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AUSTRALIAN NAVAL INSTITUTE

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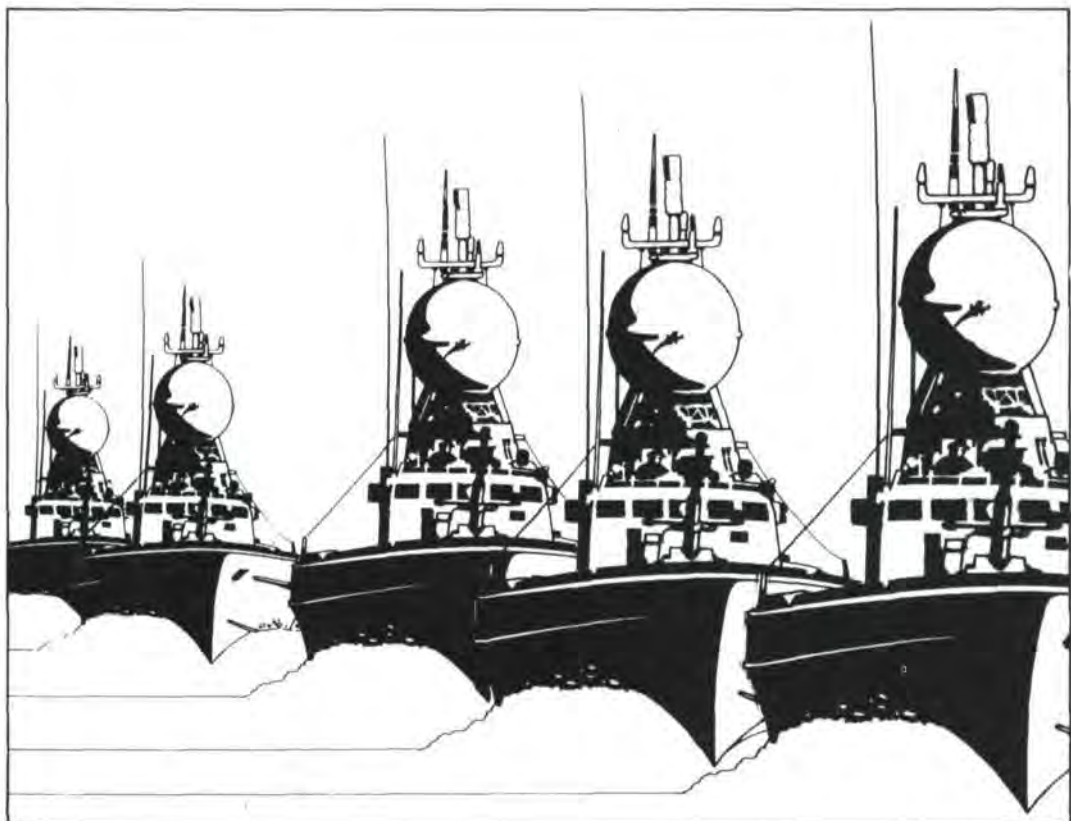
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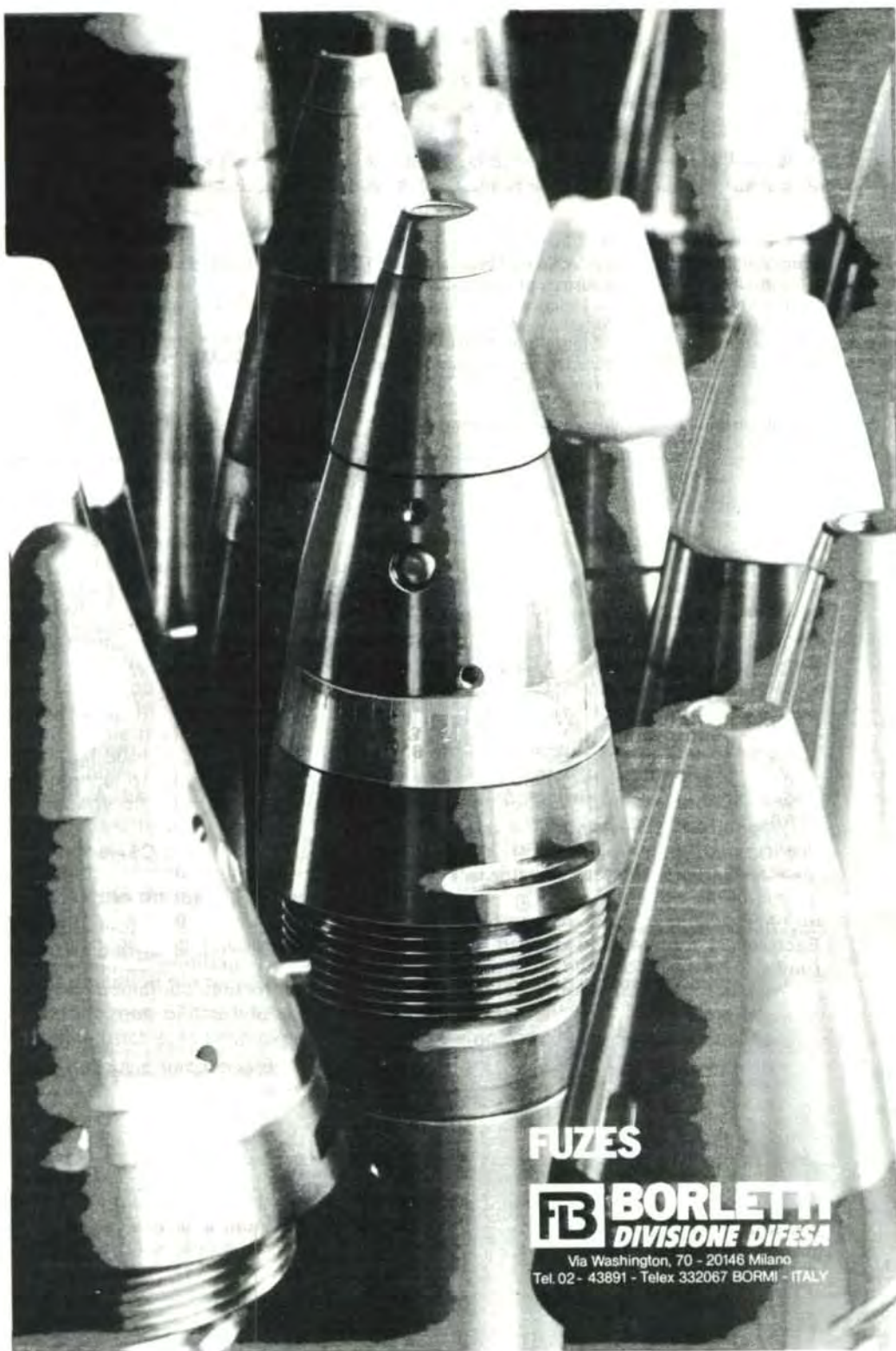
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The front cover: HMAS VAMPIRE, escort for the Royal Yacht March 1977, celebrates her 25th birthday this year.

Courtesy: John Mortimer



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FROM THE EDITOR

By the time you read this, *Seapower '84* will have been and gone — successfully, I hope. My computer and I (to coin a phrase) have been working overtime, not only tidying up ANI records generally, but also recording and printing all the *Seapower* registrations, proforma, programmes etc. I am about to start work on *Seapower '84* Proceedings. I do hope you find that this edition of the Journal has not suffered from my extraneous activities.

Which reminds me to offer apologies to Mr A Bergin and LCDR Gulliver for typographical errors in the last Journal. Mr Bergin was referring to the 8th RAN *Legal* Conference in his letter, and there should have been no 'would like to' at the beginning of paragraph 2 of his article. LCDR Gulliver's initials are IR not IA; question 13.d of his quiz should have referred to PAKISTAN not India; and he served in *HMS DEVONSHIRE* not HMAS. I am always prepared to receive constructive criticism of my efforts — only thus will the standard be improved. I also take this opportunity to put out the editor's perennial cry for submissions: please write to me, long or short articles, preferably typed, not necessarily in Queen's English if you are prepared to let me loose with a red pen!

There is no theme to this journal, but there is a link with *Seapower '84* — from a historic and futuristic perspective, and from Australian, US, Soviet, Swedish and European points of view. There is no biography of CMDR Pennock — new readers can look him up in almost any previous journal; acknowledgements are made to Mr H Grevby for the article by Capt. Hultman originally published in *Swedish Navy News*, and to Tom Friedmann for the article from the Congressional Research Service. There is no Washington Notes due to pressure of business.

In order to balance the journal, I have included some photos of ships unrelated to articles. If we ever get our naval photographic archives off the ground, I will do this more often. If there are any readers' requests for specific photos, we will do our best to meet them.

Tom Friedmann and others have been suffering mailing problems which unfortunately seem to be beyond our control. In an effort to improve our service, we will be offering air mail rates for overseas subscribers as of the new financial year — details in the next journal. Other changes include a new insignia page (and new prices!) and a new format for the membership application page: if you do not wish to mutilate your copy, please feel free to copy the details onto your letter. We are considering offering subscriptions for longer periods — three or five years, or life — now that the computer can easily keep track of them and indicate financial status on address labels: any comment?

Lastly, a plea for a worthy home for any surplus copies of *GEO*, the Australian Geography Magazine, or *National Geographic* 1982 + 1983. Please contact me at the Journal address, or 062-654673, on any offers — or on any likely submissions for the Journal.

Geoff Cutts

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Correspondence

Dear Sir,

On reading, *FROM THE EDITOR*, in the February ANI Journal I was disappointed to find that the RANNS did not rate a mention in the breakdown of membership, and yet Associate Members did. This is particularly disappointing since several Nursing Officers are Regular Members, including LCDR Elizabeth Coles, RANNS, who is one of the Councillors of the ANI.

Beverley H. Hartwig
Lieutenant RANNS

[By the Editor: My computer read 'RAN' as all phrases beginning with 'RAN'; therefore, the nurses were included in the 291. There are 4 members of the RANNS in the Institute.]

Dear Sir,

I am delighted to read that Captain Swindells has decided to dust off and re-start the discussion on the status of RANR members of the Australian Naval Institute. I support him whole-heartedly but would carry the matter just one step further. If subjected to re-examination, then I would suggest that 'Regular Membership' be extended to all members of the Australian Naval Forces irrespective of whether they are serving, retired or Reserve. In the generic term Reserve I include RANEM, RANR AND RAFR.

It seems somewhat incongruous to me in this enlightened age that a professional association should appear to be so introverted as to fear the incursions of others (the Reserves) who may have professional ability in two spheres. I am sure that their expertise in fields other than 'The Navy' should be welcomed and encouraged. The best way to do this would be to treat them as equals within our Institute.

In the very early days of this debate, one argument put forward against the Reserve/ Retired Members was that the wishes of our Founding Fathers was to keep the Constitution sacrosanct and in its original form. Whilst applauding the sentiment, I believe that even the Commonwealth of Australia has had to change its Constitution to keep up with the times. When the Institute was formed, there were 59 Foundation Members of which 10 were Associates. The passage of time has dramatically altered these figures to 44 Associates, including our Past Presidents. Is the reduction of status of these people a reward for services rendered? I think not!

A latter attempt to change the membership provisions was brought into the open with public debate. To quote the Corrigendum to *ANI Journal Vol 8 No 1*:

'On 19 February, 1982 a Special General Meeting of the Australian Naval Institute was held in Canberra to consider the motion to change the

definition of 'Regular Members'. This was not carried by the necessary majority of members present.'

The pros and cons of the argument had been previously published (*ANI Journal Vol 7 No 4 p 6*) and the 19 February debate was lucid, mostly valid and well put by both sides. However, voting members present only numbered about 50, or about 12% of the total membership of the Institute. (You may correct me on these figures if needs be.) In retrospect, I believe that the points as published 'against' were based on a subconscious fear that the management of the Institute would be the subject of a take-over by the 'old and bold'. May I illustrate this by examining three specific points:

- *The Institute's administration is assured of continuous rejuvenation (due to the posting process).* The posting process does not always provide this. Recall if you will those of us who shuffle from building to building or floor to floor within the Defence complex every two or three years. Voting for Council is always in Canberra with Navy Office/ Defence personnel shouldering the burdens of office. The majority of voters are Canberra residents and it would be incumbent upon them to ensure that the dreaded take-over did not occur.
- *The growth and achievement of the Institute to date have clearly vindicated the policies and judgement of the founders.* The Institute is growing in size and stature each day and I believe that total membership of 1,000 is not too far away. To administer this number (and perhaps more) will be taking up even more time of our Navy Office/ Defence Councillors. Reading the latest annual reports, I notice that certain areas of administration have been let out to contract. With envisaged growth, should we not look ahead rather than rest on past laurels?
- *It would establish a precedent facilitating further changes to the Institute, the effects of which cannot be foreseen.* This is an indication of the fear of change and certainly not 1984 thinking (no Orwellian pun intended). Francis Bacon summed it up better than I can:
'Set it down to thyself, as well to create good precedents as to follow them.'

Sir, the ANI must grow stronger, and in doing so will expand its horizons. There is as yet a largely untapped source of members: the Reserves. Your statistics in Volume 10 No 1 prove this! Not only can they swell our membership, but properly motivated they can publicise and promote the Institute to the civilian market-place. In my outpost of empire, there are at least 200 reservists plus untold numbers of civilians who dearly love things maritime. Yet we only have a handful of Members.

There are within the ANI Council, sub-committees for Administration and Membership. May I suggest that they cast their eyes beyond the eastern seaboard and gauge fully the feelings of all members on the importance of membership status for Reserves. The cost would not be great; a loose page insert with the next Journal to members would I believe achieve the aim.

Robin Pennock

Dear Sir,

I would like to take the opportunity through your columns of replying to the letter by Anthony Bergin in the February 1984 Journal concerning my November 1983 article on surveillance. I would also like to correct any wrong impressions which may have arisen over the Commanding Officers' powers to which he refers.

It was never my intention to mislead, and when both parts of the article are taken together I think the chances for misconception are minimal. When I first began to write, I intended to complete a single piece. It soon became apparent that the subject was too large for that treatment and I was thus forced into the somewhat unwieldy formula of two parts. Mr Bergin has commented upon the first part without the benefit of reading what was to follow, and I believe that my description of the YUAN TSUAN incident amply demonstrates that the RAN has no charter for cavalier action on the high seas. That particular hot pursuit action progressed in intensity step by step from very sedate beginnings to its final resolution, strictly in accordance with laid down legal naval procedures. RAN Operational Instructions set out quite categorically all of the actions which are to be taken progressively by a patrol boat commanding officer in such a situation. Indeed, permission for HMAS TOWNSVILLE to fire upon the fishing vessel with an intention to inflict damage came only as part of that procedure and required positive personal approval from no less than the Minister for Defence.

My remark that 'Legally the RAN is well protected...' referred to the various statutory authorities under which patrol boats operate. In the mechanics of writing the article, it was necessary to amplify some aspects at length while limiting others to a cursory coverage. Legal authority was one of the latter. Readers may be interested to know that members of the Defence Force (and in this context particularly commanding officers of RAN patrol boats) are 'Officers' of the Commonwealth for the purposes of enforcing the provisions of the Fisheries Act 1952-1975 and the Continental Shelf (Living Natural Resources) Act 1968-1973. A naval officer's powers under these Acts are set out in the Australian Coastal Surveillance Manual (MISCPUB0027) and enable a patrol boat to board and search a foreign vessel, and to arrest it without warrant in exceptional circumstances. Many other powers, also vested under the above Acts, are set out in detail for interested readers in the Manual.

With respect to naval officers acting as special members of the Australian Federal Police, such appointment is confined to the Commanding and Executive Officers of RAN patrol boats and applies

only to duty in Bass Strait. These powers are also limited to the provision of Police Services in relation to the Petroleum (Submerged Lands) Act 1967. If a commanding officer has reasonable ground to believe that a vessel or its master has committed an offence against a law of the Commonwealth or of a Territory in connection with the provisions of the Petroleum Act, he derives power to effect an arrest from section 8A of the Crimes Act 1914.

These above legal authorities formed the basis of my comment that naval officers were adequately protected. It was never my desire to create an impression that patrol boat commanding officers were unfettered in the execution of their duties and I am grateful to Mr Bergin for giving me the chance to enlarge upon this important part of RAN surveillance responsibilities which I had not fully covered previously. As a post script to this reply, I would like to assure him that I will seek out the papers he referred to and read further.

AHR Brecht
Commander RAN

Dear Sir,

I found Group Captain O'Brien's article 'An Airman's Perspective on Maritime Warfare' of very great interest and most revealing as, I am sure, did many other readers of the Journal. At this stage, I would like to raise only two of the many points of difference I found in the article.

The first claim with which I take issue is that 'in all honesty, only Australian flag shipping would be targeted.' Why? How could any potential enemy ensure that he targeted only shipping of one particular flag?

In the two weeks following the publication of Group Captain O'Brien's article, there occurred three cases of 'neutral' flag shipping being targetted (in two cases without an overt war). On the west coast of Nicaragua, one 'neutral' ship was mined. On the east coast of Nicaragua, another 'neutral' ship was mined. In the Persian/Arabian gulf, Iraqi aircraft attacked four neutral merchant ships (one British, carrying, be it noted, an Australian cargo of alumina for belligerent Iran), one Indian, one Turkish and one other.

The second contention with which I disagree, and disagree very strongly, is that following positive Defence Department direction regarding the purpose of the ADF 'we — all of us — must accept it; the nation has every right to expect nothing less of its military profession.'

On the contrary, I believe that the nation has every right to expect a great deal more of its military profession. Use existing assets with unity of purpose yes, but each member of the military profession should continue to press for the strategy and force structure which he or she believes to be in the nation's best interests. I, for one will continue to do just that although, as a Reservist, I may not be a part of the military profession.

