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JOURNAL OF THE AUSTRALIAN NAVAL INSTITUTE

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AUSTRALIAN NAVAL INSTITUTE

1. The Australian Naval Institute has been formed and incorporated in the Australian Capital Territory. The main objects of the Institute are:—

a. to encourage and promote the advancement of knowledge related to the Navy and the Maritime profession.

b. to provide a forum for the exchange of ideas concerning subjects related to the Navy and the Maritime profession.

c. to publish a journal.

2. The Institute is self supporting and non-profit making. The aim is to encourage freedom of discussion, dissemination of information, comment and opinion and the advancement of professional knowledge concerning naval and maritime matters.

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(4) Other persons having and professing a special interest in naval and maritime affairs.

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CONTRIBUTIONS

As the Australian Naval Institute exists for the promotion and advancement of knowledge relating to the Naval and maritime profession, all members are strongly encouraged to submit articles for publication. Only in this way will our aims be achieved.

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In writing for the Institute it must be borne in mind that the views expressed are those of the author and not necessarily those of the Department of Defence, the Chief of Naval Staff or the Institute.

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Articles or condensations of articles are not to be reprinted or reproduced without the permission of the Institute. Extracts may be quoted for the purposes of research, review or comment provided the source is acknowledged.

The cover photograph shows the Chinese space events support ship, *YUAN WANG*, one of the PRC vessels which participated in China's intercontinental ballistic missile firings in the Pacific in May, 1980. The first missile splashed down about 1300 km north-west of Fiji on May 18. Another photograph of participating units appears on p.9 of this Journal.

— RAAF official photograph

Correspondence

LAST QUARTER (I)

Dear Sir,

In his review of LAST QUARTER in your May issue Mr Merrillees suggests that I understand little about defence. Since the implication must be that he is an expert many of us would be grateful if he would explain precisely what relationship the Cockburn Sound naval base would have to the security of Australia, or indeed of the United States; and give the reasons why the vast expenditure required for its development should be diverted from other defence needs. The official pronouncements so far on the matter do not make sense.

Yours sincerely,

MALCOLM BOOKER

20 Gawler Crescent,
Deakin, A.C.T. 2600

LAST QUARTER (II)

Dear Sir,

Mr Booker's letter has asked for a precise explanation of the relationship the Cockburn Sound Naval Base has to the security of Australia.

I do not believe it is necessary to explain to readers of the Naval Institute Journal why the Navy needs bases. The Navy just cannot operate without the logistic and maintenance support that a base affords.

Without the base facilities in Western Australia, Australia would have only one submarine base and one base from which destroyer and larger type naval vessels could operate. Both these bases are in Sydney harbour.

If the security of Australia was threatened from the west, north or north west, (the most likely threat directions), without the Cockburn Sound Base, the Navy would be forced to operate some 3,000 nautical miles from a major refit, repair, maintenance and logistic support facility. One does not have to be an expert to realise that naval operations would be severely restricted under these circumstances.

With regard to the vast cost of further development of the Cockburn Sound Base, over the next five years, I understand approximately $m 46 is likely to be allocated.

If diverted to other Defence needs (presumably Mr Booker is referring to capital equipment) this money would buy us about one and a half F18s or one-fifth of an FFG!

Yours faithfully,

JOHN MERRILLEES

7 Palmer St.,
Garran, A.C.T. 2607

ELIGIBILITY FOR REGULAR MEMBERSHIP

Dear Sir,

May I write to express complete support for Commander A.W. Grazebrook's suggestion that members of the ANI on the active lists of the Reserve be admitted to full membership?

The proposal seems an eminently sensible compromise, since those Reservists who undertake regular training are quite as likely to be intent on maintaining the ANI and promoting the 'advancement of knowledge' as members of the PNF.

Yours faithfully,

J.V.P. GOLDRICK
Sub Lieutenant RAN

HMS Alderney
BFPO Ships
London

SWORDS

Dear Sir,

I was delighted to see the kind response by Commander Campbell and 'A Gunner' to my search for enlightenment concerning the wearing of swords. I am, however, forced to take exception to 'A Gunner's' remark that 'Undoubtedly the correct method of carrying one's sword nowadays is clumsy and awkward and rarely used by senior officers, or junior officers who think the gunnery officer is not watching'.

The latter parts of his statement are simply not true! Most non-gunner senior officers would rather be seen dead than carry their sword any other way than dragged — to cite one august example, Prince Philip, and I have even seen him doing it in Marshal of the RAF uniform! Furthermore, a Flag Officer, himself a gunner, was only recently rebuked by the senior CPOQMG at RANC after being seen carrying his sword 'at the drag' while inspecting Divisions. I am certainly not advocating that we do it any other way, even if it does look clumsy and awkward (and has 'A Gunner' ever tried to get into a car with his sword hitched up?).

One point that does interest me is that the USN at one stage wore their swords in exactly the same manner as us, but (ironically) when they changed from Civil War style to RN style uniforms after the Great War they modified their sword belts as well. I wonder why?

'MASTER NED'

JOURNAL BACK COPIES

Dear Sir,

It seems that many new members, and indeed some older ones, are searching for back copies of the journal (Vol.1 No.1 and Vol.3 No.1).

I for one still hunt for the initial journal (Vol.1 No.1).

Therefore a plea and perhaps an idea. Has any thought been given to a facsimile copy being produced in say, a limited basis?

You may reserve one copy for me.

Yours faithfully,

ROBIN PENNOCK
Commander RAN

HMAS ALBATROSS

FROM THE EDITOR

Members of the Institute will be pleased to know that the Governor-General has accepted an invitation to become Patron of the Australian Naval Institute. This is an event which brings great honour to the Institute and marks another important step in our history.

Some changes have occurred recently in the composition of the ANI Council. Following the resignation from the RAN of Captain L.G. Fox, Commodore M.W. Hudson has been elevated to the position of Senior Vice President and Commodore P.R. Sinclair has joined the Council as a councillor in his stead. All Council positions of course come up for election again at the Annual General Meeting which is to be held on Friday, 24 October, 1980, in Canberra. A Notice of Annual General Meeting and Nomination Form for Election of Office Bearers and Ordinary Councillors for 1980/81 are included in this journal.

With regard to the agenda for the Annual General Meeting, members should note that as foreshadowed in the last journal, the rate of annual subscriptions is an item listed for discussion. It is understood that the present Council will be recommending an increased rate to the meeting and hence members are advised to renew their subscriptions early so that they are not liable for the higher rate which will probably be effective after the AGM.

Plans for the next Institute Seminar, SEAPOWER 81, continue to develop. Firm dates for the seminar have now been established as Friday, 10 and Saturday, 11 April, 1981 at the Academy of Science in Canberra. The seminar theme will be 'Australian Maritime Defence and its relation with Industry' with the aim of investigating and discussing Australia's maritime defence and industry's related long-term roles and responsibilities. The speakers will include eminent Australians from both Government and Industry, as well as distinguished visitors from overseas.

Several members have indicated recently that they would like to obtain a copy of Volume 1 Number 1 of the Journal which has been unavailable for some years. The Journal printer has advised that a small reprint of this number (ie., about fifty copies) would cost in the order of six dollars each for a product of quality not lower in standard than the present journal but with a better, stiff cover. This does not seem an economically viable project unless the Institute has firm orders for at least thirty of the reprints. Anybody who is interested could perhaps tell me so in a one sentence letter to the Editor — 'I would like to order a copy of Vol.1 No.1 of the Journal' (with name and address).

This Journal is rather larger than the average journal of the past with major articles on a diversity of topics. Hopefully this will continue as the pattern of the future since the editorial staff has been encouraged recently by the number of articles being received for publication. I hope that this trend continues.

The Spruance Class destroyer, USS *KINKAID*, entering Sydney Harbour
— by courtesy of John Mortimer

A VIEW FROM EUROPE

Lecture to the Australian Naval Institute in Canberra 24 July, 1980

By Admiral Sir James Eberle, KCB

I greatly welcome the privilege of this opportunity to address you at a time which I believe we may in the future look upon as a watershed in our affairs. I speak in a personal capacity and my views, whilst not as far as I know being contrary to accepted policy, should not be taken as having any formal status. I am at home both a NATO and a National Commander. As a NATO Commander, I share together with SACEUR and SACLANT the responsibility for the operational command of the Alliance within the NATO area. As a National Commander, my responsibilities are worldwide. I see my NATO and National tasks as being essentially complementary and, I find, fortunately, that my National and NATO views are very seldom in conflict.

It was widely forecast during the latter years of the 1970s that the coming decade would be one of difficulty and potential danger. There were many reasons for this forecast deterioration in the conduct of international relations — political, economic and military. But essentially the basic cause was seen as the worsening of the strategic balance between East and West. This view has been cogently expressed in the Kissinger "Window of Opportunity". Henry Kissinger argued that "If present trends continue, the 80's will be a period of massive crisis for us all". He foresaw that the first half of the 1980s provide an era of unique opportunity for the Soviets during a period in which we will face simultaneously an unfavourable balance of power, a world in turmoil, a potential economic crisis and a massive energy problem.

There were, however, very few who forecast the very rapid deterioration in international relations during the first half of 1980 which led the Council of the North Altantic Treaty, meeting in Ankara last month, to state the past six months have been overshadowed by developments which challenge the foundations of stability in the world. The fundamental cause of this crisis has been the Soviet action in Afghanistan. The last six months have not in fact seen a particular swing in the balance of military power (although the rate of deployment of SS20 missiles in Eastern Europe has been of particular concern). There has though been a fundamental change in the perception of how the Soviets might use their military power. This has been a good example of the classic dilemma in balancing an adversary's capabilities and his intentions. The weaknesses in our capabilities vis-a-vis the Soviets have not changed greatly during this period — but seen against the background of Soviet willingness to use her own military forces directly to impose its will on a previously non-alligned country now causes these weaknesses to stand out in a very much harsher light.

There has been some discussion as to whether the cause of Soviet action in Afghanistan was offensive or defensive. Was it a defensive reaction to the instability in South West Asia and to the fear of a spread into the southern Soviet states of the Moslem revival? Or was it part of some master plan, some drive to control the vital oil resources of the Gulf? (And it must be remembered that these Gulf oil supplies are just as vital, if not more so, to the Western European countries and to other free nations as they are to the United States). I do not know the answer to these questions but I would argue the answer is hardly relevant today. The important fact is that the Soviets were willing to use their massive military power in an act of military aggression in total contradiction to their undertakings in the UN Charter and more recently in the final act of the Conference for Security in Central Europe.

THE SPEAKER

Admiral Eberle became Commander-in-Chief Fleet of the Royal Navy in May 1979. His forty years of distinguished naval service include postings as Executive Officer of HMS *EAGLE*, Commanding Officer of HMS *INTREPID*, Flag Officer Carriers and Amphibious Ships and Chief of Fleet Support. He is a graduate of the U.K. Joint Services Staff College and the NATO Defence College and has undertaken a Defence Fellowship at University College, Oxford. He was knighted in 1979.

The initial reactions to the Soviet action in Afghanistan produced different perceptions in the two sides of the Atlantic Alliance. In the United States, European reaction was widely seen to be inadequate and unco-ordinated. In Europe the view was widely held that the United States' response was an over-reaction and a failure to consult with her allies. Whether these two perceptions were right or wrong, whether they were fair or unfair, is again in my view largely irrelevant. What was important was that they represented an opportunity for the Soviets to attempt to drive a wedge between Europe and the United States. And it is in this light that we have to see much of the present Soviet policy towards the European members of the Alliance in general and towards France and West Germany in particular.

However, in more recent weeks at the NATO Ministerial Conference in May, at the NATO Nuclear Planning Group Meeting, at the Heads of Government level in Venice and at the NATO Council meeting in Ankara, the solidarity of Western nations to reject as totally unacceptable the continuing presence of Soviet troops in Afghanistan has been made crystal clear. But we need not only to look towards declarations of solidarity and intent but also towards action in support of these words. Some countries have been reluctant to take action because they did not see Soviet action in Afghanistan as having a direct effect upon their security. But in the military sphere at least there has been a direct and significant impact upon security in the NATO area as the US has had to remove one CVA group from the Mediterranean which has not been replaced. It is not for me to discuss or comment on political action; but I would like to say something more about effects in the military field.

Principally, NATO military reaction has been to harden trends, and to accelerate programmes, which were already in existence. The long term defence programme agreed by Heads of NATO Governments in Washington in the summer of 1978 called for an increase in defence expenditure of 3% per annum in real terms. Despite severe economic difficulties in many countries, there has been renewed determination by a number of NATO Governments and particularly those of the United States, the United Kingdom, West Germany and the Netherlands, to re-affirm that commitment. There is unfortunately much room for interpretation in how this 3% in real terms should be calculated, particularly against the background of a variable and varying rate of inflation runnning at levels from below 10% to above 20%. It might therefore perhaps be better if one asked the question as to whether this 3% increase in expenditure in real terms will lead to a 3% increase in real defence capability. I regret I am far from confident about the answer. We must also recognise that with Soviet defence expenditure increasing at about 4% per annum in real terms, even a 3% increase in the defence capability of the West may only be enough to prevent the present imbalance getting worse.

Soviet action in Afghanistan has also done much to convert the NATO nations to the view that their national security interests do not cease at the NATO boundary. This is not to say that there is any question in my view, either politically or militarily, of a change in that NATO boundary with its arbitrary cut-off along the Tropic of Cancer in the Southern Atlantic ocean. The founding fathers of the Alliance tell us that the purpose of this boundary was to define the area in which an attack upon one member of the Alliance would be considered as an attack upon all. Were this boundary not to be so defined then, for instance, a Chinese attack upon Hong Kong could have allowed the United Kingdom to invoke the NATO Treaty. This would hardly be likely to be welcome by most other European countries. However, the recognition by NATO nations of vital National Security interests outside the NATO area does mean that increasingly nations who have forces structured for use on a global scale and who have an historical interest in regions outside the NATO area are becoming willing to act together on a bilateral or a multi-lateral basis in support of those interests. I have been increasingly trying to get across the view that the deployment of forces outside the NATO area is, within certain limits, good news for NATO and not bad news. We must however be careful that the increasing requirement for a global military capability does not seriously weaken NATO's position within its own area. There is thus a call to the Alliance nations who cannot effectively contribute to an increased Western 'global' presence to do more within the Alliance area to make up for any deficencies and to 'fill the gap' resulting from other countries deploying or planning to deploy forces out of the NATO area.

Another matter in which it has become necessary to change our Western stance has been in the field of watchfulness. I do not refer only to an increasing awareness of the importance of strategic warning and political and military indicators derived from covert or overt intelligence; but also to the need for surveillance and counter presence. I believe it to be important that the Soviet sailor is not allowed to see the oceans of the world as being his own exclusive oyster. It is important that Soviet ships, wherever they be deployed on the oceans of the world, should see that theirs is no exclusive use. They should see the ensigns not only of the US ships but of Australian ships, of New Zealand ships, of RN ships, of Netherlands ships, and most importantly ships of the appropriate littoral states.

I would now like to turn from this review of the general global situation to a discussion on the present state of the military balance. Let me start on the nuclear end of the spectrum. I believe we

should be clear that nuclear weapons do not by themselves deter organised violence. What they do do is to limit the political aims for which the use of force is a sensible means of achieving those aims. The deterrence of war must rest on a much wider spectrum of military capability from the lowest level of conventional operations to the higher levels of nuclear response. There has been over many years in the West a theoretical debate on the differences between deterrence and defence. As the international situation has deteriorated there has been a tendency on behalf of politicians to put more emphasis on deterrence and upon the higher nuclear end of the spectrum of our capability in the mistaken impression that it is only strategic and long range theatre nuclear weapons that deter war. This has led to a reluctance to devote scarce resources to the war stocks and reserves of conventional armaments necessary to maintain the sustainability of our conventional capability. NATO strategy changed from one of a trip wire for massive nuclear response to one of flexible response some fifteen years ago. But now as Soviet conventional capability in Central Europe grows both in its quality and its quantity, and takes on an increasingly offensive nature then the adequacy of our own conventional forces is increasingly called into question. If the adverse swing in the balance of conventional forces in Europe is allowed to go unchecked then NATO could reach a situation where the strategy which we could implement would essentially be one of a 'delayed trip wire'.

Nevertheless, I believe that it is in the Soviet interest, and is seen by the Soviets as being in the Soviet interest, to avoid a war in Europe. If the Soviets could achieve their stated aim of a communised world without firing a shot, then this for them represents a better path for Socialist expansion. And I believe that they now see their navy as being a means whereby they could achieve this. If by political and other means they can achieve influence over the sources of supply in the world of vital raw materials and energy, and if they can achieve control of the seas over which those supplies must be carried to Western nations, then they will have achieved a stranglehold on the economic lifelines of Western countries. If they can achieve in the minds of the Europeans the belief that they can sever the transatlantic lines of sea communication between Europe and the United States, over which military re-inforcements and re-supply vital to the conventional capability of the Alliance must flow, then increasingly they will be able to decouple the United States from Europe and gain increasing political influence over European countries to the level of what is known today as Finlandisation. In the words of Admiral of the Fleet of the Soviet Union, Sergei Gorshkov, Soviet Sea Power, merely a minor defensive arm in 1953 has become the optimum means to defeat the imperialist enemy and the most important element in the Soviet arsenal to prepare the way for a communised world. We therefore need to look closely at the development of the Soviet Navy.

When Admiral Gorshkov took over in 1956, the Russian Navy was still largely a coastal defence force; although it had begun to build up a large force of conventional gun-armed cruisers and destroyers and was aiming at a force of 1200 submarines. It is clear from Krushchev's published memoirs that at about this time, proposals had been put forward for a significant and expensive expansion of the cruiser and destroyer programme. These proposals were rejected, as the risk of sea borne invasions had now become second priority to protection of the homeland against a nuclear attack by US strategic bombers; and the Soviet Air and Missile forces were expanded instead. Thus, when Gorshkov assumed office, he was faced with the problem of how to shape the new Navy. Despite his background of limited experience in naval operations other than those in coastal waters, Gorshkov soon came to realise that if the Soviet Navy was going to fulfil its share in the task of defending the Soviet heartland, it must look to expanding its own maritime horizons. For the major naval threat to the Soviet heartland at this time was mounted by the nuclear armed strike aircraft carried onboard United States aircraft carriers. The Soviet Navy reaction to this, Gorshkov argued, must be co-ordinated and total. It must consist of counter action by Soviet submarines, shore-based aircraft and missile-armed surface ships. Gorshkov rightly perceived as Krushchev previously argued that an attempt at this stage to match Western naval developments, in this case the attack aircraft carrier, would only result in a long, fruitless and expensive stern chase. A vigorously pursued programme of surface-to-surface missile development thus led to an appearance of a new class of missile armed destroyers, the *KRUPNY* and the missile armed cruisers of the *KYNDA* class; and the submarine building programme was completely re-cast, with plans being made to expand nuclear submarine production and also to fit them and some conventional submarines, with surface-to-surface missiles.

Hardly had these new ships appeared on the scene when Gorshkov realised that the threat had changed. No longer was the primary threat to the Soviet heartland posed by United States aircraft carriers, but by the new submarine launched ballistic missile system, Polaris. Although the Polaris submarine represented a target infinitely more difficult to counter than the aircraft carrier, Gorshkov was not deterred by the challenge. He now needed an anti-submarine Navy. Its surface ships would have to operate at an even greater distance from the Soviet homeland than before, if they were to be able to reach the likely Polaris operating areas. Thus, to survive, the new ships needed not only ASW systems but also air

defence missile systems. We saw therefore, the emergence of the large ASW ships, the *KRESTA* class, the *KARA* class and the helicopter-carrying *MOSKVA* and *LENINGRAD;* and the modification of the *KOTLINs* with surface to air missiles. And we now began to see the Soviet shift to 'forward deployment'.

But developments in the Soviets' own naval armoury were already spreading the death knell of this concept. The gradually increasing range of submarine launched ballistic missiles allowed the Soviets to deploy the *DELTA* class nuclear submarines armed with SSN 8 and SSN 18 missiles within the area of the Barents Sea and under the protection of the Soviet Northern Fleet bases, whilst still providing coverage of all the vulnerable US and European targets. Similar developments in the United States will, before long, allow the United States Navy to deploy their TRIDENT missiles under the sea in areas including those close to the United States Seaboard. There is no way in which Soviet anti-submarine surface vessels, however well defended, can survive in such an area. These large ASW ships must therefore be relegated to a defensive role in protecting a haven for the Soviet's own SSBN deployments. Thus a further phase of Soviet naval development ended with ships having to undertake functions quite different to those for which they had been conceived.

The 1970s however also saw apparent further important developments in Soviet Naval policy. The appearance of a new class of Soviet aircraft carriers, of which the first two units, *KIEV* and *MINSK*, are both in service, and of which two further ships are now building, and which carry the vertical take off and landing *FORGER* aircraft, hardly seemed to fit the pattern for ASW operations. These ships were however clearly capable of limited fighter defence, as well as anti-surface-ship and ground attack operations At about the same time, a new large amphibious ship, the *IVAN ROGOV*, appeared. The *IVAN ROGOV*, now in the Indian Ocean with Soviet naval infantry embarked, is very similar to a Soviet version of our own LPDs, HMS *FEARLESS* and *INTREPID*. I do not know the role for which the *IVAN ROGOV* was designed — but I do know that *FEARLESS* and *INTREPID* were designed for long-range overseas amphibious operations. It is therefore more than possible that the *IVAN ROGOV* has been designed for a similar purpose. Indeed her present deployment would appear to confirm this. We therefore begin to see a new dimension to Soviet Naval policy — the first signs of an independent and balanced Maritime concept which argues for flexibility. But, so far, the capability to fulfil this concept is of relatively limited proportions in the global sense.

But, there has recently been conducting sea trials in the Baltic, the largest surface ship, other than an aircraft carrier, to be built in Europe since World War II. *BAL-COM 1*, as she is known, is of some 30,000 tons and is as long as the *KING GEORGE V* battleships of the last war. She is nuclear propelled, has a new suite of surface-to-surface missiles, and a new surface-to-air missile system of very high capability. Does this powerful ship therefore represent the completion of a programme of expanding Soviet power in the 1970s aimed at limited overseas intervention; or does it represent the beginning of a new programme of further Soviet development aimed at a global policy of sea command?

