', negotiated the withdrawal of the Chinese and re-admitted the French. Vietnam's astute political leader, Ho Chi Minh, is reported to have reasoned that:

"The last time the Chinese came, they stayed 1000 years! The French are foreigners . . . (and) . . . may stay for a while . . . but if the Chinese stay now, they will never leave. As for me, I prefer the French for five years, rather than the Chinese for the rest of my life."(1)

Flight Lieutenant Egan joined the RAAF in 1966 and was commissioned in 1971. Since then he has spent 6 years at RAAF Base Amberley and the last two years at Defence Central, Canberra.

Article received October 1979.
Intermittent Chinese nationalist support for the Vietnamese over time altered to a progressive increase in aid from the Chinese communists from 1949 onwards. While providing the Viet Minh with the needed assistance to defeat the French in the second Indochina war, Chinese influence inevitably grew stronger. At the same time, Soviet influence was ideological rather than material. By 1957 imposition of Maoist methods on independent North Vietnam was strongly opposed by Ho Chi Minh. To balance this influence Vietnamese leaders encouraged the Soviet Union to become more deeply involved in their affairs, by accepting increasing amounts of Soviet aid. Furthermore, Hanoi's policy during the escalating Vietnam war, opposed Peking's views on how the war should be fought, although they both were anti-US imperialism. Mao wanted Vietnam to fight an uncompromising political and guerrilla struggle while Ho wanted to escalate the war in the South, being prepared on his terms to negotiate a settlement. The Sino-Soviet dispute of the 1960s deepened considerably and during the ensuing decade, threatened the delivery of essential Soviet military supplies to Vietnam. China rejected a 'united socialist action front' against the imperialist aggression of the US; however, this rejection was probably against the Soviets and not Vietnam. North Vietnamese leaders increasingly subscribed to Soviet positions as the Russians strove to become the main providers of military and other aid to Vietnam. This activity helped to create a fundamental shift in China's view of 'the enemy' and provided impetus for the 1971-72 rapprochement in Sino-US relations. In an apparent attempt to reverse the deteriorating relations with her southern neighbour, and to block Soviet influence, China endeavoured to get the Vietnamese to join in the struggle against hegemonism. The attempt was fruitless and the Vietnamese immediately negotiated a major new economic aid agreement with the Soviet Union. The consequence was a hardening of Chinese resolve against what they perceived to be Vietnamese support for and encouragement of Soviet activity in Indochina. The Chinese cancelled grant assistance and renewed earlier claims to common border territories and the Spratley and Paracel islands along with their undersea natural resources in the South China Sea. Military force was used by both Vietnam and China in 1974 to assert their claims to these latter territories. Vietnam's reaction was a further tilt towards the Soviet Union.

VIET-KHMER CONFLICT

Further relations between China and Vietnam declined seriously when the border war between Vietnam and Kampuchea...
intensified. Throughout the Khmer struggle, China had adopted a close association with the Khmer Rouge, particularly from 1970, following the support of Prince Sihanouk’s Government-in-exile in Peking. Moreover, the dispute had assumed a position of prime importance in Chinese opposition to Vietnam’s aims of expansion in Indochina.

While the origins of the Vietnamese-Kampuchean border war lie in the non-acceptance of French colonial boundaries — arbitrary demarcations that had no regard for the ethnic demography in the region — the recent conflict arose from the uncompromising positions adopted by the neighbouring communist government over common boundaries. Historically, the Khmer have hated the Vietnamese, and in 1975 the communist government in Phnom Penh sought to forcibly alter the Khmer-Vietnam boundary. Armed forays into Vietnamese territory by Khmer forces and retaliatory raids by the Vietnamese occurred. Additionally, many Cambodians opposed to the excesses of the oppressive Pol Pot regime in Kampuchea, fled into southern Vietnam causing a potentially unstable situation in the region; given that the Hanoi Government was still having problems in establishing new economic zones in the region; China’s fears of Vietnam’s expansionist aims gained credence as Hanoi’s forces subjected the Cambodian refugees to political and military training and organized these exiles and some former Pol Pot colleagues, into the Khmer National United Front for National Salvation (KNUFNS). The aim of this front was to provide a façade behind which the Vietnamese could overthrow China’s ally, Pol Pot, in the name of the Khmer people and eventually establish a government whose policies would be dictated by Hanoi.

INTERNATIONAL INVOLVEMENT

Soviet and Chinese collusion with their respective allies in this dispute may not be ignored. If Vietnam were to succeed in establishing a pro-Vietnamese government in Kampuchea, her aim to become the Indochina power-centre would be assured and the establishment of an Indochina Federation would be closer to fruition. Concurrently, China’s credentials in the socialist and third world countries would be discredited and her creditability as the leading power in Asia would be questioned, leaving the Soviet Union with a perception of gain and the Chinese encircled by the Soviet ‘revisionists’ and her South-East Asian allies.

While China may have preferred a less repressive regime in Kampuchea, she was committed to support Pol Pot against Vietnamese moves. As tensions grew China provided weapons and military advisers to Kampuchea and helped to increase the size of the Khmer army while, conversely, the Soviet Union adopted similar measures in Vietnam.

VIETNAMESE DEPENDENTS

During this period, Vietnam was undergoing severe problems in integrating the ‘liberated’ areas of the South and economic reconstruction was mainly dependent on Soviet assistance. This fact must be considered as an issue which the Vietnamese leaders had hoped would not evolve. The Vietnamese communists have continuously been staunch nationalists and understandably strove for independence in domestic and foreign policy formulation. Their opposition to Chinese dominance is an example of this independence. However, as Soviet aid increased and tensions increased on her northern and western borders, Vietnam had to rely on the Soviet Union. Partly in response to this growing dependence and strong Soviet influence over Vietnamese policy (and her desire for independence), Vietnam altered her foreign policy initiatives expounded after her victory over the Americans.

VIETNAMESE FOREIGN POLICY

Initially Vietnam denounced the Association of South-East Asian Nations (ASEAN) as a military bloc and a ‘tool of US imperialism’. By mid-1976 Vietnamese policy began to shift towards an acceptance of ASEAN and its attempt at establishing a zone of peace, friendship and neutrality (ZOPFAN). Moreover, Vietnamese demands for US war reparations as a pre-condition to begin talks on normalizing relations with the U.S. were dropped and tentative diplomatic initiatives began between the past enemies. However, while Vietnam remained in the Soviet camp, her initiatives only strengthened China’s perception of Hanoi’s aims for regional hegemony.
STRAINS IN RELATIONS
Throughout this period Sino-Vietnamese border clashes increased. The Chinese allege that the number of Vietnamese armed forays and incursions into Chinese territory rose from about '400 cases in 1975 to more than 1100 in 1978'. While these figures may be exaggerated, the numbers do give some indication of the magnitude of the border problem and tension between the two nations. Added to this was China's deep concern over what she considered was Vietnam's intensification of the border war with Kampuchea.

The Khmer Rouge leaders had gradually been ridding themselves of all Vietnamese-trained cadres as they were considered to be a threat to the Khmer regime. Following an unsuccessful 'Vietnamese-inspired' coup d'état against Pol Pot in September 1976, an extensive purge of pro-Viet Khmer was conducted. Simultaneously, a major Kampucheans attack along the border into Vietnam occurred which, while gaining limited objectives, prompted a retaliatory attack. After three months of fighting, Vietnam attempted a negotiated settlement preceded by withdrawal of her forces; however, Kampuchea rejected these approaches and continued to denounce Vietnam for her expansionist policy and aggression. On the other side of the argument, Vietnam blamed Peking for the intractable situation that had eventuated.

ETHNIC CHINESE ISSUE
Combined with the polemic between China and Vietnam over the border conflicts another issue which began as a domestic social reform in Vietnam erupted into a full-scale dispute between the two countries. This was the issue of the overseas Chinese (hua-ch'iao). There were about 1.1 million Chinese living in Vietnam, the majority of whom either occupied the areas near the Chinese border, or were merchants in the main cities. Ethnic Chinese are not liked in Vietnam (an issue which also has parallels in many other South-East Asian countries), and this dislike has been reinforced by a fear and a distrust of China, based on the influence China has had on Vietnam's history.

Given these conditions and the widening Sino-Vietnamese schism, Vietnam instituted a policy requiring the naturalization of ethnic Chinese. This move was aimed at tightening control over and to help ensure these peoples' loyalty to Vietnam. China protested over the naturalization policy as it ran counter to the 1955 agreement which called for consultation with her on such an issue, subsequent to the liberation of South Vietnam. Additionally, as part of Vietnam's socialist revolution, nationalization of private property continued. To a large extent, this has affected the ethnic Chinese sector who formed much of the former merchant class in the South. An exodus of 'refugees' from Vietnam gained impetus. The Vietnamese alleged that the Chinese were fermenting discord in the border region by the establishment of a fifth column; encouraging the exodus of ethnic Chinese who feared that they would be the target of Vietnamese reprisals because of China's support for Kampuchea. Violent incidents such as Vietnamese troops firing on fleeing Chinese and mobilization of forces behind China's border were reported in the world press.

Initially, Vietnamese leaders probably thought they could get away with the 'discrimination' and expulsion of the ethnic Chinese although by mid-May 1978, the exodus from both the North and South of Vietnam was out of control. By failing to consult with China before implementing their 'discriminatory' ethnic Chinese policies, Vietnam opened the way for China to exploit the hua-ch'iao issue to the extent that China's reaction was firm; thus providing exceptionally clear signals to the Vietnamese of their intense disapproval.

CHINESE REACTION
Chinese propaganda attacks accused the Vietnamese of "ostracizing, persecuting and expelling Chinese residents", and in early June, China rejected a Vietnamese proposal for talks and unilaterally announced that two ships would be sent to Haiphong for the collection of refugees. Over the next four weeks, China closed three Vietnamese consulates in southern China, announced that Chinese aid projects would be cancelled and her technicians withdrawn; and finally closed their border. If these actions were designed to halt the deteriorating relations between the two countries, it failed. Not only because Vietnam still preferred to exert its own independent policy, but also because of its serious economic problems (exacerbated by China's action), Vietnam was forced into deeper dependence.
upon the Soviet Union, and through them, to the communist states of Europe. Vietnam became a full member of COMECON, thereby finally integrating her economy with the Soviet bloc. Therefore, another effect of China's action was precisely opposite to what her leaders desired; a dramatic increase of Vietnamese dependence upon the Soviet Union and the concomitant growth in Soviet influence on China's southern border.

As if to insult China, Vietnam concluded a Treaty of Friendship and Co-operation with the Soviet Union in November 1978. Within less than one month Vietnamese forces supporting KNUFNS troops launched a massive attack into Kampuchea and by mid-January had swept into Phnom Penh and installed a pro-Vietnamese government. China reacted angrily, charging "the Vietnamese hegemonists with aiding Russia's expansionist strategic plan". Less than six weeks later, Sino-Vietnamese relations deteriorated to open conflict when Chinese forces launched a punitive but limited invasion into Vietnam's northern regions; China's declared intention being to "punish" the Vietnamese hegemonists.

VIETNAMESE AIMS

Why Vietnam decided to topple the Pol Pot regime in Kampuchea is certainly open to speculation. However, their leaders may have considered the time was opportune to fulfil their aim of controlling all of Indochina. Vietnam had recently been assured support by treaty with the Soviets and, consequently, gambled that the Chinese would not intervene because of their concern about Soviet retaliation. The successful invasion of Kampuchea was unquestionably a Vietnamese requirement of long standing while the discrediting of China as a 'Paper Tiger' was a Soviet objective in her dispute with China. Additionally, Soviet advantages gained in Indochina offset China's recent normalization of relations with Japan and the United States.

CHINESE AIMS

In retrospect, Vietnam's actions posed a distinct dilemma for China. As she strives for modernization, China has been gradually winning access to western technology, finance and military equipment. Her image as the leading power in Asia had been threatened, but to resort to military action may well have provoked a Soviet military reaction. This could have resulted in a wider conflict as well as jeopardize her ambitious development plans. Restrained by these issues, China still appears to have allowed both an historical patronizing attitude and a fear of Soviet hegemonism to influence policy decisions as evidenced by the reason China repeatedly gave for the limited invasion; namely "to teach Vietnam a lesson". China calculated that by limiting the invasion in scope and time, Russian action would still be determined by self interest. In this regard, world opinion and the United States' advertised concern over the issue — backed by her military deterrent — as well as the limited gains that would accrue to the Soviet Union, prevented her from becoming militarily involved.

CONCLUSIONS

The relationship between China and Vietnam has been marred by historical animosity and China's continuous patronizing attitude towards her southern neighbour. Independent Vietnam has opposed Chinese influence because of differing national interests and, more recently, ideological differences. The unifying effects of the revolutionary struggle against 'imperialism' dissipated in 1972-73 as the Vietnam peace accords were signed and China sought rapprochement with the United States. China's desire for modernization and opposition to Soviet hegemony, drove her to adopt policies which ran counter to Vietnam's. In effect the ideological Sino-Soviet schism has expanded into a Sino-Vietnamese split.

China's desire to be the pre-eminent power in Asia became threatened by her fear of Soviet hegemony supported by the creation of a Hanoi-led regional power centre that would prevent the expansion of Chinese influence in South-East Asia. The volatile situation between Vietnam and Kampuchea supported China's analysis of these Soviet hegemonistic aims by using Vietnam as its surrogate — its "Cuba of Asia".

The seriousness with which China viewed her relations with Vietnam, was clearly signalled when she accused the Hanoi Government of discrimination against and expulsion of hua-ch'iao living in Vietnam. Chinese Government concern for hua-ch'iao had not been an issue since the mid-1950s; therefore, its
revival marked a major change in China’s relations with her neighbour.

The penultimate activity which preceded China’s limited punitive of Vietnam, was the overthrow of the Kampuchean regime — China’s ally and bulwark against Vietnamese expansion in Indochina. Finally, China’s fear of Soviet hegemony exemplified by Vietnamese actions, has not only contributed to a most serious deterioration in Sino-Vietnamese relations, but also increased the prospects for Sino-Soviet competition in Asia. Consequently, there is little prospect of a return to a co-operative relationship between Vietnam and China in the foreseeable future.

NOTES
(8) ibid, p. 449, and Porter, op. cit., p. 195.
(11) Salmon M. (ed), The Vietnam-Kampuchea-China Conflicts: Motivations, Background, Significance, ANU March 1979, pp. 53, 74-75.
(12) Chuong H., ibid.

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A DIRECTION FOR THE FUTURE

(A Research Article)

by Air Commodore R. G. Funnell

INTRODUCTION

The military profession is changing in a fundamental manner. Under the dual impact of technological and social change the profession is being pushed towards a realignment of its values and practices to bring them more in line with those of modern society. As the American sociologist, Kurt Lang, has put it: "The military, like many traditional professions, is caught up in the throes of a far-reaching technological and organizational revolution". Both the reasons for the changes and the effects of them have been the subjects of a large body of sociological literature in the last 20 years. The seminal works in this area of military sociology have been Samuel Huntington's "The Soldier and the State", published in 1957, and Morris Janowitz's "The Professional Soldier", published three years later. Although the two works differ considerably in their subjects, their methodologies, and their prescriptions on how the profession should develop, they have been responsible for stirring interest in the military as a subject for research. Developments have however, been uneven and two recent observers, Kourvetaris and Dobratz, have remarked that "...while the field (military sociology) has recently made some progress we still believe that it is underdeveloped and has not achieved widespread acceptance in sociology and the larger academic community." The uneven development of military sociology is well illustrated in Australia where very little research and writing has been attempted. A bibliographical search revealed very little writing and even less research of substance on the military profession in Australia. Consequently, unless one has the knowledge, time, and resources to undertake the massive task of primary research in this area, the only method one can adopt is to use research and writings from overseas, and that is mainly the USA and Europe, and try to adapt them rationally to the Australian circumstance. The small amount of work that has been done in Australia can be used to assist in the process of rational adaptation. This is the method that has been used in this research article.

With the data on Australia so thin and scattered the temptation exists for the researcher merely to examine the data to see what they might reveal. That form of research invariably produces more questions that it answers. Consequently, the aim has been, despite the comparative lack of data, to structure the research around the issue of the bureaucratization of the military. The conventional wisdom has been that, of necessity, military and civilian skills are converging and, further, that, if military officers are to be effective in putting forward military views in the area of higher defence...
policy formulation, they must develop political and bureaucratic skills similar to those of the senior public servant. This piece of folk wisdom, while not rejected, has not been assumed. Rather both it and its counter-view, that the military should eschew bureaucratic skills and a political orientation in favour of those which might be termed “professional” skills and orientations, have been used as the foci of analysis.

