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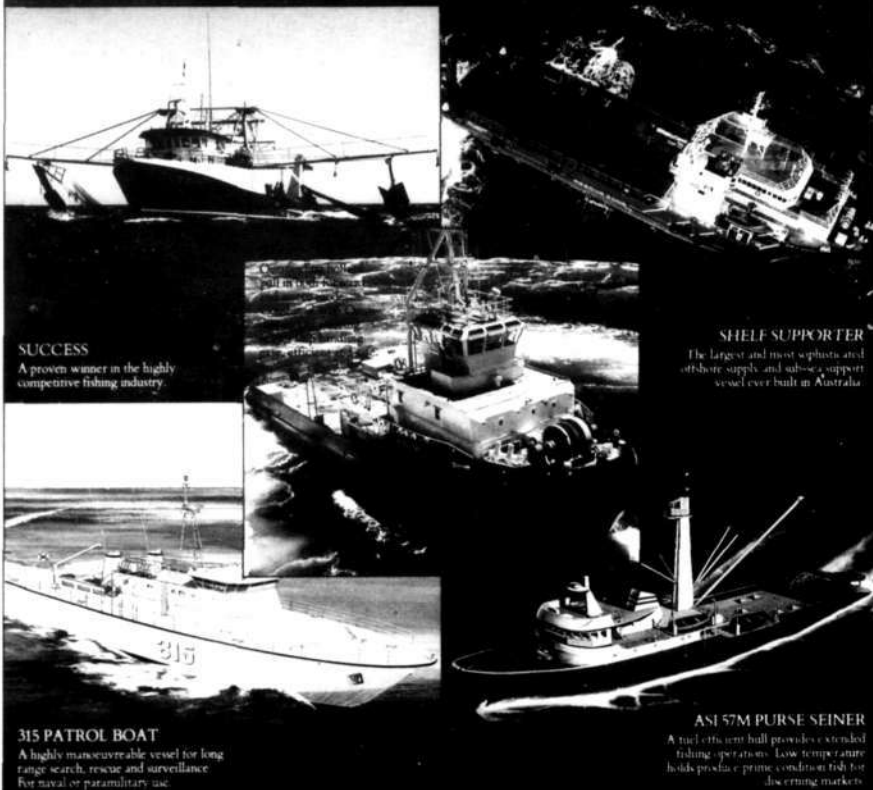
The Magazine of
THE NAVY LEAGUE OF AUSTRALIA

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THE NAVY



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HMPNGS TARANGAU on trials. (Photo — POPH Eric Pitman)

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Our Cover Photograph

THE WHYALLA — Now preserved
ashore in South Australia

See article on Page Ten

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THE NAVY LEAGUE — A PERSPECTIVE

IT was suggested that I should write this perspective in view of my comparatively long association with the Navy League. This association has been of two types; firstly as a member of the RAN and later as a member of the League.

When I became a member of the Naval Board in 1962 and in my various rear admirals' appointments I realised increasingly the amount of support and advice which was available within the League. As CNS in 1968 I took steps to increase substantially, communication between the two and this proved beneficial to the RAN and also I believe to the League.

It might be asked in what manner did these benefits occur. From a Service aspect we were of course familiar with policy, financial, personnel, technical objectives and so on, and also the desirability of having good public relations. Nevertheless, there were two deficiencies — one, that at times our view might have been limited to an extent by our profession, and, secondly, that by the nature of our work we did not have the opportunity to obtain a wider public reaction to the various and widespread naval activities whereas the League, by diversity of members, their experience, knowledge and contacts could help the Navy in its tasks.

From the League's point of view, better communication would enable members, who were obviously interested in naval and maritime matters, to have much better appreciation of the Navy's aims, their implementation and associated problems.

Naturally, if there is a common understanding and rapport between the two bodies, with each effectively playing its own role, then the result must lead towards a better maritime defence for Australia and a wider general knowledge concerning this defence.

The League's purpose has been comprehensively stated in the April-June 1987 issue of 'The Navy'. I believe it to be realistic and well worth studying. The League should never hesitate to further its policy. For



instance, in 1982 the League forcefully entered the aircraft carrier discussion. The RAN no longer has a carrier but that certainly does not mean that the League's views were wrong. The essence of this example is that the League had a policy on this matter, it had opinions to express and it did proclaim those views.

I would not wish to omit mentioning the League's close involvement with the Naval Reserve Cadets, who had their origin in the Sea Cadet youth training movement founded by the League many years ago. The League's work in this area has been of great value to the Navy and to the community generally.

This perspective has been brief, but I hope I have been able to make my point regarding the value of the Navy League concerning itself in relevant matters which affect the well-being of Australia.

Admiral Sir Victor Smith.

Admiral Sir Victor Smith, AC, KBE, CB, DSC, had a long and distinguished career in the Royal Australian Navy. A former Captain of HMAS MELBOURNE, he was appointed to the Naval Board in 1962 as Second Naval Member and served on the Board until 1965, he commanded the Fleet in 1966, became Deputy Chief of Naval Staff the following year and Chief of Naval Staff in 1968. Sir Victor was appointed Chairman of the Chiefs of Staff Committee (the senior appointment in the Services prior to integration) in 1970 and held that office until 1975 — a record period. Sir Victor also has the distinction of having served longer than any other Regular officer.

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SWEDISH SUBMARINES

THE ANNOUNCEMENT — MAY, 1987

THE Government has decided to build six Kockums Type 471 submarines, fitted with combat systems produced by a consortium headed by Rockwell International, subject to satisfactory conclusion of contract negotiations.

Announcing this, the Minister for Defence, Mr Kim Beazley, said all six submarines will be built in Australia by the Australian Submarine Corporation and assembled at Port Adelaide at a total project cost of \$3.9 billion at June 1986 prices.

"These submarines will be the largest, longest-ranging and most lethal conventional submarines in the Western World when they enter service in the 1990s," Mr Beazley said.

"They have been selected after an exhaustive valuation and development process which has resulted in a submarine design ideally suited to the unique and demanding requirements of Royal Australian Navy submarine operations," Mr Beazley added.

The Australian Submarine Corporation includes the Swedish Shipyards Kockums, CBI Australia Ltd, Wormalds International Ltd and the Australian Industry Development Corporation.

In addition to the cost of constructing the submarines and combat system, the project price includes costs such as spares, and construction of facilities to build them in Australia to increase defence capability and intensify Australian Industry Involvement.

The combat system for the new submarines represents about one third of the construction cost and will be assembled in Sydney by Rockwell Ship Systems Australia, a subsidiary of the US corporation Rockwell International, acting as a sub-contractor to ASC.

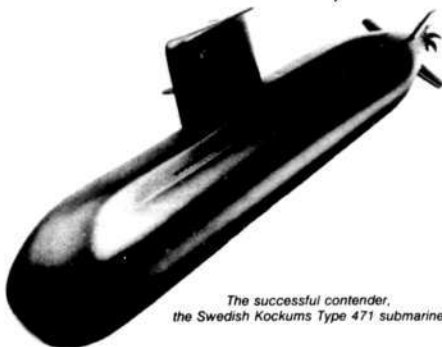
Rockwell will be supported by an experienced team of sub-contractors including Singer Librascope of the US, Thomson-Sintra of France, Computer Sciences of Australia and Scientific Management Associates.

"The successful tenderers are world leaders in their respective fields and have long and internationally respected records," Mr Beazley said.

"The selection of ASC and Rockwell is no reflection on the capability of the other tenderers. There was strong competition at all stages of the Project Definition Study and during the evaluation of the formal offers."

Kockums and Rockwell have formed Australian companies for this project. A large number of Australians and Australian firms have been closely involved with the overseas contractors in the preliminary studies and many others throughout the country have been identified as potential major or minor sub-contractors and as equipment suppliers.

"Submarines have unique capabilities and play a crucial role in Australia's defence self reliance. The new submarines will have greater range, endurance, speed and be more difficult to detect than the Oberon Class. They will have a modern hydrodynamically efficient tear drop hull



The successful contender, the Swedish Kockums Type 471 submarine

shape and incorporate the best of modern technology in submarine design and construction.

"Provision will be made for future technological advances including air independent propulsion and submarine towed arrays.

"The computerised combat system will be more advanced than any yet installed in a diesel-electric submarine, incorporating powerful sonars, Harpoon missiles and Mark 48 torpedoes. It will employ advanced microelectronics and optical data transmissions and is designed to remain operational in the face of substantial battle or other damage and be easily maintained.

"The combat system will be tested at a new Submarine Warfare Systems Centre at HMAS WATSON in Sydney before installation in the submarines.

"The Government's decision is a major step towards implementing recommendations in the Defence Policy Information Paper and together with projects for frigates, minehunters and other vessels, constitutes the greatest peacetime warship building programme in Australia's history, at a projected cost of eight billion dollars.

"The Submarine project is also a great step forward for Australian industry in developing new and upgraded capabilities for both domestic and export markets.

"More than 600 jobs will be created at the assembly site in Port Adelaide and thousands of other jobs elsewhere. There will be a massive transfer of new technology to Australian industry, including an upgrading of production skills and quality assurance flowing from the project.

"The areas of benefit to industry will range from heavy engineering to electronics. New skills will include specialised steel production, complex welding, fabrication, machining and casting, battery technology, power electronics, optical and electro-optical systems, fire control, system integration and the latest computer aided design and manufacturing techniques.

"To successfully apply these technologies and skills, a significant upgrading of quality assurance is needed in many Australian firms. The Government has authorised a wide range of accredited agencies to achieve the task, requiring Australian industry to prove itself in this crucial area," Mr Beazley said.

"The Australian Submarine Corporation has been selected as prime contractor after comprehensive competition, culminating with funded project definition studies by the Australian Submarine Corporation and Australian Marine Systems Pty Ltd.

"Seven submarine and 14 combat system suppliers had originally been identified as potential contractors with those firms putting forward nine submarines and eight combat systems for consideration in 1983.

"In 1985, after a long evaluation, the two submarine tenderers were selected to produce detailed proposals for building the submarines in Australia, including maximum Australian industry involvement with formal offers submitted in November 1986. The Project Definition Studies resulted in two modern submarine designs.



The Australian Submarine Corporation construction facility to be located at Port Adelaide.



Sweden's first 'real' submarine, a 60-ton Nordenfjell boat completed in 1885.

"Under the direction of the Chief of Capital Procurement, Mr Fred Bennet, more than 300 people participated in the extremely thorough evaluation, including Navy and civilian personnel in Defence, as well as involving the Industry, Technology and Commerce, Finance and Attorney General's Departments," Mr Beazley said.

"Rockwell was selected after the same evaluation process, including Project Definition Studies in competition with Signaal, a subsidiary of the world wide Philips group.

"All major aspects of the chosen design are now finalised, with work flowing to Australian firms in 1987-88 including the construction of the assembly facility in Port Adelaide.

"Assembly of the first submarine will begin in 1989 and is scheduled to be launched in 1993-94 followed by commissioning into service in mid 1995. The other five will follow at approximately yearly intervals.

"A decision will be taken during the construction phase on proceeding with the option for a further two submarines," the Minister said.

THE TYPE 471 SUBMARINE

The level of capability offered in the Kockums Type 471 submarine and its combat system has achieved and in some cases exceeded original RAN requirements. It matches that of comparable systems developed for the Royal Swedish Navy.

Compared to the Oberons, the new submarine offers significantly greater submerged endurance, faster underwater speed, greater diving depth and better manoeuvrability.

In addition the Type 471 offers computer assisted control, an extremely sophisticated combat system allowing the RAN to realise the full capability of its present weapons systems, much greater reliability, greater operational availability and low acoustic and magnetic signatures.

Like the Oberons currently in RAN Service, the new submarine will deploy a variety of weapons (Mk48 wire-guided torpedoes, Harpoon missiles and mines). The patrol endurance of 70 days and range of over 9000 nautical miles are similar to the Oberons.

A prime example of the new technology is the ship management system, which greatly minimises the workload by providing computer-based control and monitoring through common multi-function consoles. It is the main reason why the crew can be reduced to 41 compared with the Oberons' 63. (There is also room for five trainee crew.)

The Type 471 has a displacement of some 2500 tonnes and is about 70 metres long and over seven metres in diameter. It has six torpedo tubes in the modern hydrodynamically shaped blunt bow. The single 'skewback' propeller is designed for optimum efficiency at low revolutions, minimising noise by creating less turbulence.

The fin (more widely known as the 'conning tower') is situated slightly forward of amidships. It contains search and attack periscopes, masts, forward electronic support measures, communications, and air intake and exhaust.

The two forward control planes are mounted on the fin and the four rear planes are in an 'X' formation (instead of the usual vertical/horizontal - or 'crucifix'). These planes also work independently instead of the opposite planes being linked and moving in unison. This provides improved manoeuvrability and greater allowance for damage to or failure of some of the control surfaces.

The hull is made of a new Swedish-developed micro-alloy steel.

Internal decks and equipment are all elastically mounted to meet high shock and low noise requirements. There are four diesel generators capable of producing over 3.5 Mw of electrical power.

The Type 471 is the latest in a long line of designs from Kockums, the Swedish Government's submarine designer and builder. In recent times the Swedish submarine programme has produced a completely new class of boat on average of about every five years.

An air-independent auxiliary propulsion system based on the Stirling engine is being developed by Kockums, which could be incorporated at a later time. The system would enable the submarine to remain fully submerged for very long periods. It is being developed as an auxiliary power source for Swedish submarines.

Combat system

THE combat system, like the ship management system, is computer controlled and is based on a ship-wide high speed optical fibre data distribution system which is far in advance of any present combat system. The use of optical fibre instead of normal wiring reduces electromagnetic interference and also greatly reduces overall weight.

All tasks can be carried out at any of the multi-function common console work stations in the control centre. There is no central processor to present a single point of failure and the data distribution system can sustain significant damage or failure and still function satisfactorily.

The computer language used will be ADA, developed by the United States Defence Department and specified as standard for all combat critical operations.

The sonar suite covers a wide range of state-of-the-art equipment and systems, including high speed processing of information and highly user-friendly presentation. The thin-line reelable towed array is the Australian developed 'Kanwar' which can be extended and recovered even when submerged. It is far in advance of any other similar array and provides the ability to determine a target's distance, direction and speed at a great range.

The Type 471 features an air turbine weapons discharge system used by United States, British and Dutch submarines. This system allows a variety of weapons to be discharged throughout the operating envelope of the submarine.

NEW SUBMARINE WARFARE SYSTEMS CENTRE

A new Submarine Warfare Systems Centre will be built at HMAS WATSON in Sydney to develop and test the combat system, develop tactics and train new crew members.

With a smaller crew working in an automated and sophisticated environment, officers and sailors will have to be trained to perform many tasks instead of specialising. Trainees will have completed basic submarine training and most of the individual skills training needed to function as a member of the new submarine's command team.

- The Centre will consist of:
 - Land Based Test Site (LBTS)
 - Software Development Centre (SDC), and
 - Combat System Simulator (CSS).

There has been a partial submarine simulator in operation at HMAS WATSON since 1975. Before that, command teams trained overseas. HMAS WATSON has also been closely involved with the updated weapons system of the Oberons.



Kockum-built submarine, 1940.

and Based Test Site

The new Land Based Test Site will have as its roles:

- development of software;
- testing of all hardware and software changes;
- integration of changes to and testing of the various interfaces between the combat and other systems;
- integration of software changes into a system configuration;
- stress testing of the combat system;
- preparation and amendment of documentation;
- configuration management of the combat system and simulators and the Land Based Test Site; and;
- maintaining quality control and quality assurance.

Combat System Simulator

Elements of the combat system will be installed to provide for simulated operational combat system training on a regular basis.

Training 'games' will provide a realistic simulation of events both inside and outside the submarine under operational conditions of varying complexity running from 20 minutes to 72 hours, although most will last from one to four hours.

Tactical 'gaming' will allow a number of one-on-one options in opposing an enemy and can be played either against the programme or against other crew.

The control room of the simulator will resemble as closely as possible, the real control room of the new submarines, down to ventilation, lighting and the paint scheme, with vital indicators, dials and controls placed in the correct positions.

Equipment will include similar consoles, two periscopes, sensors, navigation system, echo sounder and radar.

THE control room will not move to simulate the movements of being at sea as in a real submarine, but all the noises that can be expected, both internal and external, will be provided, such as machinery, weapons discharge, explosions, marine life (whales, porpoises), and other vessels.

Games can be conducted over a circular area of 2,500 nautical miles radius. Natural features, such as coastlines, can be varied in distance and detail.

'Three-dimensional reality'

The characteristics of 1,000 other 'vehicles', including weapons, can be fed into the system, allowing over 60 in any one game. A visual target sub-system will provide a realistic computer-generated image. All the visual images, noises and electronic data will be synchronised to provide a complete 'three-dimensional' sense of reality.

The Combat System Simulator will be able to run up to four separate games simultaneously and the control room itself will be able to be physically divided to form two 'half' control rooms.

To help in training, games can be started or 'frozen' at any point, rewound, or stopped for debriefing.



Kockum-built submarine, 1968.