I must say to you that from the evidence that is available to me I believe that this represents the emergence of a major new programme. *BAL-COM* 1 will not be the only ship of her class. There is also a new *BAL-COM* II class of large gas turbined powered cruisers, probably a replacement for the *KRESTA* class. There is also a *BAL-COM* III, another big ship with a role that is not yet clear. A further development of the *KARA* class seems likely. And above all this, there is consistent evidence that the Soviets intend to build a new class of large aircraft carrier, perhaps of some 70,000 tons carrying fixed wing maritime aircraft. And in the submarine field, we already have the fast, deep diving *ALPHA* class. But the International Herald Tribune reports that, only very recently, the Soviets rolled out from the vast construction sheds at Severodvinsk, a new submarine which is of a displacement greater than that of any Western nuclear submarines, existing or planned. It is not an SSBN. However, a replacement of the Soviet *DELTA III SSBN*, which would carry the new seaborne strategic missile now under development, is expected soon.

If one then looks at the infrastructure of the Soviet Navy, its construction ways, its dockyards and support facilities, one sees evidence of a massive investment. A dockyard, already twice the size of Portsmouth Dockyard, is being expanded by 50%. Enormous new warship construction facilities have been built. These are the facts that we now see. And they are powerful indicators of future Soviet intentions. I have little doubt that if one looks in similar detail at the infrastructure of the Soviet Air Force building programme or that of tanks or armoured carriers or lorries for the Soviet Army, one would see a similar vast investment and potential. What makes the Soviet naval developments more serious for the West is that they pose a challenge upon the seas which are vital to the economic survival of the West, but which are not vital to the health of the Soviet economy.

We need therefore to recognise three important factors of change for the Soviet Navy in the 1980s. Firstly, there appears to have been a relative shift in the priorities given within the Soviet defence programme to naval ship building. Secondly, we see in the position of Admiral Gorshkov and the results of his powerful advo-

cacy of the naval case both in his articles in the Journal Moskoi Sbornik during the early 1970s and the subsequent editions of his book, *The Sea Power of the State*, an increasing political influence in the affairs of the Soviet state. And thirdly, we see a growing argument for an increasing role of sea power as an instrument of peaceful expansionism as well as of war. There can be no doubt that the Soviets believe that massive military power conveys great political influence — and that within that military power the Navy is becoming an increasingly important element.

It would be wrong if I left the field of Soviet naval development without saying something about the Soviet sailors and their officers. The importance and rigidity of doctrine within Soviet society, the emphasis given to collective thinking, the strongly enforced discipline of the Party, all hamper the exercise of initiative, the willingness to take responsibility, and the development of creative thought and boldness — which are vital characteristics of the successful Captain of a ship in war. But perhaps more important in considering the likely reaction of Soviet naval men in war is the lack of any naval tradition, other than that of revolution and the lack of any history of success. The Russian people have always been subject to the rigours of harsh but changeable conditions, not least in their climate and geography. They have thus developed patience and great stamina to endure phsyical and mental hardship. This leads them towards a measured unimaginative approach to their work. Nevertheless, the Russians have a basically romantic nature which can drop them from the elation of success to the depths of despair in a very short time. Repeated invasions of their country from both East and West have caused an almost instinctive and deep-rooted suspicion and distrust of foreigners; and a lack of self-confidence that is never very far below the surface. However, our observations and our studies lead us to the belief that we should expect to meet an effective first eleven in the early rounds of any naval contest. Their ships, their weapons and their tactics will perhaps lack sophistication. But they will nevertheless still be formidable opponents for we should not underestimate the moral strength that the Russian sailor will draw from his deep, strong romantic attachment to his mother country. However, if the first eleven can be put aside, the depth in the quality of their personnel is likely to be much less; and our problems will lie in dealing with the sheer numbers of their ships and equipment. Herein of course lies the danger for us of relying too much on the quality of our technology and paying too little attention to quantity in the familiar quality/quantity balance.

We should also recognise the importance of the first blow. The Soviets have the advantage that we will never fire the first shot — and with the modern precision guided anti-ship missiles great damage can clearly be inflicted in a pre-emptive attack. The Soviets have a history of defeat at sea behind them. They have now been taught that both right and might are on their side — and that both will prevail. Early success is therefore of vital importance to their morale. If they achieve it, this will have a disproportionate effect upon their self confidence — and if they do not, then their will to fight at sea may well prove fragile. The implications of the importance which we should attach to the results of the initial exchange are far-reaching. They cover the field of political decision-making during tension, our initial dispositions, our choice of weapons, our choice of tactics, our choice of targets and even our public information policy.

I want also to make brief mention of the Soviet Merchant Fleet. Continually expanding, and centrally controlled from Moscow it provides not only a growing economic threat able to under cut the Merchant Fleets of the West but a worldwide network of readily available eyes, ears and logistic support facilities. At any one time, for example, some 50-60 Soviet tankers are at sea on the North Atlantic shipping routes. Any one of these could be tasked to replenish Soviet Units. Merchant ships in port may be used for damaging or blocking port installations.

However in the very size of the Soviet Merchant Fleet lies not only a strength but a weakness. Every Warsaw Pact ship on the oceans of the world represents a vulnerability through which the West can demonstrate its resolve to the Soviet Union. One more step, our governments can say, and your merchantmen are at risk whether they are in the Atlantic or the Pacific, or the Tasman Sea.

In conclusion, let me turn to some remarks about what we need to do in the face of the difficult position which faces us and which has been described as the growing assault of World Communism. Firstly, I believe we need to recognise the vulnerability of the Western nations in their dependence upon supplies of raw materials and energy. Both their sources and their means of supply are open to the influence of growing Soviet maritime capability used as an instrument of Soviet power.

Secondly, we need to take account of the Soviet perception of the naval balance of global maritime power; and in this balance the contribution of naval forces of maritime countries outside the NATO Alliance are of great importance. I refer of course in particular to the nations of the Southern Hemisphere such as your own and also to Japan which sits in a vital strategic position across the access of the Soviet Pacific Fleet into the wider oceans of the East and South.

Thirdly, we need to ensure that our attention does not become too focused on the needs of one region at the expense of the wider picture. Events in Afghanistan and Iran have inevitably drawn attention to South West Asia. But we should not

become blind to events both favourable and unfavourable to our cause in Southern Africa and in South East Asia. Last year supplies of Soviet arms to Vietnam represented the largest military aid programme from the Soviet Union that we have seen. Increasingly Soviet maritime forces are using the ex US bases at Da Nang and Camhran Bay. For the first time ever we have seen Soviet Bear Foxtrot aircraft operate from bases here outside the Soviet Union.

Fourthly, we need to recognise that the 1980s will see a new kind of Soviet Navy. A Navy that has shifted from a one-shot Fleet for the defence of the Homeland to a Fleet capable of sustained operations in a high threat environment anywhere in the world. A Fleet which appears to place an increased emphasis on bigger ships and upon surface ships, so perhaps to parallel the position of numerical superiority that has already been achieved in the Soviet submarine Fleet. At the present scale of Soviet surface shipbuilding they will be able to add the equivalent of one battle group consisting of an aircraft carrier or a battleship, three cruisers and ten destroyers to their Fleet every three years.

Fifthly, we need to recognise the linkage between all the oceans of the world. Within NATO, should deterrence fail, our success in the battle of the Altantic will be vitally dependent upon our success in the battle of the Norwegian Sea. We must also acknowledge that there is a similar linkage between the other sea areas within the NATO boundary and with the South Atlantic, the Indian Ocean and the Pacific. Sea power today is as indivisible as air power.

And finally, we must do more to awaken the peoples of all our countries to the very difficult situation which faces us. Here we must lead a delicate path between, on the one hand the dangers of talking too much in terms of crisis — for such talk runs not only the danger of aggravating the very situation which we are trying to avoid and may cause some to question whether it is even worth making the effort to defend our freedom — and on the other hand towards saying and doing too little which will be the inevitable cause of our own eventual downfalls. In a report from Moscow dated 22 February 1946, Ambassador George Kennon wrote 'Impervious to the logic of reason, the Soviet power is highly sensitive to the logic of force'. I believe that that is just as true now as it was when it was written in the aftermath of World War II.

Chinese units conducting underway replenishment in the South Pacific during May 1980. The destroyer is a *LUTA* Class built during the early 1970s and broadly similar to a Soviet *KOTLIN*.
— RAAF official photograph

EDUCATING THE GENERAL LIST OFFICER OR THE PURSUIT OF KNOWLEDGE UNDER DIFFICULTIES — A REPLY TO 'MASTER NED'

by COMMANDER A.H. CRAIG RAN

As 'Master Ned' has pointed out (Australian Naval Institute, May, 1980), officer training is one subject upon which each officer feels qualified to comment whether or not he has kept abreast of changing training philosophies and programmes. The validity of much of the opinion voiced in Wardrooms will become even more questionable with the phasing out of the Junior entry into the Royal Australian Naval College. From January 1982, there will be no 'juniors' at RANC and the College will become akin to a University College in a Naval environment. Comparatively few officers, with the exception of Manadon educated technical officers, will have been trained in such an environment, and comment by other than that few is likely to be largely speculative.

There is nothing radical about the change from a partly secondary educational establishment to a wholly tertiary college (RMC Duntroon and the RAAF Academy have been operating as such for years) but it will require some fairly massive changes in the philosophies, practices and internal organisation of the Naval College — perhaps at the cost of some of the more traditional aspects of College life. It therefore appears that the passing of the Junior Entry provides a fine opportunity to review some college operating procedures and it is against such a background that the following opinions on 'Master Ned's' points are offered.

Junior Entry

The passing of the Junior entry is likely to be mourned only by financially strained fathers seeking a prestigious education for their sons, and recruiting officers who may have difficulty finding sufficient numbers of satisfactory candidates to fill a Senior entry. The Junior entry had become an anachronism. It cost the Service a considerable sum as a generator of 'training ineffectives' and it produced no lasting personal benefits or advantages over the Senior entry. As this country has a perfectly satisfactory secondary educational system and as no lasting benefits accrued from the Junior Entry, it is difficult to understand why it lingered as long as it did — perhaps the fact that it unquestionably helped fill the recruiter's books is relevant.

The lingering traditions in the College routine which were originally tailored around the Junior entry do not, as 'Master Ned' pointed out, sit well with the average 18 year old, to say nothing of the more mature officers under training. Philosophically and practically, the time has definitely come to do away with the Junior Entry. The RAN has long outgrown it and, in these days of financial and manpower stringency, cannot afford it.

The passing of the Junior entry is unlikely to ease the chronic accommodation problem at RANC referred to by 'Master Ned'. The main reason is that to maintain sufficient numbers in the training pipeline, the number of Senior Entrants will be increased to equal the aggregate of the Senior and Junior entries, ie, some 120 per year.

THE AUTHOR

Commander CRAIG joined the RAN College in 1959. On completion of training at RANC and later at BRNC Dartmouth he served as a watchkeeping officer in various ships. He was posted for flying training at NAS *PENSACOLA*, Florida in 1966 and returned in 1967 having qualified as a pilot in fixed and rotary wing aircraft. A tour in Vietnam followed in 1968/69 during which he served with No.9 Squadron RAAF and the RAN Helicopter Flight, Vietnam. By way of a complete change, this tour was followed by a posting as Flag Lieutenant to the Fleet Commander. After completing a Wessex Mk 31B conversion in 1971, he spent the next two years in the front lines ASW helicopter Squadron including periods embarked with the squadron in HMAS *MELBOURNE*. In 1974 he was posted to UK for a Sea King conversion course followed by service with the Australian Sea King Flight (UK). A two year posting to the Directorate of Naval Aviation Policy concluded in 1977 with another posting to UK this time for the RN Staff Course. On return to Australia he spent twelve months in command of 817 Squadron before taking up his present posting as Executive Office of HMAS *CRESWELL*.

The only satisfactory means of solving the problem of student accommodation is the construction of a new accommodation block — those who have suffered the rigours of living in the '1915 austerity' style of accommodation found in Cerberus House, the Marine Section flats or the Sickbay cabins, particularly in winter, would doubtless agree.

Topmen

Is the Topman scheme really desirable? When it is considered that recruits for Junior entry sailor training at *LEEUWIN* and apprentice training at *NIRIMBA* are selected against a totally different set of requirements to those applying to RANC entrants, the tip of a problem may be detected. Simply because a young man demonstrates academic competence and promising traits of leadership and personality at those establishments, there is no guarantee that he will succeed as an officer and it may well be unfair, to both the Service and the individual, to invite him to do so. The young man who enters RANC from *LEEUWIN* or *NIRIMBA* has effectively burned his bridges behind him if he finds he doesn't like the prospect of becoming an officer or if he finds he can't cope with the training programme. In such cases, the only courses effectively open to him are resignation on the one hand or withdrawal from training on the other. If, after suffering that trauma, he still wishes to follow a career as a sailor he must re-enlist. The whole process is unlikely to harden a young man's resolve to pursue a naval career.

A workable option would seem to be to allow the young men from *LEEUWIN* and *NIRIMBA* to graduate from those establishments and take their place in the Fleet. Having gained some experience in the ways of the Navy, they would then be in a much better position to judge whether or not they really wanted to be officers. If they did, the avenue is open by way of the SD and SL lists and, from there, to the GL if they are ambitious enough. There are, of course many ex-Topmen who are highly competent, thoroughly professional and, presumably, happy officers but, as a generality, the present scheme probably creates as many personnel problems as it solves, and most of those problems occur at RANC.

HMAS CRESWELL, the Royal Australian Naval College, on the shores of Jervis Bay.
— RAN Public Relations

Direct Entries

The Direct Entry scheme is of great value to the Service as it provides an avenue of recruitment for fully qualified professional (doctors, dentists, lawyers, chaplains, engineers, etc.) people who can ply their professions within the Service with a minimum of additional training. 'Ineffective' time is reduced to a minimum as is academic cost to the Service. The Direct Entry officer who fills a billet may not be as well versed in the ways of the Service as one who has been through the full naval training system but this does not really make him any the less valuable. The finer points of the lore of the Navy will come with experience and, hopefully, the assistance of his fellow officers. One has only to consider the splendid professional successes made by reserve officers — with minimal naval training — during the Second World War, to realise that the ability to perform competently as a Naval Officer is as dependent upon interest, initiative and enthusiasm for the job as it is on a detailed knowledge of Naval lore. Indeed the 'fully-RAN-trained' officer who is impatient and perhaps supercilious about those officers who are not as well versed in the lore of the Navy as he, is indulging in a luxury available only in the peace-time Service.

The proposal by 'Master Ned' that the Direct Entry (DE) officers live and mess with the student body at RANC cannot be supported. The DE officers are older and more mature and sophisticated than the student body and have a completely different outlook. They must take their places in Wardrooms without the benefit of time as a Midshipman in which to make their mistakes. They must, therefore, be allowed to experience and be part of as much Wardroom life as possible while at RANC. The College mess is no place to gain such experience nor is it the place, by virtue of the lack of experience of its members, in which DEs could absorb much useful Service knowledge. The Wardroom fulfils both functions and the present system of accommodating DE officers in the College Wardroom works well within the constraint of time imposed by the four week Direct Entry Officer Orientation course.

Divisional Officers/Divisional Midshipmen

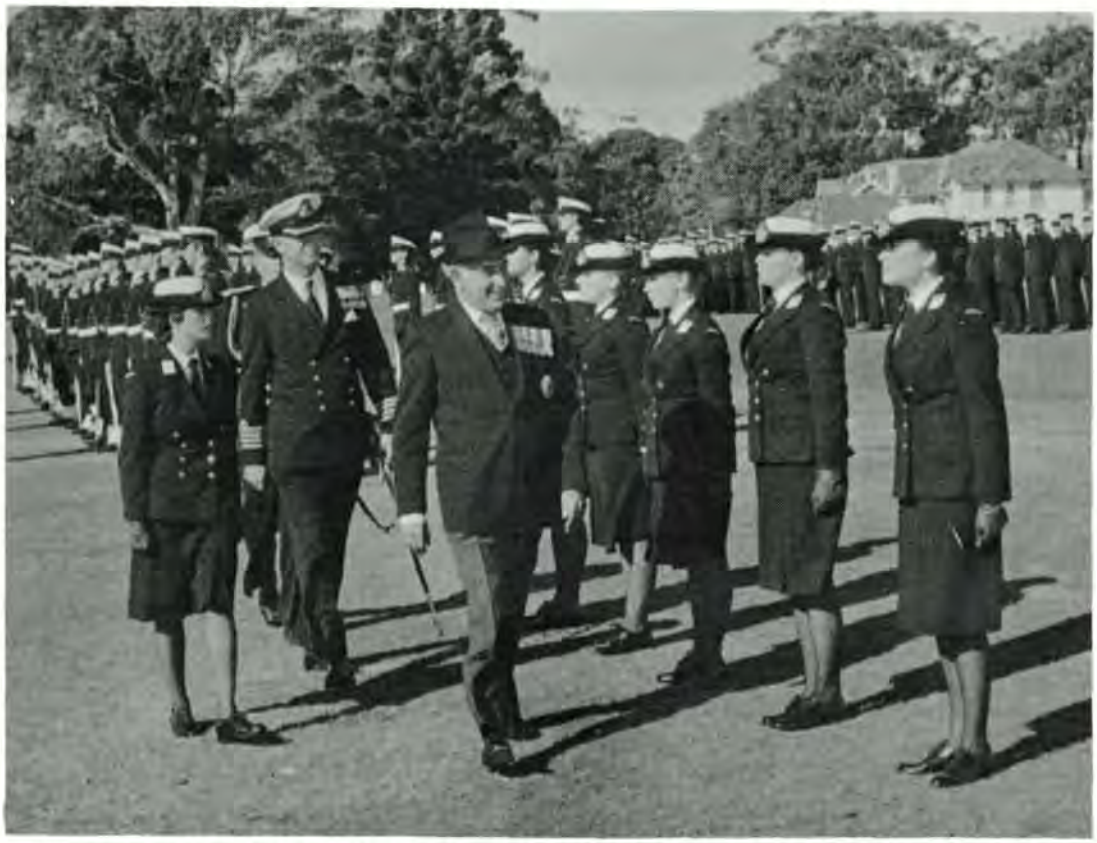
With the passing of the Junior Entry, the increase in degree stream numbers and commensurate reduction in CRESWELL course numbers, a change in the present system of appointing Divisional Midshipmen will be necessary. It may well be that an increase in the numbers of Divisional Midshipmen at the University of New South Wales (or, ultimately, ADFA) may be necessary. Clearly the present arrangement of one Chief Midshipman and four Divisional Midshipmen (DM) at RANC — selected from the CRESWELL course — and one DM at UNSW cannot be maintained when the CRESWELL course numbers reduce, as is projected, in the mid-1980s. The DMs form an integral part of the organisation for the administration of the student body and while the days of the DM as he is now may be numbered, a person who carries out his functions, whether permanently or on a roster, will be necessary in the future.

The proposal by 'Master Ned' that young, unmarried Lieutenants be appointed to live in the College and mess in the College Mess, is unlikely to find favour amongst such officers. One wonders whether the 'dream sheets' from 'Master Ned' reflect his enthusiasm for such an appointment. To return an Officer to the cloistered and comparatively rigid routines of even a future College mess after he has been accustomed to Wardroom life, would be as unpopular as it would be unnecessary. Apart from that, it could well remove from the 'senior year' the valuable experience its members should gain in the regulation and administration of the student body as the temptation to let 'Sir' take charge, and for him to do so, would be great.

The present Divisional Officer system could well be reviewed, not so much from the principle of its operation but from the level of experience of those posted to the billets. Divisions at RANC now number about 75 depending on the courses in residence. The average age of those in the divisions will rise with the passing of the junior entry and with it will increase the complexity of 'divisional' type problems and counselling requirements, quite apart from the administration of the division. A junior Lieutenant may well not have the experience to offer sound counsel to his young men in all the aspects of life and professional matters that are commonly raised. Indeed, in the worst case, he may be beset by some of the same problems himself. Because of the increased age of the student body, it is considered that a junior LCDR would be better suited by experience to fill the billet of Divisional Officer and, as the tasks of divisional administration, lecturing and commitment to College activities are beyond the capabilities of one man, he should be assisted by a mid-seniority Lieutenant and a senior sailor.

WRANS

The training of WRANS Midshipmen at RANC has been a great success. Apart from demonstrating a high level of professional competence and enthusiasm, the ladies have brought to the College an element of grace and charm which has been to the benefit of all.



His Excellency the Governor-General, Sir Zelman Cowen, inspects the first RANC Passing Out Parade to include WRANS Midshipmen — 3 July 1980.
— RAN Public Relations

The eagerness of 'Master Ned' to get the WRANS to sea in HMAS *JERVIS BAY* has, of course, been overtaken by events and the first WRANS officers recently completed a cruise in the training ship.

Time Gained

The abolition of time gained has removed an anomaly from the training system and must, therefore, be regarded as a good thing. The time gained arrangement worked well enough with the training/promotion system obtaining at the time of its inception. Since then, both training and promotion systems have altered significantly. The introduction of selective, and early, promotion to LCDR caused time gained to assume an effect out of all proportion to the original intent. Apart from that, the proliferation of entries, training programmes and career structures had caused the same amount of time gained for the same course to have a different effect on an officer's progress depending upon the career pattern followed. Time gained had outlined its relevance and few are likely to mourn its passing.

Which is not to say that excellence should not have some reward. Clearly it should. In today's pragmatic world, the proposal from 'Master Ned' of a cash bonus could well be attractive. Perhaps a lump sum award of pay at the present rank equal to the time gained (perhaps from the Peter Mitchell fund?) would be appropriate. It would have the advantage of an immediate award for outstanding results without the disadvantage of a disproportionate and/or unequal affect on careers some years after the event.

ADFA

ADFA appears likely to proceed, albeit as a compromise and with almost unseemly haste. This author endeavoured to modify his views by the diligent study of the report of the Parliamentary Works Committee, the Minister's statement in the House on 15 May 1980 and by careful attention to presentations given by ADFA project officers. In spite of these efforts, his views have remained essentially unchanged and the concept and proposed execution generate within him a multitude of deletable expletives — all of which add up to another story.

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Having commented at some length on the main points of the article by 'Master Ned', there remains a need to offer at least one original thought. It concerns the CRESWELL course and the need for it.

The RAN aims to attract, as GL entrants, personnel with the characteristics and aptitudes that put them in the top few percent of Australia's youth. In aiming to attract such people, the Navy is not only competing with the other Services but with industry as a whole, and formidable competition it is. Whether or not we can attract sufficient numbers of sufficient calibre without the Junior entry remains to be seen but it is an unassailable fact that if we are to attract the 'right sort' of people then a training/career package comparable to and, hopefully more attractive than, those offered by industry must be offered — the Navy must actively compete in the labour market.

One of the major drawcards in such a training package is the provision of a studies' programme leading to the award of a good degree. A degree has become the accepted denominator of academic achievement in industry and, if the Navy is to compete successfully then it should offer the opportunity to obtain such qualifications. Apart from the recruiting angle, it is clearly to the Navy's advantage to have well qualified officers.

Which is not to say that there is no place for the 'non-degree' officer. There is and probably always will be, but it is likely that those who rise to the top in future, will hold degrees.