This research has current and continuing importance. The military profession in Australia has had to adjust to a number of far-reaching strategic, political, technological and organizational changes. Strategically, the British withdrawal East of Suez, the U.S. withdrawal of land forces from South-East Asia and its general disengagement from Asia, and the implications of the Nixon Doctrine have created a strategic environment totally different from that of a decade ago. Politically, the successive governments of Labor and Liberal-National Country Party have provided a smaller share of the nation’s resources for defence purposes. Technologically, the profession is on a treadmill where, it seems, no matter how hard you try you never get ahead. Equipment is evaluated, purchased, introduced, and becomes obsolescent in a very short time and without ever being used for its primary purpose. Organizationally the reforms of the last ten years seem to have bewildered a profession which has traditionally found difficulty in adjusting to social and institutional change. These last changes are worth further examination.

The higher defence machinery in Australia has undergone considerable changes in the past 20 years and particularly in the last decade. The periods of office of Sir Henry Bland (1967-70) and Sir Arthur Tange (1970-1980) as successive Secretaries of the Department of Defence have brought major changes. The most far-reaching and controversial were those introduced successively from November 1973, first by the Labour Government and then by the Liberal-National Country Party Government, on the recommendation of Sir Arthur Tange. Much of the controversy has centred on the perceived roles of the military officer in the re-arranged Department of Defence and on those roles vis-a-vis those of the military officer’s civilian counterpart. The controversy, though now less public, is none-the-less still active and influential. The author, who is a member of both the military profession and the Department of Defence, is acutely aware of the deep dissatisfaction of many military officers. It is a common speculation that the increase in officer resignations that has been widely reported in the last several years is linked to the changes that resulted from the Tange Report. Although other reasons suggest themselves and, in particular, the more liberal retirement benefits scheme which was another innovation of the Labour Government, many officers purport that their decisions to resign have been influenced by the way in which the military profession has been forced to change as a consequence of reorganization. This is a major part of the reason for asserting the importance of the subject for, no matter how large or how small a nation is, the loss to its armed forces of significant numbers of its trained and highly skilled professionals is a matter for national concern and examination.

It was against this background that the search was undertaken for evidence on the issue of how should the military profession in Australia adjust to the technological and organizational changes that are occurring in its environment? In particular, should military men try to become better bureaucrats through stressing managerial skills or should they remain professionals in a selfconsciously military sense through stressing operational skills?

THE DEVELOPMENT OF THE MILITARY BUREAUCRAT

In a sense the military was the first large social organization to adopt bureaucratic procedures and practices. In combat the emphasis is placed on predictability of behaviour and as a consequence, the military developed a hierarchical structure which allowed military leaders to calculate and control behaviour even under extreme conditions. The formalizing of behaviour developed into a set of traditions which remains extant. Under the impact of the industrial revolution and its resulting technology oral tradition became inadequate in transmitting norms and values; behaviour was prescribed and standardized in procedural manuals. A parallel trend, also initiated by technological change, was the development of the military
staff to solve the problems of the specialization required in modern armies. These parallel developments provided the prototype of the large bureaucracy of the modern world with its hierarchical structure, line and staff functions, rationally ordered discipline and formalized practices and procedures. It is small wonder that Weber regarded the army as the ultimate in bureaucratization.

The great advances in the technology and organization of war, which began to have major effects in the mid-19th century and which have continued and often accelerated since, provided the impetus for the bureaucratization of armed forces. After the muddles of the Crimean War the British higher defence machinery, which has been the model that has had most influence on Australia, was revised drastically and, particularly after Cardwell introduced his reforms in the War Office Act of 1870, the control of all branches of Army administration was placed with the Secretary of State for War.

In the long established organizational tradition of rapidly reorganizing following disaster or near-disaster, the Boer War was followed by a reorganization based on the recommendations of the War Office Reconstitution Committee, commonly referred to as the Esher Committee after its Chairman, Viscount Esher. Amongst many other fundamental reforms the Esher Committee recommended the establishment of a Committee of Imperial Defence to help in coordinating the work of the War Office and the Admiralty and to advise in general on defence matters. This committee was replaced during World War I and World War II by the War Cabinet. The other major addition to the British higher defence machinery was the Chiefs of Staff Committee which came into being during World War II. Since then the major change, and a quite radical one, was made in the late 1960s/early 1970s when the three separate Service Departments of State disappeared and authority was concentrated in the Ministry of Defence.

Of course what was occurring throughout this 100 years of organizational change was an increase in the functions, size and influence of the bureaucracy. Technological developments led to an increase in specialization which in turn led to the need for increased co-ordination which in turn led to the need for better organization. This continuous process resulted in a transformation of the military from a profession dominated by combat soldiers to one influenced increasingly by bureaucrats in uniform. To many members of the profession this has been only dimly perceived and, as a consequence, combat virtues and values are stressed as those required of all military men even though most will never engage in combat. This stress has created a situation where officers advance to the top, or near to it, of their profession on the basis of combat skills with the emphasis on combat skills, senior officers may not have had the opportunity to develop the administrative and political skills they need. Kurt Lang has remarked:

"This image of their professional role corresponds less and less to what officers actually do, nor have service career structures been sufficiently modified to assimilate all the new functional elements within the military organization."

Lang goes on to point out three consequences of the change in military career structures and the, as yet, imperfect professional adaptation to it. First, the distinction between civilian and military skills has been blurred. Secondly, the massive increases in fire-power and the great improvements in troop mobility has shifted responsibility up the hierarchy. Thirdly, adaptation of military career structures to a high degree of specialization is impeded by tradition.

We are now approaching the crux of the matter and, as the discussion above has brought out, it has two important facets. The first is that, particularly at the higher levels of the defence organization, military skills and civilian skills have tended to merge. The second, which is a corollary, or perhaps better put, a reaction to the first, is that a conservative profession has been slow in accepting and adapting to the change. These points will be developed presently but first a quick overview will be given of the development of higher defence machinery in Australia.

As defence was one of the spurs to federation of the Australian colonies, it is not surprising that a Department of Defence was established from the start by the Australian Government. A separate Department of the Navy was established during World War I but it was
merged back into Defence in 1921. Between the wars there was only one department but three Service Boards. The total staff of the department was quite small. There was a council of Defence chaired by the Prime Minister and a Defence Committee containing the Chiefs of Staff. During World War II these became the War Cabinet and the Chiefs of Staff Committee. Also formed during that war were three single-Service departments and the Departments of Defence Production and Supply. These were retained post-war.

The Morshead Committee, established by the Menzies Government in 1957, made a comprehensive study of the six departments of the Defence Group and recommended that the Departments of Supply and Defence Production be amalgamated and that the three Service departments be integrated into the Defence Department under a single Minister for Defence. The first recommendation was accepted; the second and more far-reaching was not. Instead, the Government issued an administrative order which aimed at giving the Minister for Defence paramount authority in the area of defence policy and thereby attempted to strengthen his Department's authority in the co-ordination of Defence matters. In the event the order was less than successful. It did not have statutory backing whereas the three Service Boards were legally charged with the control and administration of their respective Services. A more successful initiative was the creation of the post of Chairman, Chiefs of Staff Committee, which led to greater co-ordination of military policy within the Defence Group and also provided the Secretary, Department of Defence, and the Minister with a senior military adviser, a position long enjoyed by the junior Secretaries and Ministers of the three Service Departments.

Some initial steps at overcoming the difficulties faced by the Department of Defence were undertaken by Sir Edwin Hicks. Greater changes occurred, however, after he was succeeded by Sir Henry Bland in 1967. Bland favoured joint planning staffs over joint planning committees. He saw the latter as cumbersome and too prone to promoting inter-Service rivalry over joint-Service solutions. He greatly expanded the size of his Department and increased its ability to co-ordinate the actions of the junior Departments. However, Brigadier Greville has pointed out the difficulties encountered within the new arrangements:

"The central staffs were inexperienced and Service submissions were often held in suspense for months and then referred back to the Service Departments for further amplification. Terms such as "yo-yo" and "merry-go-round" were coined (by officers in Defence) to describe the flow of paper work as it moved up and down and around and around, not only the main Defence building, but amongst its hierarchically organised inmates.

The Service Departments, in their turn, found they had to build up their own staffs, not to administer to the needs of the fighting troops, but simply to handle the endless stream of enquires from Defence. Everyone was working hard, with panic following panic, but little was done well and less achieved.

The further Defence spread its net, the bigger its staff had to be, and the more queries the Service staffs had to handle, and so on."

Bland's successor, Sir Arthur Tange, also "wished to assert the central co-ordinating authority of the Defence Department over the Services." The election of the Labor Government in December 1972 was to provide him with an excellent opportunity to promote his ideas, for one of the first acts of the new Minister for Defence was to assume control of the five departments of the Defence Group and announce the Government's intention to integrate them into a single department. The Secretary was charged with reorganizing the Defence Group of departments within the guidelines set down by the Minister. Sir Arthur Tange reported to the Minister in November 1973 and his recommendations for further reorganization were progressively introduced between November 1973 and February 1976.

A central question for Tange was how to provide Ministerial control of the functions for which he was responsible. His answer was to create a diarchy comprising a Chief of Defence Force Staff with power of command over all three Services and a Secretary, Department of Defence, responsible for resource management and policy advice. He recommended and the Government accepted:

"... that resource management, and policy advice upwards, and policy direction downwards, be distributed among five
departmental organisations under the Secretary to the Department dealing with the following groups of functions:

a. Strategic Policy and Force Development;
b. Supply and Support;
c. Resources and Financial Programmes;
d. Defence Manpower; and
e. Organisation and Management Services."

Although the Report went on to say "... a military input is provided for in the proposals concerning each of the functions" it is obvious that the diarchy has a marked civilian tilt. Moreover, the tilt is not in the direction of political control of defence policy and the armed forces but of public service control. As Dr. B. D. Beddie has pointed out concerning the Tange Report:

"It contains no discussion of the way in which Cabinet will discharge its responsibility for defence and gives only passing reference to the responsibility of the Minister for Defence..."

This point is accentuated when one looks at the committees which have been established within the higher defence machinery. There are twelve, and ten are chaired by public servants. In these circumstances it is small wonder that the Report creates a legitimate fear that the military may not secure an adequate consideration of their views at the highest levels of government". That is, however, to diverge a little from the main line of reasoning which has been to show that a large bureaucracy has been established to control the Australian Defence Force. The point concerning bureaucratic control will, however, by further developed later in the article.

Suffice it to say that within the bureaucracy there is an admixture of civilian and military officers, often with joint responsibilities but with very different backgrounds. The function of the military officer is seen to be to put forward professional military advice; professional in the sense that it is supported by the specialized knowledge and skills he has acquired through his military experiences, experiences which have not been shared by his civilian counterparts. The question we are examining is how he might be most effective in putting his professional advice.

However, before pursuing the question further and to round off this section of the analysis a broad picture needs to be drawn of the bureaucratization of the military in Australia. This is being done to show that the dimensions we are dealing with are anything but small.

The Australian Defence Force has a total establishment for regular (i.e. full-time) officers of 11,524. If officers undertaking training courses are excluded the number of posts is reduced to 9,414. Of these 2,209 or 23% occupy positions within the Department of Defence. If the figures for senior officers (i.e. those of the rank of Major or its equivalent and above) are considered the proportion is even more staggering. For the Air Force, which admittedly has the highest figure, over 50% of its established posts for senior officers are in the Department. The figures for bureaucratization could be made to seem even greater if the numbers of officers serving on the staffs at command and other headquarters are included. However, that would depart considerably from the subject being analyzed for those staffs are predominantly or exclusively military operating in a military environment on specifically military tasks. Although their functions and methods can be classified as bureaucratic their situation is considerably different from that of military officers serving in the Defence Department. For the purposes of this analysis it is sufficient to show that the military profession is highly bureaucratized, that, collectively, a high proportion of senior officers are employed in the reorganized Department of Defence and that, individually, once an officer has progressed to the senior ranks, he can expect to spend a considerable part of his career working within the Department.

THE PROFESSIONAL OFFICER

The stage having been set it is now appropriate to go back to pick up the strand of the previous argument. The point had been made that military and civilian skills have merged, particularly at the higher levels of the military organization. How should the military react to this?

The lines for the discussion have been drawn to a large degree by the seminal works of Huntington and Janowitz referred to in the introduction. As Huntington sees the problem:

"The military institutions of any society are shaped by two forces: a functional imperative stemming from the threats to the society's security and a societal imperative arising from the social forces, ideologies, and
institutions dominant within the society. Military institutions which reflect only social values may be incapable of performing effectively their military function.”

He builds his thesis for the proper control of the military on two contrasting types of control, “subjective” and “objective”. The former involves the maximizing of the power of one or more civilian groups such as a government institution, a political party, or a social class, at the expense of the military which thereby suffers a loss of autonomy. “Objective” control maximizes military professionalism and frees the military from the pressures that arise from the struggles between civilian power groups. As Huntington summarizes the differences:

“Subjective civilian control achieves its end by civilianizing the military, making them the mirror of the state. Objective civilian control achieves its end by militarizing the military, making them the tool of the state... The essence of objective civilian control is the recognition of autonomous military professionalism; the essence of subjective political control is the denial of an independent military sphere.”

In short, “subjective” control is achieved by restricting military autonomy, “objective” control by widening it. In the first, control is obtained through political means; in the second, control follows automatically from having a truly professional military.

Janowitz adopted a considerably different stance emphasizing the integrationist perspective as he pointed to the narrowing differences between military and civilian skills and orientations:

“The new tasks of the military require that the professional officer develop more and more of the skills and orientations common to civilian administrators and civilian leaders. The narrowing difference in skills between military and civilian society is an outgrowth of the continuing concentration of technical specialists in the military. The men who perform such technical tasks have direct civilian equivalents: engineers, machine maintenance specialists, health service specialists, logistic and personnel technicians.”

The congruence of military and civilian skills has been emphasized by a European sociologist, Bengt Abrahamsson, in a discussion of Janowitz’s thesis: “Military training and practices today gives the military elite the experience and expertise to run something which is with few functions excepted, a replica of civilian society.” Adam Yarmolinksy comes to a similar conclusion. At the end of a chapter titled, The Civilianized Military Command, in which he examines the theses, amongst others, of both Huntington and Janowitz, he remarks that, “For better or worse, we now are all quasi-civilians in a quasi-military, quasi-civilian, society”.

In the Janowitz thesis the military is part of and not separate from civilian society. Control of the military is assured through a congruence of values. In this style of military force, military values, while different in some respects from civilian values, are fundamentally a harmony with those of the society it serves. The aim is to integrate the military into its parent society. Only when the military is separate from the civilian society is there a danger of a fundamental difference in views and goals. As was stated in the introduction, this is the conventional wisdom and the military is frequently enjoined to become more like civilian society.

There are, however, limits on how far one can push the military in that direction. One does not need to go as far as Huntington to appreciate that a civilianized military may be ineffective in its primary function. In spite of technological and organizational imperatives, the combat imperative imposes a basic limit on civilianizing trends. This was acknowledged by Janowitz, even if it has tended to be overlooked by others: “The military establishment has not lost its distinctive characteristics... The need for heroic fighters persists. The pervasive requirements of combat set the limits to civilianizing tendencies”.