FUTURE TIMETABLE

- 1987: Official contracts signed. Contractors mobilise staff. Industry training. Detailed design work begins, in consultation with RAN. Project teams sent overseas. Work begins on construction/assembly facility.
- 1989: Software development. Construction of first submarine begins. Development of Land Based Test Site. Land Based Test Site begins operation. Integrated combat system testing begins. Crew training begins.
- 1991: Combat system installed in first submarine.
- 1992: First submarine launched.
- 1993-1999: Five other submarines launched.

AUSTRALIAN SUBMARINE CORPORATION

Kockums of Sweden was founded in 1840, delivered its first warship in 1875, and its first submarine in 1914. It has designed and built five generations of submarines for the Royal Swedish Navy over the last 20 years. In recent times Kockums have produced a new type of submarine about every five years.

Kockums Marine is a unit of the Swedish national industrial group Swedyard and has been reorganised to concentrate on military and underwater technological design and construction. The company is also involved in other types of submarines, including a remotely-operated diving bell for the repair and maintenance of underwater sections of oil and gas platforms.

Kockums, together with the Australian Industry Development Corporation, Wormald International Ltd, and CBI Constructors Pty Ltd, formed the Australian Submarine Corporation for the Project Definition Study. Both CBI (submarine components) and Wormald (life protection) are contractors to the US Navy.

Australian Industry Involvement (AII)

The Australian Submarine Corporation has proposed that Australian industry be involved in:

- limited detailed design of the hull sections;
- building, fitting out and operation of the construction facility;
- part-production, assembly and testing of major items of submarine equipment such as torpedo discharge systems, hoistable masts, main battery, electrical equipment (including power conversion and auxiliary motors and switchboards), main propulsion motor and charging generators, diesel engines, internal communications, ship management system and various mechanical systems and equipment items;
- hull fabrication, to be undertaken at a number of sites in eastern Australia as well as at the construction facility;
- final assembly of the hull at the construction facility;
- inspection, test and trials support activities; and;
- integrated logistic support.

Satisfactory contractual commitments have been developed for defining and securing the local content elements of an AII programme.



Kockum-built submarine, 1980.

THE DEFENCE WHITE PAPER

On March 19, 1987, the Defence Minister Mr Kim Beazley, tabled a defence White Paper — the formal declaration of government defence policy and plans — in the Parliament, a brief flare of publicity followed, generally favourable, and then the subject of defence disappeared from the headlines. It reappeared briefly — although not in the headlines — a few weeks later when the Government announced a reduction in defence spending to a figure below that upon which planning was based. There was very little comment as *The Age* editorial stated: "the one percent real reduction in defence spending next year to save \$350 million is electorally a soft option and should not seriously affect Australia's defence capacity in the light of foreseeable contingencies." It was all too reminiscent of the ill-fated 1976 Defence White Paper.

Having said this, the 1987 White Paper remains a valuable document as it marks another stage in the development of defence policy in Australia and it does give planners in the Defence Department something to work on.

People tend to forget it is governments who determine defence policy and not departmental officials no matter how influential they might be. In this regard defence planners have not been helped in their task by successive governments for the best part of two decades. In particular, government — the decision makers — have failed to come to grips with the problem of ageing equipment, some important (and expensive) decisions have certainly been made, but generally only after long periods of agonising and indecision which have thrown replacement timetables into disarray and usually resulted in greatly, and sometimes prohibitively, increased costs. It is far to say that in turn, governments have not always been aided by apparent indecision on the part of their advisers.

The White Paper was preceded by a review of Australia's defence capabilities conducted by a small team headed by Mr Paul Dibb of the Australian National University. The review was carried out over a period of some twelve months and the Dibb conclusions and proposals were available for public scrutiny in June 1986. A period of quite intensive debate followed, mostly within the defence orientated community, and it might be assumed this contributed to some extent to the thinking of those responsible for preparing the White Paper. It is doubtful if any defence paper has allowed for such public involvement and it is to Mr Beazley's credit that it so happened.

THE ASSESSMENT

BOTH the Review and the White Paper fall under two broad heads — an assessment of Australia's strategic situation and proposals for an appropriate defence force structure. Although the Paper is clearly based on the Review — the force structure proposals are virtually the same — there are some differences in the strategic assessment. The White Paper, or "official" assessment is broader and more realistic, and reflects the concern expressed by many people in Australia and abroad, not least in the United States, that

A LAYMAN'S VIEW

by GEOFFREY EVANS

Australia might adopt an "isolationist" defence policy.

The policy is now more in line with the country's foreign policy, indeed it almost goes overboard so far as Australia's relationship with the United States is concerned. It is worth mentioning here that Britain receives very little attention (only in connection with the Five Power Defence Agreement in SE Asia), this seems a pity in view of the fact that the defence forces of the two countries share the same nominal head — the Sovereign — as well as a great many customs and practices. Responsibility (or blame) for the less close than hitherto relationship between HM and HMA armed forces no doubt lies in both countries.

The White Paper clearly accepts regional responsibilities but it is possible to have misgivings about the limitations of the "area of direct military interest" (DMI) which consists of Australia, its territories and proximate ocean areas, Indonesia, PNG, New Zealand and "other nearby countries of the South-West Pacific". This happens to correspond roughly with the historic Australian Naval Station, first defined in 1859 and which eventually extended further west in the Indian Ocean and further north (almost to the Philippines) than the 1987 defence equivalent.

The DMI is rather theoretical but it would seem logical to have included Singapore and Malaysia in view of Australia's membership of the Five Power Defence Agreement and the fact that we have aircraft and troops stationed there, and possibly the Philippines because of the importance of that country to our principal ally, the United States.

It could also be suggested that India, China and Japan should be included in Australia's area of "broader strategic interest". Apart from any other consideration, each is a significant "local" naval power and Australians cannot be other than keenly interested in events which involve them.

The White Paper also very properly stresses the importance of PNG and Indonesia, given the geographical proximity of both and the latter's large and growing population, and industrial potential, it could not be otherwise.

THREATS

THE absence of an obvious or direct military threat to Australia's security or interests has for many years made it difficult for governments and defence advisers alike to know with any certainty the kind of defence force a country should have: the core force concept — a small force in being that could be expanded or developed to meet a threat once recognised — was a logical consequence. The same problem of course has troubled many other countries with modest resources, the only thing anyone could be certain about was that in a world plagued by super- and major-power rivalries,

racial strife, terrorism and an abundance of sophisticated weaponry, the range of possibilities was uncomfortably wide. The situation is very little different today.

The White Paper refers to the need for Australia to be able to provide its own defence in the (presently unlikely) event of a threat posed to Australia "by a nation operating within our own region" — this is the basis for force development. Terrorist activities can be envisaged (but would not seem to require a major defence effort) but it is difficult to reason why any nation should wish to "harass" Australia except as part of a much larger plan to destabilise international relationships. Mischievous Libyans or Cubans might have such an objective but do they have the means to cause serious harm without the support of a major power? If they did the situation would be likely to attract United States involvement and Australia would not be alone.

It is the writer's personal view that at some time in the future Australians will face a challenge to their way of life, but not necessarily of a military nature. The world population today is 5 billion, in twelve years time it is estimated it will be 6 billion and twenty years after that, 8 billion. Most of this increase will be in the poorer countries. Can a comparatively tiny number of Australians expect to retain sole occupancy of their vast land without some form of challenge?

DEFENCE FORCE DEVELOPMENT

THE White Paper indicates that the core force concept will be retained but under a new name — "expansion base". The present deterrent elements of the defence force, the F-111 aircraft and submarines, both capable of long range strikes, will also be retained (although the future deterrent capability of the F-111s is unclear as no decision has been made concerning the upgrading of their avionics and support systems). Some of the Navy's surface ships are stated to have "the potential to mount long range strikes" but emphasis must be placed on the word "potential" as without proper air support they would be far too vulnerable.

The emphasis of the White Paper's equipment proposals is on what might be termed "local" defence measures, essentially the protection of the Australian mainland. A great deal of importance appears to be attached to the early warning capacity of the Jindalee Over-the-Horizon Radar system currently being developed. It is believed that while the general value of the system has been proved there is still quite a long way to go and it will be only a part of the intelligence/surveillance arrangements considered necessary.

One of the most-discussed of the Paper's many proposals is a possible decision to station an Army brigade in northern Australia. Involving some 6,000 or 7,000 people the cost of doing this would undoubtedly be high, both initially in establishing the infrastructure and subsequently in maintaining the force. There seems to be mixed feelings about this proposal, on the one hand it is believed a larger Army

presence in the north would indicate that the defence of that part of the country is taken seriously, and would enable the soldiers to become familiar with terrain and climate on the spot. It is suggested it would be more cost-effective to rotate smaller formations through the area for shorter periods, enabling more people to gain experience with a less elaborate infrastructure — family housing, schools etc.

As with the plan to establish a chain of northern air bases, a large (by Australian standards) Army presence in the area will depend upon the availability of funds and rapid developments seem unlikely.

It would be hard to quarrel with the principle of most White Paper proposals, but leaving aside the matter of funding exception must be taken to the complacency evident in that section of the Paper dealing with threats to Australian trade.

Both the Dibb Review and the White Paper tend to discount the importance of trade to Australia despite the fact that for months the community has been told the dismal state of the national accounts and a general decline in living standards is almost entirely due to an unsatisfactory trading situation — Australia is not able to sell enough goods overseas to make ends meet and to sustain living standards.

A healthy export/import trade is essential to Australia's well-being in peacetime and in a protracted emergency or war the country would still need the ability to dispatch and receive cargoes sent across the oceans in ships. The enforced loss of this ability for a sustained period would almost certainly bring Australia to its knees — it would be much easier than trying to invade the country!

THE relative lack of importance attached to Australia's need for secure sea lines-of-communication naturally has a bearing on the kind of naval forces considered necessary. In this regard the plan to build up to eight light patrol frigates must be welcomed, they will be equipped with helicopters, mainly for anti-submarine purposes, but it must be accepted that while they have to depend upon shore-based fighter support their range of action will be severely restricted. The consequences for merchant ships traversing the open ocean without any real protection could be disastrous.

Unfortunately the oceans on three sides of Australia are too often seen as a form of protection — the word "moat" has been used, while this is true to some extent — if one thinks in terms of invading armadas — the very vastness of the ocean surrounds lends itself to exploitation by an antagonist with quite moderate naval capability and is therefore a weakness.

PERSONNEL

It has been said that the men and women of the Australian Defence Force are its most valuable asset; this is of course so and the White Paper clearly recognises the fact.

For most of their history, the sense of dedication and loyalty in the Australian Services has been of a very high order and despite a long period of peace and many vicissitudes it remains so today. A rather complacent community can be thankful for this.

The sure way of destroying dedication and morale would be to allow a feeling of neglect to creep in. It is up to the Australian nation as a whole to ensure this does not

happen. The best equipment in the world is of little use without skilled men and women to operate it.

SUMMARY

As remarked at the beginning of this article, the White Paper (and the Review that preceded it) is of considerable value and provides those directly concerned with defence with a sense of direction.

The force structure plans and proposals are by no means radical but it needs to be kept in mind that many proposals are no more than that. Whether the funds to convert them into reality will ever be made available remains to be seen (they no doubt would be if Australians received a sufficiently severe fright). An apparent lack of understanding of the country's maritime problems is a weakness in the Paper.

The extraordinarily long time-frame in which to develop a quite moderate defence capability (10 to 20 years) provides plenty of scope for governments to defer or change projects and plans. This could also be seen as a weakness.

At this stage it can be said with certainty, life will continue to be difficult for Australia's defence planners.

DEADLINE

The deadline for the October-December issue of The Navy is

SEPTEMBER 1, 1987

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PACIFIC PATROL BOAT

The Pacific Patrol Boat, for Papua New Guinea, has officially been handed over to the nation's Minister for Defence, Mr Stephen Tago, at a ceremony in Western Australia on Saturday, May 16.

The vessel is the first of 12 long-range patrol boats being provided to Pacific Island countries under Australia's Defence Co-operation Programme.

Under the project, Papua New Guinea and Fiji are scheduled to receive four boats each, with Vanuatu, Western Samoa, the Solomon Islands and the Cook Islands receiving one boat each. Representatives from the Pacific Island countries participating in the project were present at the ceremony.

The project, which includes vessels and associated spares support, training and advisory



HMPNGS TARANGAU on trials. (Photo — POPH Eric Pitman)

assistance, is the largest defence co-operation project ever undertaken by Australia.

THE project was first announced by the Prime Minister at the 1983 South Pacific Forum meeting in Canberra at which Australia agreed to develop, in conjunction with Pacific countries, a specially-designed patrol boat to assist them with surveillance of their 200 nautical mile Exclusive Economic Zones.

The patrol boats will also give them the capability to conduct disaster relief, search and rescue, medical evacuation, along with police and VIP inter-island transport tasks.

The Pacific Patrol Boats are being built by Australian Shipbuilding Industries at its shipyard south of Perth. The boats displace 165 tonnes, have a continuous operating speed of at least 23 knots and an operating range of at least 2,500 nautical miles.

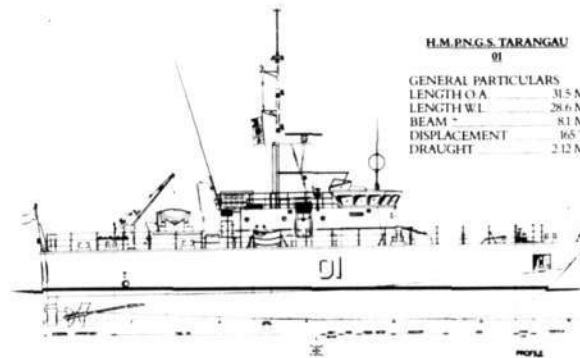
Each boat is fitted out for operating in a remote and harsh environment with emphasis placed on ease of maintenance, good sea-keeping qualities and operational economy.

The project will allow regional co-operation between South Pacific states in the surveillance of their often adjacent resource zones. As well, practical defence links between Australia and regional countries will be enhanced, and our knowledge of maritime activities in this region of primary strategic interest will also be increased.

In addition to the patrol boats, a comprehensive support package has been arranged including two years' spares support, advisory assistance and intensive crew training in Australia for the vessel's complement of three officers, two senior and nine junior sailors.



The Papua New Guinea national flag is unfurled for the first time aboard the patrol boat. (Photo — POPH Eric Pitman)



Side profile of the ASI-315 patrol boat.

H.M.P.N.G.S. TARANGAU	
GENERAL PARTICULARS	
LENGTH O.A.	31.5 M
LENGTH W.L.	28.6 M
BEAM	8.1 M
DISPLACEMENT	165 T
DRAUGHT	2.12 M

estimated to be \$61.7 million at December 1986 prices.

DIMENSIONS:

Length (Overall)	31.5 metres
Length (Waterline)	28.6 metres
Beam (Maximum)	8.1 metres
Displacement (Full Load)	165 tonnes
Draught (Deepest)	2.12 metres

PERFORMANCE

Speed:

Maximum Sustained Speed (Full Fuel)	21 knots
Minimum Sustained Speed	7 knots

Endurance:

Range (At 12 Knots)	2500 nautical miles
Fuel (Bunkerage)	27.9 tonnes diesel
Water (Bunkerage)	6000 litres
Watermaking	3000 litres per day
Fresh/Frozen Provisions	10 days
Dry Provisions	21 days
Spares	21 days

ACCOMMODATION AND MESSING:

CO Cabin	Separate facilities
Officers Cabin	2 Berth with facilities
Occasional Officers Cabin	2 Berth
Officers Facilities	Shower and W/C
Wardroom	All officers
Senior Sailors	2 Berth combined sleeping and mess with separate facilities
Junior Sailors Accommodation	12 Berth
Junior Sailors Facilities	2 x showers, 2 x W/C
Junior Sailors Mess	All junior sailors
Combined Galley	All crew

Officer training is being conducted at the Australian Maritime College in Launceston, Tasmania. HMAS CRESWELL, HMAS WATERHEN, HMAS CERBERUS and at the Rockingham TAFE College near Fremantle, Western Australia.

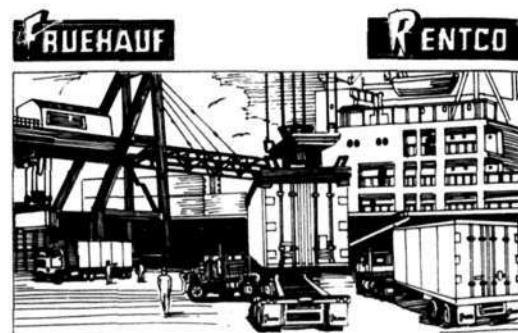
Australia will also help maintain and support the boats throughout their service, and regional maintenance support facilities will be established.

The characteristics of the boats were developed in close consultation with regional countries. Ten companies tendered for the

construction of the boats, offering a total of 13 designs.

After rigorous evaluation by two independent evaluation boards, the design offered by ASI, known as the ASI 315, was selected as best meeting the characteristics required by participating countries.

ASI currently has a contract to build 12 boats for \$36.5 million at December 1986 prices. An option remains for a further two boats to be built as part of the project. The estimated total project cost, including crew training, spares and regional support and advisory assistance, is



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THE WHYALLA

by PHILLIP STONE



An original photo of HMAS WHYALLA taken in the Whyalla Harbour in 1941.

When the original HMAS WHYALLA was launched at the Whyalla Shipyard in 1941, the proud ship builders of the day would have found it inconceivable that 46 years later the ship would be "alive" and about to take on a new, life-time role.