If the degree qualified officer is most likely to rise to the top, where does that leave the *CRESWELL* course as a training programme? Already positive efforts have been needed at RANC to prevent the *CRESWELL* course becoming a 'catch all' of those who have failed to make the academic grade in the degree courses. Clearly, the 'catch all' principle would degrade the credibility and prestige of the *CRESWELL* course. The student body at RANC — a most sensitive barometer in such matters — has already created a gap between the two streams. The unlovely nickname given to the *CRESWELL* course — the 'Creswell Krets' — while etymologically suspect, speaks for itself.

With the passing of the junior entry and the rise of ADFA, some diminution of *CRESWELL* course numbers will occur. As mentioned previously, the projected mid-1980s figures assume some 14 *CRESWELL* course members out of an entry of 120. With such small numbers, is the continuance of the *CRESWELL* course worthwhile? This author is of the opinion that it is not.

Given that the main source of future GL officers will be the degree stream from RANC (and ADFA) and that these numbers will be supplemented as required, and as originally intended, by Supplementary List officers, there seems little reason to continue with the *CRESWELL* course. In future those who wish to join the Navy as officers but do not wish to pursue degree studies, could join as SL officers. Satisfactory avenues exist to allow SL officers who have demonstrated professional excellence to transfer to the GL. There is no reason why such avenues should not remain and provide the opportunity for non-degree qualified ex-SL entrants to rise to high rank on merit. Degree holding officers may well have an advantage, but this would hardly be unfair as there must be some reward for endeavour. Such a scheme would reduce the number of officer entries and streamline the academic and professional training organisations at RANC. It might also destroy the 'elite' concept of the GL but that is another argument.

As a final thought, some consideration should be given to the types of degrees pursued by the GL entrant. Clearly the technical officer requires a technical degree and a science degree is appropriate for seaman officers with a bent towards those subjects. What does not seem appropriate is the requirement for the majority of the remaining seaman and supply officers to undertake an Arts degree which is, in many respects, a science degree undertaken in the Faculty of Arts. This situation presumably came about from the perception that the Navy was becoming increasingly technical and therefore subjects without a bearing on the technicalities were inappropriate. This may be more or less true during an officer's junior years but as seniority mounts and 'policy' jobs become more frequent, a sound grasp of such subjects as Government, History, Economics, Psychology and English, to name a few, could only be advantageous — those who have been thrown off the deep end to draft, and cost, a Naval Staff Requirement would surely agree. In short, there seems to be merit in allowing officers to study for a true Arts degree. Heaven help us if the Navy has, or is likely, to become so technically orientated that no room exists for the officer who is well qualified in the Humanities.

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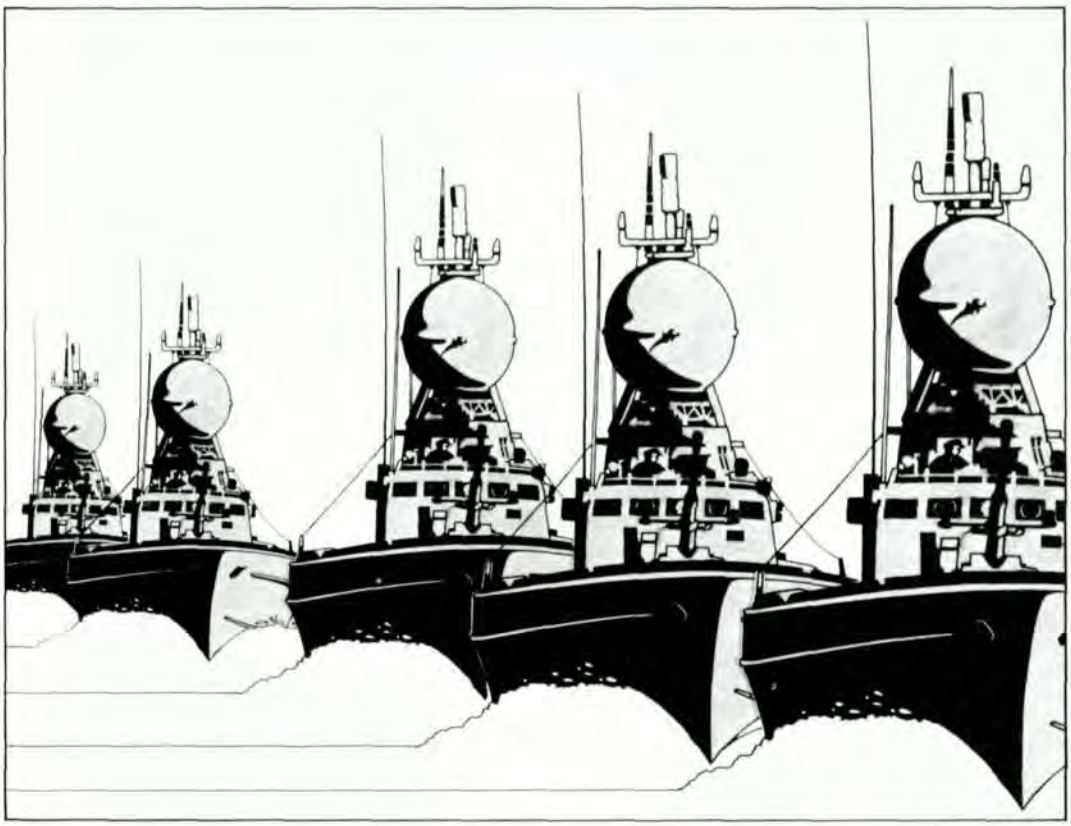

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THE DEMANDS ON LEADERSHIP IN THE NAVY OF THE 1980s

by Chief Petty Officer L.J. Laub

'All training at all levels has a duel object, to develop us all as leaders of men and followers of leaders'.
The Armed Forces Officer, US Dept. of Defence 1950

Leadership manifests itself in every aspect of human endeavour, whether it be industry, politics, the Armed Forces or organised crime. The individual leader in each case, has certain qualities which are unique to his field and a number of other attributes which are common to all fields.

All leaders have the courage and the will to exercise their leadership. They command themselves to command others. 'He who seeks responsibility and fulfils it is a successful man of action.'[1] Such men are found at the head of any organisation, large or small. Again, leadership is invariably exercised by those who have the power to enforce their will, whether this power is derived from the nature of their position, the authority of military rank or the dynamism of their personality. However, effective leadership will only result if the leader is a man who can be looked up to, whose personal judgement is trusted and whose intelligent approach inspires confidence. He invariably speaks the language of his followers and communicates his wishes clearly and succinctly. Leadership 'is a battler for the hearts and minds of men.'[2]

The most successful leaders of today and tomorrow must understand, predict and control the behaviour of their men. To be truly successful, they will wish they had the understanding of a psychologist, the compassion of a military Chaplain and the patience of Job. Of course most leaders are less than perfect but they should know something about the behaviour of the individuals and the group they are required to lead.[3]

Leaders and Followers

It has long been known that every order has a different effect on each individual and as a result each man responds differently. These individual reactions have been said to be the products of individual experiences, environments as well as ancestry and 'needs'.[4]

Psychology tells us that we can use the construct of 'need' in accounting for human behaviour. (Some prefer the words 'drive' or 'motive' but the notion is the same.)

There are at least five basic needs which appear in all people (in varying degrees) and it is the drive for the fulfilment of these needs which produces behaviour. Unfortunately few other needs are universal[5] apart from hunger, thirst, the need for sleep and other metabolic requirements. Self-preservation, aggressiveness, self-assertion, love and hate appear as strong drives in some people and not others. This is no doubt why some people will fight for any cause and others will not fight whatever the cause. One of the most difficult tasks in being a leader is to find which need is strongest in that individual and acting on it[6]. This approach can be used to great

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Chief Petty Officer Laub was born at Pocking Refugee Camp, Germany, in 1945 and migrated to Australia in 1949/1950. He was educated at the Christian Brothers College Adelaide and joined the RAN as a Junior Recruit in 1962. He trained as a Dental Assistant and Dental Hygienist. An instructor at the Dental School 1969 to 1979 (apart from brief sojourn to sea in 1974) he is currently an instructor at the RAN School of Training Technology. During 1975 he completed the Services Certificate of General Education and matriculated (HSC Victoria) after two years night school in 1977.
In 1978/79 he commenced studies toward a BEd Degree at SCV Frankston (part-time) and transferred studies to Deakin University Geelong (off-campus) in 1980. Currently in final year of an Arts Degree Course and majoring in History. CPO Laub anticipates graduating in July 1981.

'Man, not men, is the most important consideration.' — Napoleon I: Maxims of War, 1831
— Defence Public Relations photograph

effect on those men who are moved by tradition, patriotism and other strong ideals.

There is no single 'need' which can identify a potential leader. Researchers have shown that ownership of fifty-one per cent of the stock in a company may be as useful as experience, training and knowledge of the job.[7]

Finding Leaders

There was a time when it was widely believed that leadership development in the Navy was an automatic process requiring little attention. It was probably felt that the normal operation of a complex military structure would allow the cream to rise to the surface. It would be seen, scooped off and processed whenever it was required. Naval management only needed to provide the conditions which permitted the cream to rise.

A different approach was suggested by Field Marshal Montgomery:

> 'Leaders are 'made' — rather than born. Many men who are not natural leaders may have some small spark of the qualities which are needed; this spark must be looked for, and then developed and brought out by training'.[8]

The Navy and most industrial enterprises clearly understand the value of identifying and training leaders and it would be most unusual to find even a medium sized organisation which did not have a management/leadership programme and the staff to administer it.

Concern with leadership is as old as recorded history. Plato's *Republic* speculates about the proper education and training of leaders and most political philosophers are still venting their feelings on the subject.[9]

Leadership has been a special concern in democracies which, by their constitution cannot rely on a hereditary nobility to rule as an absolute monarch. The recruitment of national leaders and their cabinets relies largely on the aspirations of a potential leader and an assessment of him by the voting public. Where there is no hereditary aristocracy, every man is a potential leader and society has to give thought to the identification and proper training of men who will guide its institutions and lead her citizens.

This concern with leadership has become considerably more acute in the Navy during the last fifty years. Modern weapons and sophisticated electronic technology require an increasing degree of coordination and specialization. One man can no longer master all the skills which may be required to run the Ship. Teams of specialists must somehow be coordinated and made to work for a single goal. This requires a unique form of leadership.

The Leader and His Men

The leader of a task group interacts with his members through his relations with them as individuals and through his organizational role. This will always allow the leader to influence morale as well as performance.

The Captain, the Divisional Officer, the Senior Sailors and even the Able Seaman in charge of a passageway, all play some part in the adjustment of a Sailor in his relations with him. This is particularly true in real-life Naval situations in which the individual's career, life or safety are at stake.[10] To be liked and accepted by a powerful figure represents security, a sense of achievement and a feeling of well-being to a young sailor whose control over his fate may be relatively weak. The Naval leader should not only concern himself with his job but also his men as one affects the other.

The adjustment of civilians to Service life affects their entire future. Clark shows some insight into the effect that a good leader has on his men and the job that they do. An American GI in Korea describes his Corporal:

> 'He's easy to talk to. He listens to our gripes and helps set things straight. He helps me write letters. I couldn't ask just anyone to do that, but with him, I don't mind. He stands guard with the new guys and they just forget the jitters. He just seems to understand things.'[11]

The NCO mentioned in this statement illustrates that good leadership means far more than standing out front and giving orders.

Recent research indicates that there are at least four variables involved in good leadership. These are:

- the characteristics of the leader;
- the characteristics of the followers;
- the nature of the organization; and
- the social, political and economic milieu.[12]

This is an important research finding because it means that leadership is not only a property of the individual but interaction of a number of variables. Because leadership is not dependent on one specific trait, it follows that leadership potential is more broadly distributed within the population than previously thought.[13] It does not follow that everyone can be a leader in every situation but it does seem that almost everyone has a leadership niche somewhere.

The relevance for the Navy of the 1980s is that leaders should know that they cannot expect the same results in each posting because the variables affecting their role will be different.

The second finding is that all these variables change with time. This makes it almost impossible to predict the personal characteristics of our future leaders even if we know what they will be

doing.[14] The answer seems to be to create a heterogeneous supply of human resources from which individuals can be selected to fill any number of future leadership roles. A broad spectrum of individuals from diverse backgrounds would seem in order. Graduates in Arts, Social Sciences and Economics may turn out to be more useful than electrical engineers. Among the junior ranks, personnel with agricultural backgrounds could be more important than tradesmen.

The selection of candidates for future leadership positions may also require a second look. Recruitment and selection of leaders has traditionally followed the premise that high academic achievement was an indicator of intrinsic leadership potential.

Since no other real barrier (apart from education) was placed in front of a candidate, it followed that someone with educational ability would make a good leader. This is not necessarily true. Some of history's greatest military leaders have been less than intellectual giants. The Civil War General, U.S. Grant was (posthumously) found to have an IQ no greater than the average adult entry Naval Recruit of today.[15]

Intelligence and Leaders

Intelligence tests have been useful tools in predicting academic potential but there is no reason to suppose that they help in predicting leadership potential. Memorising ability has little in common with resourcefulness, ingenuity and the like.[16]

In studies of leadership performance in various military units (tank, bomber and gun crews plus infantry and engineering combat units) researchers concluded that they could find no correlation between the leader's intelligence and the results of the men he lead.[17, 18] It would therefore be logical to select future leaders on criteria other than intelligence.

In the past, it was assumed that previous leadership experience was an indicator of future performance. 'Good leaders' were thought to come from the best schools, a military background and had probably excelled in the Boy Scouts and Cadet Corps. Again, this premise was found to be false.[19] To further confuse the issue, another study of Naval Officers showed that those who were rated most likely to succeed during their training did not. A further survey proved that efficiency ratings for sea duty varied enormously from the efficiency ratings for shore service.[20]

One must conclude that the direction taken by research indicates that the Navy of today is selecting tomorrow's leaders by less than satisfactory means. Still, there is no reason to expect that the quality of future leadership will be less than in the past. It seems that good leaders will always manage to achieve positions of leadership in spite of the selection methods.

Tomorrow

One of the more interesting recent developments is the movement toward the scientific study of the future. Alvin Toffler's prophetic *Future Shock* is one of a long line of books which have sought to predict tomorrow's world and the accelerating pace of change invites others to follow suit.

The Hudson Institute in the USA has attempted to forecast the future by projecting current trends into tomorrow. Its assessment of the world of the 1980s is that there are long-term trends towards:

- an increasingly sensate culture — the erosion of traditional taboos and values;
- a decline of elite groups;
- an increasing accumulation of knowledge;
- institutionalization of technological change;
- world wide industrialization;
- increasing capacity for world wide destruction;
- increasing affluence and leisure;
- zero or minimal population growth;
- increasing urbanization;
- increasing interest in environmental issues;
- increasing importance of higher education;
- increasing literacy;
- clear, future thinking;
- innovation and rationality; and
- an increasing tempo of change in all the above.

The two points which stand out from this list are an increased capacity for mass destruction and the increasing importance of a university education. It was only these two points which were absent from the list of problems facing our grandfathers and no doubt their grandfathers as well. It is my belief that the future will be not much different from the world of today. Science is obligated to the maintenance of our current standards and a dramatic change in the next ten years is unlikely. *The leader of the 1980s will not face totally alien situations which cannot be recognised as descendants of today's world.*

The Navy

Organizations inevitably change because they are open systems in constant interaction through the input and absorption of information. Considerable information has been focussed on the need for organizations to adapt to changing conditions. It almost seems popular to stress the importance of change without any care for stability as a whole. Any organization must maintain enough stability to function in a satisfactory manner and still keep an open mind about innovation and change. A realistic view is that stability and adaptation are essential to survival and growth in the future.

Tomorrow's leaders are charged with the responsibility for maintaining a dynamic equilibrium by foreseeing situations and designing

adjustments so that guidelines exist to cope with these new situations. Given the dual goals of stability and adaptation, some resistance to change can be expected. Few changes of any magnitude have not had opponents (the greater the change, the more the opponents) and it seems the greatest opposition comes from social change rather than technological change.[22] One of these major social changes has been a desire on the part of everyone to have greater influence. There seems a continuing decline in the gap between organizational elites and lower level participants. In formal organizations, there appears to be a move toward 'power equalization' with all members having greater influence on internal affairs. Organizations like the Navy will place less emphasis upon a hierarchical structure and will move toward a more equalitarian system. It is even likely in the not too distant future that a major symbol of stratification, the salute to the superior will be unceremoniously discarded by the military Services.[23]

The Navy has proved over the past eighty years that it is effective in accomplishing the many tasks given it. It has assimilated technology as quickly as it was presented yet it retained the same social structure it inherited from the last century.

1980 to 1990

As more human activities are taking place within the Navy, the role of its leaders has also expanded. There has been a significant increase in the number of technicians and specialists. It will be the role of the future leader to co-ordinate and unify the various specialties around him and weld them into a fighting unit. His task will not become easier; it will be more difficult because it will be more complex. Some writers suggest that organizations are approaching such complexity that they are on the verge of becoming unmanageable. With the growing complexity of this technological age it appears that this will only happen if traditional, bureaucratic approaches to leadership are used.[24] Many of the old notions of leadership were adopted for standardization and the maintenance of a hierarchic status quo. With a more dynamic environment and the need for flexibility, new leadership systems have developed which emphasize a more effective utilization of expert knowledge at all levels. Communication networks no longer lead up but have lateral and diagonal networks. There is increasing reliance on group decision making processes, a project or team approach and the expansion of self-regulating, participant systems among members of teams. Leaders, will be the knowledge workers of the future.

The increasing importance of these 'knowledge workers' will create some unusual problems of obsolescence in the future. When leadership skills were polished with experience it was assumed that the longer the service, the better the leader. This is one concept which is rapidly changing. Leadership has become dependent on new knowledge of operations and techniques which cannot be learned by experience. It is highly unlikely that any formal program of education can be developed which will carry a leader through his whole career and it will be necessary to continually re-educate men.

More post experience programs will be developed for training leaders in the complexities of future life. In short, the Naval leader of the 1980s will deal with men and equipment. He will integrate both to accomplish the dual goals of technical efficiency and human satisfaction.

NOTES

1. *Naval Leadership*, US Navy, Annapolis, 1949, page V.
2. Field Marshal The Viscount Montgomery of Alamein, K.G. *The Path to Leadership*, Collins, London, 1961, page 233.
3. CFP 131 (1), *Leadership Vol 1*, National Defence HQ, Canada, 1973, page 2-1.
4. H. Leavitt and L. Pandy (Ed), *Readings in Managerial Psychology*, page 6 (A.H. Maslow — *A Theory of Human Motivation*), University of Chicago Press, USA 1967.
5. M. Rokeach, *The Nature of Human Values*, The Free Press, New York, 1973, page 21.
6. A.K. Rice, *Learning for Leadership*, Tavistock Publications, London, 1965, page 11.
7. W.L. Warner and J.C. Abegglen, *Big Business Leaders in America*, Earper and Row, New York, 1955, page 1.
8. F.M. Montgomery, *Op Cit.*, page 11.
9. L. Morrow, *A Cry for Leadership*, Time, August 6th, 1979 page 26.
10. D.McK. Rioch (Ed), *Symposium on Preventive and Social Psychiatry* (S.L. Marshall, *Combat Leadership*), Walter Reed Army Institute, Washington, 1958.
11. R.A. Clark, *Leadership in Rifle Squads on the Korean Front Line*, HRRU, No.2, CONARC, Fort Ord, California, 1955.
12. D. McGregor, *The Human Side of Enterprise*, McGraw Hill, London, 1960, page 182.
13. *Ibid.*, page 185.
14. D. Cartwright (et al), *Group Dynamics Research and Theory*, (3rd Ed), Harper and Row, New York, 1968, page 302 to 304.
15. L. Terman and C. Cox, *Genetic Studies of Genius*, Stanford University Press, USA, 1955.
16. Office of Strategic Services, (Oss) *Assessment of Men*, Rinehart and Co., New York, 1958, page 266.
17. L.R. Anderson and F.E. Fielder, *The Effect of Participatory and Supervisory Leadership on Group Activity*, *Journal of Applied Psychology*, 1974, Vol.48, page 227 to 236.
18. M.E. Shaw and J.M. Blum, 'Effects of Leadership Style on Group Performance as a Function of Task Structure' *Journal of Personality and Social Psychology*, 1966, Vol.3, page 238 to 242.
19. M.F. Petty, 'Leadership Selection and Training' *Defence Force Journal*, Dept. of Defence, No.10 May/June 1978 page 48.
20. J.C. Flanagan, 'Critical Requirements, A New Approach to Employee Evaluation' *Journal of Personnel Psychology*, 1949, Vol.2 pages 419-425.
21. H. Kahn, *Trends of the Future (In Management of Information and Knowledge*, Committee on Science and Astronautics), US House of Reps., 1970, page 26.
22. Kast and Rosenzweig, *Organization and Management — A Systems Approach*, McGraw Hill, USA, 1970, page 583.
23. *Ibid.*, page 615.
24. B. Gross *Organizations and Their Managing*, The Free Press of Glencoe, New York 1968, page vii to viii.

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A NEW TREND IN SOVIET NAVAL DEVELOPMENT

by Michael MccGwire

The new classes of surface warship which will begin delivery to the Soviet navy in the early 1980s, provide evidence of a sharp increase in the allocation of resources to naval construction. A large part of the increase stems from the regular-procurement-planning process approved at the 24th Party Congress in 1971, and reflects a reappraisal of the navy's wartime mission and the need to adopt new operational concepts. However, a sizeable fraction of the increase appears to have been authorized 'out-of-plan', in response to the navy's argument that its capabilities would still be inadequate to meet these new requirements. This increase in the allocation of resources has been accompanied but *not* caused by significant developments in the basis of Soviet naval policy, reflecting a marked rise in the importance of the navy's strategic role in war and a growing appreciation of its potential as a peacetime instrument of policy. Meanwhile the navy's political influence within the defense establishment has steadily increased, although the debate over the role of seapower in Soviet state policy still continues.

These developments do not suggest a change in underlying defense policy, nor do they indicate a greater willingness for war within the West. They do, however, provide further evidence of the seriousness with which the Soviets take the possibility of such a war and their readiness to fashion their forces accordingly. Meanwhile, the emergence during the next 10-15 years of a powerful soviet fleet with a true world-wide capability will provide the leadership with an important new instrunment of policy in peacetime. The implications of these developments are best understood if set in a wider context.