A.W. GRAZEBROOK

Dear Sir,

Group Captain O'Brien's article (ANI Journal Feb 84) is an example of situating the appreciation. Its argument rests on unstated assumptions and debatable assertions. It is not based on any observable understanding of the real nature of maritime strategy, but sees it from the myopic aspect of maritime strike — shades of the battleship era! It tackles the subject from the limited perspective of weapon systems. Having approached the subject from the wrong end, the author, consciously or unconsciously, then tailors his strategic scenario to what he believes will be the forces available to implement it. Not surprisingly, from this tautological and subjective approach he finds that Air Force manned and commanded land-based aircraft can perform all the essential tactical aviation tasks at sea quite adequately (apart from some ASW helos in converted bulk carriers).

Furthermore, although he considers the functions of a naval Maritime Defence Force Commander can be absorbed into an enlarged CDFS operations centre in Canberra, he can foresee occasions 'where (the RAAF's AOC Operational Commander) would be an appropriate Maritime Defence Force Commander'. But he stops short of proposing the AOC Op Com should be the MDC, and proposes instead the abolition of the MDC altogether. For some reason, he would still maintain the Sydney MHQ; to meet Radford-Collins requirements, he says, but that won't do as a justifiable reason if the MDC function has been removed.

The author's view of command structures appears to be unencumbered with any knowledge of the history of the military disasters which have followed from too great a centralisation of command close to the seat of government, from PQ17 to Suez, Vietnam; nor, it would seem, does he have any personal experience of higher military command structures in hostilities. It is all theory, untempered by either experience or historical knowledge.

The adolescent conceits of the 'the expertise (for maritime strike) is rapidly becoming the province of airmen than of sailors' and 'proven operational . . . and training expertise exists within the Air Force to conduct (maritime) operations independently . . .' would be amusing if they were not meant seriously. He might at least acknowledge the RAAF's continuing dependence on US Navy training.

The author condemns inter-Service rivalry, suggesting strongly from the outset that it is caused by the Navy, or at least the fault of those who maintain that a carrier embarking both fixed and rotary wing tactical aviation is still needed ('grasping at the straws of carrier reinstatement'). Such people, he avers, weaken the ADF by sustaining uncertainty 'with the attendant adverse impact on morale and ADF solidarity'. Although the article begins with the author suggesting a surface force of destroyers, he ends by implying it too will become irrelevant — 'our future offensive maritime operations may involve only one surface navy, the enemy's'. Since he does not seem to appreciate the unintended irony of his own position, he should be advised that there have always been RAAF authorities attacking naval aviation. And it was them, not the Navy, who pitted the fighter against the carrier. The first attempt to get rid of naval aviation in 1959 failed, but the objective was maintained until it was achieved in 1983. It seems that the Group Captain's idea of what 'Jointery' means is only those who agree with him; everyone else is a promoter of Trenchardist dissension. Forgive me if I find this 'holier than thou' attitude a bit rich, and not a little alarming. Through its tenuous claim to be the provider of tactical aviation, the RAAF's interference in the strategic functions of both the Army and the Navy has gone on so long now that it has achieved the status of acceptable behaviour.

I suggest that the RAAF would be better occupied with trying to fulfil its own strategic functions of national air defence and strategic strike, and letting the Army and the Navy get on with the strategic ~~strike, and letting the Army and the Navy get on with the strategic~~ requirements for which they exist. Pious talk about jointery is meaningless if it is only interpreted as a licence to interfere.

Altogether, the article is a polemic of the kind which Trenchard himself could have written, yet Group Captain O'Brien would no doubt accuse me of living in the past. One thing can be said in favour of the article: it is an exercise in unconscious self-exposure, from which we now all know just where the LRMP 92 Wing Commander (designate) stands, and the personal bias and perceptions which will inform his proposals for the conduct of Australia's maritime strategy. As the Gunnery Instructions at Whale Island used to say — 'Don't say you wasn't told'.

Alan Robertson
Commodore RAN (Rtd)





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SOUTH AUSTRALIA'S NAVY

Part I — Discovery to 1900

by Commander R.J.R. Pennock ADC RAN

It all started with Matthew Flinders, or did it? The first Europeans to see the South Australian coastline were the ship's company of the Dutch vessel *GULDE ZEEPAARD* in 1627. Conjecture is that they reached as far eastward from Cape Leeuwin as the Isles of St Francis and St Peter in the Nuyts Archipelago. Abel Tasman probably saw the same coastline in about 1644, as did the French expedition of Rear Admiral Bruny D'Entrecasteaux in 1792 with the vessels *LA RECHERCHE* and *L'ESPERANCE*. Lieutenant James Grant RN made his landfall near the eastern end of the state in 1800 whilst in command of HM Brig *LADY NELSON* en route to Port Jackson.

Not too long after, Captain Matthew Flinders arrived upon the scene. In a previous voyage to New South Wales in *HMS RELIANCE* in 1797, Flinders would not have seen the South Australian coast, running the easting down, as seafarers did in those days, from Cape Town to the Tasmanian or Victorian coast and thence to the Colony of New South Wales. Flinders' early voyages around Tasmania and the eastern seaboard are well known, but they do not form part of this story. His later voyage in the sloop *HMS INVESTIGATOR* (ex *XENOPHON*, ex *FRAM*) is relevant.

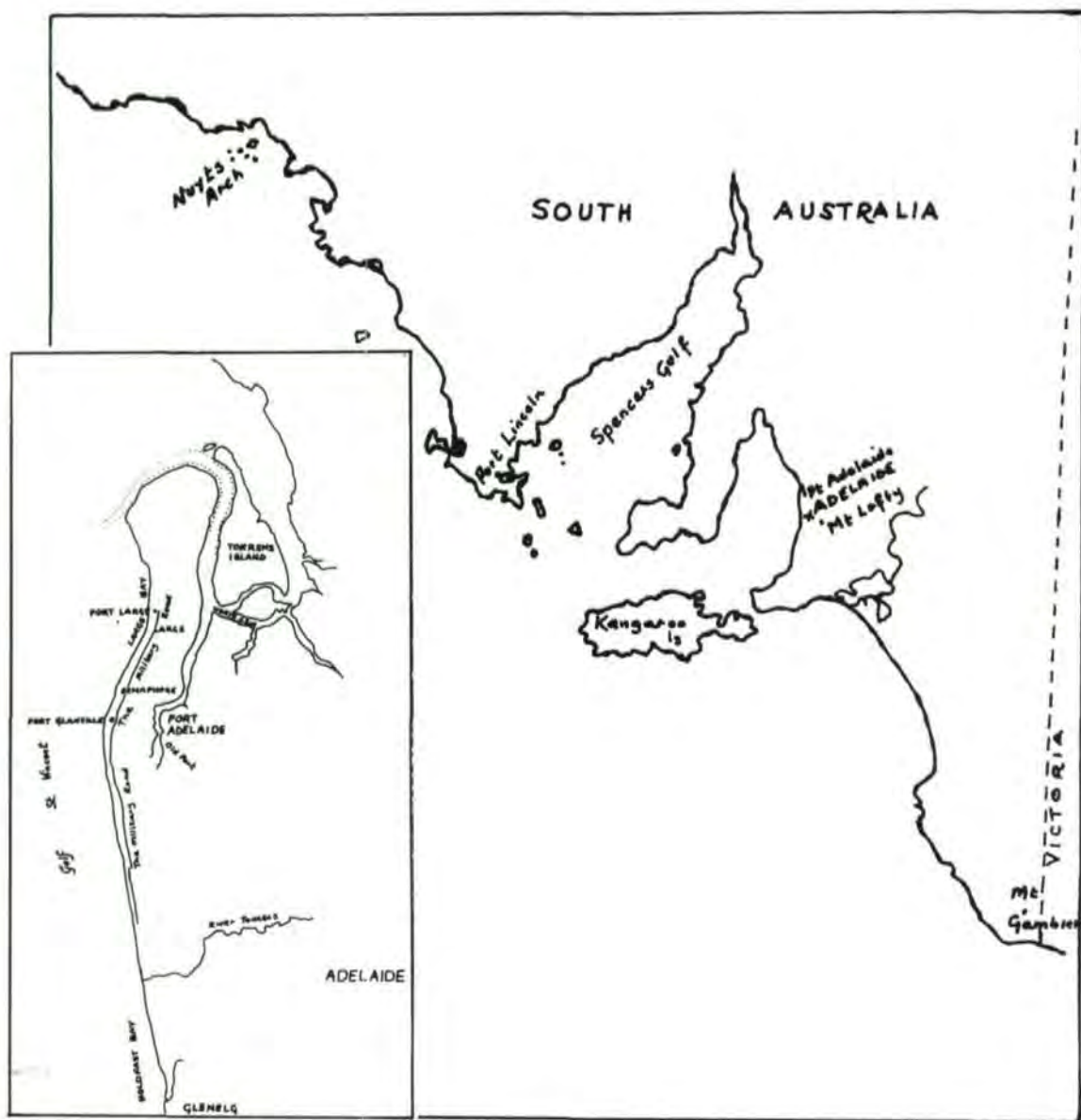
Arriving by way of the Cape of Good Hope and Cape Leeuwin, *INVESTIGATOR* worked her way eastward and entered South Australian waters about 28 January 1802. Although Flinders departed state waters on 18 April of that year, South Australia had been well and truly placed on the map. Flinders explored the east coast of St Vincent's Gulf on 28, 29 and 30 March 1802, passing some 8 miles to seaward of a creek now known as the Port River and landing near the present site of Port Wakefield on 29 March. Subsequently, he returned to Kangaroo Island to continue his explorations in and around Nepean Bay, departing from his

anchorage on 6 April. Beating through Backstairs Passage, *INVESTIGATOR* cleared for action at about 5 pm on 8 April after sighting a vessel ahead. As history records, this ship was *LE GEOGRAPHE* (Captain Nicolas Baudin) and the place, Encounter Bay. Flinders continued on towards Port Jackson passing abeam of Cape Northumberland on 18 April 1802.

Nicolas Baudin continued to the westward following many of Flinders' courses and anchorages, and much of the advice so freely given by Flinders. He passed the entrance to the Port Adelaide River (13 April 1802), and, like Flinders, did not realise that the mangrove swamps were in fact a river. Where Matthew Flinders never returned to South Australia, Nicolas Baudin did. Early in 1803, *LE GEOGRAPHE* in company with *LE CASUARINA* (Lieutenant Freycinet) departed Sydney for Cape Leeuwin, Timor and Mauritius passing out of South Australian waters in February 1803.

Shortly afterwards, the American vessel *UNION* wintered at Kangaroo Island near what is now known as American River. Whilst there, they built a 35 ton schooner *INDEPENDENCE* which later sailed for Pt Jackson. Many other visitors followed, including escapees from penal settlements. The establishment of the township of Kingscote and the arrival of The South Australian Company's vessels in 1836 brought an end to the lawless times.

At this stage, two soldiers arrived upon the scene. Captain Charles Sturt, of the 39th Regiment, undertook his epic expedition through the River Murray system from New South Wales to the mouth of that river, arriving in February 1830. A missed rendezvous with HM Colonial Ship *DART* forced Sturt to return to Sydney Town via the river. In 1831 Captain Collet Barker, also of the 39th Regiment, was dispatched from New South Wales in the schooner *ISABELLA* with the



Adelaide and Environs

Coast of S Australia

Maps by R Pennock

express orders to find the mouth of the Murray River. He missed his objective, but entered St Vincent's Gulf in April of that year. Landing near the mouth of the Onkaparinga River (south of where Adelaide now stands), Barker made for the summit of Mt Lofty to survey the flat surrounding plains. Re-embarked in *ISABELLA*, he proceeded north to examine a tidal estuary noticed from the summit. Because of the estuary's shallow mangrove mud swamps, no further surveys were made. *ISABELLA* turned south and Barker ultimately found the mouth of the great Murray River.

Flinders' discoveries and the publication of his journal '*A Voyage to Terra Australis*' in 1814 led to an interest in England of a possible new colony to be established in South Australia. The South Australian Company was formed and an Act of Parliament was passed to bring the Colony into existence. Captain John Hindmarsh RN was appointed Governor and *HMS BUFFALO* commissioned at Portsmouth on 23 April 1836.

First arrivals in the new colony were the South Australian Company's vessels *DUKE OF YORK*, *LADY MARY PELHAM* (206 tons) and *JOHN PIRIE* (105 tons) all of which arrived at Kangaroo Island in July and August 1836. Later arrivals were the Brig *RAPID* (162 tons) and *CYGNET* (239 tons). The collection of ships then in the colony contained some very interesting people. Onboard *RAPID*, and as her Commanding Officer, was the Surveyor-General of the Colony, Colonel William Light. His status 'in command' was due solely to his previous RN service. *RAPID* arrived in August 1836 and Colonel Light immediately set about finding a site for the capital. Captain Thomas Lipson RN was onboard *CYGNET*. Prior to leaving England, he had been appointed Naval Officer Port Adelaide although Governor Hindmarsh did not officially proclaim the capital as Adelaide until early 1837.

By the time *HMS BUFFALO* arrived at Port Lincoln, a site for the capital had been chosen. Captain Lipson met the new Governor on his arrival and all proceeded to Holdfast Bay, arriving on 28 December 1836. *HMS BUFFALO* remained at anchor off what is now the suburb of Glenelg for 5 months until her departure on 14 June 1837. Having established a port for the city of Adelaide at the head of the Port River, surveying of the entrance was soon completed. Buoys were placed at the Outer and Inner bars where the depth of water was 9 ft. at low water. The establishment of the Old Port (about a mile above the present Port Adelaide bridges) was not a success and in 1837 the New Port came into being. Development of a wharf, sheds and a 6 ton crane were due to the South Australian

Company's interests.

Port Adelaide developed steadily in those days. A 500 ton capacity patent slip and 20 hp steam engine were landed at Kingscote in 1840 but later transferred to Port Adelaide. The site used later became known as Fletcher's Slip at Birkenhead and the area is still in use today as a ship repair facility. Those who are familiar with the present *HMAS ENCOUNTER* will realise that it is on Fletcher Road and within two minutes walk of the old Fletcher's Slip.

In 1838, a small dredge arrived in Port River and in one year had cut a deeper channel through the Outer Bar. *CORSAIR* and *COURIER* were the earliest steamships to visit, being owned by the South Australian Steam Navigation Company (SASN Co). Both vessels arrived under sail and had their engines assembled after arrival. They proved invaluable in the new colony, especially in towing sail driven vessels from the anchorages to the inner harbour at Port Adelaide.

All these early developments took place under the watchful eye of Captain Thomas Lipson RN. He was Naval Officer Port Adelaide, Collector of Customs, Harbourmaster and later, First Master of Trinity House. His life was not without irritations. Let me quote two:

- An extract from the log of *HMS BUFFALO*: 'January 6th 1837. Sent the barge and cutter to Pt Adelaide with Capt Lipson, family and baggage with two officers and twenty men.' (Recall if you will that the Port River had barely been explored)
- On his request for official transport: 'Governor Hindmarsh regrets no more than anyone this distance from the port to the seat of government but cannot comply with your request that a horse be allowed you'.

Prior to Lipson retiring in 1855, a steam bucket-dredge had commenced work on deepening the Inner Bar, removing an unprecedented 50-60 tons of spoil per hour.

Up until this time and for some little while longer the protection, such as it was, depended upon visiting warships in various shapes and sizes. Although the visitors are too numerous to list in full, there were some famous names worth mentioning: *HMS ALLIGATOR* (Captain Sir J.G. Gordon Bremer RN), *HMS BEAGLE* (Commander J. Lort Stokes RN) and *HMS FANTOME* (Commander J.H. Jennys RN). In addition to ships, the new colony had no lack of naval officers. Lieutenant John Lloyd RN was appointed as the signal-master in 1840, Captain J. Walker RN set himself in a shipping concern and Captain G.F. Dashwood RN held a number of Colonial Government appointments.

The onset of the Crimean War brought Colonial defence to the forefront and the South Australian Government set up a commission in 1854 to report on defence measures. The Commissioners were Captain Lipson and Lieutenant Dashwood, and a Major Moore of the 11th Regiment. Amongst its recommendations were:

- a boom across the Port Adelaide Creek
- military land forces
- a chain of semaphore stations from Cape Borda (Kangaroo Island) to Port Adelaide
- mounted patrols along the coast near the city
- the British detachment of 40 soldiers to be strengthened
- an armed steamship in St Vincent's Gulf.

After war had been declared, Commander J.H. Jennys of *HMS FANTOME* recommended a battery of thirty-two pounders on Torrens Island.

Further proposals were put forward on local defence including forts at (The) Semaphore, Glenelg, Torrens Island and inland; six gunboats each armed with a 100 pounder gun; a torpedo station in the Port Creek and a military road at the rear of the sandhills linking all the forts. Ambitious? It certainly seems so when the parliamentary grant was only £20,000. The only items that materialised were Forts Glanville and Largs, and the military road.

Having eased their conscience on the defence of the Colony of South Australia, 'Their Lordships' promptly forgot the colony itself. Every naval officer and sailor who has served at *HMAS ENCOUNTER* has, at times, bemoaned the dearth of visiting warships. An Executive Council minute of 25 July 1864 made a similar complaint:

'The Executive Council brings to His Excellency's notice that the inhabitants of this Colony have not been gratified by the presence of any of Her Majesty's ships of war in these waters for the last nine years.'

The minute brought a virtual flood of visitors including HM Ships *CHARYBDIS*, *CURACOA* and *GALATEA* (Captain HRH Alfred Duke of Edinburgh RN).

Still without its own Navy as such, South Australia did by this time lay claim to HM Colonial Schooner *YATALA*. Built in Port Adelaide, she was a wooden topsail schooner of 65 tons. Launched on 28 July 1848 by Mrs. Lipson (wife of Captain Thomas) she was used extensively around the colony. Sent to the Northern Territory in 1864 to assist in survey work, she was condemned and sold in Timor within the same year. The next acquisition was the wooden schooner *BEATRICE*. Built in Newhaven, Sus-

sex in 1860 for James Weller of London, and sold to Thomas Must of Portland, Victoria, she arrived there in 1862. The same year, *BEATRICE* was purchased by the Admiralty and the Province of South Australia in joint ownership. Listed as an RN vessel, *BEATRICE* was used for surveying duties in both South Australia and the Northern Territory until 1880. Purchased outright by the Province, she became a Colonial vessel and laid-up. In 1881 she was reclassified as a moorings boat until sold into commercial service. She was wrecked on Waterhouse Island in Bass Strait in June 1921.