And it would have been just as incredulous to have suggested that the final resting place for the corvette of 815 tons displacement would be two kms inland.

But in Whyalla, the unbelievable has happened. The first HMAS WHYALLA, later to become the Rip when decommissioned, and now known simply as The Whyalla, has been removed from the sea up the same slipway, now disused, that gave it its birth, been transported through the BHP steelworks and across saltbush to finally set down on foundations adjacent to the city's northern highway entrance.

It will be the focal point of a \$1m to \$1.4m complex which will include the restored ship, an extensive maritime museum and a new tourist information centre.

THE Whyalla Maritime Tourist Complex will be a memorial to the city's shipbuilding past and the men who served on the ship. It will also create the biggest single tourism boost for the city ever experienced. Plans are still being developed for the complex, and it is expected the new tourist centre will open later this year. The ship by late 1987 or early 1988 and the museum early to mid 1988.

Meanwhile, back to Saturday February 14, the day that The Whyalla was due to start its journey from the harbour back up the slipway from which it slid on May 12, 1941. Several hundred onlookers were ready, television crews from Adelaide had flown in, and the many official photographers were in place.

Plans by WA contractor Dawson Offshore were to have the ship on its new foundations within two to three weeks. However, as the old saying goes "the best laid plans can go astray". The subsequent battle pitted by Dawson's against what became known as the "Reluctant Lady", resulted in a successful re-siting, but not until Thursday April 2, and not until Dawson's operations manager Dave Shade and operations engineer Piet Ellnor, had spent untold hours, sleepless nights and frustrations to win over "The Lady".

In reality it took five days to winch the ship, sitting on a cradle which had been previously lowered over the side of the wharf and placed under the hull, up a specially laid track, to a position where the bow was above the low water mark.

But the problems weren't over. Damage had been caused to the cradle and end of the slipway. Working often at night because of the need of high tides, it took a further two weeks to get the ship completely clear of the water — divers spent hour after hour clearing away damaged pieces of steel and activating the jacking system which saw the ship gradually inch its way up the slipway.

During all this, 220 tonnes of trailers and two prime movers valued at \$4m, railed from Perth to transport the ship from the top of the slipway to the land site, had arrived and due to the delay and another commitment at Mount Newman, had to return and come back in late March.

BY mid-March the ship had been brought to the top of the slipway, and then began the process of raising it about 1½ metres off the ground to allow for the installing of the trailers. The big hurdles were over. The Brambles Manford crew returned with the transport equipment and from then it was almost smooth sailing. Within five days the ship had been secured to the trailers, shifted along its 2km route, and settled on its permanent foundations.

The move was complete. The various contractors and local firms involved in the project had worked their hearts out to bring the project to a successful end albeit behind schedule. They weren't going to let "The Reluctant Lady" win.

The Whyalla now stands alongside the Lincoln Highway, unusually nestled amongst a backdrop of trees and shrub vegetation. Now the work has started to transform the ship and complex area into a memorial and tourist attraction of which all will be proud.

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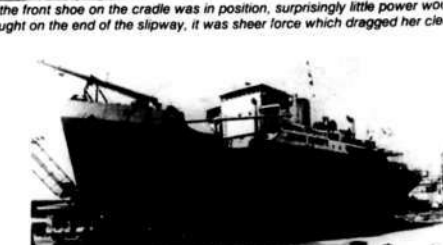
Later to become the "Rip", the ship arrives from Melbourne with its volunteer crew on May 21, 1984.



The ship waits for high tide off the end of the slipway for the first stage of movement on to land. Little did anyone realise the frustrations which were ahead.



Well researched homework by Dawson Offshore had shown that once the front shoe on the cradle was in position, surprisingly little power would be required to edge the ship up its track. But when the ship became caught on the end of the slipway, it was sheer force which dragged her clear.



The ship, resting securely on its trailer, on firm soil at the top of the slipway.



An aerial view on the last leg of the ship's overland move as it approaches what was the Tanderra Hostel of BHP, now disused, just 200 to 300 metres from its resting place.

At left: Partial success — the WHYALLA with its bow exposed at low tide.

THE WHITE PAPER AND THE REGION

The Defence White Paper has defined Australia's region in a way which limits the countries which have, or shortly will have, the military, naval and air ability to threaten Australia.

The White Paper limits arbitrarily the distance from Australia for neighbouring powers to be considered regional powers.

This distance varies according to direction. As a result, the White Paper excludes significant consideration of two powers which have the ability to conduct major naval operations not only in our region, and on our ocean trade routes, but also in extensive areas of our coastal waters.

These two powers are India and China. China's maritime strength, once realistically described as a China Sea - Yellow Sea Navy, has been growing in 'blue water' strength.

Ships and submarines built recently with further units building and orders now placed, demonstrate incontrovertibly that China is substantially increasing both the size and quality of her blue water fleet.

Specific developments include:

- A new building programme for gas turbine powered destroyer sized ships, equipped at least in part with European weapons and sensors.
- Extensive modernisation of existing frigate designs to allow the full operation of modern helicopters.
- Acquisition of modern western naval helicopters.
- The development in China of new generations of surface to surface guided weapons, surface to air missiles, and air to



Submarine support ship. (Photo — Ross Gillett)

surface missiles. This is a major change — no longer will the Chinese Navy be dependent on derivatives of Russian made weapons of thirty years ago.

- The construction of new ocean going underway replenishment ships, submarine depot ships and amphibious warfare units continues.
- The first units of China's new classes of nuclear armed nuclear powered ballistic missile submarines (SSBNs) and nuclear powered attack submarines (SSNs) are now at sea and there are indications that a large class of SSNs is planned.
- The first units of China's new generation of diesel electric submarines are now under construction. These boats will combine the benefits of Chinese operational experience



Jianghu class frigate with surface to surface missiles. (Photo — Ross Gillett)

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by A. W. GRAZEBROOK

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- The modernisation of the later units of the existing Romeo class submarines.

The new more capable amphibious warfare ships will enhance China's amphibious strength, the well publicised strategic purpose of which is the neutralisation and/or recovery of Taiwan.

THE size of China's new attack transports and tank landing ships permits more distant amphibious operations than against Taiwan — perhaps the disputed Paracel Islands and other islands in the South China Sea where China has territorial claims. As yet, there is no sign of China building major amphibious warfare ships (such as vessels of the size of Russia's Rogov Class) with a vertical assault capability.

China's new destroyers and frigates incorporate an increase in anti-submarine warfare and anti-aircraft capacity to complement the surface capability of earlier ships. The AAW weakness of China's existing ships would be a serious weakness on operations outside the range of Chinese naval shore based fighters.

There are reports that a Chinese aircraft carrier is planned, but there is no published evidence that this is anything more than a very tentative plan.

In summary, an analysis shows that it will be



Yukan class tank landing ship. (Photo — Ross Gillett)

at least seven years before the Chinese Navy has sufficient surface forces, of the necessary capability, to conduct protracted operations, opposed by first class submarines, and aircraft and surface forces down into the Indonesian Archipelago.

Seven years is not long in terms of naval force development requirement. For example, the Australian Submarine project team was formed five and half years ago but we have only just reached the decision on the design of submarine we will build, let alone actually started building new submarines.

This point is relevant, because a much shorter margin of notice applies to China's submarine force of SSNs, SSBNs and SSs.

It is clear that China's nuclear armed ballistic missile nuclear powered submarines are part of China's nuclear deterrent against Russia. China's SSBNs have no regional role to play.

However, the very reasons which attract objective Australian defence strategists to

nuclear powered attack submarines attract the Chinese Navy to SSNs — high sustained underwater speed and virtually unlimited range.

SSNs have the ability to pass through the Indonesian Archipelago and conduct torpedo, guided missile or minelaying operations in the Arafura Sea and the Indian Ocean — both areas of vital concern to Australia. Similarly, Chinese SSNs have the ability to operate in the South Pacific.

CHINA's conventional submarine force is already very strong indeed — at over 100 boats it is massive by regional standards. However, even the newer Romeos are obsolete — they are noisy underwater and lack modern sensors and homing weapons (either torpedoes or guided missiles). It is for these reasons that China has undertaken the Romeo modernisation programme. It is noteworthy that even obsolete submarines can lay mines with a reasonable degree of safety.

This conventional submarine force is already capable of extended operations in the waters of our region and in Australian waters. The additional range imparted by China's submarine depot ships must not be ignored.

From all this, it can be seen clearly that the exclusion of China from the category of regional power, in spite of China's possession of a numerically massive submarine fleet, can result in a serious underestimate of the material capability of powers well within submarine range of our coastal waters, let alone ocean trade routes.

The same Defence White Paper that excludes China from our region recommends the construction for the RAN of light patrol frigates which, initially at least, will have no anti-submarine weapon capability whatever. This comes at a time when Navy's specialised anti-submarine destroyer escorts of the River Class are being withdrawn from service.

All this is no more to say that the People's Republic of China will attack Australia than it is to say that the other powers considered in the White Paper — Indonesia, Malaysia, the Philippines and others — will attack Australian interests.

However, it does seem anomalous to say the very least to exclude from the White Paper a power (China) which currently has a great deal more capacity to harm Australia militarily than does one of our nearest neighbours — Indonesia.

Much the same must be said about another power excluded from the Defence White Paper — India. That country's burgeoning maritime strength will be reviewed in a future edition of Navy Magazine.

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Arrival of USS MIDWAY, Sydney, June 5, 1987. (Photo — Courtesy Barry Norman, Daily Telegraph)

Soviet Naval Power

NAVAL FORCE DEVELOPMENTS

THE Soviet Navy is headed by a commander in chief (CINC) who is also a deputy minister of defence. He functions as the equivalent of both the US Secretary of the Navy and the Chief of Naval Operations and is the chief adviser on naval policy to the minister of defence. Fleet Admiral Vladimir Chernavin has commanded the navy since 1985 and is assisted by several deputies who supervise the day-to-day operations of the navy, including the work of more than 10 staff directorates.

The Soviet Navy comprises four major fleets: Northern Fleet, Pacific Ocean Fleet, Baltic Fleet, and Black Sea Fleet. Fleet headquarters are located at Severomorsk for the Northern Fleet, Vladivostok for the Pacific Ocean Fleet, Kaliningrad for the Baltic Fleet, and Sevastopol for the Black Sea Fleet. In peacetime, the fleet commanders report directly to the chief of the Main Navy Staff and exercise operational control over all general-purpose forces afloat and ashore within their fleet areas.

Under each fleet commander are several major operational elements, including surface and submarine forces, naval base commands, naval aviation, and naval infantry. While the fleet commands provide administrative, logistical, and operational support to the strategic submarine force, operational control of Soviet SSBNs is at the national level.

NAVAL FORCE DEVELOPMENTS

An Update

SUBMARINES

A significant part of Soviet naval strength lies in its general-purpose submarine force, the largest in the world. Today, this force numbers some 300 active units composed of some 35 classes of torpedo attack, cruise missile, and auxiliary submarines. About half the force is nuclear powered, and the percentage is expected to rise in the years ahead as heavy investment in submarine building programmes continues to receive priority allocations of military resources.

Currently, the Soviets are producing or testing nine classes of submarines. Of these, almost all are nuclear powered. This programme spans a wide range of undersea warfare applications, including torpedo and antiship cruise missile attack, land-attack submarine-launched cruise missile (SLCM) technology research, and specialised communications support. Backed by aggressive research and development, the newest Soviet submarine designs show evidence of an emphasis on quieting, speed, nuclear propulsion, weapon versatility, and incorporation of advanced technologies.

This emphasis has been greatly underscored since 1983, with the introduction of four new classes of nuclear-powered attack submarines. The MIKE SSN, at almost 6,400 metric tons, will probably serve as a propulsion testbed. It is

capable of firing a wide range of submarine-launched weapons, including the SS-N-15 nuclear depth bomb and the SS-N-16 ASW conventional and nuclear missiles.

The second nuclear-powered attack submarine launched in 1983 was the SIERRA. At 7,600 metric tons, the SIERRA is about 20% larger than the VICTOR III, which was introduced only 4 years earlier. In this era of rapidly developing technologies, the SIERRA is a clear demonstration of the high priority that submarine development programmes receive in the Soviet Union. Technological advances are incorporated into designs as soon as practical, and while SIERRA differs little in hull form from the VICTOR III, it is believed to have a larger pressure hull and improved capabilities.

A third submarine development of 1983 typified another aspect of Soviet philosophy, which is to retrofit innovations into older designs, thus extending the service life and tactical utility of the submarine force. In one case, the ballistic missile tubes were removed from a YANKEE SSBN in a process that converted the unit to an attack submarine. This YANKEE SSN has probably been re-equipped with updated fire control and sonar systems.

In conjunction with other programmes to produce specialised nuclear-powered submarines for research and development, weapons system evaluation, and fleet command and control, the Soviet Union maintains a diesel-powered submarine programme with the production of the KILO-Class attack submarine.

Through an unwavering commitment to submarine development, the Soviet leadership has constructed a large, versatile, modern, offensive strike force capable of both conventional and nuclear operations throughout the world. Moreover, newer submarine classes are showing clear design improvements over their predecessors and are narrowing the technological lead long held by the West. This demonstrated capability to translate submarine research to production is a clear indication that the Soviet Union will strive to apply increasing technological pressure on the West in the years ahead.

SURFACE FORCES

THE surface forces of the Soviet Navy also continue to improve their ability to fulfill a broad range of naval operations, especially in waters distant from the USSR. In general, the afloat forces are modern and well equipped with both conventional and nuclear weapons.

The trend in Soviet major surface warship programmes has been toward larger units with more sophisticated weapons and sensors. These ships can cruise for longer distances, carry more ordnance and conduct a greater range of operations than their predecessors. This development has created a new flexibility for Soviet surface forces in carrying out deployed operations on a worldwide scale.

Currently, the largest combatant ship in the Soviet Navy is the KIEV-Class aircraft carrier. Its weapons suite includes a battery of 550-kilometer-range SS-N-12 antiship cruise missiles, which can be targeted beyond the



The lead unit of the USSR's 65,000-ton aircraft carrier class — now fitting out at Nikolayev shipyard, with sea trials anticipated in 1989 — will mark an evolutionary advance in Soviet naval capabilities over currently operational 37,100-metric ton Kiev class carriers.

ship's horizon by onboard HORMONE helicopters or information received from satellites or land-based long-range aircraft. This class also carries an array of other weaponry and support equipment, including over 100 long- and short-range surface-to-air missiles, air defence gun batteries, tactical sensors, electronic warfare systems, and advanced communications devices. The 180-metre flight deck accommodates both HORMONE and HELIX helicopters and the FORGER VSTOL aircraft, which is capable of daylight attack, reconnaissance, and limited air defence intercept missions.

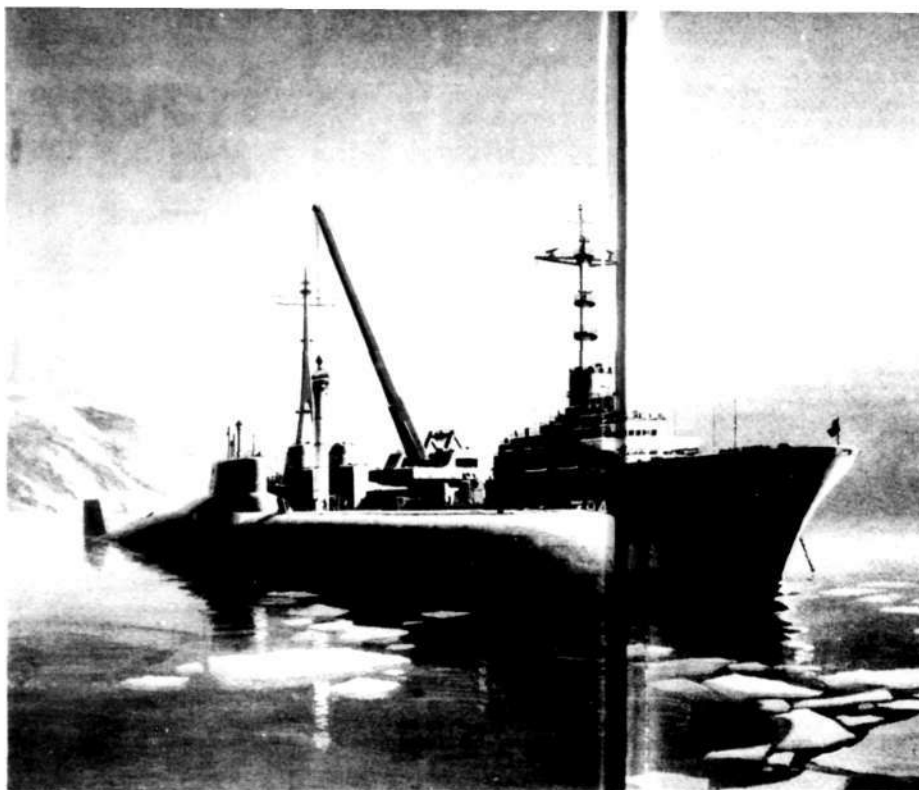
A new era in Soviet warship development began in 1980 with the appearance of the initial units of the most technologically advanced classes produced in recent years. These included the first Soviet nuclear-powered surface warship — the KIROV guided missile cruiser — and the UDALOY and SOVREMENNY guided missile destroyers (DDGs). In 1982 the first of a new class of gas-turbine-powered guided missile cruisers — the SLAVA — entered the inventory. The SLAVA is equipped with 16 SS-N-12s, 64 SA-N-6 air defence missiles, 40 SA-N-4 point defence missiles, a 130mm twin barrel, dual purpose gun, and the HORMONE surveillance helicopter.