Contemporary Soviet defense policy stems in large part from a range of decisions taken during 1961. These involved a reversal of much of Khrushchev's new policy announced in January 1980 and were largely a response to the rapid build-up of both strategic and conventional forces announced by President Kennedy shortly after taking office in 1961. From the Soviet viewpoint, a significant aspect of these American initiatives was the apparent shift in U.S. emphasis from land-based to sea-based strategic nuclear strike systems, since the latter could be withheld from the initial nuclear exchange and used to influence the subsequent stages of a war. Given the Soviet doctrine of deterrence through the possession of a warfighting capability, this had major implications in terms of the navy's roles and missions. First, the Soviet Union would need a matching sea-based nuclear strike capability to contribute to the national strategic reserve. And second, it would have to develop some means of countering these Western systems, in part because of the relationship between the reserves of two oppon-

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This article draws on a much longer and more general paper, 'The Rationale for the Development of Soviet Sea Power', published in the May 1980 issue of *U.S. Naval Institute Proceedings*.

ents, but also because these sea-based systems could be used to deny Russia the use of Europe as an alternative socio-economic base in the post-exchange phase of a war.

There were three possible ways of directly countering Polaris (as distinct from attacking its C^3 system); area exclusion, trailing and ocean search/surveillance. The last two would require the development of new systems, but a start could be made on the incremental process of excluding Polaris from the more threatening sea areas, by trying to raise the probability of their detection to unacceptable levels. This would involve an extension and elaboration of the operational concepts which had been successfully developed for the defense of the offshore zone, but would require additional, purpose designed ASW forces. This explains the Soviet navy's shift to forward deployment in the early sixties, which took place in two stages. The initial response (lasting 5 years) extended the outer defence zone to the 1500 n.m. circle from Moscow, which covered the threat from carrier strike aircraft as well as the early Polaris systems and took in the Norwegian Sea and the Eastern Mediterranean. The interim response, starting in 1967/68, began the slow process of consolidating the newly established defense zones, while extending the area of naval concern to take in the 2500 n.m. circle of threat; this included the eastern half of the North Atlantic and the northern half of the Arabian Sea. There was a progressive build-up in the number of ships on forward deployment and in ship-days deployed until 1972/73, when both levelled off.

Meanwhile, the major emphasis in surface ship capabilities was switched from anti-carrier to anti-submarine systems, in part by the major conversion of two existing classes (SAM *KOTLIN* and *KANIN*) and in part by modifying the design of new construction programs, one currently building and the others projected. For example, the 12 ship *MOSKVA* program was cancelled (because the ship was too small to be operationally effective in

Soviet 'Charlie' class cruise missile submarine (SSGN). Displacement 4300 tons surface, 5100 submerged. Speed 30 knots approximately submerged, 20 surface, 8 missile tubes for SS-N-7 system. Charlies are deployed worldwide for potential anti-carrier battle group operations.

the new concept), and its weapon systems were used to switch the *KRESTA* program from anti carrier (*KRESTA I*) to anti-submarine (*KRESTA II*). The *MOSKVA* was replaced by the *KIEV* ASW carrier, at twice the size.

As originally planned, it was probably hoped that ten years would be sufficient to develop a range of measures which, beginning in 1972/73, would allow some kind of final response to Polaris along all three lines of attack. However, not only were these hopes unduly optimistic, but other developments had meanwhile prompted a shift in operational priorities.

The most significant were the press reports in 1967-68 that the U.S. Navy was intending to develop two new classes of submarine for operations against Soviet SSBN, one very fast and one very silent, which would enter service in 1973-74. This was just about the time the Delta class would become operational, and had major implications for the Soviet decision to embody a substantial part of the nation's strategic reserve in their SSBN force. It focused attention on the force's security and led to the concept of deploying the submarines in defended ocean bastions in the Greenland and Barents Seas and in the Sea of Okhotsk. Meanwhile, as more anti-submarines systems became available to the Soviets in new surface ships, submarines and aircraft, it must have become increasingly clear that these traditional methods had inherent limitations against Polaris. This led to a shift in ASW emphasis away from the Eastern Mediterranean and Arabian Sea, to extending the inner defense zones of the Northern and Pacific Fleet areas and to providing them with watertight defenses.

The shift in operational priority to protecting the SSBN bastions generated a fundamental change in the design criteria for distant water surface units. Previously, the emphasis had been on the capability to weather a preemptive attack long enough for them to be able to discharge their primary mission of striking at Western carriers and Polaris submarines, after which they were expendable. However, the security of the SSBN bastions now had to be ensured for the duration of a protracted war, generated fundamental changes in naval design criteria. Surface ships therefore had to be capable of the sustained operations needed to gain and maintain command of a large sea area such as the Norwegian Sea, and this required long endurance, large magazine loads and an underway replenishment capability. Establishing command would be facilitated by seizing key stretches of coast and in the Pacific this probably involves the Japanese side of the two southern straits which give access to the Sea of Okhotsk, and could extend to the whole northern coast of Hokkaido. In the Norwegian Sea, the requirement may include key islands as well as stretches of the Norwegian coast.

A contemporary development which reinforced the pressure for more capable distant water surface units was the increasing possibility of war with China, generating a requirement to be able to supply the Far Eastern Front by sea in the likely event that the Trans-Siberian railway were cut. These shipments would need protection, and the threat of attack reached back to the north-western part of the Indian Ocean, where it could be posed by Chinese submarines using friendly bases, by U.S. forces, or even by regional navies.

To meet these new requirements, it was decided that the follow-on classes to the *KARA* and *KRESTA* programs (which would be due to begin delivery in 1980) would be some 25-30 percent bigger, providing greatly increased combat endurance. A scaling-up process was also applied to the amphibious program the *POLNOCNY* size being dropped from the inventory, the *ALLIGATOR* size (*ROPUCHKA*) carrying on, and a much larger ship, the *IVAN ROGOV* class, being added. The latter and the new *BEREZINA* class of underway replenishment ships are notable for being relatively heavily armed with self-defense systems, reflecting a new emphasis on being able to survive in a hostile environment.

These follow-on classes would all be built within the navy's existing allocation of shipyard facilities. However, a completely new type of ship was included in the surface program, a heavily armed battle cruiser, which would be able to provide the command facilities which had been found so necessary to forward deployment and which would be essential in a protracted war. This addition to the program required the return to naval use of construction facilities which had been turned over to civilian construction in the mid-fifties.

These new classes appear to have been included in the 9th Five Year Plan which was approved at the 24th Party Congress in the spring of 1971. However, despite the substantial increase, the navy did not consider that this would be sufficient to meet the new demands being placed upon it, and took its case to a wider audience by means of the articles in *Morskoj sbornik* which have become known as the Gorshkov series. This debate had other ramifications which will be touched on later, but a major strand concerned the importance of general purpose forces, particularly in the submarine support role, and the need for a greater diversity of surface ship types, whose characteristics should provide for long range at high speeds. The in-house argument would have focused on the specifics of the threat to the Soviet SSBN. The direct threat would come from the U.S. attack submarines, but the latter's success would depend on the suppression of Soviet ASW defenses by supporting US surface forces. The Soviet navy would have had to assume that U.S. carrier groups would be

Soviet 'Victor' class fleet submarine. Displacement 3600 tons surface 4200 submerged. Speed 30 plus knots submerged, 26 surface. 8 21 in torpedo tubes. Designed as an attack submarine for both anti-submarine and anti-shipping roles, some Victors are deployed in the Pacific Fleet.

deployed in support of their SSN, whereas Soviet shore-based air would cease to be available after the initial exchange. Without the air component, there would be no certainly that the Soviets would be able to prevent the carrier groups from penetrating the outer defense zones. It would be assumed that the U.S. carriers would seek to establish command of the surface and the air, denying their use to Soviet ASW forces, that they would harry the defending SSN, and they might even become directly involved in hunting down Soviet SSBN. If the Soviet navy was to prevail against this kind of force, it would need a comparable capability, including effective sea-based air.[1]

Presumably, it was the inherent plausibility of this scenario which allowed the Soviet navy to win at least part of its case. By mid-1974, an additional class of surface ship, comparable in size to the *KRESTA* replacement had been added to the plan, allowing for task specialization between classes. It may also have been at this stage, when SALT was in place, that it was agreed to give the new battle cruiser class the capability for long range at high speed by appropriating nuclear propulsion plants earmarked for the SSBN program. More important, it appears that authority was given to go ahead with the design of a large air-superiority carrier, which would enter service in the second half of the eighties.

The new surface ship programs represent both an increase in the number of ocean-going warships delivered each year and in the size of the various ship types. The end-product will be a much more powerful fleet, with a greatly enhanced general purpose capability. And this is taking place at a time when the navy's political standing has markedly increased and the role of seapower in Soviet policy is being reevaluated.

Evidence that a fundamental shift in the theoretical basis of Soviet naval policy may be underway is provided by the reviews of the book *Seapower of the State*, published under Admiral Gorshkov's name in 1976. Authority to produce this book was a byproduct of the debate over the navy's role in war and peace. While it restated much of the material published in the Gorshkov series, the book was about three times as long, its scope was much broader and included an extensive discussion of the ocean and the non-military aspects of seapower, a subject which was treated very cursorily in the articles. The book was well received and the tenor of the reviews is exemplified by Marshall of the Soviet Union Bagramyan's comment in *Izvestiya* that for the first time in Soviet literature, the author formulates the concept of seapower as a scientific category. This judgment is echoed by other reviews, all of which stressed the book's contribution to military science and noted that the role of maritime power had, for the first time, been given a scientific formulation. This does not mean that all the ideas in the book have been fully accepted, but it does

imply that the concept is now established in the mainstream of Soviet analytical discourse and (to quote Admiral of the Fleet Lobov), 'the book will be an important source for developing a correct viewpoint of the seapower of the state'.. This is significant, because up to now Soviet theorists have had an ideological aversion to the concept of seapower, which they equated with Mahan, capitalism and colonialism. Just as Keynes' General Theory legitimized the idea of deficit financing and induced a shift in Western national economic priorities, so may this scientific formulation engender a shift in Soviet perceptions of the navy's role in war and peace.

But the book is not just an expose of the role of seapower in the contemporary world, but part of a continuing argument about naval missions and the allocation of resources, one in which the navy has been notably successful. During the decade the naval position has evolved from defensive advocacy, to a more rounded discussion of the importance of the ocean and of seapower in a broader sense, to challenging the primacy of the continental theatres of war. In the articles, Gorshkov was careful not to attack the army-dominated military leadership directly. In the book he challenges them through his criticism of Napoleon's failure to make effective use of the French navy. This failure was not due to Britain's maritime superiority, but to Napoleon's one-sided strategy, which stemmed from his preoccupation with operations in the land theatre and his lack of understanding of the navy, his disregard for its capabilities in war, and as a result, his inability to use it in a struggle with a naval power. The book also emasculates the new doctrinal priority given to the army-inspired mission of fleet against shore by defining it so as to encompass almost all forms of traditional naval operations. The generally combative tone is preserved in the second edition, and extended to challenging the Soviet dogma that military operations in the continental theatres will be decisive throughout a future war, and to arguing that at certain stages the oceanic theatre will inevitably take precedence, with all that implies in terms of tasking the other branches of service.

Further evidence of the navy's increasing political clout is provided by the procedural trappings of the ongoing debate. The initial argument was deployed in the navy's own journal during 1972-73 as some 54,000 words spread over 11 issues and 13 months, and ran into problems with the military censors. Three years after the argument had been extended, improved and restated in a book of 151,000 words, which had an unusually large printing of 670,000 copies and was brought out ahead of schedule to meet the political deadline of the 25th Party Congress. Within four years a second 70,000 word edition had been published, which was one-eighth longer and included a new section which further extended naval claims. The military publishers categorized the first edition of the book as being for the military reader; the second edition is specifically for admirals, generals and officers of the Soviet Army and Navy. And as a final mark of approval, three of the contributing authors were promoted between the first and second edition, two to Vice-Admiral and one to Rear Admiral. Tangible evidence of the navy's improved standing is also provided by the out-of-plan addition to the regular procurement planning process. There is a world of difference between the way in which the ill-conceived cruise missile solution was imposed on the navy in the mid-fifties, and the successful argument about naval requirements in the mid-seventies. The debate is still in progress and there are bound to be strong institutional interests which feel threatened by this steady rise in the navy's relative importance. However, even if the navy's political advance is now checked, substantial gains have already been achieved.

Whatever the outcome of the political and theoretical debates, the Soviet Union is now committed to building a new kind of navy. In the past, the Soviets have been mainly successful in holding down the growth in size of successive classes, and for several decades the parameters of the main ship types have remained roughly constant, most notably the destroyer-sized type at about 3,500 tons and the escort-sized type at about 1,200 tons, and it was analytically useful to make use of those categories. However, some two or three years ago, the Soviet navy redesignated the destroyer-sized *KRIVAK* as an escort ship and at the same time altered the type-designation of various other classes to reflect a distinction between anti-submarine and anti-surface capabilities. Bearing in mind Gorshkov's original argument that all-purpose ships had never proved successful, plus press reports that of the two smaller new cruiser classes, one will carry anti-surface systems and the other will be primarily ASW, it seems likely that these redesignations presage the future structure of the fleet.

On this assumption, when looking to the nineties it is useful to think in terms of four main sizes of ship, with the type-designator indicating the general role: a battle cruiser size; a cruiser size of about 12,000 tons; a destroyer size of about 8,000 tons; and an ocean-escort or frigate size of about 4,000 tons. I assume that the battle cruiser and cruiser sizes will have a general purpose capability and that only one class of each will be built at the same time, whereas there will be at least two classes of destroyer size ship under construction, each optimized for different aspects of maritime warfare. The destroyer-sized ships will be able to operate as fleet escorts, whereas the frigate-sized will lack the long range anti-air and surface systems required for such a role. It is not suggested that this categoriziation will apply

immediately, but this could be the general fleet structure by 1990, at which date the present inventory of anti-submarine and anti-surface ships will be obsolete or obsolescent, except for the *KARA* and *KRESTA II* classes, both of which would be treated as destroyer-sized types.

What sort of numbers are we talking about? Counting only those ships which were built or converted after 1957, but using the former categorization of types (where the cruiser size is around the 8,000 ton mark), at the beginning of 1980 the Soviets had about 27 cruiser size ships (*KYNDA, KRESTA, KARA*), about 60 destroyer size ships (including *KRIVAK*), and about 100 escort size units. They also had two modified Sverdlov command cruisers and four air capable ships (two *MOSKVA* and two *KIEV*). By 1995, allowing a 25-year life cycle and using the new categorization, we could expect about 15 cruiser size ships, 65 destroyer size (including *KARA* and *KRESTA II*), and 55 frigate size ships(*KRIVAK* and successor). There would also be five battle cruiser/command ships and perhaps seven or eight air capable ships, comprising two *MOSKVA*, four *KIEV* and one or two new type large carriers. To put it another way, every three years the Soviet navy will acquire a powerful new battle group comprising a heavily armed battle cruiser, three cruisers, and about 10 large destroyers. The first three or four of these battle groups will rely on a *KIEV* to provide a modicum of sea-based air support, but thereafter we might expect to see one fully capable air-superiority carrier for every two battle groups.

On the submarine side, the picture is obscure. Past patterns of production implied that a new family of submarines were to be expected to begin delivery in 1978. Instead, we are now into the thirteenth year of the Victor, Charlie and Yankee/Delta programs. This suggests that there have been changes in the original plans and/or delays due to technological problems. We have yet to get a proper understanding of the current production cycle, but the general impression remains one of expectation.

U.S. statements indicate that the delivery of nuclear submarines has dropped from ten to seven a year, and that missile tubes are being removed from the Yankees. This suggests that SSBN production is now running at three a year, and in measure as new SSBN join the fleet, Yankees are being converted to attack submarines, the ballistic missile force remaining within the SALT I limit of 62 hulls. It is not clear, however, whether the Delta program (or some derivative) is continuing or whether it is being replaced by a Trident-sized Typhoon class, but the general implication is that by 1987 the force could still stand at some 60 submarines carrying 950-1050 missiles. Allowing a 25-year hull life, the Soviets may have planned to stabilize their force by the end of 1992 at 1200 missiles carried by 60-75 SSBN.

The picture for attack submarines is even more confused. If past building rates persist and the Yankees are indeed converted to attack submarines, this would mean that seven attack units would join the fleet each year, compared to about

'MOSKVA' class helicopter cruiser commissioned late 1960s. Displacement 15000 tons standard 18000 full load. Speed 30 knots. Aircraft 18 Hormone A ASW helicopters. Primary role is A/S but has capability for A/A warning, self-defence and a command function.
— *Jane's Fighting Ships*

four during the previous decade. Assuming that the overall production of nuclear hulls remains at seven a year, this would boost the attack force to about 135 nuclear-powered units by the end of 1987, reducing thereafter to stabilize at about 100 units by the end of 1992. However, it seems unlikely that this pattern will be maintained. Although several Alphas are now said to be seagoing, it is not clear whether the class is yet in series production, or whether these are multiple prototypes. The Alpha's genesis takes it back to the 1961-64 decision period and it may originally have been designed for the Polaris-trailing role. Meanwhile, a very large submarine of perhaps 16,000 tons surface displacement is now fitting out at Severodvinsk. It is said to be in series production and to carry 12-20 cruise-missile launchers of the kind fitted in *KIROV*,[2] the new class of battle-cruiser recently completed in Leningrad. The large hull allows a massive weapon and sensor load, and one is inclined to categorise this submarine as an underwater equivalent of the *KIROV*, its primary role being the battle for command of such areas as the Norwegian Sea, in defense of the SSBN bastions. Such a submarine would have a powerful general purpose capability, including minelaying. It is possible that this class and an Alpha derivative will make up the attack program for the eighties.

The future of the diesel submarine force is uncertain. If current building rates continue, the force could dwindle to about 95 by the end of 1987, stabilizing at about 75 in the mid-nineties. It would, however, be prudent to assume a substantially larger number since the Soviets have the experience of higher force levels, they have spare building capacity and they could easily boost production in the years ahead. Within the Soviet concept of operations, submarines are an all-purpose defense unit and it is hard to have enough of them.

Lastly, and almost as a footnote to the regular procurement process, we can expect Backfire to replace Badger as the primary land-based strike aircraft, although it is not clear whether the naval force will remain at its present strength of about 350 aircraft. On the one hand, while the Navy is getting half the Backfires which enter service, the annual production rate is low and at present two old aircraft are being retired for every new delivery. On the other hand, the improved aircraft now entering service with frontal aviation make it likely that the tactical air force will take over ground targets which were formerly the responsibility of the long-range air force. This may well release LRAF aircraft for naval missions.

Further inferences concerning future capabilities can be drawn from these developments. First, submarine technology. The Alpha represents an important breakthrough for the Soviets, since it can go substantially faster and deeper than the latest U.S. submarines, although it is still more noisy. However, the wider significance of the Alpha is that it represents the first real end-product of the 1957-58 decision which singled out the submarine as the key component of the Sovet navy, with all that implies in terms of priority for research and development resources. Bearing in mind the Soviet capacity for innovation and their penchant for adopting unconventional means to outflank a superior capability, we should expect the Alpha to be only the first of a series of advances, which could challenge our technological lead in the submarine field, and may also affect our future anti-submarine capabilities. The monster fitting out at Severodvinsk is another indication of this unfavourable trend.

Second, the tactical employment of ballistic missiles and the use of shore-based systems. We should pay serious attention to what the Soviets have written about the employment of ballistic missiles against ships and submarines. There tends to be substance in their technological claims, even though they often advance the claim when the capability is in sight rather than in service. It is quite likely that the Yankee was originally conceived as a tactical missile battery for use against carriers. It is quite likely that the SS-NX-13 terminally guided submarine launched ballistic missile was shelved because of SALT and not because of insuperable technical problems. It is clear that important elements of the military leadership have always been attracted to the concept of calling down fire from land-based systems on naval targets, using satellite surveillance systems, or ships and submarines as forward observers. Even if the Soviets have yet to develop a fully successful system, there is every reason to suppose that they will persist in their efforts because of the operational and political advantages such a global system would bring.

And third, strategic ASW. The Soviets have now invested eighteen years of research and development in non-acoustic and/or space-based detection systems, seeking to breach the concealment of the ocean which protects the U.S. SSBN force. Basic research is a Russian forte and the West is not investing enough in unconventional ASW to be certain of what they have achieved. Meanwhile, the Alpha is now available to develop trailing methods, perhaps using active sonar. They may not beat the problem, but we can be certain that they will persist in their efforts to develop a counter to Western SSBN operating in the open ocean.

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Looking to the future, the West faces the combined effects of a sharp increase in the allocation of resources to Soviet naval construction; the introduction of powerful new types of warship; and the ongoing results of a continuous research and development process. But the significance of

recent developments is only partly related to this increase in capabilities. Ambitious building programs and a large navy are nothing new for Russia, and for the last hundred years she has needed substantial forces to defend against assault from the sea and to thwart attempts by maritime powers to dictate the outcome of events in adjacent areas. Nor has the navy been overlooked in Soviet contingency planning for war. During the last twenty years, the increasing scope and importance of maritime warfare have been explicitly recognized by the military leadership, who acknowledge that navies could have an enormous impact on the entire course of a future conflict. Nevertheless, Russia was and is predominantly a land power; the mortal threats to her existence have come by land; the army has been the basis of security at home and of influence beyond her borders. Up to now, the navy has been seen as an expensive necessity, rather than (as in the West) a preferred instrument of overseas policy.

But this attitude may be changing. The role of naval power is being reassessed in the Soviet Union. The navy's political standing has increased significantly over the last decade and may still be waxing. Meanwhile, naval design criteria have shifted from short-term survivability to sustaining combat operations for the duration of a war. For the first time, wartime requirements will generate a general purpose navy with a true world-wide capability, suitable for use as an instrument of state policy in peacetime.

The political use of Soviet naval forces in peacetime has evolved progressively over the last 15 years. The role emerged initially as a by-product of the presence in distant sea areas of ships on forward deployment but, during the last decade, changes in perceptions of threat, and of risks and opportunities combined to make the navy's political role increasingly important. This coincided with a more assertive Soviet policy and the increasing use of a Soviet military presence in support of overseas objectives. However, the navy's contribution to this policy has been secondary and the primary instruments have been the provision of arms, military advice and training; the transport of men, munitions and equipment by merchant ship and long-range aircraft; and direct participation by the combat troops of revolutionary states. Up to now, the navy's role has been to serve as an earnest of Soviet commitment, to offer limited logistic support and to provide protection against intervention by local forces. And it has yet to demonstrate its readiness actually to engage Western naval forces, in order to prevent them from intervening against a Soviet client state.

This may change in response to developing opportunities and capabilities. While the requirement to defend the SSBN bastions will tend to work against continuous distant deployment, concern for the Chinese threat acts in the opposite direction, as do wartime interests in the Persian Gulf area. The Soviet navy will be emboldened by increasing operational experience and bolstered by a new theory of seapower, and will have a strong voice in Moscow. As the more capable warships begin to join the fleet, we may see a new Soviet willingness to use naval forces to counter the projection of Western military power in time of peace.