Some of the disadvantages of the bureaucratization and civilianization of the military have been highlighted in a thought-provoking paper by Edwin A. Deagle Jr. in which he supports and develops Huntington’s contention that military professionalism is diverted and diluted as military officers concentrate on developing civilian skills, particularly bureaucratic skills. He points out that Vietnam was the first war fought by officers who developed within a large military bureaucracy. Although he does not go so far as to state that their performance was not up to
the standards of their forebears, that is the clear implication. Deagle uses data from a 1970 U.S. Army War College "Study on Military Professionalism" to support his contention that the military must reverse the process of bureaucratization and redevelop "...a strong institutional commitment to professional standards of competence and integrity."33

The U.S. Army study indicated "...that the bureaucratic pressures built into the management of a large peacetime force structure tend to warp the professional values and standards of the officers who must compete for coveted command and staff positions,"34 Deagle believes that, although the new style of officer possesses political and administrative skills, he is not necessarily competent for combat. "The system rewards not demonstrated competence in combat — as it did in World War II — but the kind of bureaucratic political skills which accompanies successful advancement in any large organization. Thirty years of this process have, as the army's professionalism study reveals, institutionalized it."35

For Deagle the solution to the military's problem is to sacrifice political influence and bureaucratic power and stress professional values. By, as Huntington puts it, "...withdrawing into its own hard shell..."36 the military can renew its professional idealism and effectiveness in much the same way as it did in the U.S.A. and other western nations in the years of neglect between the two World Wars. Deagle is anything but sanguine over the prospects of this occurring:

"Unfortunately, restoration of the old system is not likely to be undertaken by the services themselves. The officers who command the armed forces today are themselves products of the new rather than the old system. They represent a powerful political force, after years of successful bureaucratic survival in the rough politics of budget-making in the Federal Government. They cannot be expected to be willing participants in either the dismantling of the defence establishment that has existed for thirty years, nor the return to a system of preservation of military virtues many consider unsuited to modern times."37

On the other hand Abrahamsson argues cogently against Deagle's position pointing out the dangers associated with a military profession which has retreated from society and hardened its profession values in an introverted way.38 Huntington argues that there are no political dangers with a truly "professional" military force but, in effect, what Huntington has done is define the problem away. His thesis becomes in Carl Hempel's words "a covert definitional truth."39 True professionals never intervene in politics because if they do they are not true professionals. Abrahamsson cites examples in Algiers in 1961, Pakistan in 1958, and Nigeria in 1966 in which professionals did intervene.40 The separation of politics from military issues is not only extraordinarily difficult to achieve but also unlikely to work in the national interest. A "professional" argument that is often advanced is that the military should not concern itself with the political implications of its advice — that is for the politicians to grapple with. Rather than attempt to do the politicians' job for them the military should confine itself to providing the very best professional advice. But, as Abrahamsson points out by using the example of the Cuban missile crisis of 1962, the very best professional advice might contain no options that fall within the boundaries established by political realities.

"President Kennedy was impressed with the effort and dedicated manner in which the military responded by putting the Army, Navy, and Air Force on constant alert. But he was distressed that military representatives with whom he met gave so little consideration to the implications of the steps they suggested."

"President Kennedy was disturbed by the inability to look beyond the limited military field. When we talked about this later, he said we had to remember that they were trained to fight and to wage war — that was their life. Perhaps we would feel even more concerned if they were always opposed to using arms or military means — for if they would not be willing, who would be? But this experience pointed out for us all the importance of civilian direction and control and the importance of raising probing questions to military recommendations."

Probably even more disturbing than the passage quoted is an instance described in the same memoir. When the Soviet Union
announced on the Sunday of the crisis that it would withdraw its weapons, one “high military adviser” wanted the President to authorize an attack on the Monday in any case while another felt that, in some way, they had been betrayed.43

Military professionalism in the Huntington sense is a plea for independence and autonomy. It is an attempt to escape from tight political control. But, as with all professions, professionalism provides the military with its own particular interests and objectives and there are no guarantees, unless one accepts Huntington’s definitional approach, that those interests and objectives are those of the society. As Abrahamsson concludes “... civilian control hinges on an explicit recognition of the military’s professional bias, and on the adequate capacity to respond to that bias.”44

Another argument against what might be called the ideal or absolutist professional orientation is that, even if the military did attempt to retreat from society behind a professionally protective wall, technological and organizational imperatives would ensure that the wall would be constantly breached. The military profession is no longer solely combat-oriented; it is no longer professionally exclusive and, to remain effective, it must interact constantly with other professions and groups. A change in transport technology affects all users of transport; a change in communications technology affects all users of communications; the transport, communications and other specialists within the military profession must maintain close ties with the world outside the profession. No longer are the military merely managers of violence; they are members of an increasingly interconnected and interdependent society. As Yarmolinsky has pointed out in his discussion of Huntington’s thesis, an “... objectively controlled, purely professional military seems feasible only in the pre-World War One universe.”45

A difficulty that is associated with the ideal professional orientation of Huntington on the one hand and the pragmatic professional orientation of Janowitz on the other is that neither seems to allow for compromise. The two positions are not, as they might first appear, different positions on a spectrum. Neither the ideal professional nor the pragmatic professional can move far from his position without destroying the rationale for being there. But what if one were to adopt a pluralist stance and allow both? Might it not be feasible to allow within the profession a variety of orientations?

In effect, this pluralist perspective is the one adopted by Richard Rosser in an often-quoted article “A 20th Century Military Force.”46 Rosser suggests that a nation’s armed forces should not be unified but diversified — diversified in a number of “separate, largely self-contained, and largely independent branches or corps.”47 He sees three main advantages for his proposals:

“First, a specialist would be hired by a particular branch, remain part of it, be promoted within it, and eventually have the opportunity to command it... Second, functional organizations would enhance morale by encouraging the full development of professionalism in smaller, more easily identifiable groups... Third, separate branches would finally permit us to shed the ‘combat standard’ as the touchstone of military professionalism.”48

Rosser argues that the “combat ethic”, while appropriate, indeed mandatory, for the combat specialist is inappropriate, irrelevant and discouraging for the non-combat specialist. Another who argues for “military pluralism” is Charles Moskos who sees institutional change in the military as being the result of a dialectical process in which the “institutional persistencies” of the military react to civilianizing pressures.50 He believes that the result of this process will not be a homogeneous profession but one in which some sections of it diverge and some converge with respect to civilian society. The sections that diverge would be those to which the “combat ethic” is appropriate, viz., combat units, certain support units, and higher command levels; those that diverge would be sections involved with administration, education, logistics, and other technical specialties. He argues that a pluralistic profession is more appropriate than either a highly civilianized profession that might well be ineffective in combat or a highly militarized profession which would not be responsive to society’s requirements. Although Moskos does not go as far as Rosser, who suggests that branches “... should be permitted to develop distinctive uniforms, traditions, codes of conduct, and professional standards”,51 he does propose a profession in which there is a fundamental division.
Rosser's solution is really no solution at all. He breaks the military along functional lines and not only allows the various branches to develop separately but positively encourages it. If the functions of three military services with fundamental similarities are difficult to coordinate how much more difficult would be the co-ordination of a far greater number of branches with fundamental differences. The effect of Rosser's suggestion might well be to establish a smaller, more introspective, combat-oriented military which saw the other branches as not being military at all. For their part, the non-combat-oriented branches might well shift their orientations from military to specialist perspectives. The result of this would be first to dramatize and then to exaggerate the very differences you set out to remove.

Larson argues forcefully against Moskos' proposals. While he sees Moskos' notion of a dialectic between the forces of professionalization and the forces of civilianization as being reasonable and useful, he rejects the division of the military into professionalized and civilianized sectors as a "reductio ad absurdum".

"Great functional difficulties and unbridgeable ideological differences would develop very quickly between the two parts of the institution. Two military institutions in the place of one would soon emerge — one elitist and militaristic, the other popular and politicized. They would inevitably become locked in political struggle, and would ultimately use their military power against each other and the larger society."

While one might view Larson's reaction as also being extreme, his conclusion that the objective should be a relatively homogeneous military and not a pluralistic military is reasonable. Irrespective of whether parts of the military are more or less professionalized or more or less civilianized than others, the whole has a real and vital set of objectives and to achieve them it must be organizationally and ideologically cohesive.*

If one rejects pluralism as an alternative, the dilemma remains — should the choice be an ideal military professionalism emphasizing political neutrality, isolation from society, and the efficient achievement of military victory or a pragmatic military professionalism emphasizing political sensitivity, integration with society, and the acquisition of managerial and bureaucratic skills. Larson argues for the latter and, as previous discussion has shown, so do most other analysts. The argument for an ideal, absolutist form of military profession is difficult to develop and, in the light of technological and organizational developments even more difficult to sustain. The discussion will now turn to the Australian experience to see if the pragmatic orientation is an appropriate direction for the military professional in Australia to take.

THE PROFESSIONAL MILITARY OFFICER IN AUSTRALIA

Military professionalism in Australia was cast very much in the British mould of being politically neutral, highly professional, and combat-oriented. Political control of the military in Australia has never been in question. Odd right-wing groups such as the New Guard and others, which at times have entertained the idea of acting against the elected government, depended for what little "military" support they were able to obtain on ex-servicemen, retired military officers and the occasional member of the militia. The allegiance of regular forces has not been doubted. It has been, however, only since World War II that Australia has had regular forces of any size. Until then Australia had relied on mobilization as its military response to the need for a large military force. While not denying the existence of a pre-war military profession in Australia it is possible to argue that, as a profession of any size and more particularly as a profession which regards itself as distinctively Australian, it has existed only since 1947 when the Labor Government decided in favour of maintaining a regular military force. Since then the development of the profession within Australia has been much along the lines of the profession in other western nations.

The interdependence between military and civilian activities has long been recognized in Australia as has the critical importance of technological and organizational changes to the profession. Quite the best summary of a worldwide problem is that of an Australian analyst, Dr. B. D. Beddie. It is quoted at length:

"Civilian-military relations are undergoing transformation in every country that has

* Ideologically is here used to mean a shared set of beliefs about the military profession. It is not used in the narrow sense of sharing a set of political beliefs.
promoted a major rearmament programme since the Second World War. The transformation has not been a smooth one, but has generally given rise to controversy and in some cases, e.g., the U.S.A., to sharp conflict. The element of crisis that has entered into civilian-military relations reflects a cross-movement of underlying forces. On the one hand, the technological revolution in weapons within the context of the cold war has greatly increased the importance of the military component in national life; civilians now continuously depend upon the military for their security and hand over to them resources on an unheard-of scale. On the other hand, again because of the technological revolution, the armed services have lost much of their previous autonomy. They have become more dependent on one another and much more highly dependent on a wide range of civilian activities. So just at the time when the military might expect to be increasing in social influence they have fallen into a network of civilian entanglements. They have now to pass much initiative to and to share control with scientists, industrialists, economists, diplomats and above all, at least in Australia, with the public servants who administer and co-ordinate policy.

For Beddie and for others the solution to the problem posed by civil-military interdependence is that the military professional should develop the political and bureaucratic skills needed to ensure that the military voice is heard. A search of the literature has revealed no evidence of support for the ideal or absolutist professional orientation in Australia. This would seem to fit with the observations of Hancock, Davies and many others that Australians are culturally oriented towards pragmatic, rational, bureaucratic solutions to problems of this type.

To help in overcoming some of the problems encountered by the military professional Beddie argues for developing officers with particular political and bureaucratic skills in a separate career stream. This same notion is picked up 13 years later by a former Chairman, Chiefs of Staff Committee, Admiral Sir Victor Smith: "One solution that comes to mind is that a Service Officer should be selected relatively early in his career and his future postings in the main, but by no means exclusively, would be at Russell.

Consequently, as he progresses in rank so his skill in areas of defence policy formulation will develop and his input will be all the greater."

The 13 years difference between the similar remarks of Dr. Beddie and Admiral Smith prompts the remark, even if it is somewhat cynical, that in the areas of social and institutional change the military profession moves exceedingly slowly.

The impetus in Australia is pushing the professional officer in the direction of acquiring political and bureaucratic skills. There is also inserted into the problem a factor that, from a search of the literature, appears to be, if not exclusively Australian, at least predominantly so. A former Minister for Defence, Mr. Bill Morrison, picks up a point made in previous discussion: "Civilian control of the Services has never been a point of issue in Australia. But the Services in acknowledging and accepting civilian control do not equate it with control by Department of Defence bureaucrats." The problem in Australia is that the well-established principle that the military must be subject to civil control has, through a slide in the meaning of civil, come to be applied not to control by the elected representatives of the people but as control by public servants. Much of the military reaction to the Tange reorganization has been based on the feeling that they have institutionalized public service control of the military.

The practice of substituting public service for political control is not new. Schaffer remarked on it in 1963 and commented on the "extraordinary degree of influence" possessed by the Secretary, Department of Defence. As would be apparent from the discussion in an earlier section of this article the reforms since then, particularly those of Bland and Tange, have increased considerably the influence of public servants. Beddie argued in 1964 that "... many of the major deficiencies in our defence effort, both before and after 1958, can be attributed to the absence of effective Cabinet Control and clear lines of ministerial responsibility." The point is as strong today as it was then. Some of the strongest criticism of the Tange reorganizations has been on this point of inadequate provisions for ministerial control. As previously noted, considering the Tange Report, Beddie has remarked on the lack of discussion of and provision for political controls while Brigadier Greville has been
even more forthright. He sees the Tange reforms as "the assumption of Ministerial power by the Secretary."60

Dr. T. B. Millar, an eminent and highly-respected defence analyst, has been equally forthright. Of the reforms in general, he has stated that the reorganization is "... a mistake of unprecedented magnitude."61 On the particular point of public service control he remarked:

"The draft legislation and the minister's speech give strong grounds for believing that the bill is a giant step along the road to Public Service control of the armed forces. The fact that this trend has been going on for some years does not validate the concept or, indeed some of the earlier changes in the same direction.

No one in the armed forces would question the principle of civil control, but under the Westminster system we have adopted, this means control by a civilian Parliament and Ministry, not by the Public Service."62

In these circumstances it is small wonder that the professional military officer in Australia believes he has been placed, organizationally, in an embattled position. The problem for him is not helped when senior public servants downgrade his professional position. Sir Henry Bland had this to say shortly after he had relinquished his position as Secretary, Department of Defence:

"Basically the organisation of all relevant inputs and the welding together of the military and civilian components in defence administration is a management function and, in our higher defence administration, Australia has traditionally devolved this responsibility on the civilian side. This practice has been reinforced by a long-held political theory that ultimate control of defence matters must rest with the civilian authorities."63

The shift from political to public service control of the military, which was previously spoken of, is strongly evident. He went on to repeat an old saw that war is too important to be left to generals and, from that, to remark:

"... there has been a growing tendency, political and public, to challenge the mystiques of defence — and even the conduct of battles — and regard the problems defence presents as just as susceptible to solutions by competent, though non-expert persons, as other areas of public concern."64

It seems that there are few limits to the specialist areas into which "competent, though non-expert persons" (whoever they are) might enter. There also seems little doubt that Bland was most unimpressed with the calibre of the professional military officer in Australia and that he saw military men as being inadequately prepared for high office within the Department of Defence.

"The observer must be left wondering whether the management concepts of today's world are yet fully comprehended in our Services and whether the relative importance to the senior military officer, whether the commander in the field or on staff work at Russell Hill, of highly developed management skills, as distinct from professional military competence, is yet really understood. And this despite, in the case of the Army, the history of the success of non-Regular Army commanders!"65

Prima facie it would seem from the Tange Report that the present Secretary shares his predecessor's views. In the reorganized department all large-scale managerial functions that are common to the three Services (logistics, technical services, communications, et al) are placed not under the Chief of Defence Force Staff but under the Secretary. With technical services the Report notes that the Chiefs of Staff preferred that their technical chiefs be responsible to them. Nevertheless, Sir Arthur still recommended "... that the primary responsibility of the technical chiefs should be to the Secretary, so their professional expertise can be brought to bear on, and improved management techniques can be adapted and applied to, the defence task."66 The implication of who possesses managerial knowledge and skills and who does not is not difficult to discern. This is in line with the feelings he expressed in his address to the Chief of General Staff's Exercise in 1973 where he remarked that Servicemen were in the "... possessive grip of earlier experience, rummaging in the experiences of the 1940s to throw light on the problems of the 1970s and 1980s."67

The reorientation required of the professional military officer as he moves from the combat to the bureaucratic milieu has been made more difficult by the abolition of the Service departments. As Mediansky has remarked:
"The Service departments provided an institutional framework and support for the realisation of Service goals in a Service setting. By contrast, the new integrated department has reduced the institutional support for Service perspectives. The very format of integration has forced Service officers to seek their goals in the context of a bureaucratic environment dominated by the politico-civilian ethos."

The point, while well made and germane, is perhaps overstated. Many military officers differentiate between Defence (Central Office) and the Navy, Army and Air Force Offices, the latter being viewed as being, to come degree, similar to the former Service departments.

Nevertheless, the discussion above has revealed the very real difficulties facing the professional military officer in Australia if professional military advice is to receive due weight in policy formulation. His professional position has never been secure and the organizational reforms of the 1970s have subjected it to greater pressure. There seems little doubt that the most effective approach to a solution lies in the direction of acquiring the managerial and political skills that he is purported or assumed to lack. One must add that from the evidence the assumptions seem to be well-founded.