Each of these classes is in series production. The KIROV, with a displacement of about 28,000 tons, is the largest warship, with the exception of aircraft carriers, built by any nation since World War II. Its principal armament is a battery of 20 550-kilometre SS-N-19 antiship cruise missile launchers, complemented by launchers for the SS-N-14 anti-submarine missile in the first ship of the class only. Three HELIX or HORMONE helicopters are included for ASW and missile targeting. The KIROV is outfitted with an array of air defence weapons, including 96 long-range SA-N-6 missiles and, on the second and subsequent unit, provisions for 128 SA-NX-9 shorter range SAMs. Medium-calibre gun mounts, a number of Gatling-type guns for point defence, torpedoes, and ASW rockets complete the KIROV's modern armament. In 1984, *Frunze*, the second unit of the KIROV-Class, became operational. A third KIROV-Class ship is now fitting out, and a fourth is under construction.

Other new construction programmes show similar evidence of Soviet concern for the multidimensional aspect of modern naval warfare. All new destroyers and larger surface combatants are equipped with surface-to-air missiles and sensors and weapons for antiship warfare, in addition to helicopters and specialised weaponry. The eighth SOVREMENNY DDG, for example, is estimated to carry 40 SA-N-7 short-range surface-to-air missiles, a HELIX or HORMONE helicopter, 53-cm torpedoes, and 120 antiship missiles, as well as 8 SS-N-22 supersonic antiship missiles.

The Soviets' newest class of aircraft carrier, launched in December 1985 at Nikolayev in the Black Sea, is still fitting out. The ship is approximately 300 metres overall in length and is expected to displace about 65,000 metric tons. The ultimate flight-deck configuration of the new carrier is yet to be confirmed, and the aircraft for its air wing are still under development.

In support of the development of aircraft for future carriers, the Soviets have an active test and evaluation programme under way at Saki



The ALEXANDER BRYKIN, lead unit of a new class of strategic ballistic missile submarine tenders, is preparing to join the Soviet fleet. The survivability and sustainability of the Soviet SSBN/SLBM force will be further enhanced with missile-reloading operations in protected waters. Such operations demonstrate a growing Soviet capacity to engage in protracted nuclear war.

naval airfield near the Black Sea. There, the Soviets have constructed a 295-metre flight deck outline, arresting gear, and aircraft barricades, and two catapults — one being tested and one under development. Two ski-jump ramps have been erected to test aircraft in short, rolling, ramp-assisted takeoffs. Several aircraft have been variously associated with these test facilities, including the FLANKER and FULCRUM. While candidates to fly aboard future carriers themselves, these aircraft could also be testing particular aspects of sea-based aviation for a totally new aircraft designed specifically for the stringent requirements of carrier air operations.

Although it will take years after launch and fitting out and training with an operational air wing to develop operational effectiveness, the new carrier will enable the Soviets to extend their operations beyond the umbrella currently provided by land-based aviation. Eventually, high-performance aircraft of the embarked air wing are expected to permit them to conduct integral air defence of task groups, decrease the vulnerability of their deployed surface forces, and contribute to overall national air defence. Additionally, the Soviets have an active interest

in improving their peacetime distant-area power projection capabilities to become more influential in the Third World. To achieve this goal, they seek enhanced capability to protect and assist ground forces operating ashore, as well as to provide air protection for naval forces. Thus, the aircraft on the new carrier are expected to have both air-to-air and ground-support mission capabilities. Sustained combat operations in Third World areas, however, would require underway replenishment ship support of a kind the Soviets currently lack.

NAVAL AVIATION

ALTHOUGH the emphasis on sea-based aircraft development will be increasing, Soviet Naval Aviation (SNA) will remain primarily a land-based force. Numbering over 1,600 aircraft, SNA alone is larger than most of the national air forces in the world today. Since the mid 1950s, when the force was first equipped with missile-carrying jet bombers, weapon systems and tactics associated with its principal antiship strike mission have been progressively upgraded. The Tupolev-designed variable-geometry-wing

shipboard applications, a new ASW helicopter, the HELIX, became operational in 1980. Now widely deployed in the Soviet fleets, the HELIX has significantly greater range, speed, and payload than its HORMONE predecessor.

SNA aircraft are also employed for vital maritime reconnaissance missions. Intermediate-range MAY aircraft are continuously deployed to South Yemen and periodically deployed to Libya and Syria,

primarily to conduct maritime surveillance operations. Additionally, BEAR D and F long-range aircraft conduct regular deployments to staging bases in Cuba and Angola and are continuously deployed to Vietnam. BEAR Ds also deploy periodically to Angola. Operations from these bases provide the Soviets not only with military intelligence but also with detailed information on ship movements along critical Western sea lines of communication.

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BOOK REVIEWS

"THE U-BOAT PERIL"

By BOB WHINNEY.

Published by Blandford Press.

Australian Distributor Capricorn Link, Sydney.

Reviewed by "Gayundah".

"The only thing that ever frightened me during the War was the U boat peril" so wrote Winston Churchill.

In 1939, Britain's Royal Navy was unready and unable to counter this challenge.

The author of the book was one of the highest scoring anti-U-boat hunters of the Second World War. He relates how the unforeseen development of U-boat warfare by the Germans almost starved Britain into defeat.

Before the outbreak of conflict he was one of the first to qualify as an anti-submarine specialist. However, he was soon to find out that in the early years submarine counter measures were given a very low profile.

The author describes his actions against the U-boats as the commanding officer of a veteran Royal Navy destroyer of the V and W class, including the process of detection and attack, in language for the layman.

"SHIPS AND AIRCRAFT OF THE US FLEET"

By NORMAN POLMAR.

Published by Arms and Armour Press.

Review copy from Capricorn Link, Sydney.

Reviewed by Joe Straczek.

Norman Polmar's, "The Ships and Aircraft of the US Fleet" has always been a treasure trove of information about the United States Navy. This, the thirteenth edition, is no exception.

The book starts by giving a resume of the state and organisation of the United States Navy and its various associated agencies. This is followed up by the main part of the book which deals with the ships and aircraft of the United States Navy as well as their weapons and electronics. The final chapters of the book cover the United States Coast Guard, National Oceanic and Atmospheric Administration, Advanced Technology Ships and a listing of US shipyards.

Each of the ship chapters gives introductory details of the particular vessel type concerned. There are also details of proposed and planned ships, some of which have been cancelled but have been listed to provide some background information. The individual class sections provide extensive information on all aspects of the individual class, much in the same ways James Fighting Ships is organised. The major difference between this and James is that the information is more detailed because of the concentration on the United States Navy. Each section is well illustrated by selected photographs, some of which are included for historical reasons. Perhaps the most interesting is the photograph of the USS WISCONSIN in a floating dock and the photograph of the model of the proposed Strike Cruiser.

Following on from chapters on the various ship types in US service is a chapter on United States naval aviation. Here are listed aircraft currently in service with the Navy as well as some developmental aircraft. This chapter is followed by one on naval weapons and electronic devices, detailed explanations of various American terms being provided. As with the previous sections these are also well illustrated with numerous photographs.

Perhaps one short-coming in this book is the lack of a section which deals with the various ranks and categories within the United States Navy. The inclusion of this and illustrations of the various uniforms and rank insignia would have completed what is an excellent reference work.

All in all "The Ships and Aircraft of the US Fleet" is a well researched and well written reference on the world's most powerful navy. It is highly recommended to all those interested in the United States Navy and naval affairs in general.

"THE COST OF SEAPOWER"

The Influence of Money on Naval Affairs from 1815 to the Present Day

By PHILIP PUGH.

Published by Conway Maritime Press.

Reviewed by John Mortimer.

This book fills an important gap, in existing literature, for those wishing to understand some of the important considerations which either do, or should, underlie the defence decision making process.

Unlike so much of the existing commentary which focus their considerations on the major naval powers, or the NATO and Warsaw Pact alliances, Philip Pugh's work has a more general application.

The analysis covers: the relationship between defence expenditure and national wealth; the problems of comparing costs from different nations and eras, how budgets are developed; the underlying causes of cost escalation, radical innovation and its application in lesser naval powers, the trade-off between numbers and capability; the problem of rising unit cost and its long term effects on naval planning; the high cost of new developments, and concludes with a discussion on escaping from the apparently inexorable growth in the unit cost of warships.

Philip Pugh's writing style flows easily and he has some memorable quotes which will bring numerous chuckles to what one might normally expect to be a somewhat dry subject. As presented it is anything but dry and is well balanced in its discussion. Pugh's style is characterised by some classically simple but effective statements. For example his discussion on radical innovation is titled "If you cannot win then change the rules", and is followed by such sub-titles as "Victory despite the Admirals", and "It seemed different at the time".

Highly recommended reading, particularly for those interested in the formulation of defence policy beyond technical naval and strategic issues.

"USN - NAVAL OPERATIONS IN THE '80s"

By MICHAEL SKINNER.

Published by Arms and Armour Press.

Review copy from Capricorn Link, Sydney.

Reviewed by "Shtandart".

The sea-born forces of the United States of America are undoubtedly the largest and, arguably, the most technically advanced of their kind in the non-communist world.

Since the NATO nations would suffer major economic damage without their merchant fleets, and in view of the growing mutual recognition among the Superpowers that unacceptable collateral damage makes a land-based nuclear exchange even less of a viable option than ever before, then the possibility of a nuclear war of attrition on the open seas becomes more realistically possible. Additionally, sea-water is known to be a far more efficient medium than land for the diffusion of radiation.

"USN" is a racy, highly-readable account of the operational and tactical methods and daily routine of the ships and men comprising the largest maritime component of the Western Alliance. Unusually for a book of this title, the functions of the Coast Guard, the Marine Amphibious Force, the SEALs, SeaBees and the civilian-crewed military SeaLift Command are also covered in detail.

The author employs a laconically efficient and distinctly 'American' style of presentation, liberally and authentically spiced with naval jargon. In this connection, a very comprehensive glossary of relevant terminology is included immediately after the Preface. There is no Index, however a complete table of comparative ranks for the Navy, Coast Guard, Marines, the Army and Air Force is at the rear section together with a competent listing of each Fleet and a tabulation of every major vessel in the Navy.

As far as it is practical so to do, the equipment and armament peculiar to each main class of warship is described to a degree usually available only to an actual observer of such matters and, as such, the author's descriptions are highly detailed. A prime example is the chapter concerning carrier operations.

Interestingly, and as far as possible, the author also compares American and Soviet naval practices in relevant areas. An additional bonus is a separate listing of all major warships of the Soviet Navy together with literal translations of their names. All main Soviet Fleets and their bases are also listed.

This is an immensely enjoyable, heavily illustrated and valuable soft-covered work that, if desired, can be picked up and opened at any point with immediate satisfaction for the reader. Indeed, many of the photographs were taken by the author. The book's kaleidoscopic breadth will also, with passage of years, provide a fascinating retrospective aspect for students of US naval operations in the 1980s. Highly commended.

"WAR AT SEA 1939-1945"

By JOHN HAMILTON.

Published by Arms and Armour Press.

Review copy from Capricorn Link, Sydney.

Reviewed by Joe Straczek.

Since the cessation of hostilities in 1945 there have been virtually thousands of books published dealing with the war at sea. What makes John Hamilton's work different, is that it has been illustrated using 176 of the author's paintings. These paintings graphically illustrate the text and add to the history, a feeling and a sense of being there which is absent in the normal clinical histories. The colour paintings range in size from large double page ones to small quarter page illustrations. Unfortunately, in reproducing many of the paintings in a large format they have been cut by the spine of the book. This does tend to spoil a large number of otherwise excellent paintings.

All paintings are the result of hours of painstaking research and attention to detail and reflect the artist's desire to give a younger generation some indication as to what war at sea was like. To help the reader get a better feel for what was happening as a whole the text and paintings are supported by a number of maps. These maps help to set the scene which is then brought to life by the paintings.

Unlike other books authored and printed in Britain, John Hamilton's "War At Sea 1939-1945" refers to Australian warships as HMAS and not HMS.

All in all "War At Sea 1939-1945" is a remarkable book which has clearly brought "to those who were spared the horror and who never knew" a glimpse of the war at sea in 1939-1945 and at \$65 is well worth the cost.

"JANES NATO WARSHIPS HANDBOOK"

Edited by CAPTAIN JOHN MOORE, RN.

Published by Janes.

Review copy from Lothian Books, Melbourne.

Reviewed by "Acheron".

This 448 page 'ready reference' type book presents the warships of the NATO Navies, including France. Each class or ship is illustrated by a photograph with the relevant technical data and general design, modernisation and armament notes opposite.

At the beginning of the book, a section is devoted to recognition silhouettes, while later a list of pendant numbers for the major surface ships has been reproduced.

All types of ships, from submarines and aircraft carriers down to amphibious and seaward defence craft, and even coast guard cutters, are described.

"BRITISH WARSHIPS & AUXILIARIES"

By Mike Critchley.

Published by Maritime Books.

Reviewed by "Acheron".

Now in its ninth year of publication, the 1987-88 edition of Mike Critchley's "British Warships & Auxiliaries" presents the current status of the Royal Navy, Royal Fleet Auxiliary, Fleet Air Arm and Royal Marine auxiliary Service.

The author introduces his book with an informative description of the service today and highlights the problems of maintaining sufficient numbers of ships. However, the main part of the book is devoted to the simple but informative ship listings. A colour centre section illustrates a number of the classes, while overall the quality of photography is excellent.

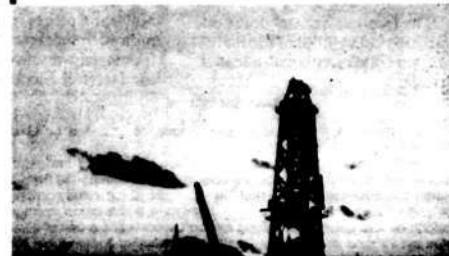
The section devoted to the Fleet Air Arm has been written in an enlarged and more informative style, and it is hoped that in future editions this improved format is used cover to cover.

On the final page, the author has included a list of ships in reserve, reserved or awaiting sale. Overall an excellent but brief summary of the Royal Navy today.



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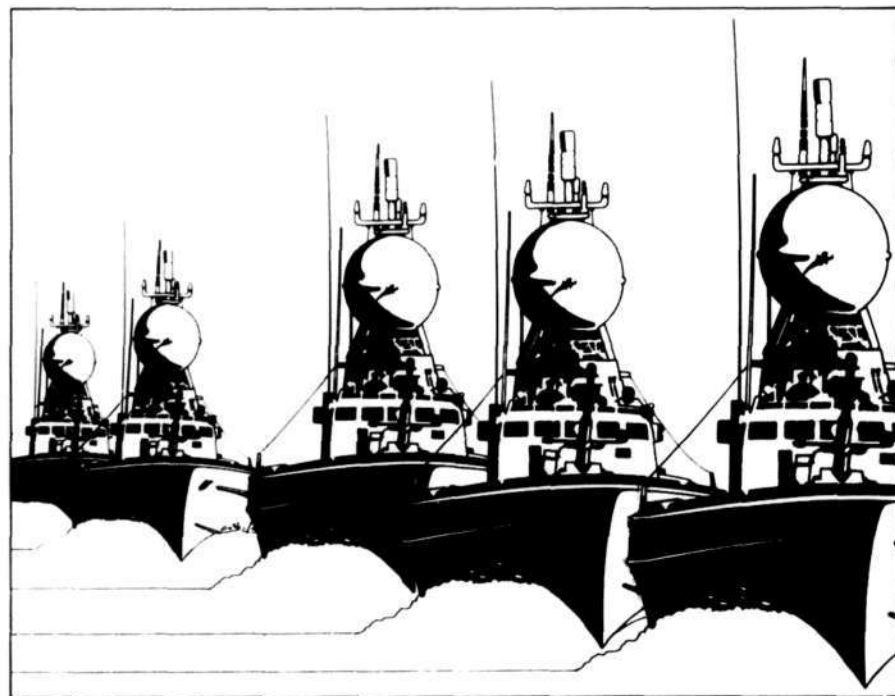
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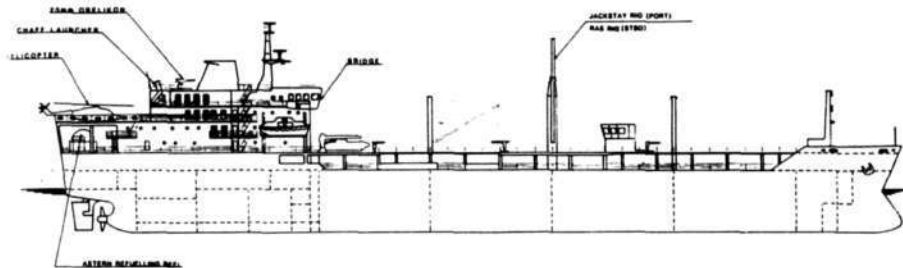
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HMNZS ENDEAVOUR

The acquisition programme for the new tanker for the Royal New Zealand Navy is progressing well.