1884 is really the year that South Australia came of age with regards to a naval presence. The Colonial Defence Act of 1865 made it legally possible for any (British) colony to own and man a ship-of-war. In addition, there was provision within the Act whereby officers of the Royal Navy could be loaned to assist in training the crews. Also within the Act was permission for colonial seamen to be recruited into a Navy Reserve which, to all intents and purposes, would be a part of the Royal Naval Reserve.

The Colony of South Australia did not take immediate action in 1865 to found a navy, rather they preferred to allow the RN ships of the Australia Station to carry out their maritime defence. Strained relations with Russia in 1876-77 again drew attention to the paucity of defence preparedness and the lack of defence co-ordination between the various (Australian) colonies. The British Government then sent two Army officers (Major General W.F.D. Jervois and Lt Colonel Scratchley) to discuss a common policy on military and naval defence. Together with Commander F. Howard of the Admiralty Survey Office, Adelaide, they again concluded that South Australia needed forts, gunboats, a small naval force and a Naval Reserve.

Jervois, who later became Governor, pressed for a local naval force in the form of a large formidable iron-clad warship. What was eventually purchased was a small cruiser that gave service in three navies. Two years later, assent was given to an Act entitled 'The Naval Discipline Act for the Commissioning of Ships-of-War and the Establishment of a Naval Brigade'.

HMCS PROTECTOR was a twin screw steam cruiser of 920 tons built by Sir William Armstrong & Co, Newcastle UK at a cost of £65,000. Especially built for service in the Gulf waters of South Australia, she arrived at Port Adelaide on 30 September 1884. Considered at the time to be the most heavily armed vessel for her size, she boasted 1 × 8 in, 5 × 6 in and 5 multi-barrel machine guns. Dimensions were 188 ft × 30 ft beam × 12'6" draft. *PROTECTOR* saw service in local waters, in China at the Boxer



SS GOVERNOR MUSGRAVE (1874-1930) stranded off an Adelaide beach.

*— From the A.D. Edwards Collection,
State Library of S.A.*



Schooner BEATRICE (1860-1921)

*— From the A.D. Edwards Collection,
State Library of S.A.*

Rebellion and in the RAN after Federation. Her first Commanding Officer, Captain J.C.P. Walcot RN was also appointed as Naval Commandant on his arrival at Port Adelaide. *PROTECTOR*'s career with the RAN and USN has been well documented in other books and articles. Suffice to say that the hull now forms part of a breakwater off Heron Island in the Great Barrier Reef.

At this stage, mention must be made of the Marine Board's vessel *GOVERNOR MUSGRAVE*. An iron, single screw steamer of 180 tons gross, purpose built by the Mort's Dock and Engineering Company, Balmain NSW at a cost of £11,750, she was not a naval vessel but had the distinction, post 1884, of being commanded by Captain C.J. Clare an officer of the SANF. After a refit in 1885, *GOVERNOR MUSGRAVE* was paid off and laid up. It had been agreed, however, that in time of need she would be provided with a crew drawn from the ship's company of *HMCS PROTECTOR*. Captain Clare, a lieutenant commander in the Reserve, later commanded *PROTECTOR*. Re-commissioned, *GOVERNOR MUSGRAVE* served as an examination vessel in RAN service (1914-1916) and after a long and varied career ended her days at Port Stephens NSW.

In his report for 1890, Captain Walcot commented upon the establishment of a Naval Depot and Torpedo Station at the North Arm (of the Port River). He also made comment on the fact that 12 torpedoes were lying useless for the want of a vessel from which to fire them. He also asked for the money to build, or buy a drill shed for the Naval Brigade. Observing that his own men had built the Naval Depot and Torpedo Station using second-hand timber salvaged from the anti-shipping boom in the river, this was not an unreasonable request. The same year, cutbacks were being argued in Parliament due to the financial depression throughout Australia.

It took three years to reach the decision on what form the cutbacks should take. Although it was decided to keep *PROTECTOR*, the cutback took the form of discharging the ship's company and placing Captain Walcot on half-pay. The Naval Brigade were to man and maintain *PROTECTOR* on an 'as-required' basis. Walcot resigned and left the State, and Captain William Creswell RN was appointed to the SANF in 1893. Irrespective of the financial cutbacks, South Australia went ahead and bought a torpedo-boat in the same year that Walcot resigned. *TASMANIAN TB No 1* was a steel, 2nd Rate torpedo-boat of 12 tons. Built by Thornycroft of Chiswick (UK) in 1883 at a cost of £3,300, she arrived in Hobart, Tasmania on 1 May 1884. Originally operated by the Tasmania Engineer Corps she was transferred to the Tasmania Torpedo Corps in 1889 or 1890. Little used *TB No 1* was sold to the South Australian Government in either 1894 or 1895 (different sources disagree on the actual date). Their new acquisition was towed to Port Adelaide but capsized on route and had to be righted at Portland. Little else is known of *TASMANIAN TORPEDO BOAT No 1* (this was her official name), except that she was paid off in 1901 and sold for disposal in 1910.

By late 1899, the South Australian Naval Force consisted of two ships totalling 932 tons, 12 out of date torpedoes, a Naval Brigade and a Naval Depot by then established at Largs Bay.

Sources

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HMCS PROTECTOR at Port Adelaide.

— From the A.D. Edwards Collection,
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WESTLAND

THE CHARACTER OF NAVAL WARFARE: A SOVIET VIEW

by Commander James John Tritten, USN

In his remarks to Congress in 1982,¹ former US Chief of Naval Operations, Admiral Thomas B. Hayward, went to great length to explain the character of naval warfare at sea, apparently high-lighting the differences with, and where able, using the terminology of land warfare. The effort to explain naval warfare is also characteristic of the writings of the Commander-in-Chief of the Soviet Navy, Admiral of the Fleet of the Soviet Union, Sergi G. Gorshkov.² This paper will attempt to outline the character of naval warfare as contained in the writings of Admiral Gorshkov. Where appropriate, the contrasting American view will be presented and analysis of the possible wartime use of forces will be presented.

STRATEGY AND CONTROL

Underlying the use of any military force are political decisions, plans, and doctrine. Forces in being are often created with potential use in mind. The plan for such use is considered strategy.

Soviet military doctrine represents official decisions and desires as to the useage of military force to achieve political gains. The highest level of planning for the actual use of these forces is termed military strategy. No individual Service has its own independent strategy; rather, a unity of views and combined arms approach is used to ensure coordination in achieving political goals.

Admiral Gorshkov is most certainly a strong proponent of the use of seapower and especially naval power to achieve political goals. His writings, however, are constrained by accepted unified doctrine and strategy. Gorshkov himself places distance between himself and Western

'Mahanists' who think that a maritime strategy can exist outside the realm of overall multi-Service coordination.³

The fact that Gorshkov himself openly writes about the need to maintain naval strategies within the bounds of higher military strategy is indicative of a number of possibilities. There may be those within the Soviet Navy who are attempting to grab a larger portion of the defense pie for the Navy, and Gorshkov may be attempting to keep his officers in line. On the other hand, it may be the other Services which are resisting entering into operations in the naval theater and are being reprimanded for their reluctance. In either case, Gorshkov does not openly criticize either group but uses the Western 'oceanic strategy' as a convenient whipping-boy to express this thesis. Perhaps he is only creating straw-men to pledge his allegiance to the overall doctrine of combined arms.

Implicit in good strategy is the need to maintain control over forces. According to Gorshkov, the revolution in military affairs which includes new dynamics in electronics has added

The Author

Commander James John Tritten, U.S. Navy, holds subspecialty ratings in Strategic Planning, International Affairs (Europe and USSR), and Anti-submarine Warfare. He has had numerous articles published in journals around the world. As a Naval Aviator, Commander Tritten primarily served in carrier based anti-submarine warfare squadrons. He also had a tour of duty aboard an aircraft carrier as a ship's company officer in charge of the anti-submarine warfare module. Commander Tritten holds a BA from the School of International Service at American University, an MA from Florida State University, and an AM from the University of Southern California. He is currently assigned to the University of Southern California where he is enrolled in a Navy-sponsored PhD program at the School of International Relations.

new dimensions to control possibilities. Gorshkov is a firm believer in central control using the vast resources which computers allow. In a major series of recent articles in the primary Soviet Naval journal *Morskoy Sbornik*,⁴ Gorshkov outlined the advantages of computers assisting commanders.

Computers may be used to ascertain your own forces' status and capabilities, to present intelligence outlining enemy capabilities, to predict enemy actions based on his known and observed tactics, and to then recommend the best courses of action. Gorshkov and other Soviet naval authors⁵ are not above stating that this has meant some of the decision-making has therefore been placed out of the hands of local commanders.

On the other hand, the realities of isolated naval operations and the very real possibility of being cut off in time of hostilities has meant that individual commanders must maintain the ability to think and act for themselves.⁶ In these cases, the commander has apparently been provided with computer software which can help him perform all of these tasks internally. Obviously, fleet units would not have access to the latest intelligence being compiled at shore stations unless this information was contained in downlinks as part of a global command and control system.

DEPLOYMENT AND MANEUVER

Deployment, and more specifically maneuver, are terms generally associated in land warfare with efforts to place forces in the most advantageous position. It can be used by a weaker force to overcome the superior firepower ability of an enemy. Deployment and maneuver can be performed to place a military force into a position whereby its mere presence serves a purpose, such as in a deterrent role. Naturally it can also be used to secretly or openly move forces to counter or engage an enemy.

Admiral Hayward makes extensive use of this phrase, arguing that maneuver is the essence of sea warfare. Gorshkov also recognizes this fact but appears to be somewhat reluctant to openly discuss the need to deploy and maneuver in all of the world's oceans with a superior force. This may be due to his need to remain within budgetary constraints and/or the need to not present an image of aggressive designs for his fleet.

As the ability to deploy and maneuver increase, the scope of naval warfare does also. Admiral Hayward points out the uniqueness of naval warfare in needing to deal with an air, surface, and subsurface environment. He care-

fully explains that fronts or forward edge of the battlefield operations do not exist in the naval theater. Both Admirals recognize the extreme difficulty in conducting reconnaissance in the subsurface environment.⁷

Admiral Gorshkov has frequently mentioned the new global nature of warfare which characterizes his fleet. The Soviet Navy has indeed moved onto the world's oceans. According to Gorshkov, the naval theater has the unique ability to sustain political-military actions which are much less constrained by the norms and rules of international politics. Admiral Hayward on the other hand stresses the need to continually consider the presence of non-belligerents during operations at sea.

The scope of naval warfare includes the doctrine of superiority, parity, or an inferior position vis-a-vis an enemy. The United States has carefully defined a desire to maintain naval superiority in only certain areas and not worldwide.⁸ Admiral Gorshkov agrees, although he now uses the term 'dominance at sea.' In Gorshkov's view, dominance at sea is not as strong a term as sea control, but merely one which will prevent an enemy from interfering in one's own missions and one which can prevent an enemy from achieving his. The concepts of superiority and grand sea control are described by the Soviets as 'fetishes' of the United States and NATO.⁹

FIREPOWER

When forces cannot use maneuver and deployment alone to achieve an objective, they may instead resort to direct offensive confrontation. In land warfare, the term firepower is used to describe the potential of a force to damage an opposing force. Superiority in firepower alone can and often has resulted in superiority in sea battle.

Using terms such as fleet against fleet, or fleet against the shore, Admiral Gorshkov discusses the concept of firepower in terms that make it appear he is attempting to educate officers and politicians whose background is in the ground rather than sea services. Gorshkov makes the clear distinction between battles which are conducted by fleets against fleets, and strikes, which may be conducted by a fleet against another fleet or against the shore.

Being faced with a 1950s political decision to virtually abandon a surface fleet capable of long-range sustained operations, Gorshkov initially set about maximizing the striking power of his fleet primarily using submarines, aircraft, and relatively inexpensive surface ships. The primary emphasis was to amass firepower by using the

revolution in military affairs to the Soviet advantage.

The initial Gorshkov fleet stresses strikes against the shore using nuclear powered ballistic missile submarines (SSBNs) and strikes against a fleet using torpedoes and nuclear missiles from a variety of platforms. Strike was the term used to describe the concept of sea-denial and offensive warfare from an inferior position. Dominance at sea is essentially a sea denial strategy and limited to areas where air superiority can be maintained.

Gorshkov was careful to stress the ability of this type of a fleet in achieving strategic objectives which include undermining the military-economic potential of an adversary. The Soviet sea-denial fleet is in fact capable of successful *pre-emptive* missile strikes against the sea lines of communication (SLOCs) at the terminal ends and Western fleet assets which are found in port. They can probably also *pre-emptively* strike Western high value units such as aircraft carriers using nuclear missiles and torpedoes, and successfully achieve their objective. The Soviet Navy does *not* have the capability to counter deployed Western SSBNs. Successful accomplishment of strikes, Gorshkov argues, is necessary to accomplish victory on land. In order to guarantee success of the strike, it is necessary to protect and defend the capital ship of the Soviet fleet, the SSBN.

Although Gorshkov uses technology to improve the odds in firepower, he also wants to do this by improving readiness.¹⁰ Obviously, readiness has an impact on offense and defense. The robustness needed by naval forces in defense is stressed by Admiral Hayward. He makes the strongest possible case for the need for forces which can absorb blows inflicted on it by the Soviet Union and still go in harm's way by challenging the Soviet fleet in close aboard waters. Admiral Hayward also understands the ability of technology to improve the odds of the US fleet in achieving the objective of fighting in each high threat environment.

The Soviet surface fleet has *not* been equipped in the past to fight a prolonged war in distant waters. All that appears to be changing, with increased emphasis on sustainability and conventional airpower on new aircraft carriers. What does this mean for the West? The present Soviet fleet only hopes to achieve dominance at sea in selected areas close to protective land based airpower. A new capability for independent sea based airpower may mean the Soviets are willing to challenge the US fleet in battle, direct fleet upon fleet confrontations. On the other hand, it may mean that Gorshkov's sea-denial strike strategy is to be maintained and a surviving

Soviet offensive fleet of even modest capability can be used to dominate whatever Western assets remain following a successful *pre-emptive* strike. Survival of the Soviet offensive fleet might be accomplished by not deploying it outside protected waters.

Gorshkov has repeatedly stressed that the role of battle is not outmoded in modern warfare. He has acknowledged that its priority is below that of strike. In discussing the need for control, one of the primary reasons is because of the emergence of large tactical fleets. Not all Soviet naval authors, however, speak positively of battle.¹¹

Battle could also be conducted defensively such as in defense of Soviet protected bastions. If this were true, there would be no need to build the type of forces which are currently being procured. New Soviet Navy forces will have capabilities which exceed that needed for defense of bastions close to the homeland. They will be capable of distant independent battles, blockade, limited war options including strikes against the shore, and power projection. The key to understanding the Soviet fleet in the future is airpower on aircraft carriers. This capability is required if dominance at sea and projection of power ashore is to be achieved. Gorshkov speaks of both strike and battle in terms of the need to seize and hold the initiative, to achieve results in a short time, and to attack in depth. Sustainability and rear support is also needed but only for a long-term operation or offensive support of distant foreign policy objectives.

Surprise is another theme often written about by many Soviet military leaders, since achieving surprise can result in a significant advantage.¹² Recent attempts to de-emphasize surprise and first-strikes by the Soviets in many of their military writings can only be seen as political attempts to portray their regime as 'peace loving' and a threat to no one. This may be due in part to Western translations of Soviet military and naval writings which emphasize *pre-emptive* attack. Translations of the initial series of naval and military writings underscoring the crucial role of surprise probably remain valid due to the soundness of their content and logic. Recent efforts to the contrary must be viewed as disinformation in support of diplomatic and other foreign policy efforts.

FLEXIBILITY

Both Chiefs of the world's two largest Navies agree on the absolute necessity to procure forces which are able to respond to a full spectrum of contingencies. The next war will be fought with the forces on hand, at sea, and ready for combat at the time that deterrence fails.

Therefore, both Admirals stress balanced multi-purpose navies with a proper mix of forces. Each fleet will be different, however, due to unique requirements. Mirror-imaging and number counting of hulls and tonnage has no relevance to either party.

CONCLUSION

When Admiral Gorshkov spoke primarily of strike, he referred to a sea-denial Navy which used offensive tactics to

- achieve a defensive perimeter around selected areas,
- eliminate Western high value units, and
- break the sea lines of communication.

Damage limiting strikes against deployed Western SSBN are discussed by him as future possibilities which technology is working to achieve.

As presently configured, the combined efforts of all Soviet armed forces acting under a unified nuclear war strategy could in fact perform these strikes and seriously degrade Western naval forces which would be needed to perform vital missions in support of long war strategy. If the West cannot maintain control of the Atlantic and Pacific SLOCs, it is doubtful that European or Asian allies can survive a massive Soviet invasion and a long war.

If Western carriers are eliminated by nuclear missile and torpedo strikes, the Soviets could use the limited offensive fleet now being constructed to break out into the high seas and battle surviving Western assets. This would threaten the SLOCs and potentially doom any long-war strategy. Perhaps the Soviets might even be able to challenge Western SSBNs being held in strategic reserve. If the West cannot afford sufficient quantities of high technology naval units, then perhaps an answer is to no longer deploy assets which are crucial to the long war in such vulnerable areas like the Mediterranean. If the Soviets are building a fleet capable of dominating the seas after the next war's first strikes, Western maneuver and deployment in the pre-war phase may be a successful strategy which could deny the Soviets the ability to achieve their political aims.

FOOTNOTES

1. "A Report by Admiral Thomas B. Hayward, U.S. Navy, Chief of Naval Operations Before the House Armed Services Committee on the Fiscal Year 1983 Military Posture and Fiscal Year 1983 Budget of the United States Navy," 8 February, 1982.