Some moves to correct the present situation are immediately obvious. The military must attract young men of intellectual quality and provide them with a good education. Whatever its organizational shortcomings, the proposed Casey University — Australian Defence Force Academy is a positive move in that direction. Basic education must, however, be built on with both career experiences and further education. One of the difficult facts the profession must face up to is that its best junior officers are more than likely those who are potentially its best operators in the politico-bureaucratic environment of the Department of Defence. At present the military ethos is built around the combat ethic resulting in the strong desire of junior officers to remain in combat units. This produces the common situation in which an officer’s first working experience in the Department is after 10 or more years commissioned service. Moreover, once he is there, because of the professional environment in which he has been nurtured, he is forever trying to move back into the combat environment. The profession must come to terms with the local environment. In 1978 the reality is that professional military advice will not enter with full force into the policy-making processes if its advocates are not skilled operators in the bureaucratic environment. Although combat is the ultimate purpose of military forces and their “raison d’etre” if its place in the professional ethic is over-emphasized it becomes an end in itself. A combat orientation is essential to a professional military force but so too is a quite pragmatic acknowledgement that, without the less heroic skills of the bureaucrat, the profession may be rendered impotent before combat is even joined.

The need seems to be to provide a career pattern for those officers who show potential which will allow them to spend a considerable part of their career in staff and policy positions. Periodic returns to combat-oriented positions would be needed to avoid organizational sterility, but care would have to be taken not to overdo this; the fundamentals of the profession do not change rapidly. Once in a policy area an officer must be allowed to stay there for some time. Lang has pointed out that combat orientation and rapid rotation have distinct advantages if the officers you need at the top of the hierarchy are those with a combat orientation. The snowball rolls in the other direction if the officers needed at the top are not those with combat skills but those who are skilled in “... the management of technological innovation, of resources, and of the personnel systems on which continued organizational effectiveness increasingly depend.”

Another change that suggests itself is an increase in the retiring age of officers. The present retiring ages, which fall in the bracket of 45 to 55 depending on rank, are based on the combat orientation and are more applicable to an era in which a far greater percentage of officer positions were in the operational career fields. The changes that have occurred in the last 30 years together with those mooted here should allow an increase of at least five years. This would have the significant effect of making the military a life career rather than merely the first section of a working life as it now tends to be. This point is, however, suggestive of what might be examined rather than prescriptive of what should be done. It is a complex issue with many ramifications.
CONCLUSION

The military profession in Australia today is under strain. It is very much an elite in transition, to borrow a phrase from Janowitz, struggling to redefine its profession and accommodate to a rapidly changing strategic, political, technological, and organizational environment. To examine how this redefinition and accommodation might be undertaken this research study was entered with two conflicting propositions as the foci of analysis: the military professional must develop political and bureaucratic skills similar to those of the senior public servant; or the military professional must eschew bureaucratic skills and a political orientation in favour of strictly professional skills and orientations.

The development of the military bureaucrat was traced first through the British experience, this being the model used by Australia, and then in Australia itself. Particular emphasis was placed on the organizational reforms of the last ten years which have resulted in a very large bureaucracy being established on Russell Hill for the management and control of the Australian Defence Force. The bureaucracy is not only one of public servants; the number of bureaucrats in uniform in the Russell complex is indeed impressive with more than a fifth of all full-time military officers being employed there. The reaction of the military profession to these circumstances is the crux of the whole matter.

Huntington argues for an ideal or absolutist profession in which the military isolates itself professionally from society and stresses traditional military verities. Although there is some support for his thesis, in general it fails to come to terms with the modern social and political environment. The pragmatic professionalism of Janowitz and others is more in harmony with the realities of modern society. A possible alternative is that of "military pluralism" in which a variety of professional orientations are accommodated within the military. This was seen to produce problems not solve them; the weight of opinion is in favour of a relatively homogeneous military which is organizationally and ideologically cohesive.

For Australia the arguments all line up in favour of a pragmatic military professionalism in which greater stress should be placed on political and bureaucratic skills. Australia does, however, have an added complication in that, through a slide in reasoning, civil control of the military has come to mean, for many, Public Service control. Another difficulty has been that the managerial abilities of senior military officers are not regarded highly by senior public servants. While there is evidence to support this it has not helped the military profession in its attempts to re-orient itself and it may to some degree be self-fulfilling in that it may cause a reaffirmation of traditional military orientation just when that is least needed.

The Military profession in Australia must make a quite fundamental adjustment. A combat orientation is primary and predominant but it is not an end in itself and it must not be allowed to dominate practices and procedures as it has to date. The profession must accommodate to political and organizational realities. If professional military advice is to receive due weight in defence decision-making at the highest levels military professionals must be developed who possess the political, managerial and bureaucratic skills needed to operate effectively in the organizational environment of the 1980s.

NOTES

1. The temptation to qualify this statement by relating it only to the profession in western societies has been resisted. Although the data are uneven there is evidence to suggest that a similar realignment is occurring in the Soviet Union and the nations of Eastern Europe and there is no reason to suppose that other nations would not be similarly affected by these changes. See Van Doorn, Jacques, ed., Military Profession and Military Regimes, Mouton & Co., The Hague, 1969, and in particular the chapters by Cyrcek, Graczyk, and Zhilin, on the Czech, Polish, and Soviet armed forces respectively.
6. The earliest military specialties were those of artillery and engineering. It is of interest that the modern idea of training officers in military academies developed from the need for specialists, particularly engineers, and not for officers in the combat arms. The United States Military Academy until very recent times was an exclusively engineering school. In Britain the academy at Woolwich for artillery and engineering officers was founded in 1741, 61 years before Sandhurst, the academy for infantry and cavalry officers.

7. Miewald, Robert D., "Military Bureaucracy and the Military Model", Public Administration Review, Vol. 30, No. 2, March/April 1970, p. 129. Miewald, however, argues against Weber in stating that the circumstances of combat are so unpredictable as to defy bureaucratisation of the combat function. He argues the Clausewitzian point that war is inherently unpredictable and, of the Vietnam War, he remarks "Clausewitz would have questioned the wisdom of such a bureaucratic war." p. 133.


9. Harold Wool has documented the post-1945 changes in the skill structure of the U.S. Army in which enlisted men whose primary specialty was combat fell from 39% in 1945 to 29% in 1963. The Military Specialist, The John Hopkins Press, Baltimore, 1968, p. 43. Kurt Lang's data on officers whose role is associated with combat show that the percentage is higher for officers of all services. However, only in the small and combat-oriented Marine Corps did it exceed 50%. "Trends in Military Occupational Structure and their Political Implications" in Kourvetaris and Dobratz, op. cit., p. 65. Wool does point out that there are limits to the fall in this percentage and it seems to have been reached. In this contention he is supported by Janowitz. See ibid. pp. xxiii.


11. Ibid., pp. 495-6.


13. That is, post-1921, when the Royal Australian Air Force was established as a separate service.

14. Committee members were Lieutenant-General Sir Leslie Morshda, Sir William Dunk (Chairman of the Public Service Board), E. W. Hicks (Secretary, Department of Defence), and John Bunting (Department of the Prime Minister).

15. Greville, op. cit., p. 11.


17. Quite apart from any narrowly defence-oriented imperatives this allowed the new government to increase the total number of public service departments without a corresponding increase in the size of the Ministry.

18. Tange, op. cit.


20. Ibid., p. 23.

21. Ibid.


25. The figures quoted in this section were obtained by the author from officers within the Department of Defence and from computer print-outs during April 1978.


27. Ibid., p. 83.


34. Ibid., p. 169.

35. Ibid.


40. Ibid.

41. Ibid., p. 161.


43. Ibid.


45. Ibid.

46. Yarmolinsky, op. cit., p. 84.


48. Ibid., p. 33.

49. Ibid., pp. 33-34.


51. Rosser, op. cit., p. 35.


54. Ibid., p. 139.

55. Smith, Admiral Sir Victor, "Military and Civilian


58. Beddie, op. cit., p. 133.


60. Greville, op. cit., p. 12. The assumption of Ministerial power by the Secretary, Department of Defence, has been the subject of considerable comment in the news media over a number of political issues in the period April-May 1978. The most significant of these issues concerned the changes to equipment being carried out after the government's decision that their communications station at North-West Cape in Western Australia.


62. Ibid.


64. Ibid., p. 9.

65. Ibid., p. 12.


68. Lang, The Perceived Role of the Military, p. 135.

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THE FAMILY BACKGROUND OF LIEUT. GENERAL SIR JOHN MOORE, KB

by
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LIEUT.-General Sir John Moore, KB, has an enduring place in British Military History, particularly for his exploits at the Battle of Corunna in 1809. His death was commemorated by the Rev. Charles Wolfe in a famous poem that has formed part of British cultural heritage for several generations. But the hero of Corunna was not the only member of his family who achieved distinction, for his father and two of his brothers each have their special niche in history. Indeed, by following the experiences, lives, exploits, achievements and associates of the various members of the Moore family, one can weave a unique historical tapestry that general, military and medical historians, as well as students of English letters, can study with profit.

The future General was the eldest of the five surviving sons of Dr John Moore who gained distinction in his own right. He not only achieved success in his profession, but also possessed literary talents that gained for him an established place in the history of English letters.

John Moore Senior, was the son of the Rev. Charles Moore and was born at Stirling in 1729. On his father's death, Mrs Moore moved to Glasgow where John was educated at the Grammar School, from where he matriculated for the University of Glasgow. On leaving school he was apprenticed to Mr John Gordon, a surgeon with a busy practice to whom, earlier, between 1836 and 1839, the future novelist, Tobias Smollett, had been apprenticed. Gordon was mentioned in Smollett's novel, The Expedition of Humphrey Clinker, and it has been suggested that he was the original of the character, Potion, in Roderick Random.

Having completed his apprenticeship Moore began a period of military service by enlisting as a "surgeon's mate" in the future Duke of Argyle's Regiment of Foot. In that capacity, he saw service at Maestricht where the hospitals were busy dealing with casualties from the Battle of Loffeldt. Having been recommended to George Keppel, 3rd Duke of Albemarle, the Colonel of the Coldstream Guards, by Mr Middleton, the Director-General of Military Hospitals, Moore was next appointed Assistant Surgeon to that regiment.

When peace was declared he continued his medical education by attending a course of lectures at the Great Windmill School which was run by the great Scottish doctor, William Hunter. Many of Britain's greatest doctors

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received their training there. It was also a gathering place for exiled Scottish doctors among whom was Smollett and it was probably about that time that he and Moore became acquainted.

After completing his course of lectures at Great Windmill Street, Moore, accompanied by his friend, Sir William Fordyce, with whom he had served as a "surgeon's mate", travelled to Paris to continue his studies. By that time the Earl of Albemarle had been appointed British Ambassador to Paris and Moore called on him to pay his respects. The Ambassador appointed him surgeon to his household in which position he had the opportunity to meet all sorts of interesting people. At the same time, he did not neglect the purpose of his visit to the French capital but worked hard and gained experience in various hospitals.

In 1750, during his sojourn in France, he received a visit from his friend, Smollett, who was making a trip to France and the Low Countries at the time. The two did some sightseeing together, visiting St Cloud and Versailles. Smollett's tour was a significant one for British letters for a considerable portion of his novel, *The Adventures of Peregrine Pickle*, was based on material he had gathered during it. In fact, the novel appeared in the following year, 1751.

When Dr Moore returned to England he was invited by his former master, John Gordon, to enter into a partnership with him. He accepted the offer after first having undertaken some further studies at Great Windmill Street, Moore and Gordon practised together for two years when the latter, having obtained an extra qualification as a "prescribing physician", as it was known in those days, ceased the practice of surgery and left the partnership. The Professor of Anatomy at Glasgow, Mr Hamilton, took his place in the partnership. In 1757, Moore married the daughter of Professor Swanson who occupied the Chair of Divinity at Glasgow.

During that period of his life an event occurred that not only had an important effect on his own career, but also on the lives of his sons, particularly on that of John, the future General; for in 1769 he began an association and friendship with the noble Hamilton family. With his friend, Dr Cullen, Moore was called to attend James, the 15 year old 7th Duke of Hamilton who was dying of phthisis. On the Duke's death, it was Moore who composed the verses for his tombstone. His mother then placed her other son, Douglas, who now became the 8th Duke, under Moore's care.

This was the beginning of a lifelong friendship with the Hamilton family and particularly with the 8th Duke. In 1770 Moore obtained his M.D. degree from Glasgow University but two years later he abandoned his medical practice and spent the next six years travelling on the Continent with his young friend, the Duke. Probably the latter's mother had employed Moore as a sort of guardian or "governor", as was the custom in those days when well born young gentlemen went travelling. During part of that period Moore's son, John, the future general, accompanied them. There is a well known painting by Gavin Hamilton of Dr Moore with his son John and the Duke of Hamilton which was hung in the Scottish National Portrait Gallery. He was also painted by Sir Thomas Lawrence, P.R.A.

In 1778 Moore, on returning to London, set up a house in Clarges Street and commenced medical practice. He continued to practice but it was from that time on that he began to make his literary reputation.

In 1779 his first work appeared. It was an account of the experiences he had had on his travels and was entitled, *A View of Society and Manners in France, Switzerland and Germany*. This was followed in 1781 by a further work dealing with his travels. It was entitled, *A View of Society and Manners in Italy*. Both these books were in the form of a series of letters home and they established his reputation as a writer. His next work which appeared in 1786 dealt with subjects in his own professional field and was entitled, *Medical Sketches*. It contained an account of some interesting physiological observations he had made.

Moore's first novel, *Zeluco* appeared in 1781. It told the story of a Sicilian boy who was brought up without restraint by a doting mother and who commenced a life of vice by squeezing a sparrow to death. In all his writings Moore revealed a clear, straightforward narrative style which was singularly free from the complexities of expression of his day. However, his narrative style which was ideally suited to expository writing seems to lack an element of artistry that one expects in good fiction. Be that as it may, the novel was highly regarded by his contemporaries. Lord Byron in an introduction to his *Childe Harold* remarked
that he had planned to make his own hero a sort of poetical Zeluco.

Moore wrote two other novels. Edward appeared in 1796. It was an attempt to portray the admirable side of life and human nature just as Zeluco had attempted to portray the evil side. However, it was regarded as a rather tedious creation. The same comment applied to his third novel with the self-explanatory title, Mordaunt: Sketches of a Life, Character and Manners in Various Countries including the Memoirs of a French Lady of Quality. There is something reminiscent here of the manner in which his friend Smollett used his experiences while travelling to produce both travel books and novels based on the same set of experiences. Moore’s inclusion of the Memoirs of a French Lady of Quality also recalls the Memoirs of Lady Vane in “Peregrine Pickle”.

In 1793 Moore visited the continent with the Earl of Lauderdale. This resulted in two more volumes of travel that proved to be important contributions to historical writing for they described the massacre in Paris on 29 September which Moore had viewed at first hand. The first volume of his, A View of the Causes and Progress of the French Revolution, appeared in 1793 and the second volume in the following year. Thomas Carlyle in his classic history of the French Revolution derived a considerable amount of his material from Moore’s work and cites it in several places.

Moore as an established writer, interested himself in the career of Robert Burns with whom he conducted a correspondence. He offered the poet a good deal of sound advice.

English letters is also in Moore’s debt for his classic biography of his friend, Tobias Smollett. Smollett died in 1771 at Ligorno (Leghorn) in Italy and in 1797 Moore published an edition of his works in which he included a memoir of his friend’s life which has been drawn on by all future biographers. The full title of the edition was The Works of Tobias Smollett with memoirs of his life, to which is prefixed a view of the Commencement and Progress of Romance. The last mentioned section is an interesting outline of the development of romantic writing through the ages set against the background of the lifestyles of the periods concerned.

There had been an earlier account of Smollett’s life and an edition of his works by Dr Robert Anderson, himself a write, but this had not been as extensive as Moore’s.

Moore himself died on 21 January, 1802, leaving a wife who survived him until 25 March, 1820, and five sons, John, James, Graham, Francis and Charles. His biography was also written by Dr Robert Anderson when he brought out an edition of his works in 1820.