The Tanker, HMNZS ENDEAVOUR, is being built by Hyundai Heavy Industries in Ulsan, Korea.

A team of naval technical officers from New Zealand have just returned from the ship-builders and report that the first steel for the hull was cut on February 4. This will form part of the framework in the engine-room section of the ship.

The tanker is being built in sections under cover. The first completed major section will be moved to the building dock in the Special and Naval Ship Division of the yard in early April.

All major structural design work has been completed, as has the detailed design and drawings of the complex fuel pipe and cargo handling systems which will be installed in the ship.

The major items of machinery and special equipment have been selected and ordered from suppliers around the world and the ship's engineer, Lt Cdr Mike Downes, is now in Korea standing by the build.

The New Zealand Navy is using the British firm of Burness, Corlett and Partners as technical consultants for the design and construction of the ship.

Being built to strict Lloyds' tanker standards, the ship will be launched by flooding the building dock in August and will be completed by December.

HMNZS ENDEAVOUR will carry out builders' trials before sailing for New Zealand in 1988.

The tanker will be 136 metres long, displacing 12,300 tonnes and have a speed of 14 knots. It will carry 7,500 tonnes of diesel fuel and 120 tonnes of aviation fuel. British designed rigs will be fitted to enable frigates and other vessels to be refuelled by the tanker while underway.

Construction of the vessel will cost about \$21 million. Equipment and installation and other costs will bring the total cost of the project to a maximum of \$27.7 million. It may be less.

Acquisition of this vessel was foreshadowed in the preliminary review of defence needs a year ago, when the Navy was authorised to search for a suitable tanker to buy. Construction of a new one in Korea has now been shown to be cheaper. There are many surplus tankers tied up around the world but most of them are of 100,000 tonnes or more.

Second-hand tankers of about the size we are seeking are few and in demand. When refitted to our requirements they will cost more and would have a shorter life than a new ship. It is expected that the ship will be built, equipped and handed over to the RNZN in about 18 months.

The vessel will extend both the range and endurance of the frigates and other vessels at sea in the Pacific — whether engaged in disaster relief operations, extended patrols or exercises. Its purchase is thus squarely within the Government's policy of increased self-reliance.

The vessel will have space for helicopters to land or take off and refuelling facilities. This will enable helicopters from a frigate to land and take off from it and enable it to carry a helicopter sometimes, if needed. There will be no hangar or extensive maintenance facilities.

The ship will also have capacity to carry a limited quantity of dry and refrigerated stores. It will require a Navy crew of 35.

Its purchase does not pre-empt the defence review. Whatever its final conclusion about the Navy, we are likely to continue operating some of

the frigates for a long time to come; if it were decided to sell all of them a tanker would be even more easily saleable. It is also likely that it would still be needed for ships that might replace frigates.

The vessel will be fitted with a limited self-defence capacity and standard naval communications equipment. It will meet all international standards for safety, antipollution and navigation.

Naval Policy Statement RNZN Tanker

1. This policy statement encompasses the operating, maintenance, support and manning policies for the RNZN tanker. This statement will require to be updated to take into account operating experience with the RNZN Tanker after twelve months service.

Operating Policy

Roles

2. The primary role of the RNZN Tanker is the underway provision of fuel to RNZN ships.
3. Secondary roles that can be undertaken include other tasks such as the sea training of RNZN and RAN personnel, support to other naval units, the NZ Armed Forces, allied naval units, and aid to civil authorities.

Mission

6. The primary mission of the RNZN Tanker is to replenish deployed units of the RNZN.
5. Secondary missions in fulfilment of secondary roles as may be authorised from time to time.

Area of Operations

6. In carrying out its primary mission the RNZN Tanker will operate in support of RNZN deployed units with priority of employment being given to the South Pacific.

Allocation of Effort

7. Within the constraints of operational availability and the restriction, in normal circumstances, that the ship spend no more than 200 days away from its home port in any one leave year, the RNZN Tanker will be allocated to support specific fleet units or undertake tasks as determined at the biannual Fleet Planning Meeting.

Maintenance Policy

8. A maintenance policy based on Merchant Service practice has been determined as being the best means of providing optimum operational availability of the RNZN Tanker. This maintenance philosophy takes the following into account:

- a. The RNZN Tanker is a merchant vessel built to Lloyds Classification Regulations and as such the plant is 'commercially known'. The exception to this is the Replenishment at Sea, radio equipment and other military equipment.
- b. The manning policy for the RNZN Tanker dictates that ships staff will generally be able to undertake minor maintenance and defect repair only. The majority of maintenance work will require to be undertaken by staff other than the ships crew. When deployed overseas, it will be necessary to utilise commercial contractors to repair on board equipments.

- c Ships husbandry will be limited because of the RNZN Tanker manning policy
- d New Zealand commercial contractors will be utilised to provide maintenance support beyond the capacity of Fleet Maintenance Unit and dockyard resources
- e Ships equipment will be maintained until spares support from RNZN stocks manufacturers stocks is no longer economically available when the equipment will be replaced in toto
- 9 The RNZN Tanker will generally conform to a merchant service maintenance cycle modified as necessary to reflect the replenishment at sea capability of the ship and taking into account the following:
- There will be a maintenance plan to maintain the ship's class rating standards based on a five year cycle (prepared by the Marine Classification Society)
 - The ship will be docked twice within the five year cycle (subject to recent changes to classification regulations which may allow waivers to one of the dockings subject to a satisfactory underwater video check of the hull)

Support Policy Naval Stores

- 10 The RNZN Tanker will carry the range and quantity of 'Long Voyage' spares prescribed by Lloyds and necessary to obtain a Lloyds classification. In addition, in the case of equipments that are not covered by Lloyds requirements but which will affect the ability of the ship to meet its operational role (eg. Communications, domestic and Replenishment at Sea equipment, etc.) a suitable range of spares will be carried. Stockholding will be based on current RNZN policy
- 11 The Naval Supply Depot will carry sufficient back-up quantities of those items held in the ship to enable ships stocks to be routinely replenished as stocks are consumed (the initial range of spares will be based on the 2 year range of spares purchased with the RNZN Tanker). SNSD will not carry additional items of stores over and above those mentioned without prior approval from the Chief of Naval Staff. Major overhaul maintenance spares will be purchased as required
- 12 RNZN Tanker stores will be accounted for in accordance with

established NZ Defence Stores procedures as laid down in DM 52 and NZBR 26. The RNZN Tanker will be self accounting for its stores. Full Component Identification And Allowance Lists (ICILAs) are not required. Spares lists will be limited to identification of items held in the RNZN inventory.

- 13 Replenishment of ships stock will follow established RNZN/NZ Defence Stores Procedures.

Rations

- 14 The RNZN Tanker is capable of providing rations for 35 men for 45 days. A cash rationing account will be operated.

Navy League Life Membership REAR ADMIRAL H. A. SHOWERS CBE RAN (RTD)

At its last annual meeting, the Federal Council of the Navy League of Australia appointed Rear Admiral Harry Showers as a Life Member of the League in recognition of his many years of distinctive service to the League at both Federal and State levels.

Rear Admiral Showers was elected as the League's third Federal President in 1956, succeeding Vice Admiral Sir John Collins who had been appointed High Commissioner in New Zealand, and Commander (later Sir) John Bates. He had been elected NSW State President in the previous year.

During a long term of office as Federal President (12 years), Admiral Showers nursed the "Australian" Navy League through its growing pains — until the late '40s it had consisted of several State branches of the United Kingdom Navy League — and was responsible for bringing about its present status as an incorporated organisation under the Companies Ordinance of the ACT, a process which took six years.

As Federal President, Admiral Showers was the League's senior representative on the Australian Sea Cadet Council, the Navy's advisory body on Sea Cadet matters. One of his last tasks was to oversee the changes which culminated, after he retired, in the Naval Reserve Cadet organisation.

Although he retired as Federal President in 1968, he remained as NSW State President until 1976, thus completing a remarkable 21 years in that office.

A Federal Council minute of the 1968 Annual Meeting, the last over which the Admiral presided as Federal President, records that in responding to a vote of thanks he said "his work had been a labour of love". The Navy League owes a great deal to Harry Showers.



Navy League Federal Vice President RADM Andrew Robertson (left) and NSW President CMDR Otto Albert (right) present the Life Membership Certificate to RADM Showers.

OUT OF THE PAST

Dear Sir,

I came across the enclosed article which was published in the *Ballarat Courier* newspaper recently and thought it may be of interest to you.

It concerns that Ballarat Naval Cadets of many years ago and in particular the march of that Unit from Ballarat to Melbourne in 1908 to meet and greet the American *Great White Fleet*.

You may even consider republishing it.

With best wishes,

Yours sincerely,

BRUCE TURNER,

Institute Librarian.

(Lieut. NRC — Staff Officer —

Administration,

Victorian Division).

THE COURIER, Ballarat, Saturday, April 11, 1907, Page 37

SATURDAY MAGAZINE



The Ballarat Naval Cadets' historic march, December, 1908. (We apologise for the poor reproduction — Editor.)



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A souvenir of Ballarat Naval Cadets' historic March, from *The Courier* Christmas supplement of December 15, 1908 — an item in the Heritage Week display at the Ballart Library in Camp Street.

Nearly 80 years ago the young Naval Cadets became local heroes when they marched to Melbourne to provide a reception committee for the visiting American Fleet.

The March, described by Mrs Kelly as a unique protest march, captured the imagination of the people of Melbourne, who feted the boys on arrival.

The cadets were founded by Lieutenant John Henry (Harry) Adeney, a remarkable man whose father the Rev H.W.H. Adeney, was the first vicar of St Peter's Church of England, Ballarat.

Harry Adeney went to sea at about 14, became a master mariner in the British Merchant Navy, was later in the Victorian Navy, and also a harbour master.

His youngest and only surviving son, Ralph Kimbell Adeney of Healesville, now 83, has provided an amazing collection of early photographs and pictures of the cadets, Ballarat, St Peter's Church (without the tower), a scrapbook and memorabilia of the march, including the signatures of the original cadets, an illuminated address and his father's diaries, logs and letters written at sea.

There are personal letters from people such as Prime Minister Alfred Deakin and MacRobertson of chocolate fame.

Some of this material is being displayed upstairs at the Ballarat Library for Heritage Week, with a rifle and cutlasses similar to those used by the cadets in exercises.

When he formed the cadets, Lieut Adeney had left the sea to marry 'Dear Nell' of his letters. They were living in the former St Peter's vicarage at 'Rowton', Mount Rowan, a home now being lovingly restored by Mrs Margaret Maher.

The Victorian Navy had gone into decline and the RAN was not yet formed. Lieut Adeney held a passionate belief that Australia needed a Navy and strenuously lobbied for it.

Mrs Kelly believes that Lieut Adeney personally did more to establish the RAN than any other individual.

In an effort to practise what he preached, he formed the Ballarat Naval Cadets.

Some 24 boyish signatures were collected at Ballarat College and the first muster was held on August 5, 1903. Numbers eventually grew to 160.

Their first public appearance in November at St Peter's Strawberry Fete triggered a demand for their entertainment. A report said: "Much interest was excited by a party of small boys in correct man-of-war rig, who performed the cutlass exercise with precision and much energy."

A report in 1904 referred to a concert at Her Majesty's Theatre. "Then followed a melee with cutlasses in which Mr Adeney's naval cadets acquitted themselves with such vigor that the audience wanted to see it all over again."

Mrs Kelly said that Harry's organisational skills must have been brilliant. He begged and

Local boys of '08 made good

scrounged equipment from all manner of sources. From the Navy, the University rowing club, government and civic leaders and local traders.

The boat they used for drill was a war skiff which he had brought from China 25 years previously.

The boys were taught to swim, handle a boat, manoeuvre, parade and exercise with the weapons of the day, cutlasses and a Whitworth gun, lent from the School of Mines museum. They put on naval displays on Lake Wendouree, reviewed by guests on the paddle steamer 'Ballarat', and even had their own band.

In 1904 they bravely went out in a 'nasty squall' and rescued the occupants of a capsized yacht. Adeney was a Ballarat Yacht Club member, among many other interests.

In August 1908 the event occurred which was to make them the darlings of Victoria.

Lieut Adeney had been lobbying unsuccessfully for transport to enable the Cadets to welcome the American Fleet, but the official reception committee would not authorise rail passes.

When Premier Tommy Bent finally suggested that if they wanted to come, they could walk, Adeney took up the challenge.

On August 25, 1908 with bands playing, about 60 boys set off to march to Melbourne, over 78 miles of unsealed, muddy roads.

The memorabilia contains heartwarming touches.

Nine-year-old Curly Skews, the mascot, must have dressed in a hurry as he forgot to put on

his underpants. There is a note from his mother who sent them on with instructions to make sure he wore them.

The boys' effort inspired a wave of enthusiasm, with traders and publicans en route providing hospitality. Ballarat butchers Treadors sent a consignment of beef and sausages for the 'noble lads'.

Sleeping on straw in tents, they spent the nights at Gordon, Myrning, Melton. At Sunshine, a tumultuous reception awaited them.

Prime Minister Alfred Deakin rode out to greet them. They were feted by H.V. McKay, Sunshine Harvesters and spent the night on 10 cut of straw in the Mechanics Institute.

Bands led the final stage of their march to the Melbourne Town Hall, a slow progress as the crowds mobbed them and women hugged and kissed them.

They had left Ballarat at 9.30 am on August 25 and arrived at the Town Hall at 9.35 am on Saturday, August 29 — after four days' marching. Adeney spoke movingly of his pride in the boys and that not one had fallen behind.

The Lord Mayor, Sir Henry Weedon, received them and they were taken, probably in dire necessity, to the City Baths.

Their aim to be part of the official reception for the American Fleet was realised — by direction of Prime Minister Deakin.

They rowed a cutter up the Maribyrnong River to Flemington racecourse where they took part in the march past, led by Crimean veterans, before the Governor, Sir Thomas Carmichael, and Admiral Sperry, USN.

They were invited into innumerable parties, ferried around in cars, given a tea party and tours on board the American flagship USS VIRGINIA and warship CONNECTICUT — and introduced to chewing gum.

Gifts were showered upon them. The founder of the MacRobertson chocolate empire, who signed himself simply 'MacRobertson, native of Ballarat', sent a letter to say he was motoring up with a supply of 'our famous milk chocolate and the well known chewing gum a great American digestive confection.' He sent 70 tins of chewing gum and 70 packets of chocolate.

Public pressure was such that a free train ride was provided back to Ballarat via Geelong, where they were again feted and taken on a bay tour by the harbour master.

Eddie Doepel, later a Ballarat real estate agent, who bought Dunk Island, was a bugler on the march. He recalled that they were given so many presents that a compartment had to be set aside on the train.

Back in Ballarat the fervour continued. They were met at the station by a band and marched to receptions at both Ballarat East and West Town Halls.

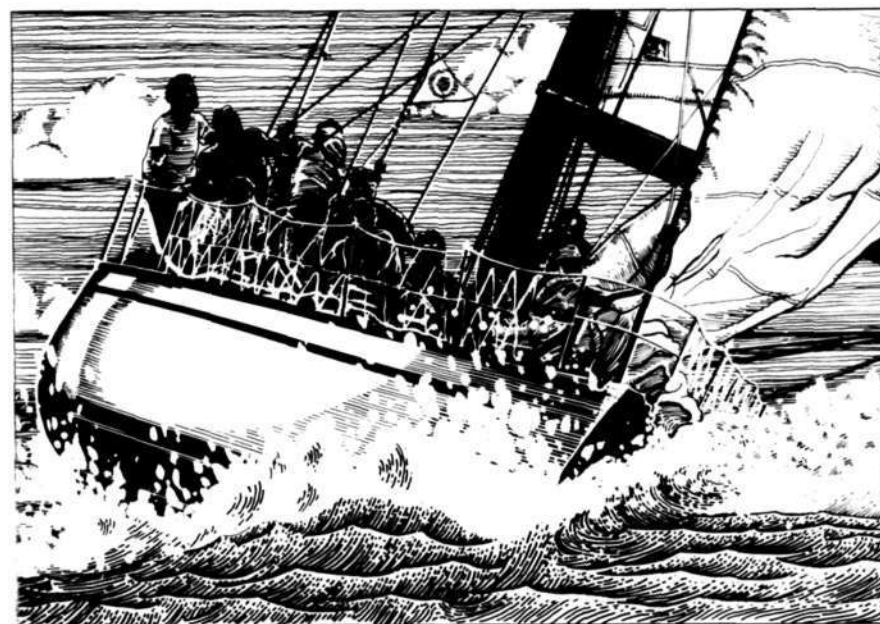
A fund was set up to provide a testimonial for each boy. Several survive in historic collections. On view at the library is Lieut Adeney's own framed testimonial.

In 1910, Lieut Adeney and his family moved to the Mallee to take up land west of Ouyen.

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The Navy League of Australia

APPLICATION FOR MEMBERSHIP

HISTORICAL

The Navy League of Australia had its origin in the Navy League formed in Britain towards the end of the 19th century and described in some dictionaries as "A body formed in 1895 with the object of arousing interest in the British Navy".