2. Over ninety of Gorshkov's articles, interviews, books, and speeches were consulted for this research. The best sources and those used primarily for this paper are the "Navies in War and Peace" series contained in *Morskoy Sbornik* No. 2 1972—No. 2 1973; "The Development of the Art of Naval Warfare," *Morskoy Sbornik*, No. 12, 1974; *The Seapower of the State* (both Pergamon translation and Soviet 2nd. Supplemented Editions); "Guarding the Accomplishments of the Great October," *Morskoy Sbornik*, No. 11, 1977; and "Problems with Respect to Control of Naval Forces," *Morskoy Sbornik*, No. 5 & 6, 1980.
3. See especially pp. 306-315, entitled "The Strategic Employment of a Navy" in *Morskaya Moshch' Gosudarstva*, 2nd Ed., Supplemented (Moscow: Military Publishing House, 1979). The need for a unified strategy is also seconded by Vice Admiral K. Stalbo in "Some Issues of the Theory of the Development and Deployment of the Navy," *Morskoy Sbornik*, No. 4, 1981, especially pp. 25-26. Stalbo is listed by Gorshkov as having provided advice and assistance in the preparation of both editions of *Seapower*.
4. "Problems with Respect to Control of Naval Forces," *op. cit.*
5. See Rear Admiral M. Iskanderov, "The Development of Battle," *Morskoy Sbornik*, No. 5, 1980, pp. 28-32; and Part II to Stalbo's previously cited article, in the May edition of *Morskoy Sbornik* (No. 5, 1981), especially p.19.
6. This reality is recognized by Gorshkov but argued more eloquently by Captain 1st Rank V. Germanovich, "The Thinking of a Commanding Officer in the Course of Making a Decision for Battle," *Morskoy Sbornik*, No. 10, 1980, pp. 13-19. This article complements the Gorshkov articles on control.
7. The difficulty of conducting successful anti-submarine warfare (ASW) is a topic in itself. Gorshkov points out the difficulties of successful ASW campaigns. It is not clear whether he is doing so while pointing out the advantages of current Soviet SSBN deployment patterns, or, the difficulties in locating Western SSBNs. Many non-Naval authors do not seem to understand the problems inherent in an anti-SSBN campaign.
8. "Statement by the Honorable John F. Lehman, Jr. Before the House Armed Services Committee on Department of the Navy Posture," February 9, 1982, pp. 4-5.
9. Stalbo, *op. cit.* *Morskoy Sbornik*, No. 4, 1981, p. 22 for an early discussion of Gorshkov's view on dominance at sea. See *Morskoy Sbornik*, No. 8, 1972. By referring to Belli instead of Mahan, Gorshkov is probably making a concerted effort to emphasize the difference between the concept of "sea control" and "control of the sea."
10. "Navy Shipboard Regulations — Basis of a Navyman's Service," *Morskoy Sbornik*, No. 5, 1978, pp. 3-4 especially; and "The CO and Combat Readiness," *Morskoy Sbornik*, No. 1, 1979, pp. 3-7.
11. A strong dissent is raised prior to the appearance of the 2nd Ed. of *Seapower* by Captain 1st Rank A. Aristov, "Some Problems of the Dialectics of the Development of Forms and Methods of Naval Warfare," *Morskoy Sbornik*, No. 6, 1979, pp. 18-22. The position of one of Gorshkov's possible successors is not very clear. See Admiral of the Fleet N. Smirnov, "Studying Assiduously the Experience of the Great Patriotic War," *Morskoy Sbornik*, No. 5, 1979, pp. 3-7. Smirnov is criticizing the prospect of re-fighting the last war. He does admit a role for the massing of forces and the conduct of nuclear strikes. Is this battle?
12. The crucial need for surprise is an old Gorshkov theme echoed by the Aristov article. Later writings tone down the absolute necessity for surprise and speak in more general terms of its advantages. See Stalbo, *op. cit.*, *Morskoy Sbornik*, No. 5, 1981, pp. 21-22.

BATTLESHIP REACTIVATION

By Alva M. Bowen Jr and Lisa Miner

While the battleship *IOWA* lies in the Litton ship yard at Pascagoula, Mississippi, in the process of reactivation, the battleship *NEW JERSEY* has completed the process and has been operating on the Pacific coast since early 1983. Long lead funding for the *MISSOURI*, the third of the battleships planned for reactivation was denied by the 97th Congress, but the funds have been requested again in the FY 1984 budget.

The Navy's rationale for the modernization and reactivation program is to add numbers of offensive weapons platforms to the fleet in the short term by upgrading four already available *IOWA* class battleships. Since the Navy's current offensive striking power is concentrated in only 14 aircraft carriers, they desire to have more units capable of performing offensive tasks without bearing the expense of new carrier battle groups.

Part of the initial changes these ships will undergo is the addition of Phalanx anti-aircraft systems and some Harpoon and Tomahawk surface-to-surface missiles. Besides these initial changes, these ships will not be armed much differently, in the short-term, than in World War II when they were used primarily as air defense platforms and for naval gunfire support of ground combat, primarily amphibious assault. After the war they were retired as uneconomical.

Critics of modernization and reactivation argue that the battleship's 5-inch guns are no longer effective for air defense, and that more cost effective means than battleships exist or can be had in the short term to provide naval gunfire support or the delivery of surface-to-surface missiles. Also, since the addition of cruise missiles to the fleet severely complicates arms control agreement efforts, these missiles may very well be bargained away, undermining one argument for reactivation. Consequently, certain questions arise: What new roles or missions has the Navy in mind for the battleships that justifies the expense for the modernization and reactivation, and cannot the same results be attained at less cost?

Ever since President Theodore Roosevelt's round-the-world Great White Fleet, the battleship, or 'dreadnought', has played an important role in the history of American seapower and diplomacy, and national nostalgia as well. Its size and majesty have created a certain magnetism about this ship that captures the imagination.

When the United States Navy announced its intention to refit the four *IOWA* class battleships and return them to active fleet, they solicited volunteer crewmen for the 1,600 slots on the USS *NEW JERSEY* (BB-62), the first of the battleships to come out of 'mothballs'. In response, more than 6,000 volunteered, including hundreds of ex-battleship sailors and retired Navy men and women. In addition, bags of letters from well-wishers expressing congratulations and support inundated the ship's post office. President Reagan addressed overflow crowds at the fourth commissioning of the *NEW JERSEY* on December 28, 1982.

The term 'capital ship' has been used to describe warships of the largest size and heaviest armament, a category for which the *IOWA* class battleship easily qualifies. It combines great offensive power, good protection, and high speed, an impressively balanced combination of military characteristics and previously considered unattainable. Having been designed to survive ship-to-ship combat with enemy units armed with 18-inch guns, the *IOWA* class battleship is the most heavily armored US warship.

During World War II, the battleship's main role in combat was shore bombardment and fleet air defence. The battleships were decommissioned because Navy leaders judged that aircraft and small ships were a more efficient and cost effective means of fulfilling these roles.

The *WISCONSIN*, the last *Iowa* class battleship to be built, cost approximately \$144 million in FY 1942 dollars (about \$980 million in current dollars). The other three of the class cost somewhat less. The recent modernization and reactivation of the *NEW JERSEY* cost \$326 million and includes the addition of new arma-

ment. (In comparison, this equates to the cost of the much smaller *PERRY* class frigate, according to Navy planners.) However, the *NEW JERSEY* 12 to 17 inches of armor plating throughout is considered representative of a construction feat that would be virtually impossible to duplicate today. If the *NEW JERSEY* were built today, it is estimated the cost would be \$2-5 billion, comparable to that of a *NIMITZ* class aircraft carrier which is the largest US Navy ship.

The decision and approval for the current reactivation program came in 1981 and was the result of a debate as to whether there really is a place for the battleship in today's navy. Despite the denial for funds in the FY 1983 appropriations for the reactivation of the *MISSOURI* (BB-63), the Navy has not abandoned its plans to reactivate all four of the *IOWA* class. This is evidenced in the further request for these funds in the FY 1984 appropriations. Meanwhile, the arguments for and against the battleship program continue.

Prior to its most recent modernization, the original configuration of the 'heavies' consisted of nine 16-inch guns in the main battery, and a secondary battery of twenty 5-inch dual purpose anti-aircraft and anti-surface guns, and numerous 20 mm and 40 mm anti-aircraft guns. The modernization plans which have been proposed for all four of the *IOWA* class battleships are to be completed in two phases. Phase I, which has already been completed on the *NEW JERSEY* and is already underway on the *IOWA*, includes the removal of all remaining 20 mm and 40 mm guns and four of the ten 5-inch gun mounts, and replacement with four Phalanx weapons systems, 32 Tomahawk cruise missiles in armored box launchers, and four launchers for sixteen Harpoon intermediate range cruise missiles.

Phase II in the modernization plans could take place at the time of the ships' first regularly scheduled overhaul several years after recommissioning, and might include an increased aviation capability or the installation of a vertical missile launch system, upgrading of the ships' command and control suite, and an anti-air warfare (AAW) surface-to-air (SAM) missile system. Precise cost figures for alternative Phase II modernizations have not been determined. Some estimates, however, range as high as \$1.5 billion per ship.

These costs have naturally led to questions as to the purpose these vessels will serve in the future. Secretary of Navy John Lehman, testifying before Congress in 1981, identified some of these roles. The battleship is to operate as an element of an aircraft carrier battle group (CVBG) or provide naval gunfire support for Marines during amphibious assaults. Additionally, in areas of reduced air threat, the battleship

will be capable of surface action group (SAG) operations with appropriate anti-submarine warfare (ASW) and anti-aircraft warfare (AAW) escorts, and without the air cover normally available from a carrier.

The defense of the US carrier task force is divided into three major zones. The outlying zone is made up of submarines and carrier-based aircraft, which are the main interceptors. The middle zone consists of ship-launched missiles and helicopter-launched torpedoes. In the inner zone, short-range defence systems such as rapid-fire guns, anti-missile missiles, and ship-launched torpedoes are the weapons of last resort.

Any attacking system must first succeed in penetrating all three of these zones in order to reach the command ship, usually the aircraft carrier. If an attack force succeeds through the first two zones of defense, it will most often be opposed in the final few miles by point-defense systems such as the Phalanx or NATO Sea Sparrow. The Phalanx weapon system is part of the battleship reactivation program. In areas of reduced air threat, the outer force of fighters could be omitted, according to SAG concepts of operation.

Secretary Lehman testified that battleships serving as the predominant strike force of a SAG operation in areas of lesser threat would provide both command and control for the force and a significant increment of strike and anti-surface warfare (ASUW) capabilities. Former Chief of Naval Operations Admiral Thomas Hayward cautioned, however, that the SAG simply does not have the offensive and defensive power of the CVBG and thus cannot replace the latter in high threat areas.

As part of a CVBG, the navy argues that naval gunfire from the battleship can be used to neutralize or soften enemy air defenses and thus enhance penetration of the target or targets by manned aircraft; or the battleship herself can be used to destroy the target. In the Vietnam war, the Navy claims that a number of missions carried out by aircraft against targets in North Vietnam were within gun range and could easily have been completed by naval gunfire in virtually any weather without the loss of men and equipment that occurred in air operations.

In summary, Navy plans foresee two possible roles for the battleship, depending on the perceived threat: operations as part of a carrier battle group (CVBG) or as the center piece of a surface action group (SAG). All in all, the Navy wants to provide a near-term increase in combat power. According to Admiral Hayward, the offensive capability provided by the ship's Tomahawk cruise and Harpoon missiles, and its 16-inch guns battery, provide this combat power.

BATTLESHIP REACTIVATIONS*
FY 1984 Fact Sheet as of 6/23/83

COST DATA (DOD Congressional Data Sheets 1/83—\$ millions, then-year)

		Research & Development	Procurement (quantity)	Military Construction	Total
Projected	FY85	4.0	587.7 (1)	—	591.7
Requested	FY84	2.0	72.1 (0)	—	74.1
Estimated	FY83	6.0	315.6 (1)	—	321.6
	FY82	3.9	332.7 (1)	—	336.6
FY81 and prior		3.4	89.1 (0)	—	92.5

PROGRAM DETAILS

Program acquisition cost (DOD estimate): \$1,876.6 million

Program unit cost (DOD estimate): \$469.2 million

Planned procurement (DOD estimate): 4

Initial operational capability: 1983

Delivered: 1

In conversion: 1

Building: 1

SHIP CHARACTERISTICS: Displacement: 57,500 tons full load; Length: 887 ft; Beam: 108 ft; Draft: 38 ft; Propulsion: steam turbines; Boilers: 8; Speed: 33 knots; Manning: 70 officers & 1,556 enlisted; Guns: 9 16 in; Missiles: 4 quad cannister launchers for 16 Harpoons, 8 armored box launchers for 32 Tomahawks.

CURRENT STATUS: New Jersey (BB 62) completed reactivation at Long Beach Naval Shipyard in January 1983. Iowa (BB 61) will be reactivated by Litton at its Pascagoula, Mississippi yard. (Avondale Shipyard will assist in the drydock phase of the reactivation.) Congress denied long-lead funds for Missouri (BB 63) in final action on the FY 1983 appropriations to await report on operational experience of New Jersey. The House Armed Services Committee recommended full funding of the FY 1984 request.

FURTHER REFERENCE: CRS Issue Brief (IB 83053) Battleship Reactivations.

*Prepared by Alva Bowen.

* * * * *

Besides the battleship's more functional role during wartime, the great ship provides unique peacetime presence. Naval analysts cite the battleship's ability to instill confidence, fear, or respect in allies or adversaries as one of its major attributes. Battleship advocates claim there is a psychological and perceptual effect wherever one goes, providing a potentially effective diplomatic and/or political tool. Many feel that in peacetime how we are perceived militarily is often as important as our actual military capabilities, if not more so.

In all its strategic planning, the United States is continually aware of the Soviet threat. As part of our endeavors to match the Soviet Union militarily, the battleship fills a US need to have a ship corresponding to the 22,000-ton nuclear Soviet cruiser, the *KIROV*, which went into service in 1980. Plans to have all four of the *IOWA* class back in operation by 1987 would offset the introduction of these ships.

The war between Great Britain and Argentina last year over the Falkland Islands has increased concern over the effect of modern precision-guided weapons on the future of naval warfare. Ten ships were lost altogether by both sides during the two-month conflict. Six of those were destroyed by conventional means such as gunfire, aerial bombing and accidents.

The most significant loss is considered the British destroyer HMS *SHEFFIELD*, hit by a French-built Exocet missile launched from a distance of about 20 miles by an Argentine Navy Super Etendard fighter-bomber (also made in France). The *SHEFFIELD* was a highly rated, 4000-ton destroyer, built about 10 years ago at a cost of approximately \$50 million. It was armed with some of the most advanced defensive systems available anywhere today and yet it was defeated in one stroke by a comparatively small, medium-range missile costing a few hundred thousand dollars. This raises question about the

possible obsolescence of large, expensive, surface warships.

Although the conclusion is easily drawn that the *SHEFFIELD* disaster is a demonstration of the impending vulnerability, and therefore obsolescence of all surface ships, some react quite differently. They cite the battleships' armor, compartmentation, and damage control capability and conclude it is unlikely that even a more powerful missile than the relatively small Exocet would do any disabling damage.

They also believe that the US Navy's defense in depth against missile attack would be effective. More detail is necessary in order to thoroughly understand what caused the *SHEFFIELD*'s destruction and the loss of the Argentine cruiser, *BELGRANO*. But these incidents raise the issue that capital warships may be increasingly at risk to comparatively inexpensive smart missiles and to torpedoes, regardless of the ships' armament.

Critics of the reactivation program also argue that the missions and capabilities of the battleship are based on previous missions and warfare of the past. They believe nostalgic feelings of awe and admiration are no longer justified. Instead, they ask what new situation or technology makes the battleship attractive for today's warfare.

Critics claim that aircraft carriers superseded battleships years ago as the Navy's capital ship because at extreme ranges, guns are not very accurate and aircraft can deliver their payload at a much greater distance and from potentially more advantageous directions than the battleship's 16-inch guns. In rebuttal, advocates point to the Tomahawk system which is being installed in the modernized versions of the *NEW JERSEY*. The Tomahawk has a CEP (Circular Error Probable; ie, the size of a circle within which 50 percent of the shells will land) of 10 yards. The battleships' 16-inch guns have a CEP between 200 yards (at close range) and 600 yards (at 22 miles).

But the Tomahawk is controversial in that it has the potential to complicate arms control agreements. Because nuclear armed cruise

missiles cannot be distinguished from conventionally armed missiles and the ship's reload capacities are not readily verifiable, sea launched cruise missiles are major stumbling blocks to arms control agreements, and are subject to being 'bargained away' or severely limited in arms control negotiations. If these limitations occurred, a principal rationale for reactivating the battleships would be negated.

Another criticism of the Administration's plans to reactivate is that the Phase II type modernizations, which will make the battleships truly capable, would not be scheduled until five to nine years after the Phase I modernizations. This delay, together with the costs involved with Phase II would be a definite contradiction of the original purpose of the program: to provide 'low cost' and 'near term' increase in naval offensive power. The Navy plan is to recommission the ships at minimum cost and operate them a few years to evaluate their performance in their new role before committing the additional funds to enhance their capability. A question then remains about possible less expensive or equal cost means of increasing the number of separately deployable fleet groupings in the near term.

One of a number of alternatives to the modernization and reactivation of the *IOWA* class battleships that has been suggested is the modernization and reactivation of *DES MOINES* class heavy cruisers. The two remaining mothballed *DES MOINES* class cruisers have relatively shorter periods of active service and would be expected to serve at least 15 additional years in the active fleet. However, although recommissioning the heavy cruisers would be cheaper than bringing back the battleships, their capabilities would also be commensurately less.