Dr Moore’s immortality rests not only on his own achievements but also on the achievements of his sons. The most famous of the five was, of course, John who was born at Glasgow on 13 November, 1764. He received part of his education at the Glasgow High School but at the age of ten years he joined his father in the five year tour of the Continent he was making with the young Duke of Hamilton. During that period, John spent some of the time at school at Geneva but a good deal of it was spent travelling with his father. In Brunswick he also received drill instruction from a Prussian sergeant.

When he was fifteen, a commission as an ensign was purchased for him in the 51st Regiment of Foot and he joined that regiment in Minorca on 2 March, 1776. In view of the close ties his family had with the Hamiltons, it is not surprising that on 10 January, 1778 he was appointed Captain-Lieutenant in the newly formed 82nd (Duke of Hamilton’s) Regiment. He served with that unit in Nova Scotia during the War of American Independence and experienced some sharp engagements but when it was disbanded in 1783 he went on half-pay.

Once again, the Hamilton influence can be seen in his affairs for between 1784 and 1790 he represented that family’s interests as Member of Parliament for the boroughs of Linlithgow, Selkirk, Lanark and Peebles. During that period too in 1785, he purchased a majority in the 100th Regiment of Foot. After Parliament was dissolved he abandoned politics and for the remainder of his life devoted himself to a military career. He served in many theatres and over the years he gradually rose in the Service until at the time of his death he had attained the rank of Lieutenant-General.

In 1788 Moore joined the 4th Battalion but soon returned to his old unit, the 51st Regiment which was at that time in bad shape. On 30 November, 1790, he was promoted to the rank of Lieutenant Colonel and set about getting the Regiment into shape. One of the things he was
noted for was his innovations in the methods of training.

Between March 1792 and December 1793 he was stationed at Gibraltar and then was moved to Toulon. He became Adjutant General to Lieutenant General Sir Charles Stuart on 10 October, 1794, and was given the rank of Brevet Colonel on 21 August, 1795. In September of that year he was posted to the West Indies with the local rank of Brigadier General and three years later he was appointed Colonel of the 8th West Indian Regiment with the rank of Major General, on 1 January, 1798. That was the year of the Irish Rebellion and he and his Regiment saw active service in Ireland. He also served in the campaigns in Holland.

During the Peninsular Campaign he suffered many frustrations. He was a soldier rather than a diplomat and at a considerable disadvantage against the plotting of certain individuals in the rear echelons. The story of Moore's hour of glory at Corunna has often been told. After the British, under Moore, had attacked the French lines of communication in the Burgos region, they made an epic withdrawal of nearly three hundred miles over mountainous country to Corunna which they reached 11 January, 1809. Unfortunately, though hospital and store ships were anchored in the Bay, the transports that were meant to be there to evacuate most of the troops had been delayed by bad weather. As many of the sick and wounded as possible were embarked on the hospital and store ships. On the evening of 14 January, the missing transports arrived. That night Moore embarked the remainder of the sick and wounded, all but eight of his guns and all his cavalry as the terrain was not suitable for mounted troops. On the 15th, Soult occupied the hills round Corunna and an attack was expected on the 16th, but the French did not begin the attack until the afternoon.

Even though the British troops were debilitated by illness and the hardships of the retreat over difficult terrain in the depths of winter, and even though they had lost many men through straggling and weakness as well as being short of men and guns because of the partial embarkation, those who were left gave a good account of themselves. When the fighting petered out at nightfall neither side could claim the victory.

Next morning, the British were able to complete their embarkation. While observing the action on the afternoon of the 16th, Sir John Moore fell with a shattered shoulder and died that evening. Presumably, his death resulted from the loss of blood that ensued, and it is interesting to speculate whether in modern warfare with blood transfusion and the modern methods of handling of casualties, he might not have survived such a wound.

At midnight his officers carried his body to the quarters of his friend and aide de camp, Colonel Thomas Graham, afterwards Lord Lynedoch. Soldiers of the 9th Regiment of Foot dug his grave and as morning broke and the French opened fire on the harbour, he was rapidly lowered into his grave "with his martial cloak around him". The Chaplain to the Brigade of Guards, the Rev. J. H. Symond, afterwards Vicar of St Martin's, Hereford, read the burial service.

The aftermath of the Battle of Corunna is of extreme interest to medical and military historians for it is a classic lesson on the importance of medical matters in military operations.

On the vessels returning the troops to Britain there was an outbreak of illness. The most important disease among the troops was typhus which assumed epidemic proportions and the mortality was catastrophic. Many months were to elapse before the bulk of the troops were ready for service, a fact which delayed another military project.

The British were uneasy about the massing of French naval forces in the Lower Scheldt, a river that Napoleon had described as "a loaded pistol pointing at the heart of England". Ten ships were already there and the French intended to bring their number up to twenty. To counter this move the British planned to send in a joint naval and military force to capture or destroy these ships and to destroy the dockyards and arsenals at Flushing on the island of Walcheren. One effect anticipated from this action would be that a British squadron anchored off the island would be able to seal the passage of the Western Scheldt and prevent the movement of French vessels down from Antwerp.

Because of the debilitation of the troops after Corunna it was not until 28 July, 1809 that the expedition sailed. From the military point of view the action was a great success and had a
considerable effect on the lowering of French morale which alone would have made it worthwhile except for one serious error in the British planning. The notorious unhealthiness of the climate at Walcheren had not been taken into account and this in fact was one reason that Napoleon had the island only lightly manned.

The British occupation began at the beginning of the wet season with the dykes cut and the countryside knee-deep in water. Before the middle of August an epidemic had broken out of what was called “bilious remittent fever”, but was in fact malaria. In spite of this and in spite of the fact that the conclusion of peace between France and Austria on 13 October made further occupation unnecessary, it was not until 13 November that the decision was made to evacuate the island. It was not until the following month that the last man had been withdrawn. Deaths from illness numbered nearly 4,000 while 11,500 men were still in hospital five months after the completion of the expedition. It was a classic example of a military disaster as a result of an epidemic of disease.

Another member of the Moore family played a prominent part in the action at Walcheren, particularly at the evacuation. The naval commander, Sir Richard Strachan, a fine sailor with a healthy contempt for army generals, allotted the task of destroying the basin, arsenal and sea defences at Flushing to the commander of the Marlborough, a vessel of 74 guns, who was Dr John Moore's third surviving son, Graham, who was destined later for a distinguished career.

Graham Moore (1764-1843) entered the Navy in 1888. In 1782 he became Lieutenant of the Crown, one of the fleet that took part in the relief of Gibraltar under Lord Howe. In a period of peace he went to France to perfect himself in the French language, which appears to have been a fairly common practice among officers of the armed forces at that time.

He was recalled to duty and served on several vessels until in 1790 he was promoted to the command of the sloop, Bonetta. Other commands he held in the years that followed included Syren to which he was posted in 1794, Malampus to which he was posted in 1795, Indefatigable, a 46 gun frigate to which he was posted in 1803 and the Marlborough of 74 guns to which he was posted in 1807.

In these vessels he served in a number of theatres. In Syren he formed a part of Sir Richard Strachan’s squadron patrolling the North Sea and later the coast of France. In Malampus he served off the coast of Ireland in 1798 where his brother was successfully campaigning on land. On 14 October of that year he engaged and captured Resolve with 500 men, including soldiers, aboard. A short tour of the West Indies in 1800 and 1801 led to his being invalided home through illness but on the renewal of the war, he returned to duty at his own insistence to take command of Indefatigable. In that vessel he formed part of Admiral Cornwallis’ fleet at Brest.

In 1804 he was in command of a squadron of frigates sent to watch for treasure ships off Cadiz. A sharp action with the Spaniards on 4th October resulted in the capture of treasure worth up to half a million dollars. On Marlborough he served on the coast of Portugal and was given the task of escorting the Portuguese Royal Family to Rio de Janeiro accompanied by four English and five Portuguese ships of the line along with some smaller vessels. His part in the Walcheren expedition has already been mentioned.

In the years that followed the Peninsula War he continued to rise in the Service. In January 1812 he was appointed to command Chatham, a vessel of 74 guns, and in August of that year he was raised to the rank of Rear Admiral. For a time he commanded the Baltic Fleet with Fame as his flagship.

In 1814 he was appointed Captain of the Fleet to Lord Keith in the English Channel. The following year was a significant one for Moore and for Europe. Moore was appointed KCB and on Napoleon’s escape from Elba he was ordered to the Mediterranean as second-in-command. That appointment was terminated on the cessation of hostilities but shortly afterwards Moore was appointed one of the Lords of the Admiralty, a position he held for four years.

In 1819 he was promoted to the rank of Vice-Admiral and in the following year he was posted to the Mediterranean as Commander-in-Chief, his flagship being the Rochefort. One interesting assignment he had at that time was to take the King of Naples to Leghorn on his way to attend the Congress of Laybach. The King offered to confer on him the Grand Cross of the Order of St Ferdinand but Moore declined.
as acceptance would have been a breach of the British Service Regulations.

In that same year he received the GCMG and sixteen years later, in 1836, the GCB. In 1837 he was promoted to the rank of Admiral and between 1839 to 1842 he served out the closing years of his service as Commander-in-Chief at Plymouth. He died on 25 November 1843 aged 79. His was a long life and he seems to have inherited from his mother a tendency to longevity that several of the Moores of his and the next generation possessed.

Graham Moore had married in 1812 Miss Dora Eden, the daughter of the Deputy Auditor General of Greenwich Hospital, Thomas Eden, the brother of the 1st Lord Auckland. Their son, John, kept up the service tradition set by his father the Admiral, and his uncle the General. He chose a naval career and two days before his father's death he was promoted to the rank of Commander. He eventually reached the rank of Captain and died in 1866.

Between Dr John Moore's son, John the General, and Graham the Admiral, there was another son, James, who like his father became a successful doctor and was associated with several distinguished members of his profession. Like his father, too, he distinguished himself as a writer. His writings covered both technical contributions to medical literature and non-medical publications. His place in English letters rests mainly on his biographical writings dealing with his brother John and his exploits.

James Moore, who later in life, on inheriting property from a relative in Ireland, changed his name to Carrick-Moore, was born at Glasgow on 21 December 1762. He received his medical education at Edinburgh and Glasgow and later in London where he became a member of the Corporation of Surgeons in 1792. Among the friends he made in London was Edward Jenner, the discoverer of cowpox vaccination for the prevention of smallpox. In 1808, Jenner appointed Moore Assistant Director of the National Vaccine Establishment that he had founded. In the following year, when Jenner retired as Director of the National Vaccine Establishment, Moore succeeded him.

Moore did his stint of military service, for in 1798 while his brother John was campaigning against the rebels in Ireland he paid a visit to that country and became surgeon to the 2nd Regiment of Lifeguards.

Of Moore's many medical publications one of the most interesting historically appeared in 1784 and was entitled "A method of preventing and diminishing pain in several operations of surgery". In it he describes how in order to diminish the pain of certain surgical operations he had made use of the well known phenomenon that a nerve becomes numb on pressure. The surgeon he assisted in this manner was Dr John Hunter, the younger and more famous brother of the founder of the Great Windmill School of Anatomy, Dr William Hunter. He also wrote on gout, on some current medical theories and on certain quack remedies. But probably his most important medical writing concerned the subject with which he was most closely involved, smallpox and smallpox vaccination. In 1815 he wrote A History of Smallpox which he dedicated to Edward Jenner and in 1817 he published The History and Practice of Vaccination.

The most important of his non-medical writings were undoubtedly his two works dealing with his brother John's exploits. These books established his place in the history of English letters and were important contributions to military history. The first appeared in 1809 shortly after the death of his brother John at Corunna. It was a straightforward account of the Peninsula Campaign and of his brother's death. It contained extensive extracts from the relevant despatches and other source documents. It was dedicated to his mother and bore the title, A Narrative of the Campaign of the British Army in Spain Commanded by His Excellency, Lieutenant-General Sir John Moore, K.B.

Later in life, in 1834, he published in three volumes a more extensive account of his brother's life and campaigns. He included in it an account of his own visit to John in Ireland in 1798. The book was entitled The Life of Lieutenant-General Sir John Moore.

James Carrick-Moore retired from active practice in 1825 but lived on until 1860, dying in his 98th year. That strain of longevity that was evident in certain members of the Moore family was also shared by a daughter who survived until 1904 when she died at the age of 100 years.

Thus, the three eldest surviving sons of Dr John Moore each made a mark in history. The two youngest, though talented, are remembered only through their membership of this remarkable family. Dr John Moore's fourth
son, Francis, was educated for the Diplomatic Service. For a time he was private secretary to the Duke of Leeds. He served successively in the Department of the Secretary of State and in the War Office. The youngest son, Charles, who was called after his Reverend grandfather, became a barrister.

To complete this story of the Moores that has led us down so many byways of history one other matter should be mentioned. They were descended from that family of Moores or Mures one branch of which owned the Rowallan estates in Ayrshire. The direct line at Rowallan died out but besides John Moore's branch there were many others, some of whose members achieved distinction. Thus Sir William Mure (1594-1657), the third owner of the Rowallan property, was a poet. The political economist, Robert Ross Rowan Moore (1811-1864) also came from a branch of the Rowallan family that had settled in Ulster in the early seventeenth century.

It was R.R.R. Moore's son, the distinguished physician and man of letters, Sir Norman Moore, Bt (1874-1922), who wrote the biographies of the two medical Moores, Dr John Moore and Dr James Carrick-Moore, in the Dictionary of National Biography as well as the one of his father\(^1\). Among his other literary activities Sir Norman contributed 459 biographies to the first sixty three volumes of the Dictionary and wrote a history of St Bartholomew's Hospital, an institution to which he had devoted thirty years of his professional life. In 1918 he was elected President of the Royal College of Physicians and held that office until the year of his death. He died on 30 November 1922\(^\text{12}\).

REFERENCES

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3. H. M. Chichester: D.N.B.
8. J. K. Laughton: D.N.B.
10. N. Moore: D.N.B.
11. N. Moore: D.N.B.

BOOKS IN REVIEW

The following books reviewed in this issue are available in various defence libraries:


THE ROLE OF THE PLANNING BALANCE SHEET IN THE LOCATION OF AIR FORCE BASES IN AUSTRALIA

By Dr. G. R. Webb
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Faculty of Military Studies,
University of New South Wales

Introduction

In recent years the location of military bases in remote parts of Australia has become an important consideration, particularly with the need to increase surveillance over Australia's 200 mile exclusive economic zone so as to prevent landings by smugglers and illegal immigrants, to prevent the introduction of animal pests and diseases, to prevent the poaching of resources, and to detect and control pollution from vessels. However, studies by both the Army Office and the Air Force Office suggest that the Defence Department lacks a rational method for determining the least cost location of such bases, particularly one that is capable of handling a mixture of 'hard' and 'soft' costs — economic, social, environmental, psychological, etc. A recent report on the urban environment by the House of Representatives Standing Committee on Environment and Conservation touched on this matter as follows:

"The Department of Defence has taken steps to assess the environmental impact of particular proposals with the appointment of environmental officers and the establishment of an environmental board on which officers of the Department and EHCD are represented. While this process is to be commended, it does not necessarily comprehend a broader assessment of the impact of defence installations on the pattern and distribution of Australia's population, particularly in regard to the development of major provincial cities such as Townsville. Nor does it necessarily comprehend the socio-economic impact that a particular installation may have on a community. The Department of Defence . . . informed the Committee that Australia as a whole could do better in integrating total defence planning with the urban environment."2

A useful method of evaluating the total impact of a military base on an existing community is the planning balance sheet. The application of this technique to Defence projects can be illustrated by working through a hypothetical case study involving the location of a maritime reconnaissance squadron. However, before proceeding to the case study, it may be useful to briefly outline the mechanics of the planning balance sheet.

Mechanics of P.B.S.

The planning balance sheet was developed in the United Kingdom by Lichfield in order to overcome certain weaknesses in traditional cost-benefit studies, notably the exclusion of costs and benefits which cannot be converted into monetary terms, and the failure of cost-benefit analysis to deal adequately with the equity aspects of projects. Thus the planning balance sheet can be regarded as an extension of cost-benefit analysis in that it sets out to build on the strengths of cost-benefit analysis, whilst seeking to overcome its major shortcomings with regard to the measurement of policy impacts and their distribution.
This is done by identifying all relevant community groups which are likely to be affected by the policy in question, either directly or indirectly. In other words, the planning balance sheet is concerned to identify who benefits and who pays for a project. Once the various groups within the community have been identified, the planning balance sheet then classes these as either producers or consumers. This is because all policies "involve and affect, directly or indirectly, organisations or individuals, each of whom is either a 'producer' of the effect or a 'consumer' of it...".