In the event of war, operations like the Battle of the Norwegian Sea will become of critical importance. However, maritime conflict will not be limited to the outer defense zones and the sea lines of communication, and Gorshkov's writings suggest that the Soviet navy thinks in terms of wide-ranging operations in the subsequent stages of a nuclear war. While it is hard to envisage detailed scenarios with any confidence, the mobility and firepower embodied in warships could have a critical impact on a protracted conflict, in what may well be a largely pre-industrial world.

NOTES

1. For a summary of the evidence that in 1972, Gorshkov was arguing for carriers, see my 'Naval Power and Soviet Oceans Policy' in *Soviet Oceans Policy*, John Hardt (Ed.), U.S. GPO, October 1979, pp. 118-119. (Prepared by the Congressional Research Service for the Senate Committee on Commerce and the National Oceans Policy Study.)
2. Admiral Hayward, CNO USN reported in *Aerospace Daily*, 20 June 1980, Vol. 103, No.36 p.281-282. The submarine is said to be 480ft. long and 57ft. in diameter (compared to Trident 560ft. x 44ft.) and will probably carry the SS-NX-19; *Air Force Magazine*, July 1980, p.19.

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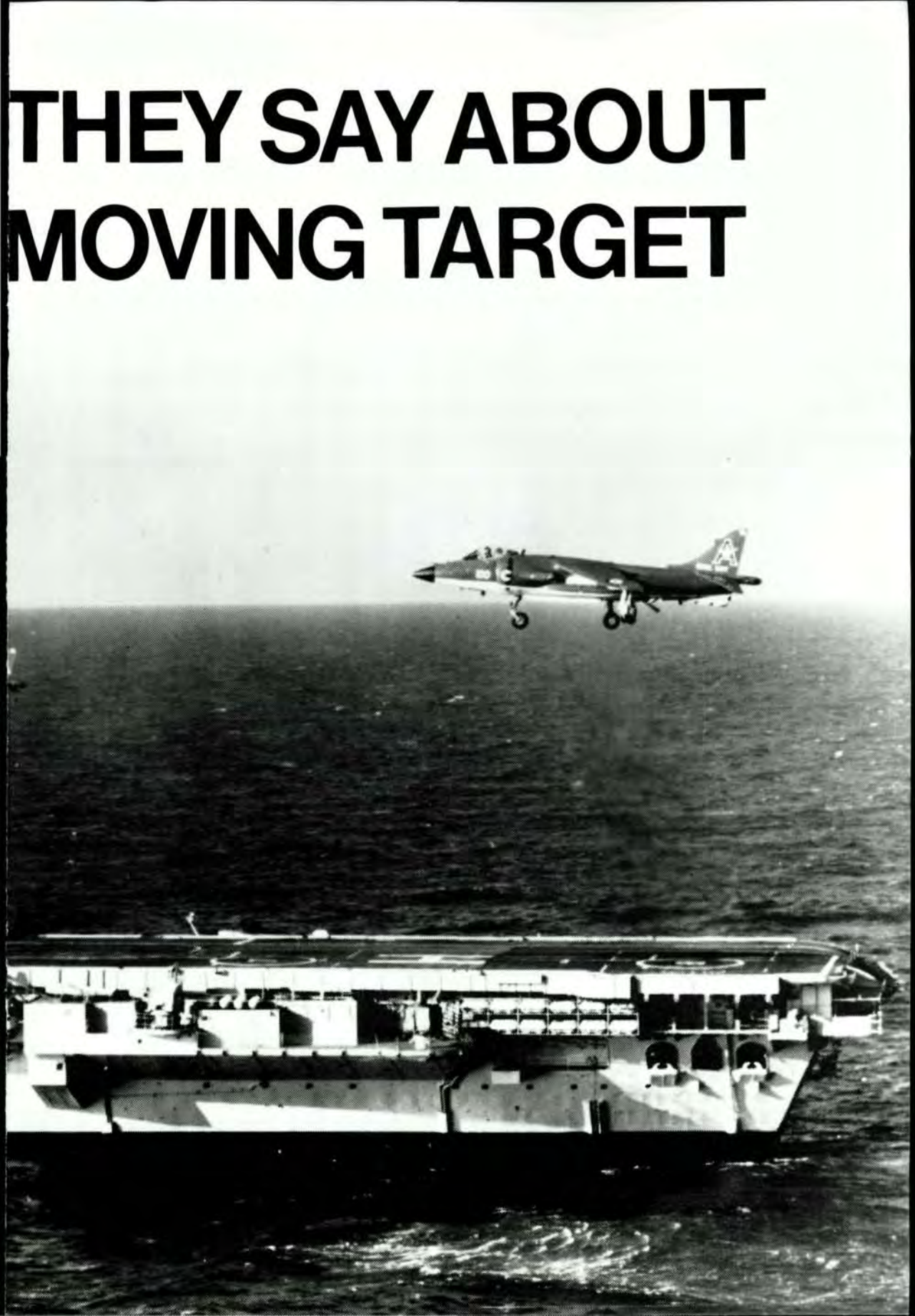


MORE THOUGHTS ON ADFA

by 'Master Ned'

Some time ago in this Journal, I wrote an article describing my objections to the proposed Australian Defence Force Academy (ADFA). Until the recent compromise in Parliament (and perhaps even now), the matter was one subject to a great deal of controversy. Critics from every quarter attacked the Academy on the grounds of expense, of its social isolation, because it could never be a proper university, because it would be too much of a university, because it would be too military and because it could never be military enough. As has frequently been observed by proponents of the institution, the critics were remarkable not only for their vociferousness, but for their lack of unity.

Despite all protest, the government, it seems, has won the day; the notable concession to popular opinion being that the Academy will operate as a college of the University of New South Wales, on much the same lines as the present RMC Duntroon. This is certainly a step in the right direction, since it means that ADFA will be subjected to continual external scrutiny. One can only hope that the degrees obtained by officers at ADFA will not be suffixed by the unfortunate label Military Studies as are the present Duntroon degrees. Those of the Academy should be simply those of the University of New South Wales.

Given all this, and given the Government's clear determination to carry the matter through, whatever one's feelings about the manner in which the authorities have acted and despite any misgivings about the future of the scheme, the time has come to cry 'enough'. The subject is ripe for re-opening, and I intend in this article to examine the Academy with the premise that it is an accomplished fact and that there is nothing that can be done to make it otherwise. What follows is another somewhat unstructured discussion (to quote one who did not agree with Recipe for Disaster?) which I hope will arouse some lively debate on the subject.

This attitude may appear somewhat hypocritical (do I hear a chorus of 'You're not kidding'?), but it seems clear that the point has been reached where continuing argument becomes counter-productive and the only solution is to get on and make the best out of the situation. The Academy has the potential to be either a monumental white elephant or a considerable success and a model for the world. The former is by far the more probable outcome, but I believe that there is a chance that, with enough enthusiasm and understanding, it can be avoided.

The organization deserves explanation for those who have not seen much more than the numerous press articles on the subject. Briefly, the Academy will function as a college of the University of NSW, offering pass and honours degrees in Arts, Science and Engineering. It will be commanded by an officer of two star rank, and a Vice Chancellor who will manage the academics. Before the decision not to proceed with the plan for an independent university the intention was to have the Academy governed by a Council which would be responsible directly to the Minister of Defence, the two officers mentioned acting as its executive. I am not sure whether this Council will even come into being, or indeed what will be the exact title and status of the Vice Chancellor, but I dare say that the eventual result will be much the same, with the authorities of the University of NSW supervising the academics.

Each Service will enter its officers in early January of each year and put them through a period of basic training before the academic year commences in March. Academics will take up approximately 30 weeks per annum, with 15 more allocated to professional training. Five hours in each academic week will also be devoted to Service training (joint-as well as single). Pass degree officers in Arts and Science will spend three years at the Academy, while those studying Engineering or Honours will remain a further twelve months.

The Corps of Cadets will be organized upon single-Service lines, officers wearing the uniform of their Service and subject to its day-to-day procedures. The early proposals to develop the Academy on a purely Defence Force model met, I am glad to say, with sufficient opposition in the right places to ensure their demise. The young officers will be much happier if they are able to identify with their own Service and not with an artificial and unique creation which bears little relevance to their future careers.

The Academy is not intended as a professional training institution, this is a role still reserved for the particular Service Colleges. Rather, it is intended to provide the best environment wherein the military virtues can be fostered and vocations maintained without detriment to the free atmosphere of a university or to academic excellence. The aim is to produce good officers with good degrees. The five hours available in each academic week will, for example, be devoted largely to keeping officers in touch with and interested in their Service. It is quite possible that the Corps will never parade as a body in the Academy, even for whatever graduation ceremonies which may be devised.

Having outlined the organization, two questions present themselves. First, what effect will ADFA have upon the Navy, and, second, what can be done to make the scheme as successful as possible?

The major obvious effect of the Academy upon the Navy will be the eventual end of the Creswell Course and the non-degree General List officer. If the present degree programme were to continue at its present graduation and retention averages, the final proportion of degree officers (including those from other entries) relative to the List as a whole would be something around 20 per cent. The desirable figure (as enunciated by Navy Office) is 44 per cent. Assuming that the Supplementary and Special Duties Lists remain at much their present strength, this means that every GL officer will eventually be taking a degree.

The present figures for the Academy allow 138 places for naval direct entry students. Because this is barely 15 per cent of the total, instead of the 25 per cent which one might expect, any capacity which ADFA will have for expansion will be the Navy's to claim. To attain the 44 per cent figure such an expansion will be necessary for 138 breaks down to an entry (allowing for a reasonable rate of wastage) of only 50 a year. The allocation of officers to the Academy who would otherwise be assigned to the Creswell Course would increase the number to around 80.

It is difficult to say precisely when this will take place, there being no actual reason why the Creswell Course cannot end as the Academy begins. One hopes sooner rather than later. The effect upon the Naval College would probably be most beneficial because it would not only release badly needed accommodation and training space, but would allow the establishment to concentrate solely upon professional training. The enforced separation of academia and Service will ensure the end of recurrent bickering over who should have the officers under training, when and for how long. The end of the Creswell Course should also mean the end of the 'Oldest Resident' syndrome, that process, most readily apparent in the American Service Academies, whereby young officers become more amd more hidebound and resistant to change as they gain seniority within their College — largely because they have spent too long in the place. (This is something which must be watched for as ADFA develops.) In fact, the wheel will turn full circle, because the Midshipmen who will spend the most time at RANC will be those of the Supplementary List!

The change which the Fleet will notice most will be the appearance of far more degree officers than at present. Ships' training officers, shaken by their contact with the relatively small numbers who have already passed through, now face the dubious prospect of degree officers under training en masse. Because of the numbers game concerning sea training billets, we will probably find that we will have one large SL entry in the middle of each year, instead of the six-monthly entries, and that the GL officers will join the Fleet as a group in January. Thus, HMA Ships will be populated by GL Midshipmen from January until June, and by SL Midshipmen from July until December. Bon appetit!

All this assumes, of course, that the Academy manages an adequate yearly output. One of the major attractions of the Academy for the Navy is that it promises a higher pass rate than the present methods which have, as even their most ardent proponents will admit, had their ups and downs. The gross and completely unnecessary wastage among both degree and Creswell course officers has been the gravest failing in our programme and if the Academy (not to mention the College and the Fleet!) is successful in maintaining the enthusiasm and interest of the officers throughout their long training, the game may just possibly be worth the candle.

As to what can be done by the Navy to get the best out of the Academy, there are a number of areas which deserve consideration. In the first place, the Navy has to make sure that it is involved in and concerned with every level of activity — even to a watching brief on the academic matters normally left to the professors. There is always a risk that ADFA could develop into a particularly nasty Service version of a QUANGO if left unattended.

It will be very important to ensure that the Midshipmen do not become isolated from the mainstream of naval activity. It is all very well to

say that the officers-under-training will be 'on the coal face' during their annual professional training, but they will still be spending the majority of their days at the Academy or on leave. Provision must be made to ensure not only close contacts between ADFA and RANC (which will continue to conduct the bulk of the professional training) but between the Academy and Navy Office. Regular briefings on the state of the Navy and the progress of various projects should be conducted and as many senior officers as possible roped in to speak. As far as possible, the same should apply for the Fleet Staff officers, most especially those involved in training.

We must fight the tendency to 'leave it all to ADFA and RANC' while at the same time moaning at the results of their efforts. The greatest critical interest should be taken in the students and graduates of ADFA to ensure that the system is working. It is conceivable, given the length of time which the officers will spend in the rarefied atmosphere of the academy, that they will emerge quite as opinionated, as critical and as 'bloody minded' as the 'worst' of the graduates of UNSW — to use the term guardedly.

The Naval Staff at the Academy should be of the highest quality possible. It is going to be essential to ensure that the 'best and brightest' young officers are not only assigned to the divisional side of the Academy but sent to do a turn in the academic posts. One of the great dangers with an institution of this kind, especially when conducted on such a scale, is that hostilities can develop between the military and academic sides of the organization. This can have most harmful effects upon the officers under training, since they tend, in the manner of the young, to go to extremes in their sympathies.

The plan is to run the three divisions of Midshipmen with a Lieutenant in charge of each and, I presume, a Commander/Lieutenant Commander in overall command. Although it is intended to have other officers on the academic staff, I think it a far better solution, so far as possible, to mix up the professional and academic duties. Thus, we might have seven officers (or more) of Lieutenant/Lieutenant Commander rank, each responsible for twenty Midshipmen, as well as their teaching. Degrees will, of course, be essential and, assuming two other Instructor officers as purely academic staff, we could have three or four Seamen officers, one or two Supply, two Engineering and perhaps one Instructor assigned. Whatever the solution, I do think that it is clear from the experience of the Naval College that 40-45 are too many for one officer to manage as a division and even if we are to have officers posted purely as DOs we are going to have to increase their numbers.

There will also be a requirement for a number of Senior Sailors of the very highest quality to assist with the running of the professional side of the Academy and to ensure that the Midshipmen never forget how the other half live. These people will have to be very good indeed, and will have to be very well briefed, for it is the experience of RANC that it is they who find the attitudes of the academic world most difficult to comprehend. (And who can blame them?)

The clearest benefit of the Academy becoming a college of the University of NSW is that it grants the establishment at least some chance of being recognized from the first as a proper part of the academic world with sufficient standing to attract the best lecturers and tutors. (Although I despair of ever enticing the most original and radical thinkers.)

There is, of course, the risk that UNSW may impede the development of ADFA — an unsympathetic University Council might well result in a stagnating Academy and the complete failure of every vested ambition. I do not think this will happen, provided the Council manages to tread the narrow path between forbidding any studies which appear at all 'militaristic' and allowing the reverse and equally undersirable process to take effect.

Reciprocal arrangements for lectures and tutorials with the Australian National University, as have applied for RMC Duntroon, should be instituted. These will provide the officers under training with at least some small exposure to radical and unusual ideologies and would probably do the common-or-garden ANU student quite as much good — so long as the armed camp syndrome sometimes apparent between ANU and Duntroon is not allowed to develop.

A major advantage of the Academy will be the provision it makes not only for part-time students but for commissioned under graduates — 130 of the former and 152 of the latter at any one time. Assuming that the Navy claims its share this means that 10 or more older naval officers will begin full time studies at the Academy every year. With a similar number undertaking part time studies, not to mention any post graduate students, the opportunity exists to ensure that the Academy does not become wholly an ivory tower. A tutorial containing a sufficient leavening of more mature personalities from a variety of backgrounds is far more likely to produce original results and be of lasting value to all concerned than one consisting merely of young men straight from school.

There is no good reason why WRANS officers should not undertake degree studies at the Academy in precisely the same fashion as male officers. With the development and expansion of the Women's Services within the Navy there is a clear need for a core of experienced and well trained officers of long service after the fashion of, if not in fact, the General List. There is

no place better to begin than at the beginning, so why not plan that the first entry to ADFA will include WRANS officers and that a proportion of the mature age, part-time and post-graduate officers will be women?

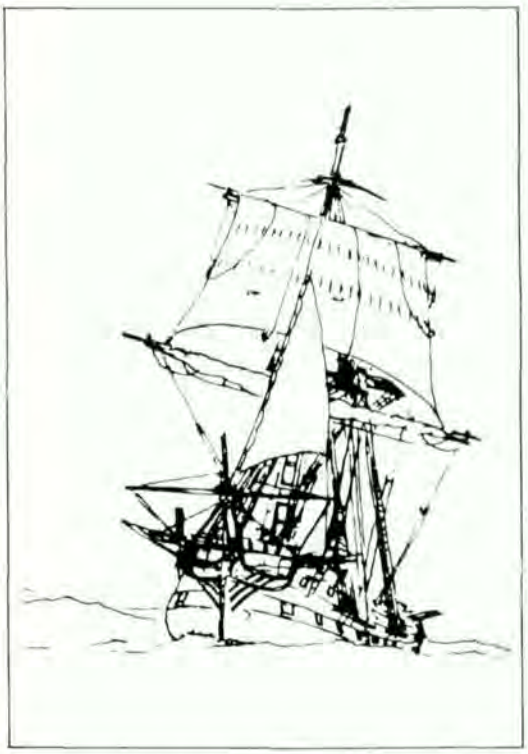
This Academy, so long as it attains a sufficient measure of academic standing, will provide the Navy with a forum for discussion, experimentation and forward thinking hitherto undreamt of. It is probably too much to say that it could ever be a 'think tank', but it would certainly be an institution which could do much to clear the Navy's thinking and end the intellectual 'hand to mouthism' which has bedevilled the RAN, largely because of its limited size, budget, and its overweening responsibilities, since its earliest days. The advantage of the Academy over the Staff College is that it will be bigger, will have more resources at its command and will, above all, have more time for its work. It should be possible, for example, for the Academy to run courses for senior officers, civil servants, foreign officials and captains of industry on the lines of the Royal College of Defence Studies. Properly run, there should be many ways whereby these activities can be tied in with those of the under graduate and post graduate bodies. Perhaps the Naval Institute has a part to play here!

Of course, we must be careful not to be preoccupied with defence matters. As with other universities, ADFA may develop special expertise in the most unexpected areas. Such specializations should be watched for and cultivated most carefully when they appear. Nonetheless, a well thought out scheme, on the lines of the present Defence Fellowships (a programme in which distressingly few naval officers have been involved) will produce a great deal of value, especially in the areas of foreign policy and international law, and of personnel and economic management.

I will admit that the theme which links all my recommendations is that of diversity — to be a success the Academy requires to draw its people from as many different backgrounds as possible. Because it is so small a tertiary institution, the risk is that ADFA will be striving for its own mediocrity; the more catholic the origins of staff and students the less the likelihood of this happening. The foreign students (57) planned will be an additional help, and I do not think that it is too late to start thinking of having a certain number of civilian under graduates. My fear has aptly been named the 'Military Monastery Phobia', but despite all the declarations that it is most unlikely to happen, I see it as a very real threat. As soon as the Academy begins to produce anything approaching a standard mentality it will fail — and any attempts in that direction must be prevented. The Services should have quite sufficient time, before, between and after the academic sessions to mould their people; the Academy, on the other hand, is that time when minds should be deliberately allowed free travel. This is precisely why it is so important that as many extraneous influences be brought to bear as possible.

Herein lies the contradiction inherent in the concept — the maintenance of the military attitude in the academic environment. It is in fact no contradiction *so long as it is remembered that the best sailors and soldiers have been neither conformist or complaisant in any way.*

In sum, the Academy provides some chance of achieving the aim of a balanced and liberal education for the future officers of the Defence Force so long as its establishment is carried out with understanding and care by the most highly qualified personnel available. It will not succeed if it is starved of any of the vital factors of expertise, enthusiasm and enlightened supervision. Nor will it succeed in producing officers with a broadly based education and a balanced outlook on life if any move is made to emulate the isolation of such institutions as Annapolis and West Point. Simply put, the Service Colleges should be left to get on with the professional training and the Academy should be left to be a university. ADFA's raison d'etre is surely that of maintaining enthusiasm and interest during the academic studies and thereby increasing the retention rate. It will provide no new answers for the 'nitty gritty' of training junior officers in their duties as junior officers. So, you ardent advocates of ADFA, CAVEAT EMPTOR.



NOTICE OF
ANNUAL GENERAL MEETING

The Annual General meeting will be held at 1930 on Friday, 24 October 1980, at the R.S.L. National Headquarters, Constitution Avenue, Canberra, A.C.T.

AGENDA

1. Confirmation of minutes of the Annual General meeting held on 26 October, 1979.
2. Business arising from the minutes.
3. President's Report.
4. Auditor's Report.
5. Annual Subscription.
6. Election of the officers of the Institute and the ordinary Councillors.
7. Appoint an Auditor and fix his remuneration.
8. Other Business.

ELECTIONS

Office Bearers:

The Office Bearers of the Institute are:

a. President
b. Senior Vice President
c. Junior Vice President
d. Treasurer
e. Secretary

Council

The Council of the Institute consists of:

a. The Office Bearers
b. Ten regular members known as Ordinary Councillors

Qualifications

Only regular members may hold office.

Nominations

Nominations of candidates for election are to be signed by two members (regular or associate) of the Institute and forwarded to reach the Secretary no later than 10 October 1980. A nomination form is enclosed.

Voting

Only regular members may vote and voting must be in person at the Annual General Meeting: proxies are not allowed.

HONORARY SECRETARY

The sequel to an article published in the November 1979 Journal of the Australian Naval Institute

AVAILABILITY — THE NEGLECTED DESTROYER CAPABILITY

by Mr K.J. Hope

Introduction

An earlier paper in this Journal presented some considerations of the connections between ship technology and naval mission ability (1). The aim was to bring into better communion the naval officer concerned with material suited to new strategic challenges and the technologist able to perceive potential for, and constraints on, new configurations of such material. This paper, in the nature of a sequel to the earlier, aims to round off that discussion by analysing one important ship characteristic which seems regularly to be misunderstood or neglected, to the disadvantage of both the selection process and the resulting warship system.

The earlier paper briefly examined a number of system technicalities affecting destroyer configuration, noting how structural design practices and hull slenderness related directly to ship survivability after damage liable to be inflicted by modern powerful weapons. In the light of the peak stresses generated in deck and bottom amidships by the destroyer configuration and weight distribution along the hull, and the extent of deck or bottom structure likely to be destroyed by modern weapons, a real danger was noted of 'jackknifing' of a typical destroyer hull.

The second half of the earlier paper pursued the theme of a methodology to relate ship technical characteristics to naval staff mission needs. The aim in principle was to be able to state with some precision the change in mission value of a naval ship concept arising from any set of changes in technical details, whether they be to an entire weapons system or to some more obscure system detail such as a hull wiring or piping circuit.