Another suggestion has been made to develop and install Major Caliber Light Weight Guns (MCLWGs) on destroyers. Previous application of MCLWGs has found them to be deficient in certain respects. However, if the deficiencies that caused cancellation of the original MCLWG program could be overcome, such a weapon could be installed on a number of destroyers and could satisfy some or all of the major caliber gun shore bombardment require-

* * * * *

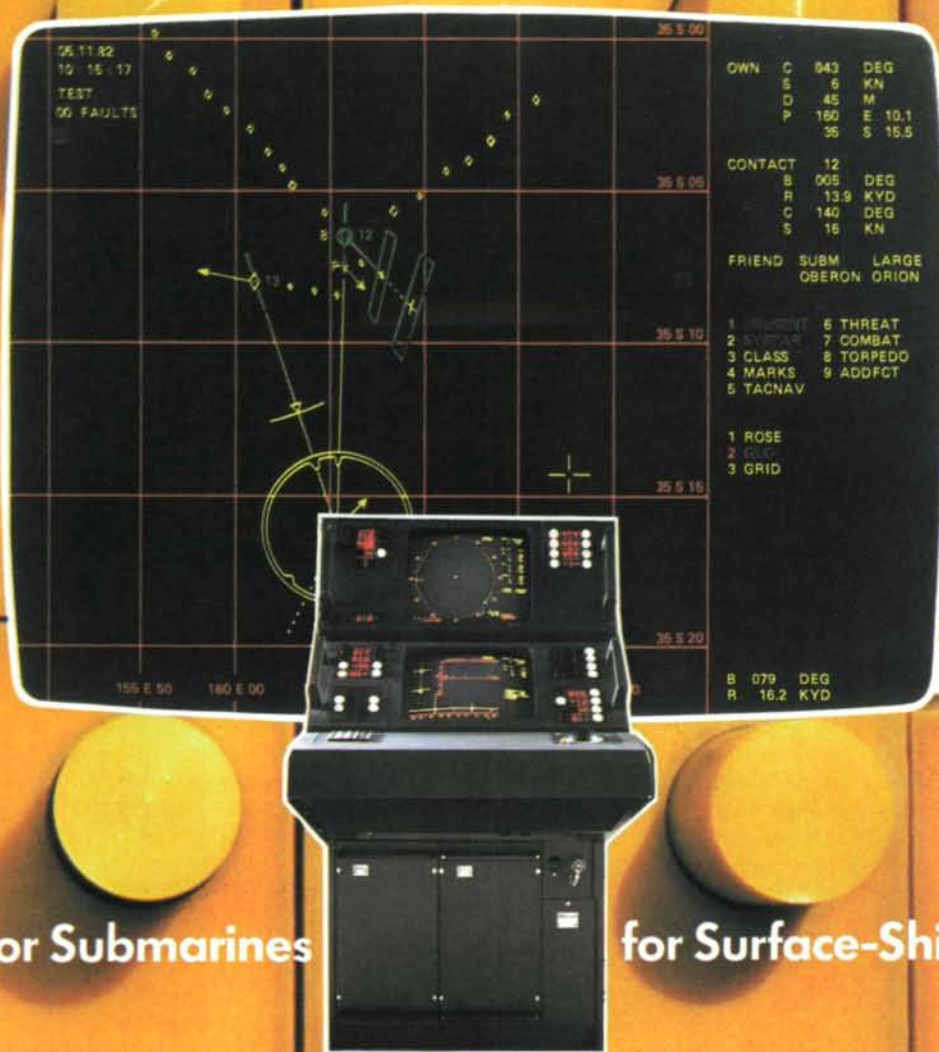
SYNOPSIS OF IOWA CLASS BATTLESHIP HISTORY

Ship-Hull Number	First Commission	Placed in Reserve	Recommissioned	Placed in Reserve
USS <i>Iowa</i> (BB61)	Feb 1943	Mar 1949	Aug 1951	Feb 1958
USS <i>New Jersey</i> (BB 62)	May 1943	Jun 1948	Nov 1950	Aug 1957*
USS <i>Missouri</i> (BB 63)	Jun 1944	Feb 1955	—	—
USS <i>Wisconsin</i> (BB 64)	Apr 1944	Jul 1948	Mar 1951	Mar 1958

* Reactivated in 1967; recommissioned in 1968; decommissioned and placed in reserve in 1969.

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ments. In addition, a 122-missile Vertical Launch System (VLS) capability could be installed much like that planned for the Aegis cruiser variant of the *SPRUANCE* hull.

Distributing the naval gunfire and cruise missile firepower aboard 30 destroyers scattered over three oceans providing services for and performing other missions with aircraft carriers, convoys, and the like is attractive in its own right, but while this alternative addresses the naval gunfire support and bombardment requirement and the land and surface ship attack requirement, it does not particularly address the need to expand the number of separately deployable fleet grouping. The battleship-centered SAG would be quite different in capability from a destroyer centered SAG.

A third alternative that has been suggested is to modernize and reactivate a World War II *ESSEX* class aircraft carrier. Although not capable of operating the Navy's most modern aircraft, the carrier with its escorts would operate in a defensive envelope comparable to that of the battleships (in company with their escorts). Ordnance delivery would be transferred from gun tubes and missiles to carrier-based aircraft. This has important military implications in that the volume and nature of weapons delivery would change. These trade-offs would have to be evaluated. But this alternative would provide one additional separately deployable fleet grouping.

Still another alternative might be the purchase of the more capable CVV conventionally powered aircraft carrier (51,000 tons), proposed during the Carter administration. This ship could operate in a more intense threat environment than a reactivated *ESSEX* class ship but because of its small air wing, would not be as

effective as a new *NIMITZ* class CVN, although it could operate the Navy's newest aircraft. Though clearly the most expensive alternative in terms of up-front costs and not available for several years, the CVVs could nonetheless be had for little more than the projected post-Phase II modernization full-funding price of each battleship and be ready by the time the battleship's Phase II is scheduled to be completed. Unlike the other alternatives discussed so far, the number of CVVs that could be built in this mold is limited only by the number of dollars one wishes to put into them.

A final proposed alternative would be to arm submarines with cruise missiles. The argument for submarines rests largely on their survivability, and the Navy's intention to arm future submarines with cruise missiles, in any case. However, as in the destroyer alternative above, submarines would not be able to function as centerpieces of a SAG, so no new separately deployable fleet groupings will result.

Reactivating the four *IOWA* class battleships would provide four additional surface combatants for the Navy at a cost comparable to four new guided missile frigates-ships with lesser capabilities. The Navy argues they will enhance the carrier battle group's offensive capabilities and add four additional separately deployable ship groupings to a fleet hard pressed to meet its deployment schedule. Critics question whether these claimed benefits, based on cruise missiles, might be bargained away in arms control negotiations, and whether they are worth the cost in any event. Congress, having voted last year to delay further decision on the issue till *NEW JERSEY*'s performance could be evaluated, will be addressing the matter again in the months ahead as the Defense Authorization Bills are considered in each body.





USS IOWA off Pearl Harbour 28 Oct. 1952

Courtesy: USN

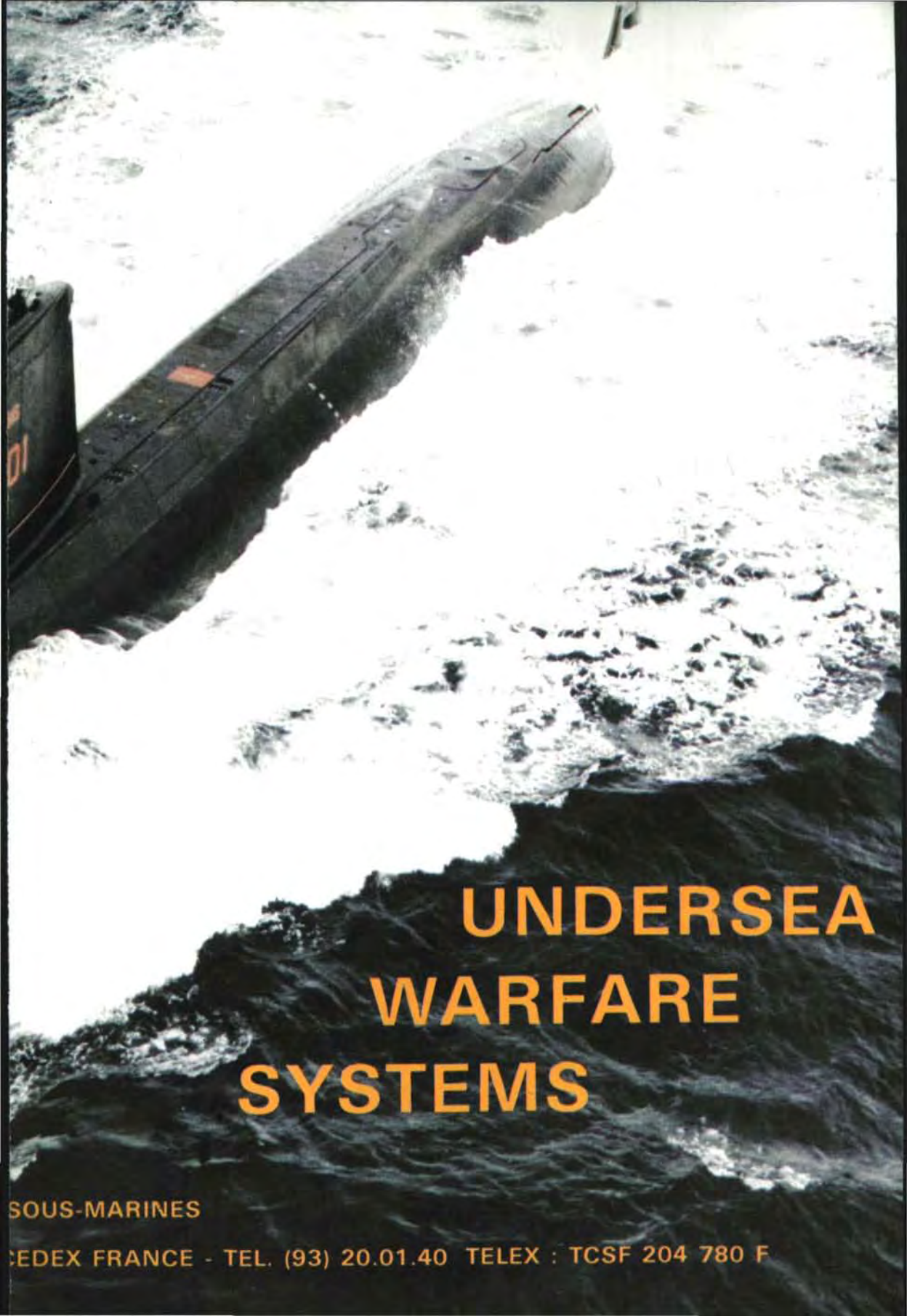


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AIR DEFENCE FOR SHIPS

by Captain Torbjörn Hultman, Royal Swedish Navy

The war in the South Atlantic from April to June 1982 between Great Britain and Argentina for sovereignty over the Falklands Islands/ Los Malvinas, turned out to be a most unusual conflict in many respects. Owing to the great distances from the participating countries — 8,000 miles to Great Britain and 400-500 miles to Argentina — heavy equipment was only used in the land warfare to a relatively limited extent. This combat was carried out with light artillery, light armoured vehicles and light anti-aircraft weapons.

The deployment of Great Britain's forces became an enormous naval operation. After the sinking of the Argentinian cruiser *GENERAL BELGRANO* at an early stage in the hostilities, the Argentinian navy remained relatively passive, even if it constituted a latent threat to British vessels. Owing to the passiveness of the Argentinian navy the naval warfare developed into a duel between the Argentinian air force and the vessels of the British expeditionary force and their carrier based air support. In various reports published since the war it is apparent that missiles played a great part in the air defences both of the vessels and of the combat on the Islands themselves. This was a natural consequence of the fact that the anti-aircraft defences of the British vessels consisted almost entirely of various types of missiles, and also that missiles were practically the only form of anti-aircraft fire available on the islands, both for the Argentine and British forces.

The British fleet sustained what must be accounted heavy losses and, whilst the Argenti-

nian air force must be given the credit for this achievement which took such a heavy toll of their own aircraft and pilots, it is probably true that the British naval forces sustained heavier losses than they would otherwise have done on account of their total reliance on missiles for an air defence. The experience of the naval actions throughout the war has underlined the opinion previously expressed by various authorities concerning the anti-aircraft (anti-missile) defence of ships. What is required for carrying out operations at sea is

- very good search and reconnaissance resources
- several independent firing units
- a mix of guns and missile weapons
- ECM equipment.

The British vessels had or have an own defence against aerial targets that is limited to engaging one or two aircraft. Frigates (types 42 and 21) have only *one* 4.5" gun and *one* anti-aircraft missile system (Sea Dart or Sea Cat) plus a couple of manually laid 20 mm guns (which can be ignored in this connection). The existing aerial

The Author

Captain Torbjörn Hultman was commissioned in 1958. Thereafter he served in the gunnery and combat department on board destroyers and torpedo boats. From 1967-69 he studied at the Military College after which he served as gunnery officer and commanding officer of destroyers. He was later Planning Director in the Naval Material Department in Stockholm.

search equipment is primarily adapted to detecting aircraft and has only limited possibilities of detecting low-flying missiles.

The 4.5" gun is primarily intended for shore bombardment though it has a certain capacity against aircraft. But considering its aiming performance and rate of fire, and its limited possibilities of using proximity fuzes at low level, the effect of the 4.5" gun against seaskimmers is quite insignificant. Anti-aircraft missile systems have severe shortcomings when engaging seaskimmers. Since most such missiles have semi-active target seekers it is necessary to illuminate the target throughout the entire firing sequence, which means that the launcher is virtually limited to engaging one target. (In attacks by four aircraft it several times occurred that 1-3 aircraft were able to press home a conventional attack with iron bombs.)

It may be of interest to make a comparison with the Swedish destroyers. Their armament consists of four 12 cm barrels, two 57 mm barrels and six 40 mm barrels. Proximity fuzes can be used in the ammunition for all these guns and for the 57 and 40 mm guns prefragmented high-explosive shells are used. This armament may be seen as the Swedish Navy's concept of the resources necessary to meet the threat from aircraft and missiles. Modern 40 mm L/70 anti-aircraft guns with proximity-fuzed ammunition and prefragmented projectiles were conspicuous by their absence in this war. The 40 mm gun's predecessor, the 40 mm L/60, was to some extent used on the British ships. At least 48 nations rely on the 40 mm L/70 gun which significantly was selected for the DIVAD project by the US Army; but ironically neither Britain nor Argentina had L/70s available.

Published test results show that this ammunition has greatly increased effect against all types of aerial targets. Very extensive tests have been carried out with this type of ammunition not only by the producer, the Bofors company, but also by the Swedish Defence Research Institute and by the Americans during the DIVAD competition. This has shown very good results. Tests have also been carried out against real missiles and these tests too have confirmed that this type of ammunition is very effective against various types of missile.

Whilst the war was going on, the international press appeared to be greatly surprised by the effect of the anti-ship missiles used. In naval circles there was no such surprise; we had long been aware of the threat from anti-ship missiles and there was general agreement as to the most important measures for an effective defence of a ship against attack from the air.

One important precondition is that all vessels

should have aerial search equipment with good low-level properties so as to be able to detect seaskimmers at least at 5-10 km range. The search equipment must, naturally, also be able to resolve the easier problem of detecting attacking aircraft within the entire air space around the vessel. Ideally, each vessel should have an anti-aircraft missile system capable of engaging aircraft at medium and long ranges. Since this is not always possible, at least certain vessels in each flotilla should have such missiles to protect the others. Naturally it is desirable to augment this with a missile system which is capable of engaging seaskimmers under all operative conditions at ranges beyond the range of guns. In addition, each vessel should have two or three independent anti-aircraft gun systems for engaging aircraft and all types of missiles at short range.

Several ECM systems for decoying attack missiles are also a necessity in the modern war theatre. Thus, a multi-layered defence with a variety of capabilities is preferable. Cost and space limit the possibilities. For smaller ships the first sacrifice to space, weight or cost must be the missile system. Instead, it is important for these craft to have effective air-defence gun systems.

On units of the Swedish Navy, 57 mm and 40 mm gun systems are used. The combination of high precision, high rate of fire and the use of prefragmented shells with proximity fuzes makes this system an effective anti-seaskimmer weapon. In addition the 57 mm system constitutes a very good all-purpose gun for vessels smaller than destroyers. Its low dispersion, rate of fire of 220 rounds per minute and its special surface target ammunition make it comparable or superior to guns up to 100 mm in calibre.

The Swedish navy's philosophy for defence against missiles can be summarized as follows. The requirement is for sophisticated sensors which can detect the attacking anti-ship missile under all environmental conditions, a sophisticated fire control that can track the target in the same environmental conditions, and a modern gun with modern ammunition especially optimized for high effect against anti-ship missiles. In the balance between threat and countermeasures the scales will tip to the advantage of the defending side with such a system. Even small patrol craft can be given an acceptable defence against seaskimming missiles if these requirements are met by the armament system.





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SSN versus SS: A CRITICAL CHOICE

by Robert J. Betzinger

Submarines will probably constitute the backbone of naval forces between the years 1995 to 2020, considering the cost-effectiveness of modern ocean-going submarines, compared with surface combatant ships. Utmost efficiency will be one of the major factors to be considered, and the greatest care will certainly be taken to include the advanced technologies now under development or in use in the field of submarine warfare. There is no doubt about the willingness to acquire up-to-date acoustic and electromagnetic sensors, computer-based fire-control systems and advanced weapons such as wire-guided torpedoes and submarine-launched sea-skimmer missiles.

The question which has been raised on several occasions is whether the Australian submarines of tomorrow should be equipped with the most advanced propulsion system, adopted since 1954 by the USA and eventually by the USSR, France, Britain and China, ie nuclear propulsion. Therefore, as the Australian submarine programme is the most ambitious of the free world at the moment, the nuclear alternative should not be excluded, especially since medium sized, reasonably priced nuclear submarines do exist.