The next step is to specify the objectives of these groups, as this provides the factor against which the benefits and costs of a policy can be assessed. The crucial part of the analysis is to identify the benefits and costs. The approach adopted by the planning balance sheet is to include all relevant items in the framework, whether or not they can be measured in monetary or other numerical terms. As Lichfield explains:

"... the analysis must include all features of relevance ... It follows that as well as those benefits and costs which are measurable in money terms, there are others that are only measurable in some other unit (time, physical) and others that are non-measurable. Thus, the balance sheet cannot, and does not, aim to provide a conclusion in terms of rate of return or net profit measured by money values as in the case of some typical cost-benefit studies. Its value lies in exposing the implications of each set of proposals to the whole community and to the various groups within the community, and also in indicating how the alternatives might be imposed or amalgamated to produce a better result. The purpose of the approach is the selection of a plan which on the information available, is likely to best serve the total interests of the community."

Under the planning balance sheet approach each alternative is given a score, or order of preference, in the light of its costs or benefits in relation to the objective. One alternative is scored as 0, and the others ranked positively or negatively against this alternative — positively if they fulfill the objective in any way, negatively if they detract from it, with the numbers representing a subjective scoring of the alternatives one against the others. The alternative with the greatest summed score is then the most favourable.

Although the planning balance sheet has been used extensively overseas, it has only been applied to a small number of projects in Australia. These comprise an evaluation of alternative development strategies for the Blue Mountains, an evaluation of renewal/redevelopment options for the Glebe area in inner Sydney, an evaluation of office dispersal options in Sydney, and an evaluation of infill and similar proposals for Canberra.

Case Study. Location of an Air Force Base
The case study set out below is purely hypothetical, and involves the following assumptions:

(i) the strategic objective of the Chiefs of Staff Committee is to locate a maritime reconnaissance squadron in northern Queensland to provide increased surveillance over the Great Barrier Reef and the Gulf of Carpentaria. The Committee is faced with two alternative locations (Figure 1). Option A would be to locate the squadron at X, a large provincial city on the coast. Option B would be to locate the squadron at Y, a small town 250 kilometres north-west of X and 180 kilometres inland from the coast.

(ii) the airport at X is used jointly by the air force and the civilian airlines. The airport is located near the beach, with housing on three sides. The air force is responsible for fire fighting and security services, and is responsible for 50 per cent of air traffic control. This involves the provision of 12 air traffic controllers. Most of the buildings owned by the air force at X (including housing for personnel) are old, do not meet cyclone building codes, and involve high maintenance costs. X experiences at least two cyclonic storms every year.

(iii) the airport at Y comprises an unmanned forward air base. New facilities (including housing) would have to be constructed. The base is located 20 kilometres from the town in flat, open country. A new suburb would be developed near the town for
air force personnel. Y is too far inland to suffer damage from cyclonic storms. 

(iv) the objectives of the Department of Defence are to minimise capital costs, logistic costs, maintenance costs, sabotage costs, storm damage costs and industrial accidents. The capital cost of locating the squadron at X (option A) is assumed to be $35 million, whilst the capital cost of locating the squadron at Y (option B) is assumed to be $50 million.

(v) the objective of the Department of Aboriginal Affairs is to reduce the number of unemployed aborigines.

(vi) the objective of the Department of Transport is to minimise the cost of constructing new domestic and general aviation facilities at X. If the air force vacates X and moves to Y, the new terminals could be constructed in the vacated area at a cost of $5 million. If the air force remains at X and upgrades facilities to handle the maritime squadron, the Department of Transport will have to locate the new terminals at a less favourable site on the other side of the airport. This would involve a road under the main runway, and the total cost would be $16 million.9

(vii) the objective of the Department of Education is to minimise the cost of providing education. Selection of option A would involve the employment of an additional 14 teachers to cope with 60 preschool, 260 primary school and 100 secondary school children. No expenditure would be involved on extra buildings because of
excess capacity at X. Selection of option B would involve the employment of an extra 14 teachers, plus capital expenditure of $2 million on extra classrooms.

(viii) the objective of the Local Council at both X and Y is to minimise the cost of providing public utilities (water, sewerage, power and other services). In the case of option A, sufficient excess capacity exists within the existing services to cater for the expected influx of 3,200 air force personnel. However, in the case of option B, services and facilities would have to be expanded to cope with the demands of the squadron at Y. The additional capital cost is estimated to be $2 million.

(ix) the objective of the construction industry is to maximise profits from the construction of facilities for the air force,

(x) the objective of air force personnel and their families in moving to either X or Y is to enjoy an acceptable quality of life i.e. one that satisfies their physical and psychic needs. These needs include housing, employment, education, shopping, health care, leisure, entertainment, recreation, culture, transport etc. X is assumed to have a population of 50,000 and to offer a wide range of shopping, cultural, recreation, sporting and entertainment facilities. Y is assumed to have a population of only 3,500 with very limited shopping and other facilities. It is assumed that the air force would spend $1 million on additional sporting facilities at Y.

(xi) the objective of local residents in X is to minimise noise costs from military aircraft. Noise pollution would not be a problem for the residents of Y because of the isolated location of the air base.

(xii) the objective of local aborigines is to obtain employment. It is assumed that 50 aborigines are unemployed in X and 350 in Y.

(xiii) air force planners consider that base X is highly susceptible to sabotage because (i) the base could be shelled by enemy submarines and (ii) the airport is surrounded by housing which could be used by commandos for mortar attack. The planners believe that if the airport was attacked, the entire maritime squadron would be destroyed. Base Y is considered to be far more secure, and the planners believe that only 50 per cent of the squadron would be destroyed in an enemy attack.

One way of evaluating the two strategies would be to carry out an indicative costing of the works required to establish the squadron at either X or Y, and to select the location involving the least capital expenditure on operational, technical, administrative and support facilities. This is precisely the approach which has been used by the Air Force Office to evaluate the location of tactical fighter squadrons in heavily populated or remote areas. Such an approach is clearly unsatisfactory because it excludes logistic and maintenance costs, compares different time streams of costs without discounting, and excludes a large number of socio-economic factors. An alternative and more meaningful approach would be to present the costs and benefits of the alternative strategies in planning balance sheet format. This would provide a systematic framework within which the consequences of choosing X or Y, and their incidence, could be traced, thereby reducing "the possibility of oversight." Such a planning balance sheet has been drawn up in Table 1, and the various groups listed in the sheet are discussed below.

Producers

The producers of the location impacts comprise Government Departments, local Councils and the construction industry. As mentioned above, the Department of Defence is assumed to have a number of objectives which involve trade-offs. Consequently, the Department is listed six times as a producer.

Item 1.1. Department of Defence. In order to make a rational comparison of the costs of the two options, the time streams of costs have been discounted at 10 per cent to 1980 values. In doing this exercise it was assumed that capital expenditure for option A would be spread equally over seven years, whilst capital expenditure for option B would be spread equally over ten years. The discounted costs are
<table>
<thead>
<tr>
<th>Group</th>
<th>Objective</th>
<th>Measure used</th>
<th>Cost</th>
<th>Benefits</th>
<th>Cost</th>
<th>Benefits</th>
<th>Order of Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>Option</td>
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<td>Option</td>
<td>Option</td>
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<td></td>
<td></td>
<td></td>
<td>A.</td>
<td>A.</td>
<td>B.</td>
<td>B.</td>
<td></td>
</tr>
<tr>
<td>Producers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 Government Depts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Dept. of Defence</td>
<td>Minimise capital cost</td>
<td>Capital expenditure (a)</td>
<td>$26.7m.</td>
<td>$33.7m.</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>1.2 Dept. of Defence</td>
<td>Minimise logistic cost</td>
<td>Operating cost</td>
<td>C</td>
<td>C+</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>1.3 Dept. of Defence</td>
<td>Minimise maintenance cost</td>
<td>Maintenance expenditure</td>
<td>C+</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.4 Dept. of Defence</td>
<td>Minimise sabotage cost</td>
<td>Maximum damage to planes</td>
<td>$200m.</td>
<td>$100m</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.5 Dept. of Defence</td>
<td>Minimise storm cost</td>
<td>Storm damage</td>
<td>C+</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.6 Dept. of Defence</td>
<td>Avoid Industrial Accidents</td>
<td>Damage to planes</td>
<td>C</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.7 Dept. of Aboriginal Affairs</td>
<td>Reduce unemployment among aborigines</td>
<td>Reduction in no. unemployed</td>
<td>B</td>
<td>B+</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1.8 Dept. of Education</td>
<td>Minimise educational costs</td>
<td>Capital &amp; (b) salary costs</td>
<td>-</td>
<td>$2.0m</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>2.0 Local Councils</td>
<td>Minimise cost of utilities</td>
<td>Capital (c) Expenditure</td>
<td>-</td>
<td>$2.0m</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>3.0 Construction Industry</td>
<td>Maximise work</td>
<td>Value of contracts</td>
<td>B</td>
<td>B+</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub Total Producers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td>Sub Total Consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 Dept. of Transport</td>
<td>Minimise cost of new terminals at X</td>
<td>Capital expenditure</td>
<td>$16.0m.</td>
<td>$5.0m</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4.1 Dept. of Transport</td>
<td>Minimise cost of firefighting and security services</td>
<td>Capital and operating costs</td>
<td>C</td>
<td>C+</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>4.2 Dept. of Transport</td>
<td>Minimise cost of air traffic control</td>
<td>Salary costs</td>
<td>$1.5m.</td>
<td>$3.0m</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>5.0 Military Personnel</td>
<td>Employment for wives</td>
<td>No. of local jobs</td>
<td>B+</td>
<td>B</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>5.1 Military Personnel</td>
<td>Maximum satisfaction from shopping facilities</td>
<td>Satisfaction</td>
<td>B+</td>
<td>B</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>5.2 Military Personnel</td>
<td>Maximum satisfaction from recreational and cultural facilities</td>
<td>Satisfaction</td>
<td>B+</td>
<td>B</td>
<td>0</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>6.0 Residents</td>
<td>Minimum noise costs</td>
<td>Noise exposure bands</td>
<td>C+</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6.0 Residents</td>
<td>Greater local work opportunities</td>
<td>Reduction in no. unemployed</td>
<td>50</td>
<td>350</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub Total Consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

(a) Does not include $1.0 million expenditure on shopping facilities at Y.
(b) Does not include salary costs for extra teachers at both X and Y.
(c) Some of these costs might have to be met by the Department of Defence.
set out in Table 2, and show that option A is the preferred strategy.

Item 1.2. Department of Defence. As all supplies would have to be moved through X and then a further 250 kilometres to Y, option A would be the preferred strategy.

Item 1.3. Department of Defence. Most of the buildings at X are old and involve relatively high maintenance costs. In addition, they need to be strengthened to meet the revised building code for buildings in cyclone prone areas. All the buildings in Y would be new, with relatively low maintenance costs. Hence option B would be the preferred strategy.

Item 1.4. Department of Defence. The cost of having a squadron of ten P3C Orion maritime reconnaissance aircraft destroyed in a surprise attack on X would be $200 million. The cost of a partially successful attack on Y is assumed to be only $100 million.

Item 1.5. Department of Defence. As X suffers from cyclonic storms each year, whereas Y does not, option B would be the preferred strategy.

Item 1.6. Department of Defence. The continued operation of a jointly used civil/military airfield at X could result in the accidental damage or destruction of maritime aircraft by civil or general aviation aircraft. As this problem would not arise at Y, option B would be the preferred strategy.

Item 1.7. Department of Aboriginal Affairs. Option B would be the preferred strategy as it would reduce unemployment among the aborigines to the greatest extent.

Item 1.8. Department of Education. Option A would be the preferred strategy as it would save the Department $2 million in capital expenditure.

<table>
<thead>
<tr>
<th>Year</th>
<th>Option A</th>
<th>Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>5.0</td>
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<tr>
<td>1981</td>
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<td>1983</td>
<td>3.8</td>
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<td>1984</td>
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<td>1985</td>
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<tr>
<td>1986</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>1987</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26.7</td>
<td>33.7</td>
</tr>
</tbody>
</table>

Item 2.0. Local Councils. Option A would be the preferred strategy as the local Council at Y would save $2 million in capital expenditure.

Item 3.0. Construction Industry. Option B would be the preferred strategy as this would provide the greatest amount of work for the construction industry.

Consumers
The consumers of the location impacts comprise the Department of Transport, air force personnel, local residents and unemployed aborigines.

Item 4.0. Department of Transport. Option B would be the preferred strategy as it would mean a net saving of $11 million to the Department.

Item 4.1. Department of Transport. Option A would be the preferred strategy as the Department would not have to meet the costs of fire fighting and security currently met by the air force.

Item 4.2. Department of Transport. Option A would be the preferred strategy as the Department would not have to meet the full costs of air traffic control. The total salary cost of twelve air traffic controllers for 20 years, at an assumed salary of $15,000 per annum would be $3.6 million. Discounted to 1980 values at 10 per cent, the cost would be $1.5 million.

Items 5.0.-5.2. Military Personnel. Until recently, little has been known about the physical and psychic needs of military personnel in Australia. However, two studies by the psychological research unit within the Department of Defence (Army Office) have thrown some light on this subject. Both studies deal with the relocation of the Army Apprentices School, the School of Military Survey and the Female Recruit Training School to Bonegilla, and were undertaken in order to identify the specific needs of military personnel and their families, and to “anticipate some of the problems and difficulties likely to be encountered by those families who will be moving to the Albury-Wodonga area in the future”. On the question of employment, the second report noted that there was a considerable strength of feeling amongst Army wives not working about wanting to work. For instance, at the time of the study 68 per cent of the wives of soldiers in the Albury-Wodonga area were not working, but 47.2 per cent expressed a desire to work. “Employment areas
of main interest were the unskilled, manual and sales areas. However, the unfavourable employment situation in Albury-Wodonga seemed to mitigate against their taking up employment. The lack of employment opportunities was seen to be a major problem by Army wives. Assuming these findings could be applied to air force personnel, option A would be the preferred strategy for air force wives seeking work. To put the matter another way, option B would involve a greater cost for air force wives in terms of income forgone and boredom, because of Y's very narrow economic base (Y has a population of only 3,500 as against 50,000 for X). Option B also is likely to impose a greater cost on air force personnel and their families in terms of reduced satisfaction because of the reduced quality and quantity of shopping, cultural, recreation, sporting and entertainment facilities vis-a-vis X, which is a large city. Hence, option A would appear to impose fewer costs on air force personnel and their dependents for items 5.0-5.2.

Item 6.0. Local Residents. Option B would be the preferred strategy because this would avoid the imposition of noise costs on the residents of X.

Item 7.0. Unemployed Aborigines. Option B would be the preferred strategy as this would provide jobs for 350 unemployed aborigines.

Conclusions
An indicative costing exercise might suggest that option A was the preferred strategy, because of the saving in capital expenditure ($15 million in undiscounted terms or $7 million in discounted terms). However, the results of the planning balance sheet exercise in Table 1 suggest that the answer is by no means clear cut. Option A would most benefit air force personnel and their dependents. On the other hand, option B would most benefit local residents, unemployed aborigines, the Department of Defence in the case of four of its six objectives, and the Department of Transport in the case of two of its three objectives. Looking at the latter Department, for example, the planning balance sheet shows that option B would result in a net saving of $9.5 million (excluding the increase in firefighting and security costs). Overall, Table 1 suggests that community preference would be evenly divided between the two strategies.

The planning balance sheet represents an improvement over recent Air Force Office indicative costing exercises in that it provides a framework which (i) combines measured and unmeasured costs and benefits, (ii) identifies all relevant issues, (iii) shows the incidence of costs and benefits, and (iv) highlights trade-offs for the Department of Defence between capital savings on the one hand, and savings in sabotage cost, storm cost and industrial accidents on the other. The planning balance also shows that the total cost to the community would be considerably higher than the capital costs for the Department of Defence. For instance, in the case of option A, even if sabotage costs are completely excluded the total costs would rise from $26.7 million to at least $44.2 million.