A U.K. seminal paper (2) had developed a hierarchy of categories, proceeding logically from a notion of utility of a ship concept, expressed as a single value of Combat Function or Role, through sequences of intrinsic Attributes and Capabilities, levels of System Characteristics, Technicalities and even Design Details or similar, having relevance to effectiveness at a higher hierarchical level.

The U.K. scheme lent itself nicely to quantitative assessment using so-called 'relevance tree' layouts and algebra. Illustrative relevance trees for a small warship were presented therein and one is repeated here (Figure 1). A pertinent reference is an article by Martin and Sharp. (15)

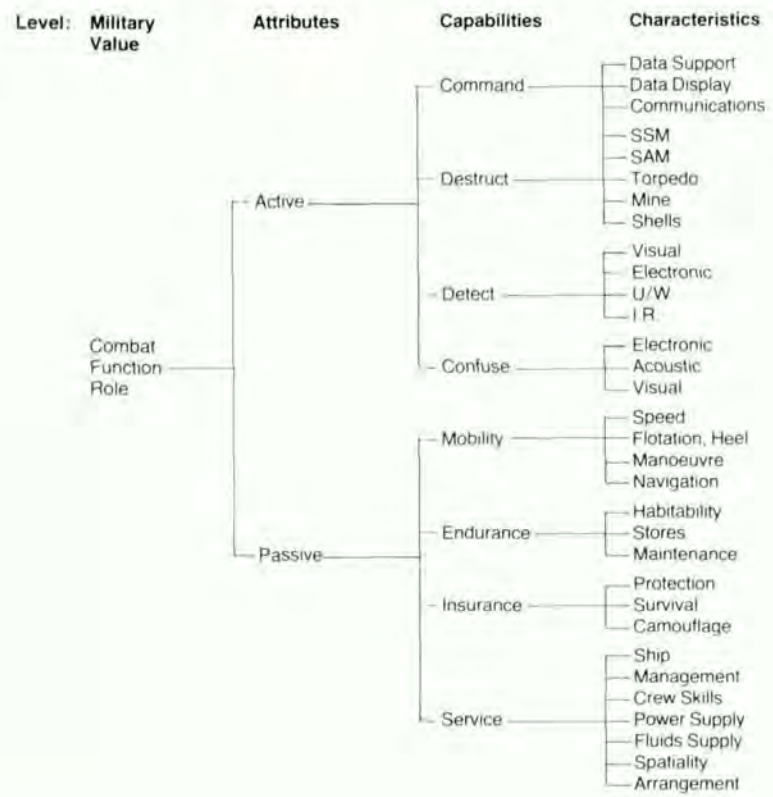
The division of a warship system into Active and Passive attributes reveals a certain incongruity in approach to analysis of that system. Many readers will be acquainted with the extent of operational research (OR) studies (e.g. 3) and technical assessments which support the gamut of capabilities which go to make up the Active attributes. These probability theory analyses are commonly thorough and impressive, begging only the question of just how to interpret probability numbers in a decision context concerned with the anticipated binary facts of victory or defeat, survival or destruction, in any contest (4, de Finetti) (5, Zuckerman).

THE AUTHOR

Kenneth J. Hope was born in 1936, joined Cockatoo Island Dockyard, Sydney in 1956 as an apprentice ship draftsman and studied naval architecture part-time at Sydney Technical College and University of New South Wales, graduating with a diploma in 1960. After a year with the Alan Payne design team on 12-metre *GRETEL 1*, he joined the Department of the Navy in 1962, serving with Naval Technical Services until 1975. He was much involved in hydro-dynamics, computing and basic ship design of *STALWART*, *ATTACK*, *COOK* and early *DDL* design studies. After a period of nearly three years with *ANRUK* as Construction Liaison Officer posted at DGS, Bath, and specialist training at AUWE, Portland, he returned as Naval Architect Class 3 in the Forward Design Directorate, NTS, Canberra and in 1975 he transferred to Force Development and Analysis Division, Defence Central. He is currently a Chief Executive Officer in the Force Analysis Branch and recently graduated from the Joint Services Staff College in Canberra. He is a member of RINA and SNAME and has been a contributor to RINA (Canberra Section) and its Chairman in 1977 and 1978.

FIGURE 1

RELEVANCE TREE FOR DESTROYER VALUE — CHARACTERISTICS



But in contrast the 'Passive' attributes are the exclusive, almost secretive, province of naval technologists who over decades have been left to follow their own professional cultural value judgements, increasingly in isolation from any mainstream of naval staff thought as to fundamental notions of benefit. The techniques used to establish passive characteristics have been the traditional ones of engineering judgement based on a historical sequence of isolated calculations and investigations. This process and the O.R. analytic method are quite disparate, with little in common apart from the inferential judgements, demanded of the naval staff client by each party, concerning the relevance of their conclusions to the final value assessment of any warship option.

The technologist's processes of establishing aspects of warship configuration are little publicised, and yet are central to choices of 'the way to go' in materiel development. So I elect here to concentrate on one of the passive capabilities/characteristics, to illustrate important considerations in value judgements; interactions with the active side of the ship system will not be neglected.

'Insurance' is an important capability, because of the way some of its main technical elements impact fundamentally on the ship system and because of its relative neglect in discussions about modern warships, a lapse astonishing to this author, in relation to the very high national asset value, strategic and financial, of a modern warship.

Insurance Capability

The 'Insurance' capability indicated in Figure 1 is closely linked to 'Availiability'. It focuses on the notion that a valuable ship should not only be technically capable in principle of conducting a certain mission but also should be counted upon to execute that task under adverse circumstances both in time and space. The notions of forceful opposition and repetition of threat are embodied in the concept of adversity.

There are numerous illustrations in history of the importance to national and military leaders of the insurance provided to their plans by ship availability, for instance:

Item — The bitter comment of Real Admiral David Beatty at about 1430 on 31 May, 1916:

The damage to the Norwegian destroyer, *HAUGESUND* (formerly the British Hunt class ship, HMS *BEAUFORT*), after being hit by a Penguin missile during firing trials in the 1960s.

'There seems to be something wrong with our bloody ships to-day!', as two British 17000 ton battle-cruisers, first *INDEFATIGABLE* then *QUEEN MARY*, blew up catastrophically from internal explosions initiated by German shell penetrations of weak armour followed by magazine explosions. His criticism centred on lack in his own force of qualities on which he had depended for achievement.

Item — Churchill's confessed worry in 1940 over lack of destoyers for British operations following effective loss of over thirty in the Dunkirk period.

There is no lack of similar instances in naval history of surprise and deep concern over revelation of weakness in ships, by men whose leadership decisions had been framed in expectation of availability of forces, which yet had been taken from them in a brief moment of combat or accident. The consequences are often so great as to distinguish this Insurance/Availability capability from its associates. The weakness of a single ship, inferred to apply to a whole class, resulting in withdrawal of a force, can conclude in loss of sea control over whole geographic areas; surely a very considerable amplification of a basic technical flaw.

The system categories and connections in Figures 1(and Figure 2, (1)) are indicative and incomplete; it would take the effort of a considerable military/technical organisation to make them less so. But those relevance diagrams together with illustrations from history are sufficient to show that Availability involves both the passive Insurance capability as well as active threat-negating ones.

It would be easy to so generalise as to lose all specific focus and treat Availability as a sole 'Military Value'. The present purpose, involving a focus down the 'tree' towards technicalities, is better serviced by some more detailed categorisation. In what follows, a distinction will be made between Vulnerability and Survivability.

Vulnerability herein is defined as the probability of a ship being struck by an attacking weapon. Vulnerability thus encompasses all the active threat-destroying capabilities of a warship. It is concerned with events in the space outwards from the envelope of the ship.

Survivability is defined as the measure of a ship's ability to both remain afloat and mobile after suffering a weapon hit and as well, to be able to continue to execute the current mission and scheduled future ones. It is concerned with events and abilities within a ship's envelope.

Vulnerability

The mechanistic nature of naval weapons aiming and flight, whether in attack or defence, allows probability theoretic measures to be used in a fairly convincing way to describe warship vulnerability *changes*. The analyses and supporting test data will be familiar to many professional readers. Many investigations are cloaked in invisibility by national security classifications, but much is still openly available e.g. (3), from which certain useful appreciations can be drawn.

The absolute assessment of vulnerability in the context of decisions about materiel is much less clear. What is the meaning of measures such as 'a 0.64 threat kill probability', or an expected value statement such as '2.8 missiles from a flight of 4 will be destroyed'? How much defensive achievement is enough, when risk of total loss of a very high investment is involved? More in the area of principle, are statistical measures based on long run outcomes in large samples relevant to considerations involving such absolute risk? Business portfolio analysis practice certainly says 'No'!

Survivability

Despite its more mundane technical orientation, little has been written on warship survivability beyond normative treatments of ship stability in still water (6), an exhaustive analysis of overall statistics of ship losses in World War II (7), a recent short general discussion (12), and naval training manuals having specific remedial aims in damage control. Most of these result only in shift of focus away from consideration of overall system behaviour. However Tables 1 and 2 repeating data by Korotkin (7) usefully set a scene for subsequent discussion.

TABLE 1

Immobilising Damage to ship Type, World War II
% of Numbers of Ships Hit by any Major Weapon

	WarshipTypes				
Type of Damage	Aircraft carrier	Battleship	Cruiser	Destroyer	All classes
Seawater entry	47	55	45	40	48
Hull breakage	—	—	3	3	1
Loss of bow or stern	—	1	4	6	3
Direct damage to fighting equipment	27	19	21	16	21
Shock damage to equipment	1	13	15	24	14
Fires	19	9	11	6	11
Explosions	6	3	1	5	2
Total, %	100	100	100	100	100
Sample size	135	148	158	220	661

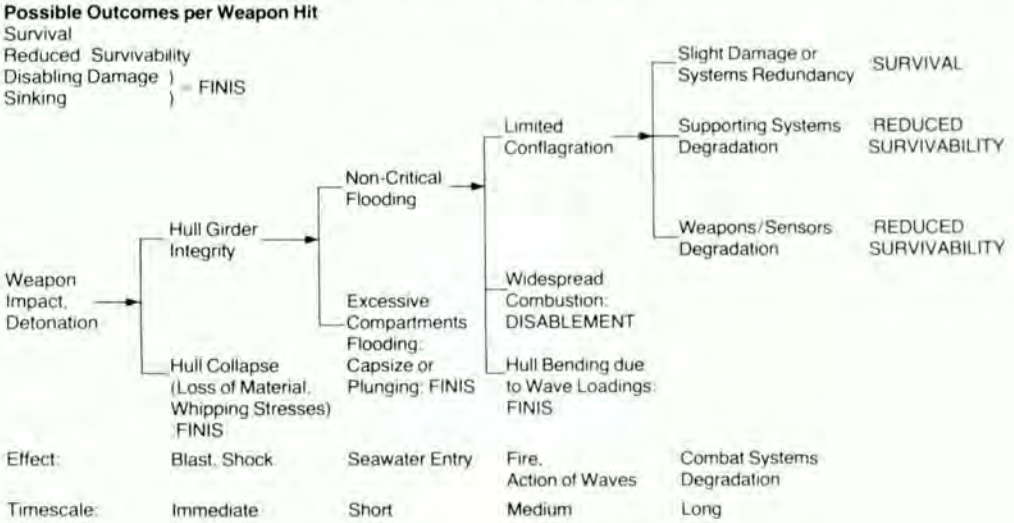
TABLE 2
Survivability Reasons for Loss of Ship Availability in World War II

	Total Loss, %	Loss of Way, %		Weapons Out of Action, %		Ship Put Out of Action, %
Kind of Damage		Full	Part	Full	Part	
Seawater entry	54	45	40	27	30	48
Hull breakage	4	3	2	5	1	1
Loss of bow or stern	2	8	6	3	1	3
Direct damage to fighting equipment	13	18	20	33	30	21
Shock damage to equipment	8	13	24	14	27	14
Fires	14	9	8	15	9	11
Explosions	5	4	—	3	2	2
Total, %	100	100	100	100	100	100
Sample Size	232	143	107	58	121	661

A temporal analytic scheme for examination of warship combat survivability is sketched in Figure 2. An examination of each stage in this hierarchy serves to indicate the aspects to be evaluated in Survivability and their impact on Availability.

The sequential tree diagram starts with the notional impact on a hull of a modern H.E. guided weapon and its detonation in or within the hull. The explosion results in effects likely to make themselves evident at increasingly remote periods of time. Clearly positive availability at any stage depends on survivability at all the preceding stages. Availability involves a sequential decision problem, each stage embracing a set of possible dramatic events.

FIGURE 2
WARSHIP SURVIVABILITY SEQUENCE



Immediate Effects

At the first, 'Immediate' stage of consequences to the warship, the explosion results in air pressure wave blast, shock (high intensity vibration) (14) and intense local heat. Blast can result in obliteration of large expanses of hull structure; the photos (13) of a USN destroyer hit by a HARPOON missile (about 120 kg H.E.) in a test firing and almost split in two are illustrative.

An equivalent effect can arise from shock effects on the hull. Periodic longitudinal, or 'whipping', stresses which typically result, in combination with the regular seagoing stresses, can result in hull failure by 'jackknifing'. Some realistic examples are described in the earlier paper (1), showing that modern destroyers are none too strong, even before blast effects.

Naval planners should be aware of two important technical trends. Motivated by engineering efficiency values, naval architects for over fifty years have been devoting analytic effort to reducing the mass of hull material by better understanding of structural behaviour allowing increased working stresses, consequently reducing the margin of safety before structure failure. Simultaneously weapons designers since World War II have been striving to propel with dramatically increased speed and precision warheads able to devastate hulls (10)(13) Clearly these trends lack congruence. Rationally, each increase in weapons capability demands increased reserve of hull strength, not a reduction, if survivability is to be preserved or increased.

Further it should be appreciated that the greatest changes have occurred only in these hull strength reserve and weapons aiming factors. Apart from certain older Soviet missiles equipped with massive warheads (and so open to judgement of 'overkill' capacity), modern missile warhead masses compare with those of World War II bombs. Ship hulls can be quite accurately treated structurally as slender box girders (1) (8). The effects of 100-500 kg masses of H.E. on such hull girders are well substantiated statistically for various classes of warship (7). So both the engineering tools and guiding data are available for practical estimates of weapons effects on warships.

A factor compounding the serious 'immediate' effects of weapons blast is the unfortunate correspondence between the most likely 'hit' zone of a modern missile (i.e. amidships) and the natural peak stress area in that same hull (mid one third of length). This agreement will arise as much from the weapons designer's awareness of the 'weak' zone of a hull, as from the concessions he must make in guidance logic design to overcome the 'glint' uncertainty properties of targets.

It can be deduced from all the evidence that typical probability of destroyers hull girder catastrophic failure given guided weapons impact is quite high, exceeding 0.5

Considering the factors of these technical trends, the statistics of dubious survivability in World War 2 warships (7), the outcomes of static firing in these warships using missiles (e.g. *HARPOON, PENGUIN*) and the quite definite ship loss data from such recent naval combats as the Israeli 1973 War and the India-Pakistan conflict, one is forced to the view that naval planners must have adopted one of these viewpoints:

a. they regard modern warships, despite their very great expense, as expendable 'one-hit' ships; or
b. they believe that severe combat conditions are not going to occur at any inconvenient time; or
c. the planners do not understand the limitations of the materiel central to their plans.

Short Term Effects

But if the destroyer hull does survive immediate effects of a modern weapon explosion, short-term effects must next be overcome. The notional timescale here is one to ten minutes.

The classical effect is one of *sinkage* or *capsize* arising from entry of seawater into the hull. The statistics in Tables 1 and 2 indicate the seriousness of this effect. Most naval readers will be familiar with the elements of ship stability and dangers from flooding; no exposition will be attempted here. References (6) and (9) are particularly useful, noting that Sarchin and Goldberg (6) pursue a normative aim, avoiding analytic descriptions of USN experience.

Widespread adoption of USN stability standards (6) based on World War II experiences has largely served to eliminate low-stability ships. Two or three-compartment standards now typify destroyer types.

The earlier paper (1) traced the importance of large monlithic machinery spaces in warship configuration. Because they can accommodate such large tonnages of seawater, machinery spaces flooding is usually critical to stability and short-term survival. Modern gas-turbine or diesel machinery spaces can be more voluminous than the steam turbine equivalents of the past, are wider because of developments in hull form and are located further aft. So there exists an anachronism. Despite more exacting modern stability standards, modern destroyers are more sensitive than in the past to underwater damage amidships or aft. In particular the risk of longitudinal instability, or 'plunging' by the stern, is much greater nowadays.

The instability and flooding effect also suffers from compounding due to superposition of contributing causes. As already noted, missiles statistically will tend to impact amidships where seawater entry has a major adverse effect for the hull and for system elements, especially electric power supplies. Equally it is the designed nature of homing torpedoes (10) to terminally aim either at the middle zone of a hull (if an active homer) or at the major underwater noise sources propellers or machinery spaces. The consequences for survivability are adverse in every case.

The important realisation for insurance assessment is that the randomness of weapon impact location associated with older naval shell and unguided torpedoes no longer applies. There is instead a technical bias towards impacts in particular hull zones, which unfortunately possess weaknesses critical to survivability.

The destroyer escort, USS *MOORE*, hit by a MK 48 torpedo during weapon lethality trials.

The USS *BELKNAP* after her 1975 collision with the USS *JOHN F. KENNEDY*.
— U.S. Navy photograph

Medium Term Effects

If the destroyer hull survives both 'immediate' and 'short-term' effects, luckily encountering no more than inconsequential hull structural impairment with flooding of some non-critical compartment (arising from some fortunate oddity of missile aiming or trajectory), medium-term effects must then be endured. The notional timescale is 10 to 40 minutes after detonation of the weapon.

The main survivability danger at this stage would be fire. The warship internal environment involves aluminium structure flammable at high temperatures and plastic at moderate ones, gaseous decorative linings, flammable paint, incendiary personal furnishings and explosive naval stores.

Major fires occurred even in the spartan interiors commonplace in WW2 warships; how much more is the risk in these less stringent days?

The means to subdue fires is a standard factor in modern damage control layouts and training. It is unlikely that a fire will take hold (yet recall USS *BELKNAP* after her collision with USS *JOHN F. KENNEDY*). But our concern is with the degree of incapacitating damage during the period of conflagration.

Any period of disorganisation or reduced active efficiency arising from damage control problems after weapons impact will embrace the likely time span of any salvo of incoming weapons. This would need to be a consideration in whether or not serious fires should be construed as incapacitation. But irregardless, the modern destroyer is so tightly linked with a web of cables and pipes critical to weapons/sensor systems that it is hardly conceivable that there would be no effective impairment of ship defensve ability at least during the duration of the fire. The apparent link between vulnerability and survivability is discussed below.

Hull Distortion is another medium-term survivability defect impacting on vulnerability and requiring assessment. There is likelihood of hull girder distortion short of collapse due to weakening after destruction of structural material by blast or 'plastic hingeing' from shock or whipping stresses. Even if systems links were not affected, alignments of weapons launchers with sensors would be disturbed, with some effects on defensive weapon accuracy.

Long Term Effects

If all these hurdles on the path to Survival are leaped, long-term effects (40 minutes upwards) still remain to be assessed. In the broad, these involve the environmental (waves, weather) and tactical (location by an enemy) dangers to a hull weakened by blast, partly flooded, less stable than usual, speed reduced, efficiency impaired by casualties or crew weariness or diversion of personnel to damage control duties and, finally, active systems degraded by the above effects and by more direct damage.

Referring to the earlier definitions, vulnerability is clearly involved at this late stage. But also survivability evidences itself in the degree of unreadiness for forthcoming engagements. It is perhaps at this stage that the Insurance capability, to which survivability contributes most clearly, displays the complexity of its relations with other capabilities and characteristics of the warship system (Figure 1). It is the ability of relevance techniques to handle such cross-impacts which justifies the continued reference to them.

Survivability Assessment

The mechanisms just described for each stage of the survivability sequence (Figure 2) would appear to be quantifiable in probability terms, any historical data being supplemented with analysis or simulation. Such values might in principle vary with different weapon types, but in

practice the explosive attributes of modern weapons are so great that only a few categories would be relevant for destroyer evaluations. Thenceforth global survivability change measures could be easily derived from a formal scheme such as in Figure 2.

An important consequence of sequential survivability logic affects overall probability assessments. All arguments utilising mathematical probability draw analogies between perceived data and mathematical models. One basic model much used in military O.R. forms the probability of occurrence of a compound event from the simple product of the elemental probabilities of sub-events; the assumption of independence, non-correlation, between the sub-events is implicit.

But independence has to be proved, not assumed. In general conditional events are not independent; even as a simplification of reality, Fig 2 suggests that survivability outcomes are very conditional and depend on the total preceding event-sequence. The event SURVIVAL (for the next onslaught) can be construed as the logical negation of the compound event: (Hull Collapse) OR (Sinkage) OR (Capsize) OR (Serious Fire) OR (Hull Distortion) OR (Systems Degradation). Evaluation of probability (Pr) of survival would involve additions of independent event probabilities and treatment of cross-impacts between them.

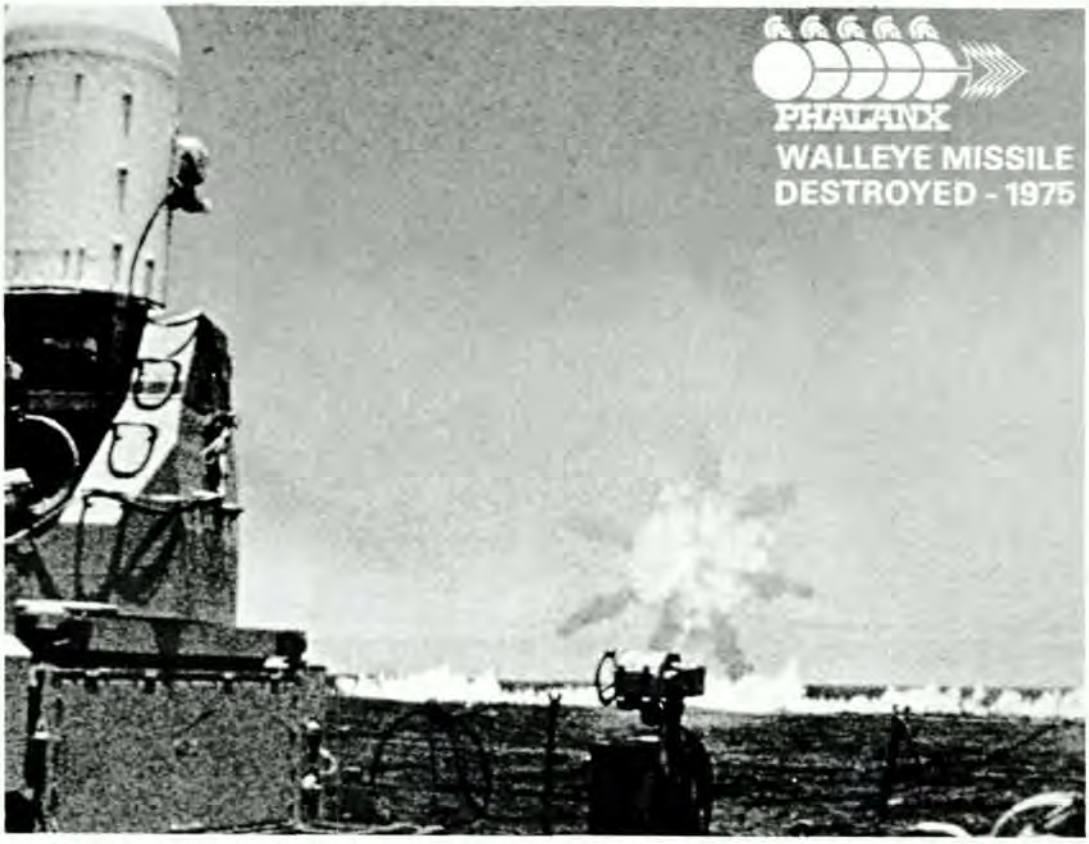
Dependencies between events need to be established (researched) by analysis of the technical system or of experimental data. It is precisely this task that relevance techniques are intended to assist.