It should perhaps be stressed that nuclear propulsion has no connection with nuclear weapons. A nuclear propulsion reactor is just a boiler. In its furnace, a tiny quantity of uranium oxide, enriched around 5%, supplies the power to a steam generator. Approximately 20,000 tonnes of fuel oil are required during the life of a conventional submarine equipped with the latest 4.4 MW diesel engines, whereas only one tonne of fuel would be used over the same period for a 20 MW-plus nuclear reactor. These figures have been extracted from the operational characteristics of a modern European SSN in service and its definition could be given as: a submarine propelled by cheap electrical energy from a nuclear source, but carrying non-nuclear, conventional weapons. It is, of course, to be compared with a diesel-electric SS conventional submarine,

carrying the same type of weapons, but confined to very limited performances, due to the physical characteristics of diesel engines combined with a snorkel induction and exhaust system.

More than 100 NATO submarines of the SSN type currently keep a permanent watch around the world, mostly in the Atlantic and North Pacific areas, while an increasing number of Soviet SSNs perform the same duty. Approximately 70 of them cruise the South Pacific and Indian Ocean, in areas of vital interest to Australia. This does not take into consideration the strategic nuclear submarines (SSBNs) carrying nuclear ballistic missiles.

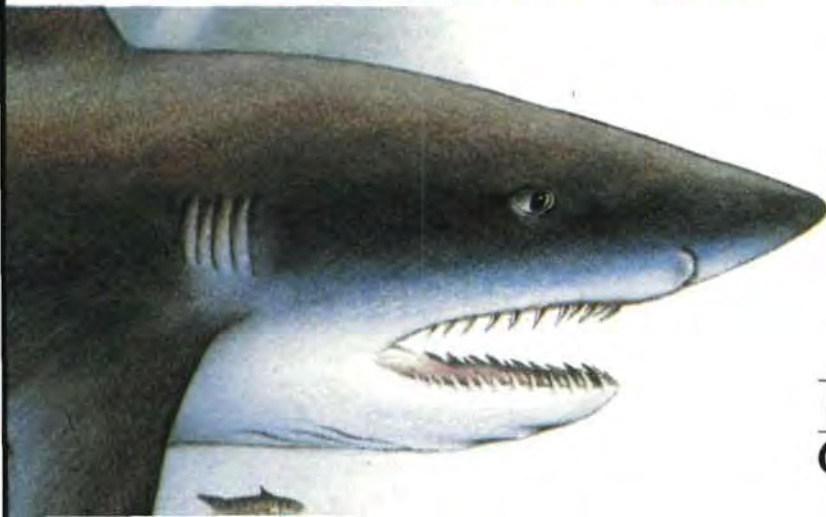
To explain the outstanding development of nuclear propulsion on submarines in the last 20 years, it is necessary to understand what a submarine is designed for and the advantage to be gained by the use of nuclear propulsion. A submarine has to remain undetected in a designated area, while at the same time able to detect, identify and destroy any hostile surface ships or submarines. To achieve this, a submarine's capabilities are essentially three-fold: fire power (weapons), surprise effect (discretion) and mobility (speed).

Discretion

Conventional diesel-electric submarines have become more and more vulnerable to airborne and shipborne advanced radar, capable of detecting at very long range the snorkel mast and periscopes raised above the surface and the wake caused by these masts. This snorkel indiscretion may cause the submarine to be lost even before it reaches its patrol area, and this cannot be avoided.

The submarine batteries supplying the propulsion motors of the submerged vessel have to be charged regularly: modern conventional submarines like the British VICKERS 2400 or the German THYSSEN TR 1700, the biggest in the

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field of diesel-electric submarines, will spend 20% of their time at snort station for a Speed Of Advance of 10 knots, 15% for a SOA of 8 knots, 7% for a SOA of 5 knots. In the case of an Australian based submarine, this indiscretion ratio is actually more constraining than for any other Navy, due to the long distances to be cruised at 8 or 10 knots, before reaching the assigned patrol area. From Sydney to the Strait of Lombok, for instance, the trip will last 20 days, with 3-5 days being spent snorting. Nuclear propulsion would make the same trip possible in 8 days, with no snorkel indiscretion at all, the submarine remaining permanently under the water. This is a major advantage in terms of discretion and one which will also be highly appreciated by the submarine captain in the patrol area, where the airborne threat is most intense. A conventional submarine on patrol would be snorting 2 hours a day: 2 hours that may prove extremely hazardous when a hostile aircraft has been ordered to clear the area for the benefit of an incoming task force; 2 hours that would be better spent quietly submerged, undetectable, searching for targets, as would be the case with a nuclear submarine.

Another source of indiscretion is found in the noise radiated below the surface by the submarines's propulsion plant and auxiliaries. Modern acoustic sensors carried by surface ships, or laid down on the seabed, or even dropped by radio-equipped maritime patrol aircraft, have indeed become capable of distinguishing submarine noise, although far less accurately than radar can detect a snorting vessel. Increased sensitivity of acoustic passive sensors has thus resulted in a trend towards silent machinery. In this regard, the position of a diesel-electric submarine is satisfactory when the boat is running slowly, deeply submerged. Unfortunately, the noise radiated by the diesel engines when the ship is snorting will soon become unacceptable. Conversely, nuclear propulsion has gained a significant advantage over the last few years with the development of a new primary thermal syphon cooling system of the core, booster pumps being started at high speed only.

Discretion is therefore a major asset on a modern submarine. In the area of ocean-going submarines designed to operate far away from the home port and to run for months, diesel-electric propulsion is now considered as belonging to the historical past. Just as, in 1945, snorting submarines could outsmart submarines having to surface to charge their batteries and diving only when in close contact with the enemy, the development of nuclear propulsion has changed submarine warfare, by filling the remaining gap of 'zero indiscretion'. In the near

future, short-leg coastal submarines will be the only ones fitted with diesel-electric propulsion.

Mobility — Speed

Discretion is undoubtedly a major asset as regards naval warfare, combining both the surprise effect and also low vulnerability (hide-and-seek tactics). As previously explained, SSN discretion is total, whereas SS discretion is only partial. This discretion is essential to the successful fulfilment of the assigned mission: track and destroy hostile forces, taking advantage of both fire-power and great mobility.

Mobility in terms of submarine warfare means a determined speed to be sustained sometimes for hours or even days. Naval forces and enemy nuclear submarines currently move at high speed. A modern submarine is equipped with acoustic sensors that make it capable of detecting, classifying and tracking a target up to 100 km away. But it carries torpedoes and weapons with a strike distance of no more than 30-40 km. In many instances, it has to get even closer to identify a selected target. The submarine captain is for most of the time in the position of a hunter who has to manoeuvre quickly in order to get into a firing position on a fast moving target.

In that regard, and within the scope of modern warfare, a diesel-electric submarine will not operate any better than a 'drifting intelligent mine', forced to a standstill by the limited capacity of its battery, rather than as an aggressive hunter. A high speed for an unlimited length of time, together with optical discretion, are required. In this context, the greatest advantage of nuclear propulsion is clearly evident: for hours and days at a time, the SSN will be able to track a fast running target — either surface combatant or submarine — retaining the capability of firing at selected times on selected ships. On the contrary, a diesel-electric submarine will have the opportunity to act once and once only.

In the balance of forces, the compared capabilities of SSN and SS, as regards mobility/speed, are extremely in favour of the SSN and the argument can be put in a few words: 1 hour maximum speed of 20 knots followed by several hours snorting for the SS, versus unlimited sustained speed in submerged conditions for the SSN.

This supremacy of nuclear propulsion related to ocean-going submarines is so unquestionable that the USA, the UK and France neither build nor plan any other propulsion than nuclear for their attack submarine forces, except in the case

of coastal submarines, as previously explained. It is worth noting that the *German builders themselves*, leaders on the export market of conventional submarines, different to the models used by the German navy, now acknowledge the end of the snorkel era. In a recent paper by Mr Klaus Winkler, Executive of Thyssen Nordsee Werke GmbH in the issue no. 6/1983 of the well-known *NAVAL FORCES* journal, is to be found:

The real and fascinating advantages of nuclear powered submarines are:

- maximum submerged speed for basically unlimited time and distance;

— almost unlimited submerged endurance and cruising ranges . . .

While the conventional submarines achieve maximum submerged speed restricted to about 1 hour's duration.

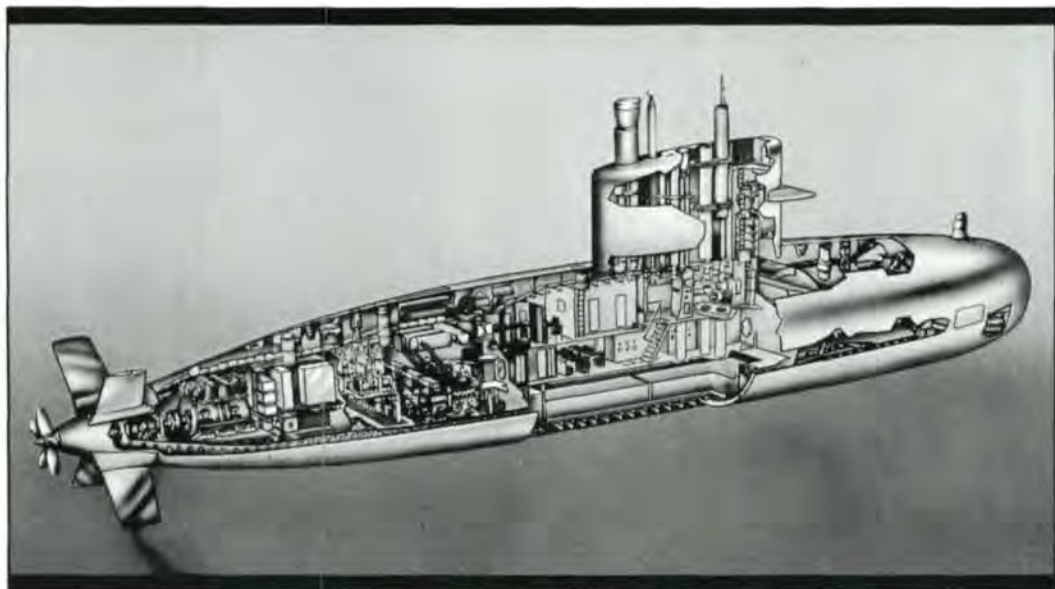
An SSN of the capacity required by the RAN would not cost more than 20% extra, depending upon the electronics on board. The outstanding performance of nuclear propulsion would easily make up for this difference, should it be by reducing the number of units necessary for a particular task. The AIP content would remain the same as for a conventional type and the logistic support would certainly not be a problem, contrary to popular belief.





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The ZWAARDVIS at sea



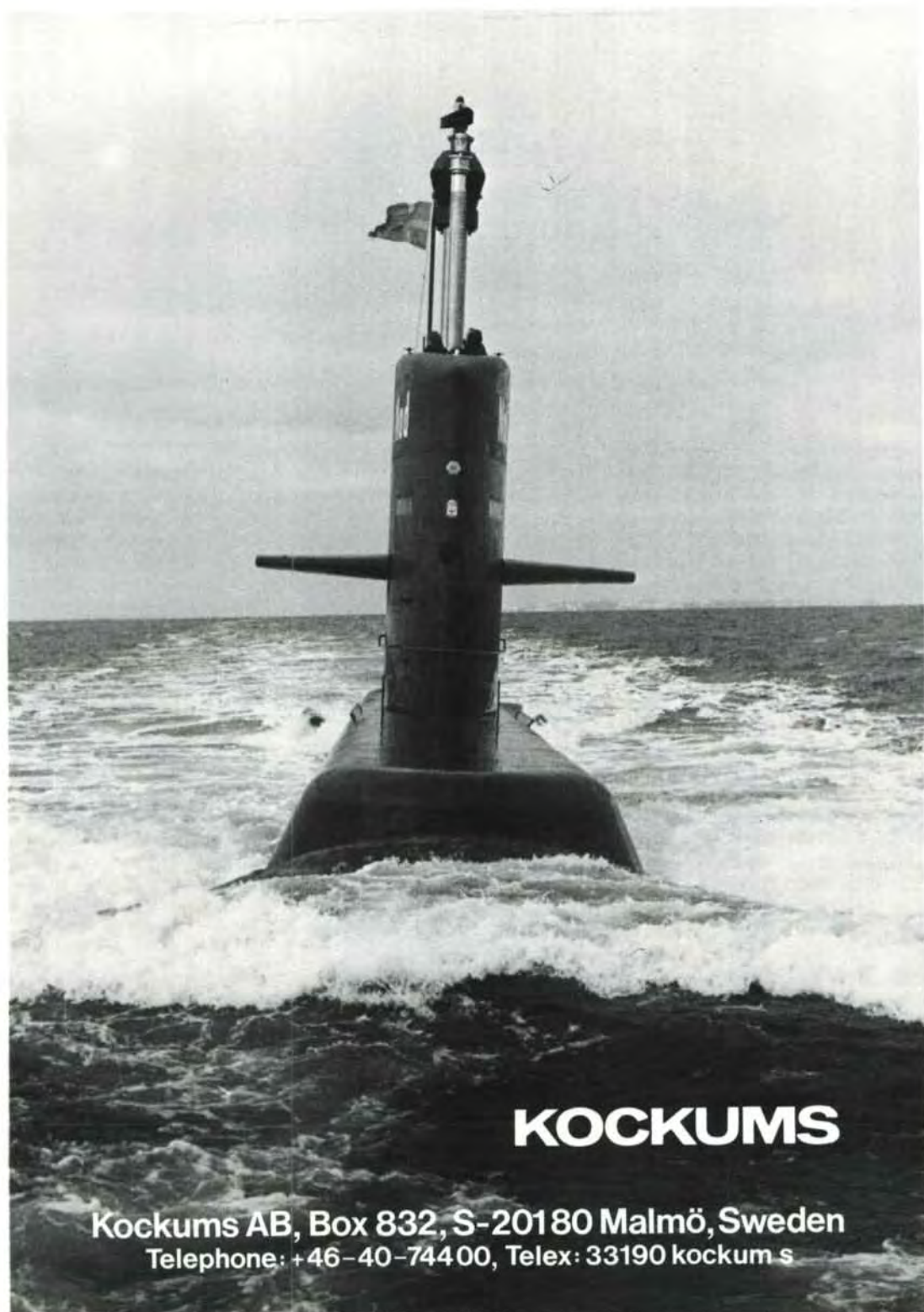
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HMAS SUCCESS

Taken 3 March 1984



KOCKUMS

Kockums AB, Box 832, S-20180 Malmö, Sweden
Telephone: +46-40-744 00, Telex: 33190 kockum s

SEAPOW AND 2084

by Commander Chris J. Skinner RAN

1984, the year of Orwell's vision, will soon recede as 1988, the 200th birthday of Australia, approaches. At such a time, there is merit in contemplating the distant future — not exactly to foretell its nature, more to express the considered directions that follow from present status and common aspirations.

This article discusses Australia's seapower and its relevance to the geographical and cultural situation as it is likely to endure, as well as the political-economic and strategic settings that are credible for the next century. In particular, the potential of Australia to develop as a major sea-power is examined in relation to the ten pre-conditions stated by Mahan and others¹. The conclusions from this examination then are developed into feasible directions considered worthy of national debate and endorsement. This is not a policy paper nor even a position paper — rather it is intended to be a seminal contribution for national progress, in an area vital to an island country.

What then is Seapower?

The concept of seapower has been recognised for millennia — the ability to exert political, military and economic might over the seas — yet like other grand intangibles, it has eluded any precise definition capable of every usage. For the purposes of this discussion, seapower is used to mean the ability to exert influence on areas of the seas and adjoining land areas that cannot be reached other than overseas; such influence need not be sinister, although it may be viewed that way; it is a wholly neutral ability which might otherwise be defined as 'not able to be ignored'.

The agency of a national seapower may be tangible as in air, sea-surface and submarine

vehicles. Above all, it reflects the medium rather than the means of its exploitation. Another important consideration is the duration of vehicular use. From this aspect, the fleeting visits of aircraft as they pass over the maritime domain cannot be compared to the steady journeying of ships; and they in turn are but short visitors compared with the deepsea fisherpeople and oceanographers.

Australian Maritime Tradition

Australia lacks an overall maritime tradition, partly for historical reasons of never having had the time or the need to act in a manner that might have given birth to such a tradition, and because the naval traditions — and there are many glorious events — have all been about individual ships or people; to put it another way — unlike the Australian Infantry Forces (AIF) which have produced many famous generals, there have been few famous admirals. The continuing situation wherein the bulk of our overseas trade is

The Author

Commander Skinner is a warfare engineer by trade, but has maintained an interest in maritime affairs since studying seamanship, navigation and naval history with some success at RANC Jervis Bay. He subsequently served in HMA Ships MELBOURNE and ANZAC as a midshipman, followed by weapons electrical engineering studies in UK. Since then, he has served in all three DDGs and spent three periods in the USA, the last as the USN Trials Officer for FFG-7. His shore posts have comprised the Applied Engineering Lab, DRCS and Naval Support Command as Superintendent Missile and Torpedo Maintenance. He is also a member of USNI, and several technological institutions.

carried in foreign-flag ships, only underlines our lack of intimate involvement in our own maritime destiny. This is not to say that such a lack of maritime tradition will always be the case.

The central theme of this article is to examine the possibilities for Australia to become involved in regional seapower and maritime affairs to such an extent that inevitably a tradition would arise; the tradition would serve as it does now in many older countries to succour and guide the maritime capability.

Rationale

The question arises naturally — why should Australia concern itself with seapower or any of the complex matters of regional maritime affairs? We could rely indefinitely on the good offices of superpowers and regional alliances to protect us — but that is to assume a continuity of common interest that is at best a one-sided exchange, and one-sided relationships wither away. Furthermore, it assumes implicitly that protection is enough: I would argue that it is nowhere near enough, and even if we deluded ourselves that it was, the countries of the region and our allies would not accept indefinitely our strategy only of self-protection. In recent years, Australia has increasingly seen fit to put forward views and proposals on international issues, depending on their inherent rectitude and logic for their acceptance; eventually such a stance must be backed by tangible strength — be it economic as in Japan, or geographical as in Indonesia, or military might as in the USA — a strength that in essence is an ability to influence events for good or evil. Australia clearly feels a responsibility to influence world affairs; this has been demonstrated by governments of both political groupings (albeit with important distinctions in individual policies) yet little has been done to marshal and create the source of the strength that will be needed to sustain the influence for the good we wish to exert.