Table 1 does not pretend to be exhaustive in its treatment of costs and benefits, nor does it pretend to actually portray the objectives of community groups. However, it will have served its purpose if it encourages the Department of Defence to apply the planning balance sheet to the location and redevelopment of real world defence facilities, and stimulates debate about the need for more structured decision-making within the Department. As the member for Corio (Mr G.G. Scholes) remarked in the House of Representatives on 29 March 1979:

"Other countries can discuss their defence matters publicly and in great depth without any serious threat to their security; without any serious threat to their actual defence force. In fact the defence force ultimately becomes stronger because these sorts of public discussions encourage and lead to better understanding."

NOTES
1. "The monitoring of Australia's area of maritime jurisdiction for civil purposes is not regarded as a direct Defence Department responsibility but, since 1968 ... the RAAF and RAN have performed fisheries patrols and now perform a variety of tasks assigned by the Working Committee of the Coastal Surveillance Standing Committee." Joint Committee on Foreign Affairs and Defence, Australia, Antarctica and the Law of the Sea Interim Report. A.G.P.S. Canberra, June 1978, p.81.
been directed at Defence: "In the case of the Australian Telecommunications Commission the Committee was most concerned at the apparent emphasis on achieving a lowest cost solution regardless of the indirect costs which have to be borne by other levels of Government in the provision of associated infrastructure". p.10.


9. A parallel can be drawn with Darwin which may be upgraded to handle a tactical fighter squadron. RAAF Base Darwin is a jointly used civil/military airfield and since 1961 the RAAF has pressed the Department of Transport to develop domestic, international and general aviation facilities in the north-western corner of the airfield. However, the Department of Transport has reservations about the suitability of this site.

10. The number of registered unemployed aborigines in metropolitan Queensland at the end of April 1979 was 567, and in country Queensland 3,994. A survey of employment opportunities at non-metropolitan aboriginal communities in the second half of 1978 showed that 13 communities with a population of 1,100 had no employment opportunities, whilst 135 communities with a population of 35,200 had few opportunities. See Department of Aboriginal Affairs, Statistical Branch Newsletter, No. 8, April 1979.


13. S. A. Martyn, Bonegilla Development Project: Attitudes and Opinions, op cit., p. 3.


15. A study of Department of Defence files on the expansion of military presence in the Townsville area in the mid 1960's shows that noise pollution was "reported on quite extensively and re-routing of helicopters, limiting of explosive charges and revision of range firing times were measures taken to appease local inhabitants." See S. A. Martyn, Bonegilla Development Project: An Examination of Settlement Problems, op cit., p.6.

16. At Air Base Butterworth, up to 1,000 Indians and Malays have been employed by the RAAF in the maintenance and base squadrons. A similar policy could be followed by the air force at either X or Y with respect to aborigines.

17. Some examples include the location of patrol boat bases on the east and west coast of Australia, the modernisation of the Garden Island naval dockyard and the location of a new task force installation. See Miltonown, A Flexible Design for a Task Force Installation. The Director General of Accommodation and Works — Army, Department of Defence, June 1978.


LETTERS TO THE EDITOR (see also pages 4-6)

AUTHORS REPLY

Dear Sir,

Thank you for giving me the opportunity to reply to Major Hessey.

As Major Hessey states, it was my intention to caution against intervention without first counting the cost. I feel that this is in keeping with my aim of cautioning "towards a more rational approach to alcoholism in the services". The definition of rational in the Shorter Oxford English Dictionary does cover "agreeable to reason, reasonable, sensible, not foolish, absurd or extravagant". The intention of my article was to warn against the introduction of extravagant programmes dealing with alcoholism in the Service, particularly when these programmes have not been shown to be successful and did not take into account all the likely consequences of their implementation.

I would take issue with Major Hessey's statement concerning "most successful programmes and policies of intervention that are already in use and achieving positive results" I think, to the best of my knowledge, there is no hard data to prove that any military programme for controlling alcoholism has been successful, since the introduction of the one I mentioned in the French Army during the first World War.

Yours faithfully,

Larry Evans
Lieutenant Colonel
LOGEX IN RETROSPECT

LOGISTIC PROBLEMS

By
Major General J. D. Stevenson

THE first Logistic Command Exercise, better known by the acronym LOGEX, was conducted in 1974 and, except for a break in 1975, has been conducted annually ever since. The exercise has taken the form of a seminar with consideration and discussion being conducted mainly indoors in syndicates followed by central discussion, but some problems have been considered on the ground. The exercises have included extensive briefings by local authorities and other experts, and visits to localities and industrial establishments of relevant interest to the problems being considered. Each year LOGEX has been attended by about 100 officers of senior major rank upwards and have included officers from all elements of the Australian Army, the other services, the Public Service and, in LOGEX 79, there was representation from the British, NZ and US Armies.

As GOC Logistic Command I have had the responsibility and pleasure of conducting the last four LOGEXs. Whilst detailed reports have been written on all these exercises and widely distributed I am sure that there is little awareness in the Army, and elsewhere in the Defence organization, of the significant points which were highlighted in these exercises. The exercises have covered a wide range of settings related to possible employment of Australian forces, both in the short and longer term. As no operations can be conducted successfully without adequate and properly controlled logistic support, it is very desirable that there is a general awareness amongst Army, and indeed Defence planners of the major issues and significant logistic requirements which were identified in these exercises.

Similar issues and requirements arose in a number of the exercises. Therefore I propose to present a consolidated coverage of these matters rather than a detailed list arising from individual exercises. However, I feel it is appropriate that I give some indication of the scope of the exercises so that readers have some idea of the wide coverage and possible implication of the setting of the exercises. The aims of each exercise are given below together with some brief notes on the scope of the exercise.

LOGEX 74
The aim of LOGEX 74 was to examine the logistic implications of supporting a Joint Force of divisional size deployed in N.W. Australia. The forces were employed on conventional continental type operations and included a significant armoured element. Topics discussed included:
- The logistic structure and system within the Joint Force Area of Operations.
- The manning, operation and control of the Lines of Communications from Alice Springs to Wyndham.
- The command and control arrangements for the logistic support of the Joint Force.

LOGEX 76
The aim of LOGEX 76 was to examine in detail the military structure and resources required to provide logistic support to Australian forces deployed on large scale defensive operations throughout Australia. The exercise was based on the operational setting of the 1975 Chief of the General Staff's Exercise.
and involved full mobilization to counter a large scale threat to the Australian mainland. The topics discussed included:

- General concept for the development and operation of the main base support area.
- The logistic support organization required between the main support area and the deployed operational forces.
- The command and control system required for the complete logistic structure.

LOGEX 76 indicated, in broad terms, the enormity of the total logistic structure and the complexity of the command and control system required to support operations on the scale envisaged. The need to identify in greater detail the size of this commitment suggested the concept and scope of LOGEX 77.

LOGEX 77

The aim of LOGEX 77 was to examine the military structure and resources required for an organization providing logistic support between the main base area and a major operational force deployed in Northern Australia. The supported force was a corps of two division, corps troops, Communication Zone and a RAAF component. This corps would be part of a larger operational force deployed throughout Australia in keeping with the setting of LOGEX 76.

This exercise was conducted in the Townsville area, and involved the study of an advanced logistic base established in the Townsville-Charters Towers area supporting the corps deployed North towards Cape York Peninsula and the Gulf of Carpentaria. Topics discussed included:

- The tasks, organization and layout of the advanced logistic support base together with the accommodation and working facilities and resources required.
- The local infrastructure, and the identification of the resources and facilities which could be used militarily.
- Problems associated with the logistic support of isolated elements in remote areas.

LOGEX 77 required a detailed study of facilities and resources in the Townsville-Charters Towers area, and a more superficial look at the resources in Cairns, Weipa and Mt Isa. Comprehensive briefings were given by local authorities in Townsville, Weipa and Mt Isa, and considerable interest was shown in the exercise by the relevant responsible authorities in these localities.

GENERAL COMMENT ON LOGEX 76 AND LOGEX 77

These two exercises were inter-related. It was apparent that the scale of logistic support required to support the major operational deployment was so great that to provide it would require full use of national resources and that planning to do so would be at a similar level. It was difficult to pursue the theme of these exercises without the detailed involvement of other governmental authorities, both Federal and State. Such a project was beyond the responsibility and resources of Logistic Command.

Having examined a high intensity situation in the previous LOGEXs it seemed logical and pertinent that in LOGEX 78 consideration should be given to meeting logistic commitments which might arise in a low intensity situation at short notice. Furthermore, in order to ensure that participants had to take a more practical and detailed approach to problems, it was desirable to examine situations for which adequate data and doctrine was available.

LOGEX 78

The aim of LOGEX 78 was to practise selected officers in logistic planning with a view to establishing the logistic implications associated with low level operations conducted away from, but in close proximity to Australia by Australian forces.

The setting of the exercise involved a logistic support of a 6000 strong Joint Force, including a two battalion task force, deployed on low level operations on a fictitious island some 800 miles off the east coast of Australia. This is a task which we might well be expected to undertake at short notice with available resources.

LOGEX 78 was conducted mainly indoors at the Army School of Transport, Puckapunyal. Topics discussed included:

- The logistic concept to support the operational force on the fictitious island.
- The detailed logistic plan within the operational theatre including the logistic Order of Battle.
- Layout, internal operation and command and control of the force maintenance area.
• The logistic implications related to the method of deployment of the force into the operational theatre.
• The capability of the main support area to continue its normal functions in support of the Army in Australia, as well as supporting the deployed operational force overseas.

LOGEX 78 certainly brought those attending the exercise back to the harsh realities of logistic support in a “real time” situation. The exercise involved an overseas setting and, of necessity, had to be considered mainly in the syndicate room and off a map. It seemed desirable that the next LOGEX should permit consideration of possible short-term commitments on the ground in Australia.

LOGEX 79

The aim of LOGEX 79 was to examine the logistic implications of supporting a force, approaching divisional size, deployed widely dispersed on surveillance and security tasks in the North and North West Australia.

The exercise setting had the force deployed from Gove in the East to Derby in the West in battalion groups or larger. It was envisaged that the logistic support organization would have to be deployed and developed in a peace time environment, and that the operational elements may well be deployed in a situation short of a defence emergency. Such a situation had implications not normally associated with deployment of either operational or logistic forces.

LOGEX 79 was based in Darwin and included short visits to Kununurra, Derby, Gove, Tindal and Alice Springs. In Darwin, Kununurra, Derby and Gove comprehensive briefings on local government and infrastructure were given by local authorities. In Darwin the briefing was done very effectively by the Chief Minister of the Northern Territory, The Honourable Paul Everingham. We also received an excellent briefing on the Energy situation in Australian by Mr Alan Woods, the Secretary of the Department of National Development.

Topics discussed during LOGEX 79 included:

• The logistic concept to support a force deployed in a remote area of Australia in a peace time or low intensity situation.

• The development and layout of an advanced logistic support base in the Darwin area.
• The suitability of Derby, Kununurra and Gove as bases for limited forces.
• Command and control of the advanced base and its relationship with the local government.

ISSUES AND REQUIREMENTS

In presenting a consolidated list of the issues and requirements identified in the succession of LOGEXs I propose to divide them into the following categories:

• Organization and Doctrine,
• Training and Information,
• Infrastructure, and
• Longer term issues.

ORGANIZATION AND DOCTRINE

• The overall logistic concept and doctrine for the support of Australian forces needs developing, particularly in relation to the system behind the area of operations.
• The command and control arrangements for the logistic system must be developed as part of the overall logistic concept and be related to the government infrastructure at appropriate levels.
• Both the logistic concept and the command and control arrangements should be compatible with, and be extensions of the Army’s present functional command system.
• The total logistic and administrative requirements must be considered when developing a logistic concept or plan. It does not make for either effectiveness or economy to consider part of the logistic requirements in isolation.
• To achieve economy in logistic support requires careful and selective planning of the operational force to ensure only essential elements are included.
• The Logistic Order of Battle, Unit organizations, equipment tables and command and control arrangements should be “tailored” to meet the actual requirement by applying the principles of administration. Too often it has been the practice to simply adapt past solutions which have been related to quite different factors, circumstances and resources.
There is a need for a proper understanding of the application of technical control as related to logistic functions. Technical control is a function of command and is exercised on behalf of a commander.

Cognizance should be taken of the logistic support arrangements made for large scale mining operations in remote areas of Australia when considering logistic support for military operations in such areas. It is the practice of mining companies to hold up to six months stock of supplies and other items in continuous use and to undertake the maximum possible repair of equipment on site.

In a low level situation well trained Army Reserve logistic units and individual members of those units could be employed at short notice. Therefore it is desirable that consideration be given to preparing legislation to permit their employment in circumstances short of a defence emergency. This would reduce the need for additional Regular Army manpower for logistic units.

Consideration should be given to creating in peace a command structure in Darwin which includes the logical operational area of the Kimberley, Northern Territory and possibly into the Gulf of Carpentaria. Before an emergency arises it is desirable that the command structure be practised in dealing with the governmental authorities of more than one State.

When a significant sized force is to be deployed within Australia it could be normal practice for the advanced logistic support base to be established by Logistic Command and then taken under command by the Force Commander when the operational force is deployed.

Infrastructure data should be consolidated into readily accessible form for planning purposes.

Logistic planning data requires revision and update to reflect the effect of current equipment, technical practice and operational circumstances.

The War Book requires revision to provide a recognized basis for logistic planning in present and possible future contingencies.

There is a need to conduct an exercise (or exercises) in the wet season in Northern Australia in the near future to examine capabilities of equipment and logistic support systems in such conditions. At present information is limited and there is too much conjecture on such matters.

TRAINING AND INFORMATION

There is a need for higher level logistic courses to train senior logistic commanders and staff officers.

Logistic support doctrine once developed must be promulgated. This need is very apparent in relation to logistic doctrine outside the area of operations.

There is a need to build up a greater awareness of the capability of national infrastructure amongst defence planners, especially logisticians.

INFRASTRUCTURE

There is a need for a Defence involvement in national infrastructure planning. Possible defence requirements should have an influence in most fields, particularly transport, storage facilities, energy and communications.

There is a need for a detailed defence study of infrastructure requirements so that a priority list can be developed. This would ensure that Defence input into national planning is both constructive and economical, and avoid unnecessary delay or duplication at a time of defence emergency.

In considering development of the infrastructure for defence purposes the following matters need the greatest attention:

1. All weather roads of reasonable capacity running from Perth, Adelaide and Brisbane towards possible deployment areas in North and North West Australia.

2. The capacity, reliability and compatibility of railways running to present railheads at Alice Springs, Mt Isa, Cairns and Meekatharra (with extension to Mt Newman). The need for a Darwin-Alice Springs (and/or Mt Isa) link has been increased with the current energy problems.

3. The capability of ports in remote areas to handle containers and roll on/roll off ships.
• The current infrastructure has a quite reasonable capability to handle the requirements of a low level situation such as depicted in LOGEX 79.
• There is a requirement to brief government officials at all levels who may be involved in infrastructure planning and development on the nature of defence requirements in particular areas. There is a desire amongst such officials to help if possible.

**Longer Term Requirements.** The longer term requirements are related to a defence emergency situation in which the country is seriously threatened and which requires the raising and deployment of Australian forces on a large scale. Therefore it is essential, in the interests of both time and economy, that they are correctly identified. A national strategy which looks to the future is required if this is to be achieved. Such a strategy would indicate the desirable developments in defence organization and equipment, the national infrastructure and the industrial capability for defence purposes.

**ACTION BEING TAKEN**

The previous paragraphs have identified a number of issues and requirements needing attention. In some matters action is already under way. These include:

• The formulation of the logistic concept behind the area of operations is proceeding. This concept will be issued widely when finalized.
• Higher level logistic courses have been recommended in the report of the Regular Officer Development Committee, and the possibility of their introduction in the early 1980s is under consideration.
• Logistic planning data has been revised and issued. Further examination is proceeding.
• Action will soon be underway to consolidate infrastructure data.
• Revision of the War Book has started.
• There are indications that there may be greater Defence input into national infrastructure planning and management, particularly in the energy and transport fields.
• The new standard gauge railway to Alice Springs is nearing completion, and the upgrading of Route 1 in North West Australia is proceeding.
• LOGEXs and other logistic exercises are emphasising the need for the application of principles of administration to logistic problems rather than the “blind” application and adjustment of solutions previously used.