From this simple beginning a world-wide organisation of independent, national Navy Leagues has emerged which over the years has influenced public thinking on naval matters and created in tens of thousands of youngsters an interest in the sea and ships.

The members of the Navy League of Australia are proud to belong to this great family and cordially invite you to join them in what they believe to be an important national task.

MEMBERSHIP

Any person with an interest in maritime affairs, or who wishes to acquire an interest in, or knowledge of, maritime affairs and who wishes to support the objectives of the League, is invited to join.

OBJECTIVES

The principal objectives of The Navy League of Australia are:-

- To keep before the Australian people the fact that we are a maritime nation and that a strong Navy and a sound maritime industry are indispensable elements of our national well-being and vital to the freedom of Australia.
- To promote, sponsor and encourage the interest of Australian youth in the sea and sea-services, and support practical sea-training measures.
- To co-operate with other Navy Leagues and sponsor the exchange of cadets for training purposes.

ACTIVITIES

The Navy League of Australia works towards its objectives in a number of ways:

- By including in its membership leading representatives of the many elements which form the maritime community.
- Through soundly-based contributions by members to journals and newspapers, and other media comment.
- By supporting the Naval Reserve Cadets, and assisting in the provision of training facilities.
- By encouraging and supporting visits by recognised world figures such as former United States Chiefs of Naval Operations and Britain's First Sea Lords.
- By publishing "The Navy", a quarterly journal reporting on local and overseas maritime happenings, past, present and projected.
- By maintaining contact with serving naval personnel through activities arranged during visits to Australian ports of ships of the Royal Australian and Allied Navies.
- By organising symposia, ships' visits and various other functions of maritime interest throughout the year.

Member participation is encouraged in all these activities.

JOINING THE LEAGUE

To become a Member of The Navy League, simply complete the Application Form below, and post it, together with your first annual subscription of twelve dollars (which includes the 4 quarterly editions of "The Navy").

The form should be sent to the Hon Secretary of the Division of the Navy League in the State or Territory in which you reside, the addresses of which are as follows:

NEW SOUTH WALES DIVISION: GPO Box 1719, Sydney, NSW, 2001.
VICTORIAN DIVISION: CA 9 Culliton Road, Camberwell, Vic, 3124
QUEENSLAND DIVISION: CA 42 Gilgandra Street, Indooroopilly, Qld, 4068.
AUSTRALIAN CAPITAL TERRITORY DIVISION: CA 45 Skinner Street, Cook, ACT, 2614.
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TASMANIAN DIVISION: CA 42 Amy Road, Launceston, Tas, 7250.
WEST AUSTRALIAN DIVISION: CA 23 Lawlor Road, Attadale, WA, 6156.
NORTHERN TERRITORY DIVISION: GPO Box 2612, Darwin, NT, 5794.

THE NAVY LEAGUE OF AUSTRALIA *Application for Membership*

To: The Hon. Secretary
The Navy League of Australia

..... Division

Sir or Madam,

I wish to join the Navy League of Australia, the objectives of which I support, and I enclose a remittance for \$12.00 being my first annual subscription.

Name:

(Mr)

(Mrs)

(Ms)

(Rank)

PLEASE PRINT CLEARLY

Street Suburb

State Postcode

Signature Date

JOIN THE NAVAL RESERVE CADETS

If you are between the ages of 13 and 18 years:

The Naval Reserve Cadets provide for the spiritual, social and educational welfare of boys and girls and help to develop in them character, a sense of patriotism, self-reliance, citizenship and discipline.

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Cadets are required to produce a certificate from their doctor to confirm they are capable of carrying out the normal duties and activities of the Cadet Corps. If injured while on duty, Cadets are considered for payment of compensation.

Parades are held on Saturday afternoon and certain Units hold an additional parade one night a week.

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Instructional camps are arranged for Cadets and they are also given opportunities, whenever possible, to undertake training at sea in ships of the Royal Australian Navy.

Cadets, if considering a sea career, are given every assistance to join the Royal Australian Navy, Mercantile Marine or the Royal Australian Naval Reserve, but there is no compulsion to join these Services.

For further information, please contact the Senior Officer in your State, using the addresses provided below.

NEW SOUTH WALES: Staff Office Cadets, HMAS Watson, Watsons Bay, NSW, 2030.

QUEENSLAND: Staff Office Cadets, HMAS Moreton, Box 1416T, GPO, Brisbane, 4001.

WESTERN AUSTRALIA: Staff Office Cadets, HMAS Leeuwin, PO Box 58, Fremantle, WA, 6160.

SOUTH AUSTRALIA: Staff Office Cadets, HMAS Encounter, PO Box 117, Port Adelaide, South Australia, 5015.

VICTORIA: Staff Office Cadets, HMAS Lonsdale, Rouse Street, Port Melbourne, Vic. 3207.

TASMANIA: Staff Office Cadets, HMAS Huon, Hobart, Tas, 7000.

AUSTRALIAN CAPITAL TERRITORY: Commanding Officer, TS Canberra, PO Box E52, Queen Victoria Terrace, Canberra, ACT, 2600.

"THE NAVY"

All enquiries regarding the Navy Magazine, subscriptions and editorial matters should be sent to:

**The Hon. Secretary, NSW Division
NAVY LEAGUE of AUSTRALIA
GPO Box 1719, SYDNEY, NSW, 2001**

OCTOBER-DECEMBER, 1987

THE NAVY



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**THE NAVY LEAGUE
OF AUSTRALIA**

**PUBLISHED
QUARTERLY**

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THE NAVY



EDITOR
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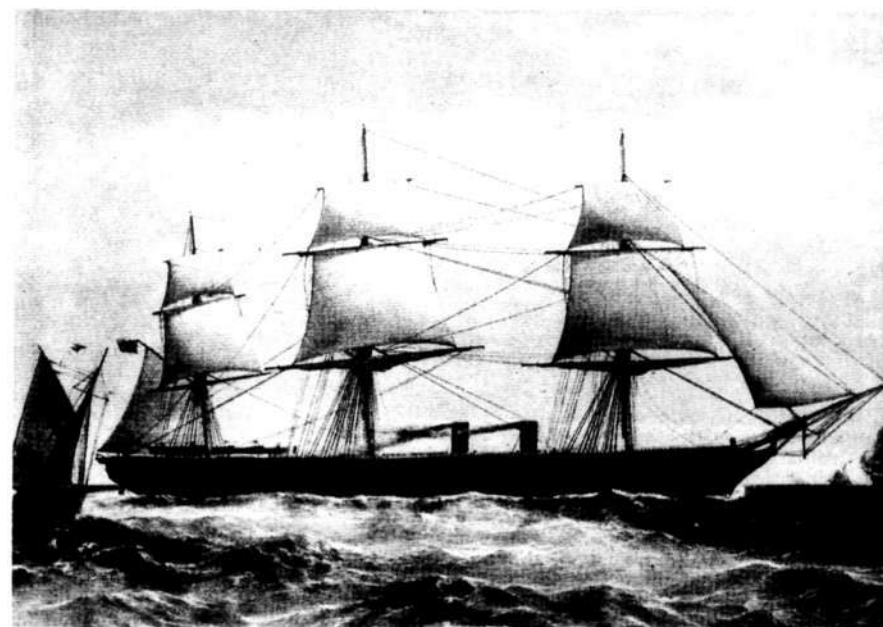
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HMS WARRIOR, a colour lithograph, showing her in her hey-day.

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The opinions or assertions expressed in articles in "The Navy" are those of the authors and are not necessarily those of the Federal Council of The Navy League of Australia, the Editor of "The Navy" or The Royal Australian Navy.

Our Cover Photograph

Top: Army Medium Landing Ship,
VERNON STURDEE, at Lae, 1968.
Bottom: Sister ship at Lambton Island,
1968.

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For more information on Acrydux and its many marine applications contact Bradmill Australia.

ACRYDUX
LAND OR SEA, IT'S GOT YOU COVERED
BRADMILL

If even one ship was lost . . .

Four years ago in an address to a United Services Institute seminar, BHP's General Manager Transport (Mr J. Prescott) stated:

"Loss of even one of my company's 140,000 dwt bulk carriers would severely restrict steel production in Australia."

Given the fact that Australia's steelmaking capability is dependent absolutely on the sea transport of raw materials from sources mainly in the west and north-west of the country to the steelworks on the eastern seaboard, one might think the viability of the Australian shipping industry in both peacetime and in a defence emergency would receive close and continuing public scrutiny. Regrettably it has not.

Steelmaking of course is not the only industry wholly dependent on sea transport, the bulk of crude oil and petroleum products is moved around Australia in ships and disruption of this traffic alone would cause Australia to grind to a halt quite quickly. Many would be surprised to know that nearly two-thirds of all interstate cargoes are moved by sea.

About 99% of our exports and imports depend upon sea transport. Contrary to popular belief, Australia is not self-sufficient in raw materials vital to the country's activities. Major deficiencies include crude oil suitable for refining into lubricants, phosphate rock for conversion to fertiliser, essential to our primary producers, and materials vital to the metals industry.

Australia's merchant fleet — ships locally owned and wearing the national flag — is quite small, hence Mr Prescott's reference to the serious consequences that would follow the loss of a single ship. Most of the coastal fleet is locally owned but only a fraction of our all-important overseas trade — less than 5% — is carried in Australian flag ships. Just what overseas-controlled shipping would be available for Australian trade in the event of a major war — not necessarily one directly involving Australia — is largely a matter of guesswork but it can be said with certainty that the interests of the owning or controlling country would come first.

Recent studies carried out by the Navy show that Australian overseas

viewpoint

trade travels along eight major routes across the Indian, Pacific and Southern Oceans, and through the Indonesian Archipelago. The mainland itself is surrounded by a network of shipping lanes used by both overseas and coastal shipping visiting the country's 89 cargo handling ports. At least 20 of these ports, handling significant tonnages of commodities such as crude oil, petroleum products, minerals, coal, steel and chemicals, are of substantial national importance, a similar number are important because of the strategically vulnerable location or the dependence of remote communities upon them.

It would be a mistake not to include the off-shore oil and gas rigs in any list of vital Australian maritime assets. Of these, the Bass Strait rigs currently supply the greater part of the crude oil consumed by refineries but the focus may shift to the North West, if this happens the product will have to be shipped several thousand miles to the eastern seaboard — no small task given the quantity of oil consumed.

While Australia's ocean surrounds have been likened to a protective moat, in fact the country is extremely vulnerable at sea. From a defence point of view, unless this fact is accepted by governments and in the community generally it would seem unlikely the Defence Force — the Navy in particular — will have the resources to resist any serious challenge to the country's vital interests.

Fortunately, there is an increasing realisation in naval circles and the shipping industry that more must be done to make the general public aware of their country's dependence in both peacetime or if under threat, on the ability of the merchant service to move cargoes, come what may. With a community accustomed to gazing inwards to its land-mass, this will not be an easy task.

CANADA

It is pleasing to be able to publish in this issue an article prepared for the Navy League of Canada by that country's Maritime Commander, Vice Admiral J. C. Wood.

Canadians and Australians have much in common. A very large area of land, extensive sea-borders, small populations, similar political institutions and customs. Like Australians, Canadians tend to be land-orientated rather than maritime in outlook.

The two Navy Leagues have for a long time enjoyed a close association which can be expected to continue into the future.

Geoffrey Evans

THE NAVY LEAGUE OF AUSTRALIA

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9 am-5 pm except Christmas Day and Good Friday. Large numbers of exhibits under cover. Picnic and barbecue areas.

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Weekdays: (046) 81 8001 — Weekends: 744 9999

HMS WARRIOR

HMS WARRIOR, as built, during the 1860s.

HMS WARRIOR (1860) was built for the Royal Navy, by contract, by Thames Iron Works & Shipbuilding Co on the left bank of Bow Creek on the River Thames.

SHE was jointly designed by the Admiralty and John Scott Russell (an outside expert). Her engines were designed and built by John Penn & Son of Greenwich. She was laid down on May 25, 1859, launched on December 29, 1860, and placed in Victoria Dock to be fitted out. On August 8, 1861, she was moved into deeper water at Greenhithe to complete fitting out. On September 19, 1861, she sailed from Greenhithe to Portsmouth and for the following nine months she was subjected to a number of trials. Finally, in June, 1862, she was ready for active service and joined the Channel Squadron.

She is also Britain's last surviving battleship having outlived her successors as a result of being used as Vernon III — part of the Vernon Torpedo Training Establishment (1904) — and in 1929 (re-named Hulk C77 in 1942) she became an oil fuel pontoon off Milford Haven where she remained under regular maintenance until 1979 when she was handed over to the Trust for preservation.

Her length is 420' overall (380' between perpendiculars); beam 58'4", mean draught 26', displacement 9210 tons. Her hull is wrought iron plates of 3/16", her armour is wrought iron armour plates 4 1/2" thick tongued and grooved together. This armour extends to cover the central 213' of the ship's sides and had a vertical height of 22', about 16' above the waterline and 6' below. At each end the armour is carried across the width of the ship so forming an armoured 'box' or citadel. Between the hull and armour plate there is 18" of teak laid crossply and the athwartships armour which closes the ends of the citadel is of wrought iron 4" thick with a teak backing 12" thick. Forward and aft of the citadel the ship is unarmoured and consists only of the iron hull, it having been calculated that, even if these 'soft ends' were riddled with shot, the armoured part together with the extensive system of watertight compartments would provide ample buoyancy to keep her safely afloat.

HMS WARRIOR (1860) total armament was originally 40 guns — two 110pdr breech-loader rifled and four 40pdr BLR on the upper deck plus twenty-six 68pdr muzzle-loader small-bore and eight 110pdr BLR on the main (or gun) deck, most of which were within the citadel. During her 1864-67 refit the ship was re-armed with eight 7" muzzle-loader rifled and four 20pdr BLR guns on the upper deck, and on the main deck twenty 7" MLR and four 8" MLR all within the citadel, making a total of 36 guns.



Ship's figurehead.



HMS WARRIOR (1860) was able to proceed under either sail or steam or both. Her best recorded speeds were — steam only 14.3 knots, sail only 13.0 knots, steam and sail 17.5 knots. These speeds made her the fastest ship in the world when completed. She is square rigged on three masts and with all sails set she spread 1 1/2 acres of canvas. She had a jet condensing single expansion trunk engine with two cylinders acting on a single cranksaft — bore of cylinders 112 1/2", stroke of piston 48", nominal horsepower 1250, indicated horsepower (full power at 54 rpm) 5560.

She had 10 rectangular multi-firer wrought iron boilers, 4 in the forward and 6 in the after boiler rooms. Boiler pressure on official trials was 22lb per square inch. Coal capacity was about 800 tons, fuel consumption at full power was about 11 tons per hour. Her propeller could be disconnected from its shaft and hoisted above the water so as not to impede the ship when she was under sail alone or so that repairs could be carried out. Steering was manual by quadruple steering wheels. There were two capstans, one forward and one aft, both manually worked with up to 90 men on the capstan bars. She carried a crew of over 700 men which included about 50 officers of all ranks and about 125 Royal Marines.



Top left: Under restoration

Top right: 68-pounder gun, main deck.

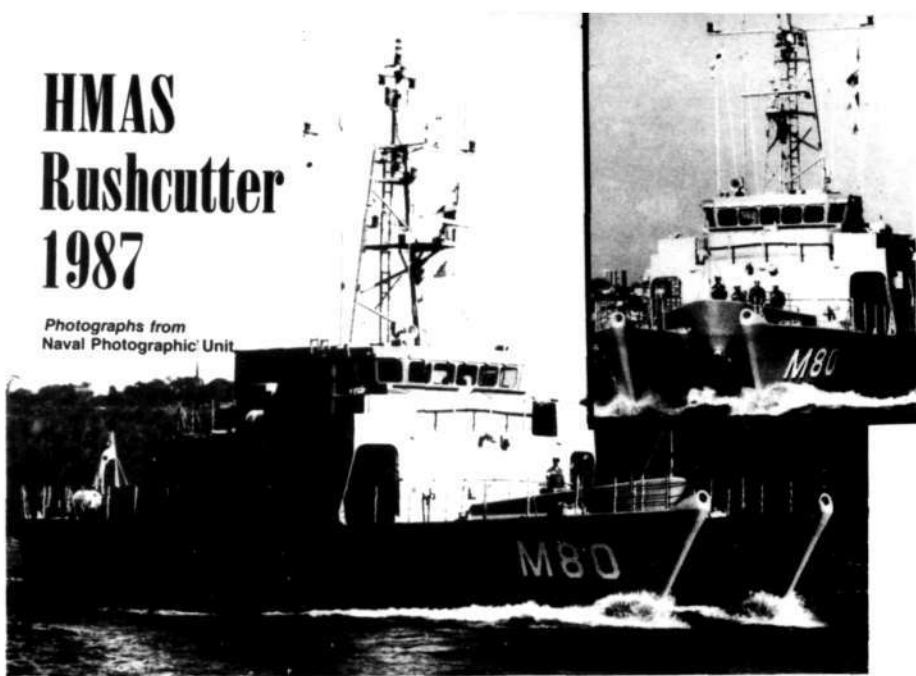
At right: HMS WARRIOR, 1873

Below: WARRIOR leaves Hartlepool for Portsmouth to take her place with HMS VICTORY and MARY ROSE. With her is HMS ARROW.