Undoubtedly, there will be many in Australian society that would feel a strong philosophical objection to the premise that strength is needed to exert influence; I would explain their objection as an unconscious rejection of all the evil, pain and suffering that has been wreaked in this world by those with the strength. A mature view would concede that without such strength the influence is much less. There have been examples — such as Switzerland, Singapore or the Vatican — where apparently disproportionate influence has been possible over long terms, but in each case a closer examination of the source reveals major strength in various forms (economic, pastoral etc).

This article is intended to explore the capability to acquire seapower strength, not to provide an exhaustive justification for so doing — which might require lengthy argument and might founder on a less than full understanding of what seapower comprises anyway.

DETERMINANTS OF SEAPOWER

Two notable theorists of seapower, namely Mahan² and Gorshkov³, have both seen maritime affairs as a total subject comprising all the exploratory, commercial and economic use of the seas as well as the projection of naval force. Indeed, they have argued that naval force is really an extension of a more general strength; this is very much in accord with conventional concepts of sea-assertion — the ability to occupy for economic and military use over a prolonged and continuous period. To put it another way, one must 'dwell' in the sea to exert power over it. From this definition, the prolonged occupation of space may lead eventually to 'space-power', but the transient nature of airborne flight could not be seen in the same vein.

Kelley and David⁴ noted the following ten preconditions for a nation to achieve the status of a major seapower; Mahan drew on this in his most famous work 'The Influence of Sea Power upon History, 1660-1783':

- *geographical* — extent of territory
— favorable location
— good harbours
- *demographic and economic*
— sizable population
— commercial and industrial genius
— a surplus of trading commodities
— numerous colonies
— wise government policies
- *maritime* — ability to build an inexpensive merchant marine
— a large navy

At first sight, some of these clearly apply to Australia; equally, others appear to be well off track — but a deeper examination is warranted.

GEOGRAPHICAL PRECONDITIONS

Extent of Territory

There can be little doubt that Australia, standing on the join of three oceans, with a coastline equal to half the earth's circumference, certainly satisfies the precondition of territorial extent. Indeed it does so far more conclusively than some earlier seapower such as England or Portugal.

Favorable Location

Again it would appear that Australia more than meets the criterion. There are factors, however, that make this precondition less conclusive; other than trade originating or terminating in Australia or New Zealand, only a small proportion of world trade passes through the area in which Australia might exert seapower. But that is as it is now — with major discoveries of oil and other minerals offshore occurring every year there will no doubt be such discoveries in quantities that lead to greater trade in the area. Perhaps the most important will be in or off Antarctica. The claim by Australia of a large sector of Antarctica is unenforceable in our current state, even if Allies supported us which they may well not since they are competitors for the same resources. The factor of interest to seapower creation is the extensive trade routes between Antarctica and countries needing the resources — much of that trade will pass within the area Australia might aspire to exert seapower within.

Good Harbours

Australia is well served with good harbours to the south, southwest and southeast — less so further north although there are exceptions and man-made ports exist in relatively large numbers, many of them deriving from the minerals export trade. As a precondition, therefore, Australia is reasonably well-served with good harbours, less so in the north, but this could well change over a century of further northern development.

DEMOGRAPHIC AND ECONOMIC PRECONDITIONS

Sizeable Population

At first examination, Australia is relatively underpopulated especially for its size. This need not be a deterrent to creation of seapower however. As Mahan noted: '...in point of population, it is not only the grand total, but the number following the sea, or at least readily available for employment on ship-board and for the creation of naval material, that must be counted.'⁶ The number of Australian-flag ships is not yet large, but in a century this could change. The very high proportion of the population that live in the coastal belt must have a greater awareness of the sea than for a country homogeneously populated like USA. The large number of amateur sailing enthusiasts augurs for a high level of expertise in the community; and Australia is an island and must thus always rely on shipping to some extent. All of these things

offset the apparently limited population and indicate this precondition can be met.

Commercial and Industrial Genius

Mahan's concept of seapower derived from a vigorous mercantile economy, a large merchant marine enabling the carrying of goods for export, and development of trading colonies to act as safe terminals for the ships. Only then could a powerful armed navy be sustained. The first link in the concept — commercial and industrial genius — has strong application to Australia, which was itself for decades the colony from which so much trade derived from Britain. More recently, this view would be taken by Japan. Australia's perspective is as a large exporter of agricultural and mineral products — which require large volumes of homogeneous cargo, and a large importer of finished goods produced elsewhere cheaper or of higher quality than Australia is capable of doing.

Recent trends in both these areas are significant — exports have been subject to the prevailing world-wide economic conditions, and in some cases have levelled off over long periods. The difficulty here is that virtually all of our exported goods are available from other countries, so that we are part of a keen competitive market — a situation we have coped with competently. However, an important factor in successful trading in raw materials is the reliability of supply, and Australia has only a mediocre standing in this regard due to arbitrary government and organised labour actions.

A recent additional factor has been Japan's stated direction of decreasing demand for raw materials as that country moves more into 'high-technology' manufacturing which is less bulky. As our major customer, this must have an effect. Plausibly, the reduced demand will be replaced by the increasing needs of other Asian manufacturing countries such as Taiwan and South Korea.

Conversely, Australia's import levels have continued to run at a high level — our appetite for attractive finished-goods from overseas, available at a lower price than our wage-rates and indifferent productivity can equal, has never slackened and is only susceptible to government controls made necessary by inequalities in trade balances. Increasingly, people are noticing that Australia has no shortage of innovative ability to design new manufactured products, but an abysmal ability to manufacture economically and to market successfully; this may be the beginning of a change in this respect — to identify the problem is the first step in its solution. Certainly if even a portion of the many initiatives being taken



USS TICONDEROGA

Courtesy: James Goss

to foster Australia's commercial capability come to fruition, there is reason for optimistic planning for a future where Australia assumes a regional pre-eminence in trade.

There are signs that Australia is feeling the first stirrings of national self-confidence based on something beyond overseas wars and sporting prowess — a self-confidence in producing better solutions based on our own ideas. Time alone will tell whether this trend will be substantial enough to overhaul the same resurgence going on throughout the Asian-Pacific area. There is no reason why not — thus it is feasible to attain the prerequisite identified for sea-power. It requires the will to do so — confidence in our own ability — and increasing levels of education to regain parity with other technologically advanced countries⁷.

A Surplus of Trading Commodities

Australia is currently a net exporter, but mainly of primary produce. The possibilities for changes in this situation have been discussed, concluding that the possibility exists for Australia to be a major exporter of goods at least in the regional area in a century's time. The disparity in wage rates among Asian/ Australian countries could be expected to decrease — which would imply a slowing of Australian wage growth as others catch up — without a noticeable (and unacceptable) decrease in Australia's standard

of living. Of greater importance perhaps will be the cost of energy for use in manufacture — this matters because production will become less-manpower-intensive from use of robots and other efficiency-improvements, and because the energy content of processes will increase as innovative new processes are invented. In this, Australia is better placed than her rivals and providing arbitrary limitations like pollution controls and anti-nuclear sentiment are not allowed to supersede rational concern for societal well-being in the broadest sense, Australia should prevail. There is enormous scope for the creative abilities of Australians to be put to practical use in building efficient industrial facilities with the highest safety standards. Capital investment will follow the demonstration of the viability of this endeavour. Once started, such industry will be self-perpetuating if the initial commercial and industrial genius is maintained, resulting in a significant surplus of trading commodities, especially manufactured and finished goods.

Numerous Colonies

Discussion of colonies at the present time is heavily affected by overtones of political domination and subjugation of people by the colonial power. The original connotation is quite different — their purpose initially was a 'station' where a merchant could locate 'his agents in reasonable security, where his ships could lie in safety, and where the merchantable products of the land

could be continually collecting, awaiting the arrival of the home fleet, which would carry them to the mother country.⁸ Seen in this light then, what is meant by this precondition is *secure terminals*. In this respect, the access provided to ships carrying Australian trade is quite satisfactory; if the terminals were interfered with it can be reasonably assumed that the market for the goods carried through that terminal was probably insecure anyway.

There is probably one land alone where the sense of colonial development in concert with exploration and trade is still applicable in the sense of a century ago — Antarctica. In this grim continent, there are many terminals but not yet much trade; nevertheless, there are signs that exploration in a commercial sense is underway by a number of countries and it is a reasonable prediction that major mineral discoveries will result. Should this be energetic and important enough, it is even possible to envisage military involvement in the regularising of the trade routes that will come into being. Australia clearly has a stake in this, although a century might well be needed to develop the seapower necessary to be pre-eminent even in a part of the Antarctic area.

Wise Government Policies

With the prospect of a century to go, government policy here considered is not at all the year-to-year management normally implied by such a term. What is meant is the consistent application of a policy enjoying general support within the country to influence the direction of growth and change over many years, even decades. For example 'all coastal trade to be carried in Australian flag vessels' would be such a policy. There have been many examples of such deliberate encouragement of national capability, such as Cromwell's Navigation Act, which required all British trade to be carried in ships of either British flag or the flag of the country to or from which the trade goods were carried. More recently, the USA embarked on a ten-year programme to revitalise its merchant fleet then lying at seventh place in the list of national registered tonnages (although as Gorchkov notes a large portion of Liberian-registered ships are US owned). The ability and determination of Australia to build a merchant fleet considerably larger than the trifling numbers presently existing will not stem from a particular government of the day alone. Rather it will flow from the awakening realisation by the country as a whole that Australia is an island dependent on seaborne trade. A century ago Mahan wrote:

... home trade is but a part of the business of a country bordering on the sea. Foreign

necessaries or luxuries must be brought to its ports, either in its own or foreign ships, which will return, bearing in exchange the products of the country, whether they be the fruits of the earth or the work of men's hands; and it is the wish of every nation that this shipping business should be done in its own vessels.⁹

Shipbuilding capability is maintained but thinly; ownership and the flying of the Australian flag can be influenced by government policies; which in turn will be influenced by the people — 'the character of a great people breaks through or shapes the character of its government.'¹⁰

Australians have always had a great sense of fair play, nowhere more than in permission of overseas interests to control parts of Australian industry and commerce. This is part of the reason for our lack of practical application of our own innovation in that we willingly submit our ideas to overseas approval when such proposed development may well involve competition unwanted by the overseas interest. Increasingly we are perceiving the folly of this abdication of control of our own destiny. Wise government policies will ensure that Australians are enabled through inventiveness and hard work to advance their own lot with minimum acquiescence from other countries; this in turn will produce the desire to control our national environment much more effectively than before; and that in turn means a consciousness of the oceans around us and a conceptual understanding of seapower.

SHIPPING AND ITS CREATION

The Ability to Build an Inexpensive Merchant Marine

There can be no doubt of Australia's technical ability to build ships of some complexity or specialisation as well as general purpose merchant ships. Many of the innovations of ship propulsion (gas turbines and liquified natural gas (LNGO) were first introduced in Australian-built ships. Nevertheless, the viability of the shipbuilding industry has only been assured by government orders especially for naval ships (even then we haven't developed an industry to fit them out with the machinery of warfare). This is not a permanent state — the relative costs of building ships elsewhere will not always be so unequal. The opportunity exists for government policy to influence the carriage of trade — as has been done in other countries from time to time.

Furthermore, the real influence on seapower and vice versa, is the number of merchant ships flying the Australian flag — with, therefore, the

implied obligation for protection by Australia. They need not all be constructed in Australia, thus policies to influence the *registration* of ships involved in trade with Australia would also be important.

Perhaps the most important factor is the inexpensiveness of the shipping. The operation of them must be competitive or trade will be taken elsewhere. The USSR has accepted this principle and is systematically working to take over large percentages of world trade by undercutting rates. If Australia is to make best use of its historical abilities then it is probably best for us to look to the South Pacific and ASEAN trade — the areas where pioneers like Burns Philp have traded competitively for over a century. We could then leave the very large bulk-liners to be influenced by Australian policies, such as registration to be either in Australia or the country of destination/ source. There will undoubtedly be a great increase in the inter-island trade in the Pacific and ASEAN areas; an aggressive approach by Australia to participate in that trade would have many benefits and would work in concert with foreign policy.

A Large Navy

A large navy for its own sake does not make much sense — its purpose may well be the support of regional foreign policy; nevertheless, the essence of that policy is the interest by all Australians in participating in the destiny of the region. That destiny will be inextricably involved with industry of all the nations in the region — large and small — and trade amongst them. This will compel the building of a large navy and the need to exercise seapower. If we fill the gaps in our industry — such as the ability to design, build and fit weapons and other specialised attributes of maritime warfare — there is no reason for Australia not to have a very large navy in our region a century hence.

CONCLUSION

The inter-relations among nations bordering on the sea have always been intimately affected by the exercise of seapower, which in turn has derived from the concern and ability of countries to involve themselves in the seaborne trade and its protection. Australia is well-placed and has every reason to be well-motivated to participate actively in the regional future — a future that involves almost without exception the inter-course between nations separated primarily by the sea. The preconditions identified by Mahan are all capable of being met in Australia's case, provided only that the determination exists in its people; which is exactly the purpose of this

article — to give impetus to the wide discussion that will be needed in Australia if we are to attain the ability to exercise seapower in our region a century from now.

'... the navy ... acts on an element strange to most writers, as its members have been from time immemorial a strange race apart, without prophets of their own, neither themselves nor their calling understood; (the sea's) immense determining influence upon the history ... of the world, has been overlooked.'

Notes:

1. For example David and Kelley as described in: 'The History of Naval History' Lawrence C. Allin. USNI Proceedings. October 1983. p176.
2. Alfred Thayer Mahan, Captain US Navy.
3. Sergei G. Gorshkov, Admiral of the Fleet of the Soviet Navy.
4. Lieutenant J.D.J. Kelley USN, first winner of the USNI Prize Essay competition, and Ensign W.G. David USN, in Allin (op cit).
5. A.T. Mahan. *The Influence of Sea Power Upon History 1660-1783*. Boston. 1949 (12th Ed).
6. *Ibid*. p45.
7. The median age of Australian school-leavers is several years lower than the USA and Japan.
8. Mahan op. cit. p27.
9. *Ibid* p26.
10. *Ibid* p51.
11. *Ibid* p21.

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HMAS STIRLING — JEWEL OF THE WEST

by Vic Jeffery

When the naval support facility *HMAS STIRLING* was commissioned on July 28, 1978, it was the case of third time lucky for a West coast naval base. Two previous decisions, one Australian, one British, to construct a naval base in Cockburn Sound foundered through war-caused circumstances. The first was the ill-fated Henderson naval base which was to be situated in Cockburn Sound in the Woodman Point area. The Commonwealth Government commenced work on the project in 1911 and this proceeded until the outbreak of World War One in 1914 saw construction suspended, with little to show for the considerable amount of money outlaid.

The second attempt was by the British Admiralty in the dark days of 1942 after the fall of Singapore. Britain was looking for an anchorage for its Far Eastern Fleet and selected Cockburn Sound as a suitable site, with its wide expanse of deep water and the fact that it could be secured against submarine and air attack. Work went on 24 hours a day, seven days a week, with 14 hour shifts, for the two years it took to secure Cockburn Sound with anti-submarine nets and gun batteries. By then, in 1944, the tide of the war had turned against Japan and the project was halted once more.

In 1966, the Federal Government announced that an investigation into the feasibility of establishing a Naval Support Facility for the RAN on Garden Island in Cockburn Sound would commence. In May 1967, the Department of Construction, in conjunction with a firm of civil and marine engineering consultants, commenced feasibility studies and the report was completed in November, 1967. In November 1969, the Government announced the intention to begin planned development of the facility, with the first stage being construction of a causeway from Cape Peron on the mainland to Parkin Point on Garden Island. The Causeway Project was then referred, as a separate package, to the Parliamentary Committee on Public Works in September, 1970. A favourable report was tabled in Parliament in October that year.

The Department of Construction was

appointed by the Government to be the Design and Construction Authority for this Project. Construction of the Causeway began in January, 1971 and was completed in June, 1973, within the time scale and estimated costs planned for the project. The Causeway cost \$9.5M and is four kilometres long, with two bridge sections allowing for the movement of tidal waters to maintain the ecological balance of Cockburn Sound.

The Support Facility had originally been programmed for completion in December, 1975. However, in 1972, construction of some sections was deferred, postponing the completion date to December 1978. This completion date was later accelerated to mid-1978. Construction of the wharves and workshop areas began early in 1973 and accommodation in late 1975. An oil fuel installation was completed in 1983 at *HMAS STIRLING* and a transmitting station is included in the future construction programme.

The name *HMAS STIRLING* was selected to honour Captain James Stirling, the naval officer who first landed on Garden Island in 1827 and founded the first Western Australian settlement in 1829. All roads in *STIRLING* are named after English and French navigators associated with Western Australia, and in the armament depot, after the names of allied submarines lost during World War II.

Today, almost six years since commissioning, *HMAS STIRLING* boasts visits from more than 100 ships and submarines including those of navies of the United States, Britain, New Zealand, Holland and Malaysia. Many vessels have visited *HMAS STIRLING* on more than one occasion. The largest RAN ship to have visited *HMAS STIRLING* is the fleet oiler *HMAS SUPPLY*. The largest foreign warship to have been alongside is the US Navy combat support ship *SAN JOSE*, displacing 16,000 tonnes.