An Example

But if independence of events could be accepted, then Figure 2 could be utilised to develop some illuminating indicative values.

Define events as:
S — Survival
RS — Reduced Survivability
F — Destruction, Real or Effective
HG — Hull Girder Integrity
NF — Non-Critical Flooding
LC — Limited Combustion
SD — Slight Systems Degradation
Then probability of Survival is multiplicative;

Pr(S) = Pr(HG). Pr(NF). Pr(LC). Pr(SD) and similarly for Pr(RS); then Pr(F) = 1 — Pr(S) — Pr(RS).



A live sea-skimming ASCM destroyed by a close-in-weapons system (CIWS) fitted in a destroyer hulk.

Table 3 indicates some results; values in the first four rows are assumed by the writer to generally indicate what might appear in real life. The drastic reduction in survivability (any one of four cases) *per salvo* should be pondered upon by designers and naval planners.

TABLE 3

Illustrative Destroyer Survival probabilities

Outcomes	5-Inch Salvo	Missile Hit
HG	.95	.40
NF	.90	.80
LC	.75	.20
SD	.70	.05
S	.45	.003
RS	.19	.061
F	.36	.936

Vulnerability/Survivability Links

Vulnerability and survivability are linked through the aspect of defensive systems impairment; any reduction in defensive ability (increase in vulnerability) due to one weapon or after one salvo increases the probability of succumbing to the next. It appears that any characterisation of a warship as a system with a constant vulnerability probability P_k (perhaps being the probability of destroying some number of missiles or fraction of a salvo) is fundamentally incorrect. In analysis that P_k value needs to be assessed anew after each notional missile flight termination.

A useful indicator of one answer to the question posed earlier in this paper: 'How much defensive ability is enough?', might be derived from consideration of the rate of change of non-survival probability within a sequence of weapons assaults, with feedback into vulnerability measures (such as P_k) taken into account.

Other Capabilities

Concentration on this exposition on the 'Insurance' characteristic should not be allowed to imply that 'Insurance' values are independent of other characteristics. Availability has larger dimensions than contributed by 'Insurance', dominant though this may be. There is an earlier illustration in the way in which 'Technicalities' relate to several characteristics (Figure 2 of (1)) and of how Design Details weave through and link them all. Equally Figure 1 and the discussion to this point should make clear that other characteristics of the warship system, governing movement prior to any culminating conflict and perhaps following it, contribute significantly to Availability. All ordinary analytic techniques depending on categorisation into mutually exclusive alternatives are excluded from system evaluation by the phenomenon of a common (technical) data base which yet by degrees of value in different dimensions results in sets or 'constellations' of conceptual value categories to the user of the system. Relevance tree techniques which attempt to handle this fundamental interrelatedness are an essential tool in practical value analysis of complex systems such as modern warships.

Conclusion

'Insurance' as a capability is important in its own right, since it affects military units whose combination of high cost and irreplaceability at a time of need gives them unique value. If a small nation such as Australia needs high cost warships at all, she needs them 'all the time', so availability in strategic timescales is critcal.

Such a nation should value its destroyers as larger nations valued battleships and fleet carriers —as Capital Ships. The absolute values might be intangible, but *changes* in value arising from changes in configuration or situation certainly appear to be quantifiable.

Vulnerability and Survivability are both central to Availability and are linked under the definitions used herein. This writer's thesis is that survivability is still valued by naval planners and engineered by naval designers much as in World War II. Both views are dangerously in error, being oblivious to radical changes in the threat to warships in recent years. The elements of this change are 'Precision' and 'Portability'.

Guided weapons (GW) are much more likely to hit targets than in the past and the points of impact along the hull are no longer random. Those points or zones of impact are now likely to involve catastrophic effects on small warships, due to mismatch between World War II design practices and World War III weapons.

Portability of GW spreads high-mass warheads potentially across every zone of combat, in contrast to the 1939-1945 era when a major warship or air squadron was a necessary but rare adjunct to delivery of ship-killing weapons.

The complexity of systems needed to defend a ship against GW makes those systems susceptible to survivability outcomes. Thus vulnerability and survivability are linked in a positive feedback manner; the less the one the more likely the degradation of the other.

Survivability does seem a key characteristic which is undervalued and incorrectly assessed. It is hard to comprehend the high investments made in small warships armed for modern combat yet so lacking in the measures to endure it. Survivability can be improved but the proper start point should be in the naval planner's value set. If such officers find this exposition of the problem illuminating and accept that the remedial 'way to go' can be quantified at successive sysem value levels, then a useful step in sound military investment practice will have been made.

NOTES

1. Hope, K.J., 'Destroyers — System Characteristics and Task Ability', Journal of the Australian Naval Institute, Vol.5 No.4, November 1979, pp 40-56.
2. Rawson, K., 'Towards Economic Warship Acquisition and Ownership', Royal Institution of Naval Architects (RINA) 1972, pp 43-68.
3. Helmbold, R.L., 'A "Universal" Attrition Model', Operations Research, Vol.14, 1966, pp 624-635.
4. de Finetti, B., 'Theory of Probability' — A Critical Introductory Treatment' (Volume 1), Wiley & Sons, 1974.
5. Zuckerman, Sir Solly, 'Judgement and Control in Modern Warfare', Foreign Affairs, Jan. 1962; also Operations Research Quarterly, Vol.13 No.3, pp 253-266.
6. Sarchin, T. and Goldberg L., 'Stability and Buoyancy Criteria for U.S. Naval Surface Ships', Transactions of the Society of Naval Architects and Marine Engineers, N.Y., V70 (1962), pp. 418-458.
7. Korotkin, I.M., 'Battle Damage to Surface Ships During World War II' Sudpromgiz, Leningrad, 1960; DTMB (USN) Translation 310, February 1964.
8. Rawson, K. and Tupper, E., 'Basic Naval Architecture' Longmans, Green & Co., 1968.
9. Bird, H. and Browne, R., 'Damage Stability Model Experiments', Trans. Royal Institution of Naval Architects, April 1974; pp 69-92.
10. 'Some Modern Torpedo Developments', International Defence Review, 1/1976, pp 91-100.
11. 'The Mk 24 Tigerfish Torpedo', International Defence Review, 2/1977, pp 294-5.
12. Rawson, K. 'Survivability of Modern Warship', Defence Attache, 2/1980, pp 45-47.
13. Pacific Defence Reporter, July 1980, p 65.
14. Keil A.H. 'The Response of Ships to Underwater Explosions', Trans. SNAME 1961, pp 366-410.
15. Martin, W.T. and Sharp J.M. 'Reverse Factor Analysis: A Modification of Relevance Tree Techniques', Technological Forecasting and Social Change, 4(1973) pp 355-373.

ERRATA

Reference previous article ANI Journal Vol.5, No.4, p.43, column 2, para.3, amend '600w' to read '35kw' and '4kw' to read '400kw'.

FORCE PLANNING SCENARIOS

'It's important to distinguish between two very different types of military planning: operational planning and force planning. The former is planning how to fight with what you have: focusing on specific geographic areas and detailed schemes about how to use weapons and forces is often essential. The latter is deciding what weapons you want to buy and how many of what forces you need — how much is enough and all that.

It is this latter, force-planning process that has become mired in its own intellectual pretensions. It wants very much to be as precise as its cousin — operational planning. When it's told it can't be, it sits and pouts and contemplates its navel, indefinitely.

There are some — a very few — weapon systems decisions that profit from lengthy study of the specific scenarios in which the weapon might be used. But for many, and especially for a weapon as widely useful and as badly needed, for example, as the general-purpose submarine, their utility is so general that agonizing studies of specific scenarios are a waste of time.

Detailed and lengthy force-planning studies, and much of the process that accompanies them in government, are frequently bureaucratic gambits to delay programs and reduce defense budgets without admitting that such is the purpose. The weapons often get used for purposes radically different from those for which they were designed anyway.'

R. James Woolsey, former U.S.
Undersecretary of the Navy

THE ROAD TO CARACAS

Progress of the Third UN Conference on the Law of the Sea

by Captain R.J. Whitten OBE RAN

At about the time that Commodore Knox was preparing the last article on the Law of the Sea to appear in this journal (ANI Journal, Vol.4, No.1, February, 1978), the President of the Third UN Conference on the Law of the Sea (UNCLOS III) was heard to say —

> 'It's futile to engage in prophecy, but I hope we'll get to Caracas someday.'

Two and a half years later the road to Caracas, where it all started in 1973 and where it is hoped by the optimistic that members of the UN eventually will be able to sign a new law of the sea convention, seems much shorter, straighter and strewn with fewer obstacles than it appeared at the end of 1977.

What has been achieved since then? Before answering this it is necessary to emphasize that any achievements will only be regarded as such if a new Law of the Sea Convention is widely accepted by a large majority of the members of the United Nations who are prepared to adhere to the provisions contained in it. In a convention which provides directions and provisions governing the world's interests in the seas and oceans as diverse as security, freedom of navigation and overflight, the extent of territorial seas and resources zones, exploitation of the living and non-living resources of the oceans, marine scientific research, the preservation of marine living resources, the protection of the marine environment and the sharing of revenue from the exploitation of the seas and oceans, it is inevitable that each nation will balance out the advantages and disadvantages for its national interests. Any Convention which does not provide for a reasonable and acceptable balance of interests is doomed to failure. At present the portents look reasonably good, so one can talk with a degree of optimism of the achievements of the Conference.

The major manifestations of progress have been in the production of two revisions of the Informal Composite Negotiating Text (ICNT). The ICNT itself was the successor to two earlier drafts. Early in its negotiations the conference adopted a 'gentlemen's agreement' that efforts should be directed towards achieving a consensus on issues and that voting would be used only as a last resort. Voting would only exacerbate divisions and lack of agreement on issues where consensus is essential if the drawbacks and lack of acceptance of the 1958 Conventions are to be avoided. Each revision of the ICNT is evidence of progress in achieving consensus. Each revision has included generally acceptable solutions to some of the critical or hard core issues which still existed at the end of 1977.

Commodore Knox identified three major issues; the legal status of the Exclusive Economic Zone including the definition of the high seas, marine scientific research in the EEZ and the peaceful settlement of disputes relating to coastal jurisdiction; the exploitation of the deep seabed; and the rights of the landlocked and geographically disadvantaged States. The Conference recognised that these issues formed a hard core which, if not solved, would prejudice its success. In an endeavour to resolve the problems informally it established seven negotiating groups. In addition one of the major Committees as a whole worked on the issues related to marine scientific research. Excluding the problems related to deep seabed mining and marine scientific research there were four groups.

One feature of the work of these informal groups is that no records of negotiations and national positions have been published. The only indication of the groups' achievements has been the final report of the chairman of each group to the Chairmen of the various committees of the

THE AUTHOR

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Conference and the inclusion of new or revised provisions in the next revision of the ICNT.

One group was given the task of accommodating the interests of the land locked and geographically disadvantaged States that had been excluded from access to the fisheries of the 200 mile Exclusive Economic Zone by the agreements between the coastal States and the maritime States on the establishment of the zone. This group produced results with sufficient consensus to be incorporated in the first revision of the ICNT Rev. 1.

A second group was charged with the settlement of disputes, particularly fisheries disputes, relating to the exercise of coastal States' sovereign rights in the EEZ. These issues centred on the basis on which the coastal State will determine the optimum sustainable yield of the living resources of its EEZ, and in turn, after it has determined its own exploitable share, what surplus is available for allocation to other States. The results of this group also were included in the ICNT Rev. 1.

A third group was concerned with a topic of great importance to Australia — the definition and the location of the outer limits of the Continental shelf. After several years of detailed negotiations during and between Conference sessions revised formulae were included in the second revision of the ICNT (Rev. 2). In this group Australia along with the other broad continental margin States has been endeavouring to retain for the coastal States jurisdiction over their entire continental shelf in the face of pressures from other States to restrict the breadth to a lesser distance. One proposal would have restricted the breadth to 200 miles. Given modern technology this would have been a considerable contraction from the limitation in the 1958 Convention i.e. the outer limit of exploitability.

The intricate, tortuous and protracted nature of these negotiations is exemplified by the alternative formulae for the determination of the outer limits of the continental shelf which are included in the ICNT Rev. 2. Some of these have become enshrined not only in successive texts but also in the lore of the conference. For example the 'Irish formula' is not an Irish mathematical joke but a formula related to the thickness of the sediments on the shelf. The 'biscuits formula', expressing alternative criteria for the cut off of the outer limits of the continental shelf is said to have reflected a 'customary affection for tea amongst the original chefs', and perhaps the quantities consumed during the private bilateral negotiations which produced the formula.

Parenthetically, it is necessary to point out that Australia's continental shelf, depending on the final acceptability of the formulae in the ICNT Rev. 2, could extend up to 350-400 miles from the coast in some areas and not just to 200 miles which is the figure sometimes used in the popular literature. In the area between the outer limit of the EEZ, 200 miles and the outer limit of the continental shelf, there could be a conflict of interests between the coastal State exploiting the natural resources of the seabed and other States in their exercise of high seas freedoms including fishing. If a coastal State is to exercise its sovereign rights over the continental shelf it will need to exercise a degree of surveillance over this outer area.

Many States consider that in return for its sovereign rights over the continental shelf, the coastal State must be prepared to share the revenue obtained from exploitation of the shelf beyond 200 miles. This revenue would be distributed by the International Seabed Authority taking into account the needs of developing countries. The negotiating group on the continental shelf has yet to come to grips with the problem of revenue sharing. Until it achieves consensus on this aspect, it would be foolhardy to speculate on the likelihood of the Conference accepting the provisions for the continental shelf contained in the ICNT Rev. 2.

A fourth group is wrestling with a most intractable problem; that of the determination of maritime boundaries between the territorial seas, EEZs and continental shelves of opposite and adjoining States. Despite progress in reaching agreement on some aspects of this issue, the differences on the major problem remain as wide as ever. What criteria are to be used in deciding where the boundaries are to be? There is a large group of States which is holding out for an equidistance or median line; others seek to take equitable principles as the main factor in reaching agreement. Several very experienced negotiators and officials within the Conference have been heard to say that this is one of the most difficult issues for the Conference to solve — and agreement is not in sight yet.

After several years of often frustrating negotiations the conference has produced compromise texts on marine scientific research which appear likely to attract sufficient consensus for them to appear in the ICNT Rev 2.

Apart from these matters which are of prime concern to Australia's defence interests there are other outstanding issues related to deep seabed mining which must be solved if a new Convention is to be achieved. The importance to a country such as the USA of deep seabed mined of essential minerals can be judged by the following US appraisal.

> 'It has been estimated that ocean mining of known mineral resources started by 1985 could — by the year 2000 — reduce US imports of nickel from 77 per cent to roughly 30 per cent, reduce cobalt imports from 97

percent to zero, reduce manganese imports from 98 percent to zero, and supplement the amount of copper produced in the US thereby significantly reducing the need for any import of this vital material'.

Given the US ability to mine on the deep sea bed, and other nations particularly Japan and the European Community also have the technology, the meeting of these demands for strategic metals from production on the deep seabed has important implications for the land based producers such as Canada, Indonesia, Australia and others. Furthermore the developing countries see the deep seabed as the common heritage of mankind from which they, in particular, should benefit. They also see deep sea bed mining as an opportunity to improve their technology.

With this complex interplay of interests it will be no surprise that at the end of 1977 there were many outstanding issues related to deep seabed mining. The Conference identified three 'hard-core' issues which impeded progress in the development of what is in effect a constitution for a completely new and unique international organisation. The issues were:

- The system of exploration and exploitation of seabed resources and the resources policy of the future International Seabed Authority (ISBA).
- Financial arrangements relating to the Authority, especially the financial terms of contract with miners and the financing of its own deep seabed mining activities.
- The composition, powers and functions of the organs of the ISBA, especially those of its executive body, the Council.

Three negotiating groups were formed to deal with these issues. Because of the complexity and interrelationships between the issues and the difficulty of reaching consensus in large groups, a smaller group of 21 States representative of the major interest groups was established to speed up consideration of the issues. This group has produced substantial agreement on many matters related to the three hard core issues such as transfer of technology, anti-monopoly provisions, joint ventures between private contractors and the operating arm of the ISBA known as the Enterprise, breaches of contract, financial obligations of contrators, and the financing of the enterprise.

There are still many lesser matters concerning deep seabed mining to be resolved. The one major obstacle to a successful conclusion to the negotiations is the third hard core issue particularly the composition of the Council of the ISBA and the Council's system of voting.

There is general agreement on an ISBA with a three tier structure. Two of these would be governing bodies. The Assembly would comprise all States which have ratified or acceded to the Convention. Voting would be on one nation one vote principle. The Council, a smaller body, would include representatives of particular interest groups such as the seabed mining States, the land based producers and the consumers. The third organisation would be the Enterprise which would itself undertake mining operations in parallel with private companies and national corporations for the benefit of states not directly involved in seabed mining.

The Western industrialised countries which have the potential to be the first generation of seabed miners are determined to ensure that the Council will not have the power to make decisions adverse to their capital investments or their national economic interests. They are resolved that the enormous capital investment required is protected and is not subject to the political whims of a majority of unsympathetic council members. Unless this stability can be assured, the investment required to exploit the riches of the deep will not be available.

The Conference has now reached a stage where two major issues remain unresolved, delimitation of maritime boundaries, and the composition of and voting in the Council. While the first of these may be solved by resort to a neutral formula which leaves disputes open to bilateral settlement involving compulsory conciliation, a compromise on the second issue is likely to be much more difficult to achieve.

If these difficulties cannot be resolved in a manner acceptable to countries wishing to engage in deep seabed mining, they are unlikely to accept the provisions of any convention. They are prepared to sacrifice hard won gains in the evolution, codification and understanding of customary international law relating to national jurisdiction and for navigational issues rather than be bound by a system in which their economic interests are controlled to a large extent by others. This would involve a surrender of national rights which few nations would contemplate.

There are those who argue that deep seabed mining which is causing so much difficulty should be excluded from a new Law of the Sea Convention. The proponents of this view believe that matters on which there has been general agreement such as the 12 mile territorial sea, the EEZ, the archipelagic concept and other provisions should be included in a new treaty now and that deep seabed mining should be left to those who have the capability.

From the defence and security viewpoint there might be attractions in such a course which would resolve the uncertainties arising from the 1955 Conventions. But such a proposition ignores

the origins and fundamental reasons for the creation of the Conference. The Conference has always been recognised as a forum in which resource interests were balanced against maritime interst. The developing countries comprehend that navigation interests are of concern to the major maritime trading nations and to the naval powers. They would not be prepared to accede to the treaty dealing with these issues alone without resolving the resource related problems.

Others argue that the world would be better off without a treaty; that this would leave the deep seabed miners free to go ahead with only the restrictions of the market place to constrain them. They consider that the present ICNT Rev. 2. provides a basis on which all other issues could be recognised by the evolutionary process of customary international law. These advocates forget that it was expanded coastal States claims without the necessary concomitant guarantees on navigational rights which were in the forefront of developments of customary international law. If the maritime trading nations and naval powers of the world are to have the necessary freedoms to go about their lawful occasions they need guaranteed rights of transit through extended coastal claims. Without a Convention, these rights would be asserted in international practice largely at the expense of peace and good order in the world.

A world in which 200 mile territorial seas became the norm, in which Australian ships were denied passage through the archipelagic waters to the north-west, north, north east and east, in which coastal States endeavoured to exclude other hungry nations from sharing the food resources of the ocean, in which all the mineral spoils of the oceans went to the large technologically advanced nations, such a world would be an uncomfortable place to live.

With goodwill, the outstanding obstacles to agreement discussed in this article could be resolved at this months session of UCLOS III or perhaps early in 1981 thereby making it possible for the nations to return to Caracas to sign a Conference which, apart from enhancing the cause of peace, will provide a model for international cooperation not hitherto seen in the world.

Footnote:

Although there is very little academic and current affairs literature on developments in the Law of the Sea published in Australia, the topic has been a fruitful field overseas, particularly in the US. ANI Journal readers would do well to investigate some of the sources, not all of which are optimistic as to the outcome of the Conference for Defence interests. Aspects which amongst others have received detailed study overseas and which need it here include topics such as Law and Conflict at Sea, and The Effect of a New Law of the Sea Convention on the Mobility and Freedom of Action of Naval Forces.

JOURNAL BACK ISSUES

Stocks of the following back issues of the Journal are available:

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Vol 1 No 1 (August, 1975) and Vol 3 No 1 (February, 1977) are out of stock.

Back copies may be purchased from the Institute at $2.50 each, which price includes postage. Write to the Treasurer, Australian Naval Institute, PO Box 18, Deakin, ACT, 2600.

ROYAL AUSTRALIAN NAVY IN VIETNAM

When operating off Vietnam in June 1968, HMAS *HOBART* was damaged by missiles fired by a US aircraft. Two RAN sailors were killed in the attack.

The integrated RAN/US Army 135th Aviation Company supports Australian troops during a sweep operation in Phuoc Tuy province.

These photographs are from Royal Australian Navy in Vietnam *now available from Australian Government Publishing Service bookshops throughout Australia. Recommended price $11 — to be reviewed in the next ANI Journal.*

Nobody asked me, but...