HMAS Rushcutter 1987

Photographs from
Naval Photographic Unit



Annual General Meeting 1987

NOTICE is hereby given that the ANNUAL GENERAL MEETING OF THE NAVY LEAGUE OF AUSTRALIA will be held at the Melbourne College of Advanced Education, 757 Swanston Street, Carlton, Victoria, 3053, on Friday, 13th November, 1987, at 8.00 pm.

BUSINESS

- To confirm the Minutes of the Annual General Meeting held in Canberra on Friday, 14th November, 1986
- To receive the report of the Federal Council, and to consider matters raised therefrom
- To receive the financial statements for the year ended 30th June, 1987
- To elect office bearers for 1987/88 as follows:
 - Federal President.
 - Federal Vice-Presidents (3)
 - Auditor.
 Nominations for these positions are to be lodged with the Hon Secretary prior to the meeting.
- General Business. To deal with any matter notified in writing to the Hon Secretary by 30th October, 1987.

By Order of the Federal Council

R. M. BLYTHMAN
Hon Federal Secretary

9 Culliton Road
Cammerwell, VIC, 3124

PRELIMINARY NOTICE

OUR TRADE AND OUR DEFENCE

Do We Need Australian Flag Shipping?

The New South Wales and Victorian Divisions wish to give preliminary notice that they have arranged to hold a Seminar on the foregoing important and challenging topic.

Speakers will include senior representatives from Navy, the Australian National Maritime Association and the Commonwealth Departments of Foreign Affairs and Trade, and Transport.

Formal notices of the Seminar will be sent out to members shortly, but all interested members of the public are welcome. A small charge will be payable at the door to cover the costs of running the Seminar, including a light supper and beverages.

Details are as follows:

Victoria:

Tuesday, 20th October, 1987, at 5 pm.
Melbourne College of Advanced Education,
757 Swanston Street, Carlton.

(For further information contact John Bond (03) 341 8834 or John Wilkins (03) 285 2555 during office hours.)

New South Wales:

Monday, 9th November, 1987, at 6 pm.
The Masonic Centre,
Cnr Castlereagh and Goulburn Streets, Sydney.

(For further information contact La Walker (02) 232 2144 during office hours.)

CANADIAN MARITIME COMMAND IN TRANSITION

by Vice Admiral J. C. WOOD, CMM, CD Navy League of Canada

Maritime Command is in a challenging and dynamic period of transition. There are many related factors, ranging from the advent of new ships and equipment, to increased national emphasis on sovereignty, to changes to the social structure of the nation. The future of the Canadian Navy is directly linked to the degree of success with which we prepare for, and meet these challenges.

CERTAINLY, one of the most visible signs of transition are the rapidly increasing numbers of distinctive Naval uniforms being seen across Canada. The initial issue of blue uniforms has now been largely completed. It is expected that the summer uniform issue, to commence shortly, will proceed as smoothly. The new uniforms have been quite well received by both junior and senior sailors alike, and are a major contributor to an increasing professional pride within the Navy.

The degree of transition can be gauged by the warship and maritime equipment acquisition programmes under way. This fortunate turn of events has also highlighted problems which must be solved before the new ships with their complex systems can be brought into operational use. The leaner years when no ships were built, resulted in the loss of almost all of the warship-building expertise and facilities developed during the building programmes of the 1960s and early 1970s. Between the Canadian Patrol Frigate (CPF) and TRIBAL Update and Modernisation Programme (TRUMP), this expertise is once again being assembled at a rapid pace. As a national asset, this industrial capability should be safeguarded and maintained for the future. Initial difficulties in the CPF programme could largely be related to this re-development of expertise. That programme is once again on track, and it is a heart-warming experience to see the sections of HMCS HALIFAX currently being assembled in Saint John, NB.

The TRUMP project is also proceeding well, and will be getting under way in the fall of 1987 with HMCS ALGONQUIN. She will be followed in turn by the remaining three TRIBALS at 12-month intervals with a forecast completion date in the fall of 1992. Each of the four TRIBAL DDHs will undergo an 18-month modernisation during which virtually all weapon, sensor, electronic warfare, command and control, navigation, communication and some propulsion systems will either be upgraded or replaced by modern, state-of-the-art systems.

The Canadian Submarine Acquisition Programme (CASAP) is in the project definition phase and the initial draft of the specifications for new submarines is in an advanced state of preparedness. While the final decision to continue this programme is subject to the outcome of the current defence policy review, we are optimistic that the OBERON class submarines will be replaced by a modern and much enhanced class by the mid-90s.

The New Shipborne Aircraft (NSA) programme is also in the project

definition phase. This phase is forecast to be completed in 1989 with the introduction of the first new operational helicopter in 1995. Requests for proposals have already gone out to industry and responses are expected soon. This project will replace the CH124 Sea King helicopters which have performed yeoman service as the airborne ASW workhorses of the fleet for many years.

In addition to the major programmes mentioned above there are also under way a multitude of lesser maritime equipment procurement projects which are too numerous to be enumerated here. All are designed to provide the fleet with the capabilities required for effective operations to the year 2000, and beyond.

A major challenge in this time of transition is the maintenance of an effective maritime profile and optimum operational capability while preparing the arrival of the new replacement ships, submarines, aircraft and systems. There will be no short-cuts on safety but the primary emphasis is on, and must continue to be, the expeditious replacement, not long-term maintenance, of the older units and systems.

In addition to their expected peace-time tasks, the ships of the existing fleet must also be the test-beds for new equipment trials. Prior to acceptance of CPF and TRUMP, realistic testing is required to confirm that the new equipment and weapons will really do what the manufacturer claims — in a Canadian operational environment. Consequently, due to this requirement, and the introduction of newer technology to the older ships by the Destroyer Life Extension (DELEX) programme, wide variances in technology are a current fact of life and must be met. For example, HMCS NIPICON has a gun designed in WW II to meet the Kamikaze threat, and a revolutionary new sonar being perfected for the new frigates. That is an overall span of 50 years of technology with which our ships' companies and civilian dockyard staffs must cope. Our technicians are superbly dedicated and provide yeoman service in this regard.

Nevertheless, in order to be prepared to operate and maintain the new systems, a comprehensive training programme is in progress in the Fleet Schools, and with manufacturers as far away as Sweden, Italy and the USA. This training programme is founded on three major personnel development actions. They are the Maritime Other Ranks Production Study (MORPS), the Maritime Engineer (MARE) Get Well Programme, and the MARS Officer Review. Each of these projects used the technology



HMCS YUKON during the RAN 75th Anniversary Fleet Review. (Naval Photographic Unit)



HMCS QU'APPELLE arrives in Sydney, September, 1986. (Naval Photographic Unit)

of the CPF and TRUMP programmes, and the predicted threat of the 1990s as the baseline. Thus, from a personnel aspect, the Navy's aim to be well prepared for the arrival of CPF and TRUMP with the right people at the right time has a firm and realistic foundation.

A further change to improve the overall effectiveness of the Fleet, was the introduction of the Standing Canadian Task Group concept. This will improve the scheduling and operation of our resources, and will consist of two Task Groups East, and one West. Eventually each Task Group will be, in general, equally capable. Initially they will be focused around a current DDH 280, until replaced by a TRUMP, to act as a Task Group Leader. One of the consequences of this action is the need to better balance the capability of the West Coast TG by the inclusion of a 280 TRUMP DDH. As the first step, a coast transfer of HURON and GATINEAU will take place this year. In conjunction, a total of four ASW helicopter detachments will also move to Esquimalt. Two will be used to support HURON, and the remaining two will be operated from PROVIDER, where the aviation support facilities have been upgraded. The completion of these actions will enable a more effective maritime posture in the increasingly important Northeast Pacific area. GATINEAU will provide a ship borne medium range torpedo delivery capability on the East coast.

Continued friction between Canadian and foreign fishermen, and the regulatory authorities, and the efforts to exploit offshore resources have all served to heighten the awareness of the public to the issues and require ments of sovereignty. Increased emphasis on effective northern surveillance, including the need for underwater aspects has also received departmental study and public discussion. Maritime Command is at the forefront of activity and planning in these aspects.



HMCS CORMORANT. (Photo RCN)

Greater public awareness of the need for a credible national defence capability, as well as the necessity of Alliances and the mutual support of our friends, is also evident. At the time of writing, the contents of the proposed White Paper on Defence have not been promulgated. However, the changes in national attitudes noted above are expected to be reflected.

For many years, Arctic surveillance has been regularly conducted, first by the Argus and more recently by CP 140 Aurora aircraft, and over our waters in the Atlantic and the Pacific by Aurora, Tracker and Sea King aircraft. During the past year Maritime Air Group aircraft flew 7726 hours in direct support of Department of Fisheries and Oceans surveillance and protection objectives on both coasts. In addition approximately 3000 hours of fisheries surveillance was performed as secondary tasking during normal operational patrols.

The Tracker aircraft continue to be effective and provide the major portion of sovereignty patrols from Summerside, PEI. This task also includes pollution control as well as fisheries patrol. The fact that they are out there and highly visible is believed to be a large factor contributing to improved and credible fishery control in recent years.

Another major MAG contribution is, of course, the 35 Sea King helicopters which form the ASW helicopter detachments in our destroyers. They, and the Bear Trap haul-down landing system continue to provide an operational capability, even in high sea states, that is the envy of many other navies.

SURVEILLANCE of the maritime domain of interest to Canada is essential in view of the steadily increasing capability of Soviet forces, and in particular, their submarine fleet. In one 12-hour period, four Canadian Aurora maritime patrol aircraft flying over two different oceans, were in simultaneous contact with four Soviet submarines. Without doubt, the Maritime Air Group (MAG) squadrons provide a valuable and essential contribution to the task of surveillance in areas of both national and Allied concern.

Maritime Command operates the rescue Co-ordination Centres on both coasts, and with the support of both military and civil resources have provided high quality service to the nation. In 1986, there was a total of 5860 incidents ranging from medical evacuations for critically ill babies, to the rescue of windsurfers being blown out to sea on their way to Europe. The search and rescue professionals work very hard under often dangerous situations on your behalf, and are credited with rescuing 1368 survivors last year in the Maritime and Pacific regions.

The Regular Force maintained its normal, busy operational tempo on both coasts and abroad throughout the year. We provided 100 days of dedicated surface ship patrols for DFO in 1986. On the average each ship spent 110 days at sea.

On the East coast ships and Maritime Air Group aircraft participated in a Maritime Co-ordinated Training exercise (MARCOT), several destroyer squadron exercises and the major NATO exercises SAFEPASS 86 and NORTHERN WEDDING 86. Exercise NORPLOY 86 involved HMCS CORMORANT and CFAV QUEST on surveillance and support operations in Davis Strait, Baffin Bay, Lancaster Sound and Barrow Strait. HMCS NIPGON visited 12 ports in Ontario and Quebec during a Great Lakes cruise.

In late May a unique event occurred. After a prolonged period of dockyard work to implement the Submarine Operational Update Pro-



HMCS IROQUOIS, 1972. (Photo RCN)

gramme (SOUP), all three submarines of the First Canadian Submarine Squadron proceeded to sea in an operational state at the same time. To mark the event HMCS OJIBWA, HMCS OKANAGAN and HMCS ONONDAGA conducted a ceremonial sail past by the Maritime Command Headquarters building where the salute was taken by The Senior Submariner.

On the West coast, MARPAC ships and MAG aircraft participated in several major exercises. These included a MARCOT, ASWOPS 86 and the bi-annual USN RIMPAC exercises. In return for the Royal Australian Navy's visit to Canada for the 75th anniversary celebration of our navy in 1985, HMC Ships QU'APPELLE, YUKON and SASKATCHEWAN visited Australia for the 75th anniversary of the Royal Australian Navy. While conducting junior officer training for officer cadets from the Naval Officers Training Centre, Esquimalt, the ships represented Canada in Hawaii, American Samoa, Fiji and New Zealand.

We continued to meet our commitment of an operational destroyer to the NATO Standing Naval Force Atlantic (STANAVFORLANT) with HMC Ships OTTAWA, ALGONQUIN, and SAGUENAY PROTECTOR also served for specific periods with this prestigious and operationally ready squadron. The past year's schedule included five major exercises — SAFEPASS, BRIGHT HORIZON, OPEN GATE, NORTH-ERN WEDDING and the Joint Maritime Warfare course. HMC ships serving with STANAVFORLANT also visited 22 North American and European ports providing a highly visible reminder of Canada's commitment to NATO solidarity. It is of note that in March of 1987 the command of this NATO squadron was assumed by Commodore L. G. Mason, a Canadian, naval officer, who will fly his flag in HMCS ALGONQUIN.

INITIATIVES are progressing to improve the effectiveness of our Naval Reserve. A revised definition of the roles, missions and tasks for the Naval Reserve has been approved, and is in consonance with the goals of Reserve Force expansion currently being discussed. A major contribution will continue in the field of Naval Control of Shipping (NCS), an area where Canada has generated a credible and recognised competence.

On August 15, 1986, a new Naval Reserve Division, Navire Canadien de Sa Majesté CHAMPLAIN was commissioned in Chicoutimi, PQ. This is the first of three new Naval Reserve units being established in

Quebec. The other two will be located in Trois Rivières and Rimouski. Initial cadres of Regular Force support staff have already been posted to prepare for the opening of the new divisions in the summer of 1987. These welcome additions to Naval Reserve strength will also serve to increase the awareness of maritime affairs and the Canadian Navy in the region.

On the social and domestic fronts there have also been significant developments. In accordance with national policy, the role of women in the forces is being redefined. For a number of years there have been women employed at sea in HMCS CORMORANT, the diving support ship. In October, 1986 it was announced that servicewomen will be eligible for employment in operational replenishment ships. Planning is now in progress for the structural changes required in the ships to accomplish this requirement. The CF is fully committed to government policy concerning the Charter of Rights and Freedoms. Progress must take into account the primary responsibility of the CF to provide operationally effective forces to protect the security of Canada.

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THE GALLOPING GREEN GHOSTS

INTRODUCTION

THE Australian Army's 32nd Small Ships Squadron Royal Australian Engineers was raised in 1959, to operate four World War Two built Landing Ship Medium (LSM) purchased from the United States Navy in Japan. Much-battered since the Korean War, the four LSMs cost \$300,000 in total. The four landing ships chosen by the military were in fact selected from a larger group of twenty plus LSMs lying in reserve. After the four best ships had been selected the USN offered one additional ship (cost free) for spares, an offer not taken up. A Landing Ship Medium Delivery Squadron was formed on May 27, 1959 for the first two ships and on October 20, 1959, for the second pair. The operation was code-named 'Taipan Four'.

The first two Australian Army ships, HARRY CHAUVEL, AV 1353, and BRUDENELL WHITE, AV 1354, reached Sydney at the end of their delivery voyage on December 31, 1959, and were followed by VERNON STURDEE, AV 1355, and CLIVE STEELE, AV 1356, on July 4, 1960. Prior to leaving Japan all four LSMs received brief refits before commencing their journeys manned by CMF & ARA crews known as Landing Ship Medium Delivery Squadron, via Guam and Rabaul (1st pair) and Sasebo, Subic Bay and Rabaul (2nd pair). Considerable drydocking and maintenance at Garden Island, then Cockatoo Island. Dockyards followed, including modifications by civil contractors to suit Australian conditions.

Tnals were held for each LSM during 1960 and 1961 on various coastwise tasks. The squadron found its first home at Chowder Bay, but after local protests, moved to Watsons Bay Wharf. In 1964 the Army acquired the Woolach Dock complex, including the former drydock, which provided excellent berthing facilities for the four ships. The remaining Army Water Transport Squadrons five small Ship Troop and a CMF unit formerly part of 33 small ship squadron RAE (CMF) at Chowder Bay using the dock complex, continued to employ Woolach Dock as their primary base.

In all, some 596 LSMs were constructed for the United States Navy and Army between 1944-45. Over \$500 million was allocated for production of the prototype at the Charleston Navy Yard in late 1943. The type was originally designated as the LCT7, but soon became known as the Medium Landing Ship. After the war most LSMs were laid up or sold to foreign navies or converted to merchant ships. By 1959 only ten remained on the effective list with the United States Navy, after all, except 13, had been stricken in 1957, although the American Army continued to employ the type.

One of the first tasks assigned to the Army's 32nd Small Ships Squadron, involved the four ships ferrying vehicles and personnel across the Tasman for exercises with the New Zealand Army. However, this exercise was cancelled after doubts were raised as to the capabilities of the LSM's crews to undertake a five day voyage from Australia. This was a rather remarkable claim as the same men had brought the ships from Japan. Despite this and other early misgivings about the ships, the four LSMs were to give valuable service to the Army in both peace and war. The LSM survives today in many of the world's navies, over 40 years since the last ship was completed.

by ROSS GILLET



CLIVE STEELE, March, 1970. (Photo Army)

OPERATIONALLY

To accomplish their mission the LSMs were called upon to beach themselves when no proper facilities were available. This process was accomplished in three steps:

1. The ship would approach the landing point at maximum revolutions and beach itself.
2. Stern anchors would then be dropped to provide stability and the bow doors then opened, exposing the ramp.
3. The ramp would then be lowered via its cable into the shallow waters to allow unloading to commence.