HMAS STIRLING has been constructed to provide maintenance support to four destroyers and three submarines, as well as assistance to naval vessels visiting or refitting in the Fremantle/ Cockburn Sound area. Ships berthed



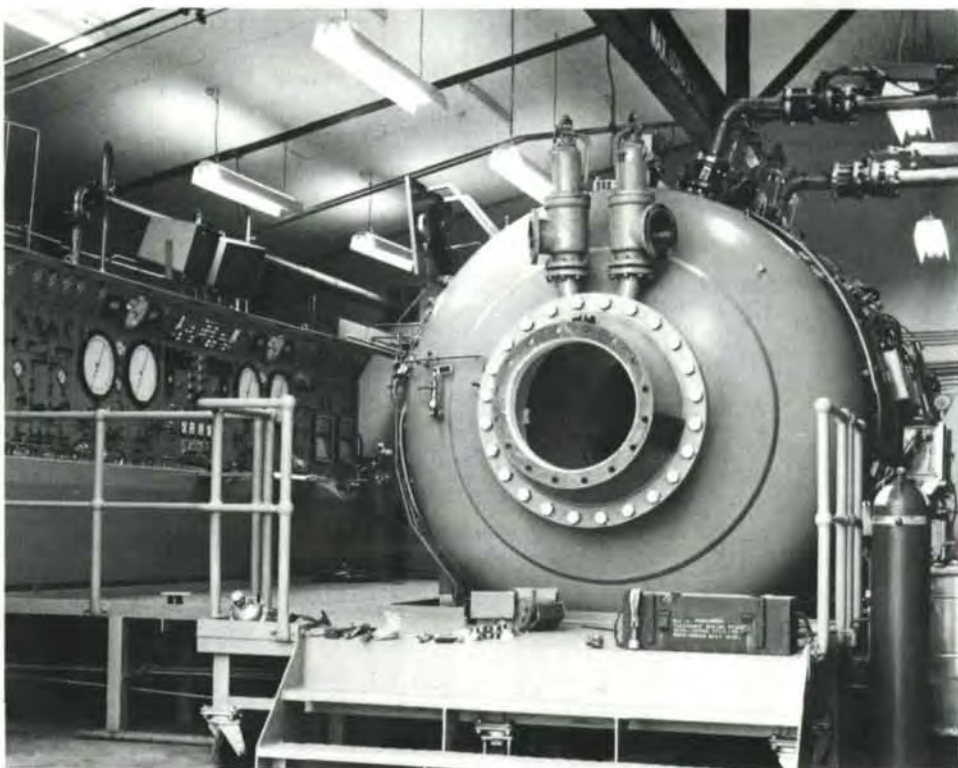
An aerial view of HMAS Stirling. November, 1983.

Courtesy Navy PR



Two RAN, two USN, one RNZN destroyer-type ships and the hydrographic survey ship HMAS MORESBY alongside the escort and submarine wharves at HMAS STIRLING during Kangaroo '83.

Courtesy Navy PR



HMAS Stirling's new \$1 million recompression chamber.

Courtesy: Navy PR



TAMMAR

Courtesy: Chris Gee

at *HMAS STIRLING* have the rare opportunity to shut down all major machinery and equipment, as *STIRLING*'s wharves have 'plug in' facilities which can supply a wide range of electrical power variation, salt water, fresh water, distilled water, steam, compressed air, lubricating oil, telephones and discharge facilities for sewerage and oil.

HMAS STIRLING's workshops are fitted with the facilities required for the performance of maintenance on the wide range of equipment found in a modern warship. These diverse abilities cover many areas from electronics and optics, to precision machining and the heavy steel plate work required for ships' hull repairs.

Behind the scene, *STIRLING* has modern accommodation, recreation and sporting facilities; a small, but well appointed hospital; and a computerised stores supply system which is the life-blood of the repair organisation.

The management of the Base is divided into four functional departments which are:

- *Administration* which provides management of the day to day domestic and administrative activities of the Base and includes the port services division.
- *Technical* which provides technical assistance to home ported, base ported and visiting ships; planning, co-ordination and supervision of contract refitting of ships; and maintenance of base equipments.
- *Supply* which encompasses all aspects of supply support to the base and attached ships. This includes stores, victualling, clothing, cash and personnel services.
- *Naval Police* who provide naval assets with physical security, as well as emergency services and fire fighting protection to the whole of Garden Island.

HMAS STIRLING is an extremely popular rest and recreation port for US Navy submariners. Rather ironically, many of the visiting submarines carry the names of US submarines which operated out of the Port of Fremantle during World War Two.

October 13, 1981, saw a major step forward for the RAN in Western Australia when the Naval Support Commander, Rear Admiral Andrew J. Robertson, AO, DSC, RAN, officially opened the new \$3.8M RAN Armament and Equipment Depot on the northern end of Garden Island. Covering an area of 47 hectares, the RANAW depot replaced the 39 year old Byford depot which was originally built for the British Admiralty in 1942. In his opening address, Rear Admiral Robertson made reference to 'the growing realisation of the need to stand on our own feet and to ensure adequate maritime defence of

both major coasts'.

Tuesday, February 8, 1983, saw another step forward for *HMAS STIRLING* when Captain D.R.O.S. Fox, AM, RAN assumed command as the first independent captain of the fleet support facility. Prior to that date, the Naval Officer Commanding WA Area had also commanded *HMAS STIRLING*. With the expansion of the base and increased activity in the Indian Ocean, the time had come to separate the two positions.

On July 21, 1983, the Department of Defence Support handed over control of the new 10-man \$1 million recompression chamber installed at *HMAS STIRLING*, after successfully completing acceptance trials. Construction of the chamber had been carried out at the Government Ordnance Factory at Maribyrnong in Victoria. It is part of a contract for two 10-man and three six-man chambers worth a total of \$4.3 million. The second 10-man recompression chamber is being erected at *HMAS PENGUIN* in Sydney.

Late 1983 saw the completion of two storage tanks at the base's oil fuel installation which are due to be handed over in the near future.

The long time dream of home-porting destroyers on the west coast came to fruition on January 20, 1984 when the recently modernised destroyer escort *HMAS STUART* arrived as the first home-porting destroyer to be based at *HMAS STIRLING*. It was joined by the new Fremantle class patrol boat *HMAS GERALDTON* on February 17. Already based at *HMAS STIRLING* were the hydrographic survey ship *HMAS MORESBY* and the Attack class patrol boats *HMAS ASSAIL* and the Reservist-manned *HMAS ADROIT*. The new small tug *QUOKKA* arrived on February 5 from Portland in Victoria and the medium tug *TAMMAR* will be launched at Australian Shipbuilding Industries yards in Cockburn Sound on March 10. Planned for arrival in 1985 is a second destroyer escort and another Fremantle class patrol boat *HMAS BUNBURY*, which will replace the older *HMAS ASSAIL*.

Described once by a visiting senior officer as 'being one of the jewels of Australia's defence', *HMAS STIRLING* continues to live up to its motto of 'Go Forward'.

The Author

Vic Jeffery is the Navy Public Relations Officer for Western Australia. He was appointed to this position in August, 1981 and is a Lieutenant in the RANR attached to the Fremantle Port Division.

- Former Vice President of the WA Division of the Navy League of Aust.
- Member of the Naval Historical Society of Aust.
- Associate member of the Institute since 1979.
- Keen Naval Historian and a very parochial West Aussie.

BOOK REVIEWS



A HISTORY OF PORT MELBOURNE. By Nancy U'Ren and Noel Turnbull. Melbourne, Oxford University Press, 1983. 296 pp. \$25.00.

What a disappointment for the maritime reader. This is a social and political history of the city of Port Melbourne and not the story of the famous port. The title is misleading and the title page, with a magnificent 1859 photograph of a dozen sailing ships alongside the Town Pier, is downright deception!

The authors acknowledge that their work is not exhaustive and, on the grounds of not duplicating previous histories of the port by others, choose to make only a brief reference to early discovery and shipping. One could assume that they did not wish to risk getting out of their depth. So their 'local history with a difference' generally ignores Port Melbourne's great age of sail from the early 1840s, followed by the sweeping changes in shipping and trade this century.

So let me start this review afresh, looking at the story of the working class municipality of what was Sandridge from 1839 until 1884, when it became known as Port Melbourne. There are a few aspects of general interest, though the work is really for local consumption. However, we learn that Sandridge was the terminus of Australia's first railway line, opened in 1854, and the first cable trams ran along Bay Street in 1980 (although I suspect this should be 1890). While not wishing to split hairs, Port Melbourne had the first steam railway service in Australia, but short railway lines, built and powered by convicts, were in use from pit to pier head near Port Arthur, Tasmania since 1836 to load coal and unload ships, and similar railway systems were probably operated elsewhere such as Newcastle, NSW.

The population and industrial expansion in the latter half of the 19th century attracted the title of the Glasgow of the South, but a major problem for health and development was the lagoon at Port Melbourne. The history of local government, churches, schools, service and sporting clubs etc. are well covered.

The Sandridge Naval Brigade and the Artillery Company are given occasional brief mention. A parade of the former in 1869 is referred to, when the brigade maintained four 32 pounder carriage guns and a powder magazine. The Artillery Company, which included a band, was disbanded in 1878 when military defences were concentrated at the Heads, but the local Naval Brigade expanded its numbers to 200 at the Army's expense. However, in the 1880s fear of a Russian invasion prompted the formation of a local militia, a Submarine Mining Company of (Army?) Engineers, who laid controlled mines in the Bay, and even a local school cadet corps. In 1887 a very large building for Naval use was constructed west of Port Melbourne railway station, and in 1900 the Port's Naval Brigade served in China during the Boxer Rebellion while their Army counterparts campaigned against the Boers in South Africa. In July 1912, it is recorded that 70 Naval and 20 Military reservists were fined for failing to attend sufficient training drills.

These defence developments are interesting but there are many gaps in the story. For the record, the Victorian Colonial Government was, in 1859, the first State to form a Volunteer Naval Reserve, known as a Brigade, and of course Port Melbourne has been its home ever since. Initially, the reservists trained in the Customs shed on the Town Pier. In 1911, the old Post Office was acquired for the RANR and a drill hall erected behind it. From 1935 this depot was known variously as *CERBERUS* I, II and III until 1940 when *HMAS LONSDALE* was commissioned, with the new depot and drill hall built in Rouse Street in 1942, on the site of the reclaimed lagoon. The old Port Melbourne Post Office is still Defence property today, being the Headquarters for Naval Police.

Back to U'Ren and Turnbull's story, we learn of the major depression of the 1890s and the Police breaking up peaceful wharf labourers' gatherings, about the Trades Hall and local politics, of sewerage and electricity, and other happenings in the community. The Great War, the subsequent depression and World War II are referred to, but nothing of the great drama of

these events at the port. The story and photos of Garden City development at Fisherman's Bend, reminiscent of an English Council Housing Estate, are of interest and also the huge wave of post-war immigration and expansion, culminating with the construction of the West Gate Bridge.

However, all in all a very parochial and unimaginative history, of limited interest to any but the local reader. The book is enhanced by some fine old photographs scattered at random through the text, but many are of little relevance to the authors' story.

Ian Nicholson

WARDANG ISLAND, GRAVEYARD OF SHIPS.
Society for Underwater Historical Research, 1983.
28pp, illustrated, \$4.50.

The Society for Underwater Historical Research, alternatively known as the Maritime Archaeology Association of South Australia, was formed in 1974. Its aims and objectives are to foster interest in, study, promote and distribute knowledge relating to, Australia's nautical history and archaeology.

Wardang Island, Graveyard of Ships is a delightful booklet, giving the results of much study and research by SUHR into a particular part of South Australian waters. Situated in Spencer's Gulf, Wardang Island forms the western barrier to Port Victoria. Although not discovered or explored until 1839, it was opened up to overseas trade in 1878 and whilst sailing ships lasted, was one of South Australia's most important grain ports.

Professionally produced and well presented, *Wardang Island* is a group effort by members of the Society and just one of their ongoing projects to have the listed wrecks declared under the Historic Shipwrecks Act. It details stories of 9 vessels wrecked and 4 others stranded but recovered. It also mentions, but gives no other details, of yet another 8 wrecks in the Pt Victoria area.

One tale that appealed to this reviewer was that of *SONGVAAR* (ex *BARCORE*). Fully laden with wheat, but at anchor waiting for her Master to come onboard, as the tide ebbed, *SONGVAAR* settled on to one of her own anchors, was holed and sat gently onto the sea-bed. For some reason (not explained), no-one appeared to have known what happened until told by a diver some days later. The sad part of the story is the outcome. Sunk on 14 April 1912, *SONGVAAR* resisted all efforts at salvage and sat, apparently at anchor, for 8 years until she capsized in a storm in 1920.

For students of marine archaeology or for those interested in ships and shipwrecks, *Wardang Island, Graveyard of Ships* is highly recommended reading. Apart from anything else, it serves to demonstrate what can be done by a small but dedicated group of people. At \$4.50 per copy it is well within everybody's reach. Copies are available from The Secretary, SUHR, P.O. Box 181, North Adelaide 5006.

Robin Pennock

ROSS IN THE ANTARCTIC 1839-1843. THE VOYAGES OF JAMES CLARK ROSS IN HER MAJESTY'S SHIPS *EREBUS* AND *TERROR*. M.J. Ross. Caedmon of Whitby, 9 John Street, Whitby, Yorkshire, YO21 3ET. ISBN 0 905355 27 x, pp. 276, price, £12.50.

Sir John Ross and his nephew, Sir James Clark Ross, polar explorers of the nineteenth century, have long deserved biographies. The trouble with John Ross was his longevity and versatility and his ability as a naval officer; his Service Record, in his small hand, covers many square feet of paper.

With James Ross, the difficulty is paucity of information. We know nothing about his life before the age of ten, when his uncle took him to sea. Careful research has shown his equivocal behaviour in 1819, when he was transferring his loyalty from his uncle to Lieutenant W.E. Parry, a critical point in his career. For the next ten years he was a subordinate, little mentioned. In 1829-33, in the *VICTORY* in the Arctic, he was on bad terms with John Ross, not even reporting all his sledge journeys. His voyage in the *COVE* in 1835-36 has been described in detail, but that was only a matter of months. He wrote about his Franklin search only in official reports. After that, he went to pieces till his death in 1862. Thus we are without a 'life' of the best scientific officer that the Royal Navy then had.

So we have only one book from him — *A Voyage of Discovery and Research* — a two-volume account of his voyage round the world and in the Antarctic in 1839-43. Readers had to wait four years for that book; it was incomplete and the maps inadequate. For well over a century, there has been a need for a full description of that voyage.

M.J. Ross, Rear Admiral, RN (Rtd) was in the Service for thirty-seven years and is a great-grandson of James Ross, and so in a good position to write of his achievements more fully. As his main source, he has used Ross's narrative. The well-edited *Life and Letters* of Sir Joseph Dalton Hooker, his junior surgeon then, has been used to supplement that. The rambling narrative of Robert McCormick, surgeon, fills some of the gaps. The strange letters of Cornelius Sullivan, blacksmith, have been used to enliven the narrative. Otherwise, apart from Service biographies, little has been added.

Originally, the expedition was promoted for scientific research. The magnetic results of the first two seasons were published in the *Philosophical Transactions* of the Royal Society. Laboriously, Ross made deep sea soundings, but much of the scientific data was gathered in vain because of failings in his instruments. He undertook the examination of the marine biology specimens, but did nothing with them before his death. McCormick contributed some confused 'scientific' reports which were used to fill the pages of the narrative. The one bright star, who saved the scientific reputation of the expedition, was Hooker. He may not have known it at the time of the appointment, but Ross had found one of the few outstanding men of that day in the field of natural history, remarkably competent and careful in his

researches. Otherwise, the scientific results were poor for an expensive expedition. The scientific reports were widely scattered and M.J. Ross has done well to bring them together in one chapter.

It was in exploration that Ross was successful. Following the lead given by Samuel Harvey and John Biscoe, he thrust his two protected ships into the pack ice of the Ross Sea, coming out into open water, which allowed him to discover and chart Victoria Land, Mt. Erebus (an active volcano) and the Ross Ice Barrier, which is still one of the wonders of the Antarctic — all in the first season. The next summer was a bad ice season, so all he did was to make some additions to his chart of the Barrier, reaching latitude 78° 10' south in Kainan Bay. In the third season, to the north of the Weddell Sea, he achieved little, a part of the voyage here described in new detail.

There are original sources that have not been used. Hooker's unedited journal and letters to his parents and the Muster Books show that it was an unhappy expedition. There are quite 70 logs books which, with the manuscript chart of J.E. Davis, Second Master, show shortcomings in Ross's navigation, making it clear that Ross was confused when sighting the Balleny Islands (discovered two years before), and that his charting of the Barrier had a large element of guesswork. They provide nothing to support Ross's 'Parry Mountains' and the 'high land' to the south of Kainan Bay, now known not to exist. Ross would have been wiser had he said nothing when sailing over Wilkes's non-existent 'land', but he was unnecessarily acid about his rival.

There is a need for a book using these primary sources, and the present book cannot be regarded as authoritative. It is a very readable story of Antarctic adventure in a voyage that has long been highly regarded though not having been examined closely; but it will probably be another century before the market is ready for a full account.

There are a number of maps; where two were

included for comparison, the printer managed to place them so they cannot be compared. There are three dozen illustrations. There is a good index and the book is well produced. Readers owe a lot to small private presses which produce books that would not be considered by large commercial publishers.

A.G.E. Jones

CATALOGUE OF RAAF STAFF COLLEGE PAPERS, Collected Research Essays 1973-1983. Royal Australian Air Force Staff College, Fairbairn, ACT, 1984. Not for sale.

This publication is reviewed because of its potential value as a resource to ANI members who happen to be conducting research in a field which may have been covered by a previous student at the RAAF Staff College.

The Catalogue contains a listing of all the major research essays written by students at the college from 1973 to 1983. Approximately 400 papers are included and they are indexed both by author and subject, although those indexed by subject are not in author alphabetical order. Some entries are classified.

Whilst there are many essays which have an Air Force flavour, a broad range of topics has been covered by students. The subject headings range from 'Accident Prevention' and 'Multinational Corporations' to 'Women in the Services', with many in between.

Details on the content of papers are not contained in this Catalogue and the actual paper itself would need to be consulted where these were required. Copies of papers are available from the RAAF Staff College if certain requirements are met. The Catalogues are located in Defence Libraries in Canberra, Defence Regional Libraries in NSW and Victoria, Staff College Libraries and, of course, the ANI Library in Russell A.

Haydn L. Daw





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