A DIVERSE NAVY

I thought I would pass this poem on to you for what it is worth. When I visited *USS Henderson* at Garden Island Sydney in 1971, I was given this poem as I came onboard. It was written by Lieutenant Commander Howard D. Isaacs, of the U.S.N. Safety Centre.

So you think you are keener
Cause you are a submariner
And wear the dolphins silver and gold;
And you ride ship under water.
And on liberty show hauteur
Toward the sailors whom you think are not as bold.

Well what of the Navy flier.
Who goes faster and much higher.
And whose training is as rigorous as yours;
He flies day or night-time missions.
He, too has proud traditions.
Often operating far from friendly shores.

Now the diver should be noted.
And his awesome cause promoted.
He's the man who visits Neptune on his own:
What's a more demanding diet
Than the murky depths and quiet.
And returning to the 'pressure' all alone?

What about the surface sailor.
Facing winds or waves or gale or
Even hurricanes that sweep the sea;
Though he wears no symbol for it.
We should certainly deplore it.
His exclusion from the Navy coterie.

There are others we should mention
Who deserve esteem attention.
For the service though unherarald they perform;
They help man the Arctic Station.
Shipyard, harbours, of our nation.
And they map the course of current, wave and storm.

And the seabees grading ridges.
Engineers who build the bridges
Even those who see the water not at all;
From the deserts to the beaches.
From the far out mountain reaches.
From the rural towns and from the urban sprawl.

All together we're the Navy.
We're the steak as well as the gravy
Of the service that goes back to John Paul or John Cresswell.
Our long history full of glory.
Now let's continue the story.
And we'll all deserve to stand up proud and tall.

ERIC JEHAN

THE COST OF LIVING

We are now into the 1980's, a period of 'increased Defence Expenditure' according to a statement to Parliament by the Prime Minister, Mr Fraser. The main intention in areas related to the Royal Australian Navy would appear to be the speeding up of production and delivery of the recently ordered Patrol Craft, ships and weapons systems. I, however, very much doubt that this area should be of primary concern, particularly in the wake of deteriorating world political crises, more particularly Soviet intervention in Middle East affairs.

In arguing my point, let us have a look at a few brief but accurate facts:

- Australia does not have a nuclear arms policy at present and is most unlikely to have one within the next five years or so.
- Should we suddenly see the need to implement the use of nuclear arms, it would take much longer than the affordable time to convert our present shipborne weapons to a nuclear capability.
- Orders for new acquisitions cannot be fulfilled or men trained in the skilled usage of these (FFG-7s, SS and SSS Harpoon

Missiles) in the time it could take for the present crises to develop into full scale military activities.

- The present government sees these problems, however they are not taking any steps towards a viable alternative to meet the current needs.

A concept which immediately enters my mind is the upgrading of our preparedness for Nuclear, Chemical and Biological attack (NBCD). My personal experience has shown that this is an area which is lacking in so much as a number of personnel are not capable of ensuring that their own protection is adequate; not to mention the overall security of the ship. It is fair to say that a marked increase in expenditure must go to the complete retraining of all personnel, more particularly our sea-going members. If I was to conduct a survey of the complement of a ship, it is highly probable that 65% could not even tell me what 'Fuller's Earth' is. It would, therefore, be of the utmost benefit to hold refresher courses in NBCD training at least yearly.

The blame is not to be altogether laid upon ourselves. As is the custom in the Services, these small points are the ones that are most overlooked. At present our NBCD exercises involve make-believe attacks with protection being provided merely by anti-flash gear and the wearing of Action Working Dress. More often than not, our ship's capability to become a Citadel is marred by ill-maintained scuttles, hatches and screen-doorways, much to the dismay of the Shipwrights who are more concerned with getting the PreWet system operational.

In a wartime situation, we are expected to know how to don and remove NBC Protective Clothing, M17A NBC Protective Masks (our U.S. replacement of the A.G.R.), and the correct procedure of carrying out decontamination. We cannot possibly learn/remember these things from our training days when the vital time comes. The point is, that the buying of new requirements does not solve the problems presented by the shortcomings of our old requirements.

In quoting the Prime Minister, Mr Fraser, speaking on the lack of PREVENTIVE measures taken in World War II (*Navy News*, 22 February 1980), we can see that it is in fact a matter of life or death: 'It would be tragic — indeed it would be disastrous for the human race — if that mistake were to be repeated only a few decades later.'

G.B. CANNING
AB ETW

COLLECTIVE NOUNS

We have for many years now in the R.A.N. had titles to describe groupings of warships. We are all used to hearing of a 'Squadron' of destroyers, or a 'Flotilla' of minesweepers, to name but two. What, however, of our officers? Is not some system needed whereby ranks can be described in the collective rather than in the singular?

It is the humble opinion of your correspondent that such a system is needed and, therefore, after much weighty thought and pained inspiration, one has been devised and is submitted for the consideration of the learned members of this Institute.

Members are asked to put forward their comments and any suggested additions or alterations before the list goes to be included in *Regulations & Instructions*. It is by no means yet perfect and any assistance would be much appreciated.

	A Warp of Warrant Officers (or a Grief of WOs?)
A Jumble of Junior Officers	A Muddle of Midshipmen (or a Snore of Snotties?)
	A Smattering of Sub Lieutenants
	A Lust of Lieutenants
	A Loss of Lieutenant Commanders (or a Torment of Two and a Halves?)
A Botch of Brass Hats	A Crank of Commanders
	A Clutch of Captains
	A Comedy of Commodores
A Frenzy of Flag Officers	A Ridicule of Rear Admirals
	A Vacuum of Vice Admirals
	An Allergy of Admirals
	An Effete of Admirals of the Fleet

One must admit, of course, that Naval Ranks do not admit of any opportunities approaching those of the Air Force. How many members have not heard of that title applied to Wing Commanders? * Nonetheless, the gap does need to be filled.

Submitted.

* A Flushing of W-Cs

'AGAMEMNON'

SHIPS AND THE SEA

ARCHIBALD RUSSELL

The *ARCHIBALD RUSSELL* was a steel four masted barque of 2,385 tons built by Scott and Company of Greenock in 1905. Originally built for J. Hardie and Co., *ARCHIBALD RUSSELL* joined the Mariehamn fleet of Captain Gustav Erikson in 1924. Purchase price was £5,500.

Used basically on the Australia to Europe grain trade, *ARCHIBALD RUSSELL* regularly beat the average times each year until 1931. Occasional fast runs were recorded up to the 1938/39 grain race.

The best recorded run was 93 days Melbourne to Queenstown in 1929 (with a crew of 22) and other times in later years of the grain races were:

1933 — 119 days
1934 — 130 days
1935 — 111 days
1936 — 104 days
1937 — 98 days
1938 — 130 days
1939 — 121 days

Used as a storage hulk in the Humber during the Second World War, she was handed back to Captain Erikson in 1947, but owing to a lack of buyers, *ARCHIBALD RUSSELL* was scrapped at Gateshead in 1949.

Robin Pennock

The *ARCHIBALD RUSSELL*.

HERZOGIN CECILIE

With so much interest in retaining training ships in the RAN, the story of the *Herzogin Cecilie* may be of interest.

In 1896, the German shipowners Norddeutscher Lloyd decided to run their own sail training ship although it was quite obvious even then that the sailing ship was fast disappearing from the oceans of the world. Initially their scheme commenced with the *Herzogin Sophie Charlotte* (ex *Albert Rickmers*) but it became such a success that a newer and better ship was needed.

Built in the Rickmers yard at Bremerhaven, *Herzogin Cecilie* was launched in 1902 as both a training ship and cargo carrier. A steel four masted barque of 3242 registered tons, *Herzogin Cecilie* was 335 ft in length with a beam of 46 ft and carried 46,000 square feet of sail. Her cargo capacity was 4000 tons.

Heavily sparred and with a mainmast of 200 ft, there was little need for labour saving devices. There were no reef points (in the 18 square sails) and no brace or halyard winches. In those days training meant just that, and the Cadets paid £40 per year for their tuition and keep.

In addition to the Master and 4 Mates, there were 2 Instructor Officers, a Surgeon, Purser, Bosun and a few paid hands. There were 60 Cadets ranging in ages from 19 to 22 years of age. *Herzogin Cecilie* did have steam winches for cargo, but evidently the owners required 'in port' time to be kept to a minimum.

As an aside, this same ship was manned in later times quite successfully, by only 19 to 22 men.

In 1914, *Herzogin Cecilie* was interned for the duration of the war, firstly in Coquimbo and then in Antofagasta where, in 1918 she was refitted and turned over to the French Government as war reparation. Sailed to Ostend in 1920 she was laid up pending disposal.

About that time, one Captain Reuben de Cloux acting on behalf of his owner, Captain Gustav Erikson, inspected her and realising her worth bought the ship for £4000. Thus *Herzogin Cecilie* was added to Eriksons' fleet of wind ships as his Flagship. Soon after this Captain Erikson was to become famous by owning the largest sailing ship fleet in the world.

Kept as a training ship, *Herzogin Cecilie* sailed to most parts of the world, but is best known for her part in the grain trade from Australia and the nitrate trade from Chile. Best remembered for speedy passages, she won the Grain Races (Spencers Gulf to Falmouth or Queenstown) no less than 8 times. Some recorded times were:

Caleta Bueno to Falmouth	91 days
Beachy Head to Adelaide	78 days
Mexilones to Scilly Isles	68 days
Fredrickstand to Melbourne	92 days
Melbourn to Taltal	35 days
(at an average speed of 14 knots)	
Port Lincoln to Queenstown	88 days

The end came in 1936 when *Herzogin Cecilie* went ashore in dense fog near Salcombe (Devon).

ROBIN PENNOCK

JOURNAL BINDERS

Journal binders are available (as illustrated) from the Treasurer, price **$5.00** each including postage. Coloured blue, with gold lettering and ANI crest, each binder will hold 12 copies of the journal (3 years' supply) by means of a metal rod which is inserted simply through the middle page of the journal and held firmly at top and bottom of the binder. Plastic envelopes on the bottom of the spine enable volume numbers or years to be inserted.

BOOK REVIEWS

URANIUM, ENERGY SOURCE OF THE FUTURE? The Case For by E.W. Titterton. The Case Against by F.P. Robotham. An ABACUS Book. 1979. Recommended price $4.95.

Australia has yet to commence the establishment of a nuclear power industry and if and when this occurs Australians are certain to be party to the extensive debate and controversy that now has become associated with this industry. Titterton and Robotham in this book succintly present most of the current arguments for and against nuclear power.

Sir Ernest Titterton, Professor of Nuclear Physics, Australian National University is by now a well known advocate of nuclear power and of the mining and export of Australia's uranium. He opens his case in favour of nuclear energy by categorically stating that electricity produced from nuclear power is the cheapest, safest and cleanest means of generating electricity yet devised by man. This sets the tone of what follows, lucid forthright facts backed by an impressive number of favourable statistics and supportive evidence. No particular expertise in or familiarity with science is required to follow most of the arguments presented and one cannot help but be impressed by the outstanding technical achievements of the nuclear industry. Titterton provides straight forward explanations of issues such as radiation, radiation hazards, breeder reactors and nuclear waste management and attempts to place nuclear energy in perspective with world energy requirements.

The case against is presented in the second half of the book by F.P. Robotham, radiation protection officer, University of Melbourne, who begins by detailing the darker side of the nuclear industry's history such as the uranium miners exposed by ignorance to damaging radiation and the pollution caused by toxic and radioactive waste. This sets the theme for what is to follow with evidence presented on the dangers of ionising radiation emissions, nuclear accidents, the disposal of radioactive waste, plutonium and terrorism. The anxiety usually associated with these issues seemed greatly exaggerated when reading the first half of the book but Robotham's evidence on these matters is not so reassuring. Yet the statistics provided to demonstrate the hazards of living near installations which form part of the nuclear power industry and the dangers inherent in uranium mining are no where near as convincing, at first reading, as those propounded by Titterton to support the case for. This is largely because, as Robotham explains, the effects of ionising radiation on living tissue is a long term effect, it being often meaningless to speak of a nuclear accident. Years may elapse before the victim becomes aware of the damaging effects of radiation exposure or, in the case of genetic damage, it is subsequent generations who may suffer. Robotham's discussion of the implications likely to follow from uranium mining in Australia, nuclear economics and non nuclear energy options contrasts sharply with his opponent's discussion of these topics and the arguments given illustrate some of the ideological differences between the nuclear and non nuclear lobbies.

Each author, besides trying to prove his case, has sought to raise some of the moral issues associated with our attitudes towards the availability of energy and our expectations in this regard. Titterton for example provides statistics on coal fuelled power stations that include the pollutants emitted and the on job injuries that occur from mining through to the delivery of electricity. These or similar statistics are often quoted by the proponents of nuclear power and the implication is that electricity from nuclear energy is less costly in human terms than that derived from coal. Consequently where is public concern for the coal miner? Or when it comes to enjoying the benefits of electricity, is the risk to the coal miner out of sight and therefore out of mind? Robotham's case against is not so clear cut in so far as much of it is concerned with what could happen should the risks taken be underestimated, misunderstood or just not appreciated. What does emerge is that the hazards associated with nuclear power are likely to have a much wider impact and by choosing this solution there is the risk that we could all share a bitter and enduring harvest. Many who read this book will seek out those facts which support their particular view but I would recommend it to anyone not familiar with the contemporary debate about nuclear power and to those who wish to gain an understanding of the technological issues involved. This is a book that requires reading more than once to fully appreciate the evidence, the arguments and the moral questions that probe our attitudes towards energy, its economic, environmental and human costs.

ROGER CREASER

(Editor's note — the author of this review, holds a Ph.D in Atomic Physics and is at present an analyst in the Directorate of Operations Analysis — Navy.)

DRINKING AND ALCOHOLISM IN AUSTRALIA — A Power Relations Theory. By Margaret Sargent. Longman Cheshire, 1979. 213 pp. Recommended price $6.95.

Dr Margaret Sargent is a senior lecturer in sociology in the School of Social Work at the Milperra College of Advanced Education near Sydney.

In the author's own words: 'The power relations theory presented in this book is an attempt at a fuller explanation of drinking and alcoholism than has previously been offered. There are still gaps and deficiencies and insufficient research has been done as yet for adequate empirical support to be claimed. The theory differs from most others by being non-elitist in certain ways. Firstly it is based on a conception of Australian society, not as having pervading order and consensus, but as consisting of many and various social groups whose values and interests differ. Secondly it does not take sides with dominant groups in society. Thirdly it does not focus blame for alcoholism on individuals, nor assume that some individuals or their behaviours are defective or deviant'.

Chapters presented include Australian drinking patterns, theories of drinking and alcoholism, women's drinking, driving and drinking and reducing alcohol problems. While one would expect from the author's background that the subject of alcoholism and drinking would be tackled from the sociological viewpoint, as one reads the book a thread of radical political conviction permeates the topics under discussion. This makes interesting reading but detracts from the book's value if one is looking for an objective overview of alcohol related problems in the Australian community.

Notwithstanding this criticism a considerable amount of reference material has been assembled and presented to add weight to the author's viewpoint. The subject of alcohol abuse is of major concern to Australia because of its association with social dislocations ranging from marital breakdown to road accident fatalities in service personnel on leave. However this book does not provide practical answers for those concerned with the management of alcohol related problems but is rather a commentary on some aspects of alcohol use and abuse in the Australian social scene.

G.J.A. BAYLISS

AUSTRALIA AT THE CROSSROADS. Our choices to the year 2000. By Wolfgang Kasper, Richard Blandy, John Freebairn, Douglas Hocking and Robert O'Neill. Harcourt Brace Jovanovich Group. 1980. 310 pp. Recommended price $16.95 cloth-bound. $9.95 paperback.

There are many indications that the next two decades are going to be critical years of change and adjustment for Australia. Despite our rich endowments in natural resources, the outlook confronting Australia is not necessarily a cheerful or buoyant one. This is the concern of the authors of *Australia at the Crossroads*.

We will need to adjust to the realisation that whilst Japan has already passed us with regard to per capita income, there are prospects now that countries such as Taiwan and Singapore may also do likewise by the end of the century if present trends continue. The sad truth is that the Australian economy has a propensity for protectionism, low growth, an inability to adjust to changing technology and world trading trends and inequitable income distribution. We could indeed be becoming a 'poor, little rich country' overshadowed by the dynamically growing economies to our North. This is the background to the pessimistic, 'mercantilist' scenario postulated in *Australia at the Crossroads*. It equates to the 'business as usual' scenario of Herman Kahn's recent book, *Will She be Right?*

There are important implications for Australia's Defence. Strategically we must be aware that, if these pessimistic trends continue, there will be countries to our North better able to exploit developments in weapon and sensor technology than we are. Australia will find it relatively more difficult to play in the defence 'big league' and will no longer be able to patronise or talk down about the defence competence of presently less developed nations.

Australia's defence expenditure is planned to grow in real terms by about 7% per annum to reach 3% of GDP by 1985. The implicit assumption is that the economy will sustain a growth-rate of about 4% per annum. In the March quarter of 1980 however, GDP fell by 0.3% suggesting that unless the overall performance of the economy improves, real difficulty will be experienced in achieving the projected rate of growth in defence expenditure. In the 'Mercantilist' scenario of *Australia at the Crossroads*, the rate of growth of GDP in the period until 2000 will be about 2.6% per annum.

Rate of growth in GDP is a basic factor in supporting a higher level of defence preparedness, unless there are to be harsh compensating cut-backs in health, education and welfare expenditure. Japan for example in the last 10-20 years has been able to support a significant expansion in the capability of her Self Defence Forces yet her expenditure on defence is still barely 1% of GDP.

During this period of growth in the capabilities of the Japanese Self-Defence Forces, there has only been marginal improvement in the capabilities of the Australian Defence Force, despite an annual allocation to the defence function of over 3% of GDP until 1973 and about 2.7% thereafter. This paradox is explained by the relatively slow growth of the Australian economy during post-war years. From 1950 until 1973, the growth-rate of per-capita income in Australia lagged by about one-fifth behind the average of OECD countries.

It is the view of the authors of Australia at the Crossroads that the picture in the future need not be so gloomy. There is an alternative. This is their so-called 'libertarian' scenario — a dynamic new approach based on free international trade and a less restricted market economy. This scenario would enable Australians in the year 2000 to enjoy living standards exceeding those now prevailing in Switzerland and West Germany. Australia would then commence the 21st century as one of the richest countries in the world. Since the rate of growth of GDP in this scenario would be in the order of 5.2% per annum, Australia would be able to afford a stronger Defence Force, should it be necessary, without sacrifices in other areas.

Unfortunately there are problems unlikely to be solved in the short-term. Life is not meant to be easy. In the final analysis, economic choices become political choices. Economics and politics are ultimately inseparable.

On the one hand, there would be those who would argue that a similar outcome to the 'libertarian' scenario could be achieved by central Government planning and direction and greater equity. On the other, there is virtually no prospect of any Australian government abandoning fully the traditional conservative protectionist policies required to implement the scenario.

Australia at the Crossroads is a must for all thinking persons with an interest in the future of Australia.

THE EDITOR

AUSTRALIAN CHURCHES AT WAR. By Dr Michael McKernan. Studies in the Christian Movement, The Catholic Theological Faculty, St. Patrick's College, Manly (in conjunction with the Australian War Memorial), 1980 pp 207. Recommended price $15.00.

Dr McKernan, lecturer in history at the University of New South Wales has opened up an area of historical research that has received scant attention up until now. On meeting the author recently, the reviewer was impressed by the breadth of his knowledge of his subject and the extent of the background research that went into this work. The book is well-presented and contains some interesting illustrations and an extensive bibliography.

Written originally as a thesis rather than an historical work, it has necessitated the author taking a certain attitude and making judgements that seem rather too sweeping at times.

The work covers the period 1914-1918. It opens with a fair statement of the position and attitudes of 'official' Church policies of the time. The author cites the attitudes of various clergymen and implies that they were out of touch with the needs of their times. Perhaps the author, in making this judgement, is more influenced by the attitudes of his time than he realises! Nevertheless, he brings out the deep faith that the churchmen had in the relevance of the Christianity they expounded and in their abiillity to provide guidance and leadership in the community.

The chapter on Chaplains and the A.I.F. provides interesting statistics and insights into the formation of the Australian Service Chaplaincy, the development of additional work beyond the liturgical, the unique position of the Chaplains in the Australian Army, and the dedication of most to the prime reason for their presence — the spiritual good of the men.

There are interesting comments on the enthusiastic involvement of the Churches in the early patriotic fervour, the failure of recruiting and the controversy of the conscription issue.

For those interested in Service Chaplaincy a chapter on the Chaplain, the soldier and religion is outstanding and contains many insights for present-day application e.g. the respect and 'almost reverence' that Chaplains held for the men of the A.I.F. — Chaplains judged by men as individuals — the growth of a *genuine and strong desire for non-sectarian religion* — *the* laying of foundations for co-operation between denominations — the contrast with the sectarianism on the home scene.

The final chapters deal with pacifism and the problems associated with peace, especially the unfortunate blight of bitter sectarianism which bedevilled the Australian community.

In his conclusion Dr McKernan raises many points that are open to debate but which help to make his work provocative and thought-provoking. Hopefully, this book will be a success, thus moving the author to undertake further works in this area to give us more insight into a fascinating aspect of our historical growth. This book is recommended as rewarding reading for anyone interested in the historical development of the relationship between the Churches and the Services.

G.F. MAYNE

FIGHTING SHIPS OF AUSTRALIA, NEW ZEALAND AND OCEANIA.
By Graeme Andrews. A.H. & A.W. Reed Pty. Ltd. 3rd edition 1980. 48pp. Recommended price $3.95.

The magnum opus of the world's navies — *JANES FIGHTING SHIPS* — is a very large and very expensive reference book and, so, without doubt, many's the Naval Officer or involved amateur who has wished for a small, manageable compendium of his or her own Navy.

Graeme Andrews has produced such a guide in this the third edition of *FIGHTING SHIPS OF AUSTRALIA, NEW ZEALAND AND OCEANIA*. This excellent little book covers, in good detail, not only the maritime assets of the RAN and RNZN but also the Water Transport Squadrons of the Australian Army and ships of the Papua New Guinea Defence Force, Royal Fiji Military Forces, Solomon Islands Police Force and the Royal Tongan Defence Service. Thus, the book is a complete record of the Naval forces of the SW Pacific and includes two informative articles — 'Patrolling the Pacific Ocean' and 'The Argument for Sea Control'. It would seem that these articles were written pre Afghanistan but none-the-less are still pertinent ever though, now, the RAN is placing more emphasis on security off the west coast than the author would have us believe.

There are a few errors in statistical fact in the text. However, the histories and statistics of each ship or class of ship are well written, informative and profusely illustrated and will appeal both to those involved in naval matters and the casual browser.

This little book is highly recommended.

'DOLLY'

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