**CONCLUSION**

LOGEXs over the years have made a significant contribution to the practical consideration of possible Defence problems facing Australia both in the present and future, and have done much to progress our thinking in implementing the government policy of self-reliance in defence matters. Unless the logistic task is identified and met adequately, successful operations cannot be conducted. Therefore it is very desirable that the annual LOGEX continues to examine the logistic problems which we may face and suggest action which needs to be taken so that these problems can be met.

**EXERCISE LOGEX 80**

Exercise LOGEX 80 is to be conducted at Enoggera Barracks, Queensland from July 14 to July 18, 1980. Approximately 100 participants are to attend. The aim of LOGEX 80 is to examine the concepts for administration behind the area of operations with particular reference to the structure and operation of Support Command. The exercise will be conducted as a seminar with visits to selected Service and Civilian Establishments.
Reviewed by Dr Hugh Smith. Department of Government, Duntroon.

This book is subtitled "A methodology for planning Australian defence force development" and it does indeed offer "an orderly arrangement of ideas" (Concise Oxford Dictionary definition of 'methodology'). But it does not provide convincing, practical proposals about how to determine the future development of the Australian Defence Force.

The authors begin by criticising — with considerable justification — the 'core force' and 'scenario-building' approaches to Australia's defence. They prefer to focus on deterrence and the allied notion of 'disproportionate response'. These concepts stress, firstly, the importance of dissuading a potential aggressor before he launches his attack that expected losses will outweigh anticipated gains and, secondly, the capacity of the defence to take measures which will cost the aggressor more to overcome — in men, money and materials — than they cost the defender. This is all good common sense (even if not so common in actual defence decision-making). For it encourages a focus on the perceptions and calculations of the potential enemy; and it compels decision-makers to look at the margin — what extra burden can we impose on the enemy at what extra cost to ourselves?

But the 'deterrence' approach to Australian defence has its own chronic weaknesses. Firstly, theories of deterrence — as the authors acknowledge — have been developed in the context of the US-Soviet balance, where the prime focus is on the capacity of nuclear weapons to hit the adversary's non-military targets, especially his cities. Australia, however, is not looking at this sort of deterrence — at least not yet — but rather at deterring a potential enemy from initiating or persisting with a conflict by threatening to defeat him in battle. While in principle both forms of deterrence are similar, there are crucial differences. When states begin wars they usually have an exaggerated confidence in their military forces and make optimistic assessments of their chances of success. It is far more difficult to change such attitudes than to convince a potential enemy that his cities are vulnerable to total devastation in the event of war. Moreover, defeating an enemy in battle has been the traditional objective of armed forces. One wonders if there is anything new in pointing out the deterrent effect of such an objective.

In the second place, the focus a deterrence does not avoid the problems of the scenario-building approach. It simply pushes that approach one step further back by seeking to deter attacks before they are launched. There is still a need to make assumptions about the sorts of forces that might be used in an attack since different sorts of weaponry will be needed to deal with different kinds of attack. It is still necessary to make some informed guesses about the nature and probability of possible attacks on Australia. There is no point in trying to deter events that are not going to happen anyway, while coastal defences, for example, are unlikely to deter an airborne invasion.

Thirdly, while the objective of deterring attacks must be accepted as part of any Australian defence policy, it is altogether a different matter to say how much importance should be attributed to it. For example, the authors recommend territorial defence for its deterrent value (pp. 34, 51-52) yet do not discuss whether other strategies might have a greater deterrent effect. Anything which deter, they seem to be saying, is desirable. Moreover, there are other functions which the defence forces are currently required to perform that are not simply defensive or deterrent in nature, eg. military assistance to Papua New Guinea, cooperation with allied forces and UN peacekeeping. How are these to be balanced against the objective of deterrence?
Controlling Australia’s Threat Environment is full of promises. It looks toward a “threat-insensitive” posture which would supposedly avoid having to examine specific contingencies (p. 60). It suggests that the deterrent effect can be stepped up in carefully calculated fashion as a threat emerges (p. 63) — although the authors earlier note the short warning time states usually have of impending war (p. 5). There is a suggestion that the government could be presented with “a range of levels of deterrence options, costed against the degree of security each offers” (p. 58). The attempt to produce such a document should keep an army of strategists occupied for the foreseeable future. As the authors themselves concede the empirical foundations for such recommendations are weak (p. 23). And finally (p. 64) there is the most tantalizing promise of all — to alter some aspects of Australia’s national character by substituting greater national self-confidence for the siege mentality that has long afflicted Australians. Some Australians, at least, seem confident that the problem of national defence can be solved and that they have the solution. For what it is worth, this reviewer believes that “solutions” are best avoided.


Reviewed by Professor B. D. Beddie, Royal Military College, Duntroon.

BRIDGES’ life presents a biographer with special challenges. Though an exemplary, he was in no way, a typical Australian military leader. Born in Scotland, he was initiated into military life at R.M.C., Kingston from which he was a ‘drop-out’. Though his failure at Kingston occurred under extenuating circumstances, it would seem to have been connected with a neuroticism against which the whole of his subsequent life was a determined and largely successful struggle. The struggle took the form of imposing upon himself unrelenting intellectual and professional discipline. At the same time it shut him off from most forms of relaxation (including sport, except for canoeing), and cast him in what to many seemed the role of a remote academic figure.

There are certain indisputable facts about Bridges’ achievements and they are sufficient to establish his greatness. He was highly competent in everything he undertook as a soldier and a superb military organizer. He was a dedicated professional and politically incorruptible. And he was brave to the point of being fool-hardy. Almost everything else about Bridges was and remains controversial. When offered the command of the A.I.F., he was not sure that he was up to it. Though, in fact, he proved himself fully adequate at Gallipoli, there were at his death still those who doubted whether he would make a great commander. Much more controversial than Bridges’ military achievements was his character. Throughout his work Mr Coulthard-Clark provides assessments of Bridges’ character by his contemporaries. The assessments are diverse and often contradictory. Describing reactions to Bridges during the period of his command in Egypt, Coulthard-Clark writes: “The people about Bridges began to experience and recognize the twin aspects of the General’s character. Some saw his strong, often brutally overpowering side, while others saw the shy sensitive side which manifested itself in his relations with those about him as awkwardness. Almost all recognized the man as an enigma; wrote one officer to a friend in Australia: ‘Egypt has always been famous for its sphinx, but for the first time in the history of the world that sphinx has met with its human prototype or so we think when we see our General, with head bowed stalking silently across the sands.’” Bean was to remark that Bridges “seemed to make few friends and to be graceless in his treatment of these.” “Blamey’s feelings towards Bridges were ambivalent, and he confessed in later years that never had he admired and disliked a man so much.”

Clearly it would take a writer of the literary power and psychological insight of a Dostoevsky to do justice to the complexity of Bridges’ character. How does Mr Coulthard-Clark, an historian, undertake the task? Historian-like, he pays scrupulous regard to whatever sources are available — his search for evidence has been particularly thorough — and seeks to strike a judicious balance. Not wholly avoiding the temptation to mix biography and hagiology, he usually tends to give the benefit of doubt to Bridges. Occasionally his defence of Bridges is barely consistent with his own evidence, e.g., where he says that Bridges did not “deliberately
misrepresent” to Pearce, the Minister for Defence, the facts about “ragging” at Duntroon.

It is, indeed, in his treatment of Bridges as the founder of Duntroon that Coulthard-Clark, himself a graduate of the R.M.C., comes closest to apotheosis. That Bridges laid sound foundations for a military college is beyond dispute, though, as Coulthard-Clark hints, certain of his assumptions may have warranted more critical examination. Where Coulthard-Clark temporarily abandons his historical professionalism is in his implication that Bridges transmitted an unbroken “heritage of spirit” (presumably intellectualism) to Duntroon. The evidence that exists is that Duntroon had an uneven history after Bridges’ time and fell to levels of unintellectualism of which its founder would not have approved. Even today there is no agreement that the institution should aim at the austere and detached intellectualism to which Bridges was dedicated. Fortunately, Mr Coulthard-Clark is now engaged on a history of Duntroon which will undoubtedly clarify the continuities and discontinuities lightly passed over in the work under review.

Coulthard-Clark’s biography throws much light not only on Bridges but on the early military history of the Commonwealth. Bridges, was, for example, in close relationship with a number of ministers during these years. One minister, T. T. Ewing, found Bridges, because of the latter’s unbending professionalism, ‘an impossible man’. G. F. Pearce, on the other hand, thought Bridges to be a sound and competent political adviser. Had space permitted, Coulthard-Clark might have thrown significant light on the history of political-military relationships in Australia by investigating more fully what was at issue in the very different estimates of Bridges made by these two ministers.

Bridges was greatly and, according to Meaney, perhaps adversely, influenced by Major-General Sir Edward Hutton. Coulthard-Clark examines this relationship but again not as fully as he might have done especially in the light of Meaney’s work. In addition, he does not get Hutton quite right. For example, he says Hutton was ‘inaudible’. Certainly Hutton did not always write particularly clearly. He was, however, a gifted public speaker whose _penchant_ for politics was closely related to his desire to give free rein to his rhetorical skill.

Again Coulthard-Clark says that Bridges avoided political intrigue “just as determinedly” as Hutton. Hutton certainly professed to believe that military matters were “above” politics but there were occasions when he engaged on a grand scale in political intrigue and, indeed, sought to destroy politicians both in Canada and Australia.

Another controversial figure with whom Bridges was closely associated was Major-General Hoad. Hoad, no doubt, was a man of limited military ability, and, therefore, was despised by Bridges. Unfortunately Coulthard-Clark takes Bridges’ assessment of Hoad rather too much for granted. Bridges’ attitude towards Hoad was almost certainly influenced by Hutton who from 1904 waged an unconscionable vendetta against Hoad. It is possible that Hoad was as hopeless as Hutton and his disciples asserted. But if so, there is certain contrary evidence, including, it would seem pre-1904 assessments by Hutton that would have to be accounted for.

Mr Coulthard-Clark’s biography is highly readable. There are, however, clustered together on certain pages, curious lapses in style and expression. They range from the use of wrong prepositions to the kind of awkward phrasing that twice occurs on, for example, page 107. Coulthard-Clark describes how Bridges “almost drove his clerks to distraction by continually amending everything he wrote, often when the alteration was quite unnecessary or of marginal improvement”. Here for once, Coulthard-Clark is perhaps too harsh on Bridges. Bridges was correct in believing that, except for a small minority of born stylists good writing is a matter of successive drafts and marginal improvements. Coulthard-Clark’s own work would have benefited from one more draft. More generally, if there is one aspect of Bridges’ spirit that has yet to become a settled part of his legacy to Duntroon, it is his passion for stylistic precision — his readiness to spare no effort in order ‘to get it right’. It is greatly to be hoped that Mr Coulthard-Clark’s book will strengthen the efforts of the authorities in the R.M.C. and the University of New South Wales to restore to staff cadets what is already for many a lost heritage of literacy. But, of course, under present conditions, they will be successful only if they are heirs to another quality of Bridges — unremitting determination.

JULIAN CRITCHLEY’S book warns West Europeans of their vulnerability to a surprise attack from the Soviet Union. The first half analyses some of the major surprise attacks which have heralded hostilities since 1939. The second half deals with the growing military imbalance between NATO and the Warsaw Pact Forces. The author is obviously concerned about the Warsaw Pact’s growing might and is highly critical of NATO’s “flexible response” strategy.

Mr Critchley is particularly well qualified to discuss the defence of Western Europe. As a Conservative member of parliament in Britain since 1970 he has been Vice Chairman of the Party Defence Committee and Chairman of the Defence and Armaments Committee of the Western European Assembly. His other publications include “Collective Security” (Macmillan 1974).

Surprise attacks, says the author, have become standard ways of commencing hostilities. His main purpose is to show that for psychological reasons nations have rejected warning signs that an attack is imminent. He delineates quite effectively the major causes of this self delusion. In analysing Hitler’s attacks on Poland in 1939, on Denmark and Norway and on the Low Countries in 1940, he shows that these countries convinced themselves by wishful thinking that they would not be attacked.

Of particular interest is his examination of Germany’s surprise invasion of Russia in 1942. Stalin refused to heed the warning signs because he believed Hitler would not adopt the irrational strategy of fighting on two fronts. Russia paid the price but learnt the lesson. Now, warns Mr Critchley, the Russians are fully aware of the advantage that surprise confers on the aggressor.

Pearl Harbour, the classic surprise attack, is well analysed. Among other lessons, the author concludes that the United States rejected the warning signs because of overconfidence in its own abilities and a pitiful under-estimation of the Japanese capability.

The Korean War brought two major surprises: first was the North Korean aggression in 1950; second was China’s intervention in 1951. The author highlights how China infiltrated huge forces into the North Korean border area without the knowledge of the U.N. The lesson is clear: Under a closed political system large forces can manoeuvre with few signs being given to the other side.

Also informative is the author’s discussion of the surprise attacks which commenced the Arab-Israeli Wars in 1956, 1967 and 1973. All the warning signs were available to the Israelis in 1973 but why did they not heed them? Mr Critchley presents reasons which are worthy of close study.

Having established that an aggressor is most likely to commence hostilities with a surprise attack, the author then compares NATO’s capabilities with that of the Warsaw Pact countries. The analysis is both illuminating and disconcerting. Mr Critchley emphasises that not only does the Warsaw Pact have numerical superiority but that they are also beginning to outstrip NATO in technological capability. The military balance is rapidly moving in favour of the Warsaw Pact.

NATO’s “flexible response” strategy is subjected to sharp criticism. NATO can rely on only forty-eight hours warning of an impending attack. Mr Critchley emphasises that this is the warning time given the politicians. It is not automatically translated into preparation time for the military.

The author particularly criticizes NATO’s assumption that the Warsaw Pact will only open hostilities with conventional forces. He regards this as a foolish assumption but one against which the West has no adequate response.

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This as the only realistic deterrent which is independent of warning time and which can react to surprise nuclear attack.
This short book is both informative and interesting. It is marred, however, by long sometimes disjointed sentences. While the author writes particularly for West Europeans, the lessons of surprise attack are equally applicable for Australians. The book also presents Australians with a valuable overview of NATO capabilities and strategy. Mr Critchley's views on British foreign policy are predictably conservative. After reading his book however, one cannot help the feeling that NATO forces are particularly vulnerable to a surprise nuclear attack under the strategy of "flexible response".

The book should be read by all interested in the value of the surprise attack, and international affairs.


Reviewed by Major J. Hancock, OC, Editor Army Newspaper Unit, Department of Defence (Central), Canberra.

"FRONT Line Theatre" is a description of some of the adventures of the members of a German World War II theatre group, sent to entertain Army units in Russia. It deals, in a somewhat limited fashion, with their lives, loves and hates.

There is nothing subtle or novel about the plot or its presentation. The word pictures are usually vivid, but flat, with a touch of artistic abstraction. In only a few instances does the author succeed in making the reader "live" the action with the characters. One such occasion is the macabre description of the improvised field hospital in Dabusha:

"The field hospital premises in Dabusha were no longer adequate for the heavy casualties. Even half-demolished cottages in the village were crammed with wounded.

"The Russians' winter offensive had begun three weeks earlier on Stalin's birthday, December 20th. Since that date, ambulances and lorries have been arriving non-stop in Dabusha with full loads of wounded or frost-bitten men.

"Staff Surgeon Sorensen was operating in the very same hall where Fritz Garten's Front Theatre Company had performed their ill-fated 'Faust' six weeks earlier . . . ." Sorensen concentrated his attention once more on possibly his thousandth 'victim' in the last three weeks.

"'Saw!' he called to the orderly.

"There was a horrible grating sound as he sawed through a bone. The patient's forearm rolled off the table and fell to the floor with a thud.

"'Suture!' Dr. Berthold could hardly see under his heavy eyelids as he tied the stitches, he worked automatically, like a robot.

"'No pulse,' said the sergeant orderly, who was supervising the anaesthetic.

"Dr. Sorensen let his instruments fall. With a little groan he rubbed his red-rimmed eyes.

"'Another sacrifice for the Fuehrer and the people,' he murmured, sinking into a chair.

"'Even this winter will pass,' said Dr. Berthold.

"'That'll be a great comfort to the poor fellow!' Dr. Sorensen pointed to the dead man. 'How about a tea break?' he inquired of the sergeant.'"

For the most part, unfortunately, the story lacks credibility, especially to the serviceman. It is definitely not a book for the tactician, the military historian or even — despite its title — the devotee of the footlights. It is, truth to tell, just a story, with some emphasis on the "just".