Its mission accomplished the LSM would then back off the sands, swing around and return to base. The stern anchors would be employed to retract the ship from the beach-head.

The Second World War proved the LSM to be a very versatile craft. The ship was commanded and navigated from the conning tower, which also housed the bridge, chartroom and wheelhouse. The tank deck, which occupied the entire length of the ship, was 18 feet wide, while compartments inside the ship's hull on either side, housed workshops, storage areas, the sick bay and galley. Accommodation spaces for the crew and troops were provided below the tank deck, beside the steering gear, engine room and ballast tanks, by which the LSM's draft could be altered to suit prevailing beach conditions.

Specifications

Dimensions	Length — 203'6" (oal) Breadth — 34'6" Draft — 4'3" forward, 7'2 1/2" loaded (full load)
Displacement	213 tons light, 734 landing (full load), 912 sea-going (full load)
Loading Capacity	165 tons maximum operating 306 tons
Engines	Two Fairbanks Morse 10 cylinder opposed Piston Diesels each 1,800 hp. 13 knots sea going
Speed	Two generators GM diesel 3 cylinder each 165 hp Once evaporator capacity 2,000 gallons per day
Auxiliaries	One boiler One Kedge anchor winch — Continental Commando 6 cylinder petrol engine, speed of winding — 18 inches per second Gyro compass, Radar, Echo Sounding Machine
Navigation Aids	3 officers and 37 men (peace) 5 officers and 46 men (active service)
Passengers	
Vehicle & Tank Capacity	5 medium Tanks (landing) 12 2 1/2 ton vehicles 18 days — 4,500 miles 42,000 gallons 14,000 gallons
Endurance	
Diesel Fuel	
Fresh Water	



VERNON STURDEE (left) and HARRY CHAUVEL (right) in the Captain Cook Dry Dock, shortly after arriving

BRIEF CAREERS

BRUDENELL WHITE — AV 1354

Up to early 1964, the LSM BRUDENELL WHITE had travelled some 54,000 miles, performing a myriad of tasks around Australia and New Guinea. During that year she was assigned missions to Port Stephens, Townsville, Noumea and Brisbane, primarily navigational exercises for officer students. In October, 1965, BRUDENELL WHITE sailed for New Guinea, returning to Sydney on November 26. The LSM underwent repairs from April to July, 1966, before returning to the Papua New Guinea region. A second re-supply voyage to Malaysian ports followed and again north to New Guinea in November, 1966.

The year 1967 found the landing ship active again, mostly repeating her earlier efforts, before reducing to an overhaul period. After the major refit BRUDENELL WHITE sailed for Cairns and Darwin on December 2, 1968, with a cargo of RAAF equipment. She returned to Woolwich on December 26. Upon completion of minor repairs the vessel undertook a trial run to Port Stephens. After this trip BRUDENELL WHITE made for Auckland, New Zealand, to transport four Centurion tanks, purchased from the New Zealand Army, for delivery to Melbourne. On completion of the discharge of tanks, the LSM was chartered to the civilian firm of Peko-Walsend and loaded a heavy engineering plant to be taken to King Island in Bass Strait. After this venture BRUDENELL WHITE sailed back into Sydney Harbour on February 24, 1969. The remainder of the year was spent with missions to New Guinea, New Zealand (including another four tanks), Melbourne and Adelaide. The ship's first assignment after refitting was trials in the Jervis Bay region and on return she loaded ammunition to dump at sea.

BRUDENELL WHITE departed Sydney for South Vietnam on September 10, 1970, and sailing via Darwin, reached Vung Tau. Whilst in the war zone she visited Cam Ranh Bay and Saigon, prior to sailing for home, via Darwin, on October 15, and reaching Sydney on November 4. The calls into Darwin on each leg of the journey were necessary for refuelling purposes, for although the total range of the LSM was 18 days, it was necessary to retain a minimum of 30% fuel on-board at all times.

A second trip to South Vietnam commenced on March 9, 1971. The vessel diverted to Cairns to repair heavy-weather damage, and then sailed for Darwin. Whilst in the latter port AHQ ordered BRUDENELL WHITE back to Sydney. This return coincided with the political decision to withdraw the four LSMs and so the cargo of tanks and bulldozers were returned to storage. BRUDENELL WHITE reached Sydney for the last time on April 14, 1971, after having steamed a total of 123,115 miles in Australian Army service.

CLIVE STEELE — AV 1356

In September, 1961, CLIVE STEELE loaded plant and equipment in Sydney for Wewak, via Brisbane. This was a quick and direct trip and the ship returned to Sydney in November. During 1962 and 1963 she undertook sailings to Manus Island, Devonport and Melbourne, in addition to Queensland and New South Wales coastal ports, accumulating 50,000 miles on all the aforementioned operations.

CLIVE STEELE proceeded to New Guinea in June, 1963, operating out of Lae until the end of July. The vessel was allotted in support of exercise Carbine in September, October, thence to short coastal tasks in February, 1964, including a visit to Hobart for the Regatta, and subse-



CLIVE STEELE, in Papua New Guinea, unloading army trucks.

quent stopovers in other Tasmanian ports and Adelaide. In late February, she was taken in hand for docking and refit.

On September 24, 1964, the LSM participated in Exercise Longshot, completing the task on October 21, 1964. CLIVE STEELE sailed for Port Moresby and later Wewak and Lae on three separate occasions during 1965. The ensuing year she remained in the New Guinea area from February to June, then began her initial voyage to South Vietnam, arriving at Vung Tau on July 15, 1966.

Here she commenced the first operational tour, running Australian cargo between Vung Tau, Saigon and Bana. The LSM departed Vung Tau on February 22, 1967, and arrived back in Sydney on March 17, after eight months work. A much needed refit was performed on the landing ship and she re-emerged from drydock on October 5, 1967. Eleven days later she sailed for Cairns and Port Moresby.

In early 1968, (January 13), the vessel departed Sydney and sailing via Melbourne to collect tanks, commenced her second voyage to the South Vietnam war zone. On January 5, 1969, on the same tour of duty, she was rocketed five times, but with no casualties. The CLIVE STEELE retaliated with fire from her 40mm Bofors and 50 calibre Brownings. Three rockets had pierced the hull, one in the forward ballast tank, one amidships in the air-conditioning unit and the third in the boiler hull, which left the ship and her complement of 51 without air-conditioning or hot water.

The vessel's mechanical condition gradually deteriorated from constant use, which resulted in CLIVE STEELE leaving Vung Tau on April 25, 1969, for a major refit at the Sembawang Dockyard, Singapore. This completed, she returned to Vung Tau on July 24. CLIVE STEELE eventually sailed for Sydney via Singapore and Darwin on February 18, 1970, arriving at Woolwich on March 16.

On June 30, 1970, she again departed from Sydney for South Vietnam on a re-supply voyage via Darwin, arriving in Vung Tau on July 21. Following only a short period she sailed for her base, arriving in Sydney



The tug STANFORD tows PACLOG SURFER (ex CLIVE STEELE), PACLOG DESPATCH (ex HARRY CHAUVEL) and UTILITY (ex BRUDENELL WHITE) from Sydney in 1971.

on September 14. After nine days she left for Melbourne to transport heavy mining equipment to King Island in the Bass Strait. CLIVE STEELE's last voyage to Vung Tau commenced on Sunday, January 11, 1971, and was completed on April 3. This trip, via Darwin and Singapore, became quite eventful when the LSM lost her stern anchor at sea after leaving Vung Tau, and later lost her port bow door north of Brisbane.

As the vessel was due for a major refit, the cost of such a modernisation was closely examined and CLIVE STEELE was put up for disposal with the remaining LSMs on September 27, 1971.

During her service with the Australian Army the landing ship had steamed 167,163 miles.

HARRY CHAUVEL — AV 1353

Following trials, HARRY CHAUVEL commenced service in 1960 but during the year her only activity was a CMF training cruise from Brisbane to Townsville and return. For the first half of 1962 she assumed the duties of base ship from HMAS GASCOYNE for central coast survey operations. Up to the end of 1963 the 'Shovel' was fully active in support of other units in Australia and New Guinea, including early 1963 when she once again operated as a survey vessel. In the latter role the LSM was fitted with a helicopter landing pad (helipad) aft.

On 1st April, 1964, in company with her sister VERNON STURDEE, HARRY CHAUVEL left Sydney and exercised in the Jervis Bay, Twofold Bay area, ferrying troops of 1st Royal Australian Regiment back and forth. On May 5, again with VERNON STURDEE, she sailed for Malaysia and Port Moresby. Throughout this period the pair were accompanied by HMA Ships HAWK and GULL and HMNZS ROYALIST. During the Borneo confrontation the ship was employed to discharge HMAS SYDNEY at Jesselton and also to support British troops in the area.

Major repairs were performed from August, 1964, to November 7, when the LSM left Sydney for a voyage along the Queensland coast and to New Guinea ports. The first half of 1965 involved exercises with the CMF and other amphibious units using DUKWs and LARC's between Sydney, Newcastle and Port Stephens, and subsequently in the Jervis Bay and New Guinea regions. From June, 1965, to January, 1966, HARRY CHAUVEL underwent a refit, having steamed 47,806 miles since 1960.

During early 1966, the vessel made for Melbourne, thence Hobart, and in May sailed to Papua New Guinea. During this voyage to Rabaul, one of the generators suffered a major breakdown. The VERNON STURDEE, returning to Australia from South Vietnam, was diverted to Rabaul to escort her sister to Sydney, and if necessary take the HARRY CHAUVEL in tow.

Up to the end of 1970, the landing ship steamed to South Vietnam on three separate occasions, as well as a voyage to New Zealand and Norfolk Island, and underwent a long refit in 1969. HARRY CHAUVEL's last task concerned exercises with CMF units in the Port Stephens area. These were finalised on June 4, after which the ship was prepared for sale. HARRY CHAUVEL had steamed a total of 102,850 miles.



CLIVE STEELE in the Woolwich Dock, 1971. (Photo Ross Gillett)



CLIVE STEELE, 'beached' in South Vietnam.



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JACK SPRY (ex VERNON STURDEE), under conversion in Ballina, northern New South Wales, October 1978. (Photo Ross Gillett)

VERNON STURDEE — AV 1355

Of the four Medium Landing Ships, VERNON STURDEE's career was the shortest spanning from February, 1960, to 1969. The ship had covered 30,000 miles by the beginning of 1964 and during her career assisted Army units in South Vietnam and throughout the Indonesian Confrontation with Malaysia. On one occasion in South Vietnam at Mui Ho Tram, the vessel stuck fast on the beach on October 5, 1967. Whilst stranded in this position signs of the deck buckling appeared and although the ship retracted from the beach, damage had been sustained. The decks were inspected by a surveyor from the United States Navy. A further inspection by Australian Army personnel deemed that repairs were necessary. On November 18, escorted by HARRY CHAUVEL, she sailed for Singapore and underwent the necessary work between November 22 and December 6.

In 1969 it was decided to withdraw the ship from service in 1970 after 108,337 miles.

DISPOSAL

DURING the early 70s three of the Australian Army's group were refitted at a cost exceeding \$30,000 each, while the fourth, VERNON STURDEE, was sold for \$12,555 in June, 1970. The latter remained in Sydney Harbour backwaters, initially at Balls Head, before moving to Blackwattle Bay, where she remained, dilapidated and faded until 1978. She was then towed to Broadwater on the Richmond River, New South Wales, where she underwent conversion to a Pacific Island supply ship re-named JACK SPRY. The entire vessel below decks was remodelled to suit a civilian crew and her engines overhauled. The former tubular conning tower was replaced by a new modern structure spanning across the tank well and supported by the ship's sides. As well, all former gun emplacements, the original anchors and davits had been removed. In place of her Army colours she boasted a green and white colour scheme.

Vernon STURDEE's three sister ships were sold almost immediately after being declared for disposal in 1971, and left Sydney in that year under tow from the tug STANFORD for the Philippines. The trio received new names before their departure, with the CLIVE STEELE re-named PACLOG SURFER, HARRY CHAUVEL becoming PACLOG DISPATCH and BRUDENELL WHITE re-named UTILITY. During the voyage north HARRY CHAUVEL foundered, whilst, in subsequent service, BRUDENELL WHITE was sunk by a mine en route to Cambodia. HARRY CHAUVEL was still operating from Singapore in the early to mid 1980s.

Prior to the sale of the Australian ships, each of the 600 ton craft were stripped of much non-essential gear, although the trio sold to the Philippines still boasted radar, winches and hoists, etc. To replace these ships the first of eight Balikpapan class heavy landing craft (LCH) was commissioned in 1971 and by 1974 all had been accepted into service. The first and name-ship of the class was crewed by Army personnel until she transferred to the Royal Australian Navy on September 27, 1974. The remaining seven commissioned in the navy from the outset.

DEADLINE

The deadline for the January-March, 1988 issue
of The Navy is

DECEMBER 1, 1987

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Naval Spectacular for Nation's Birthday

The Royal Australian Navy's "birthday present" for our Bicentennial next year will involve the biggest concentration of warships this country has ever seen.

The planning for this peaceful invasion by ships from all over the world follows the striking success of last year's 75th Anniversary celebrations by the RAN.

But whereas the Anniversary Assembly and Review by the Duke of Edinburgh in Sydney Harbour last October featured 18 visiting ships, next year's spectacular should see twice that number on the waters of Port Jackson.

Together with Australian units, there will be close to 50 ships taking part.

And, as with the 1986 event, it will show off some of the most majestic vessels afloat.

The main RAN contribution to the Bicentennial celebrations will be made towards the end of 1988 with the Bicentennial Naval Review scheduled to be held in Sydney October 1, although our ships and personnel will be in the thick of things from January 1 next year.

For last year's 75th Anniversary festivities, the accent was on the promotion of the RAN.

The emphasis is different for 1988, because the Navy is the co-ordinating authority charged with staging and promoting the Naval Review as a Bicentennial event on behalf of the Australian

by TOM JACKSON

Government and the Australian Bicentennial Authority.

Accordingly, this particular part of the birthday action next year is "on" the Navy.

RAN planners are concentrating on the international flavour of the event by attracting greater participation by Australia's ethnic community than was the case last year.

As the 15 nations represented in the Review include some whose units have never previously visited Australia, major interest is expected from ethnic groups, as well, many young people in the Navy and the other Services have their origins in the great wave of migration to Australia in the post-war period.

Last year the Anniversary Review included ships from Britain, the United States, Canada, New Zealand, France and Papua New Guinea, next year, these old friends will be joined by additional nations.

The schedule of major naval events for the Bicentennial begins early Monday, September 26, when the people of Sydney may view some 40 to 45 ships of destroyer size or larger steaming in ceremonial line down the harbour.

Bands will play and the decks will be lined by sailors from 15 countries.

Naval aircraft from these nations will overtly the entry, making this event a dazzling com-

bination of action on and above the water. The excitement doesn't end there.

Tuesday, September 27, bids fair to present the major punch of the pre-Review proceedings — the Bicentennial International Aircraft Carrier and Battleship Entry.

Sydney has had visits by carriers before, with USS MIDWAY the most recent in this category.

But no fewer than two — and possibly three — of these seagoing airfields will be coming by in 1988, and, as they enter, their assorted air groups will combine in an aerial salute to Australia.

Probably the star of the show in last year's programme was the giant American battlewagon USS MISSOURI — and once again the United States Navy is sending its big guns to Sydney town, although our 1988 visitor may not be the Big Mo, a ship of this unique class will once again make its stately progress through the flotilla of welcoming craft which MISSOURI encountered last year.

The Battleship entry is planned to coincide with the Aircraft Carrier "parade" which will lead to the major street event of the week, about 2500 sailors will mount an International Naval Parade through Sydney, Thursday, September 29.

On dispersal after the march past the Town Hall, ethnic community groups will be encouraged to mingle with our visitors.

Over the week September 26-30, as many as 45 warships will be berthed at wharves in Garden Island or Darling Harbour, with selected

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Naval Assembly and Fleet Review — 75th Anniversary.

ships open to visitors each day, Monday to Thursday.

Nightfall will bring a spellbinding display all its own — the ships will switch on their lighting to celebrate the occasion.

Friday, September 30 marks moving day for the International Fleet — ships will slip to anchorages in the Harbour.

In this way the International Assembly and Review will unfold for the people of Australia from dawn over Sydney Harbour, Saturday, October 1, 1988.

A vast squadron of warships — the biggest this country has seen — will flourish the flags of a dozen nations against the matchless backdrop of sea and sky that is Port Jackson.

The Duke of York, accompanied by the Duchess, will take the salute at noon from an Australian ship, with the routine expected to be similar to that followed for the Anniversary Review last year.

Again, there will be a ceremonial fireworks show in the evening, sponsored by the Bond Corporation and likely to surpass anything seen outside of New York.

Listed as the Swan Premium Bicentennial Fireworks Spectacular, this event will also feature lasers, searchlights, music and ships' bells ringing out from floodlit vessels between the Bridge and Bradleys Head.

This will climax a week of Bicentennial revelry — staged by the RAN on behalf of the Australian Government for the nation.

Even then, the curtain will not be rung down — ships will be open to the public the next day, Sunday October 2, and these will include an Aircraft Carrier at Circular Quay.

The main part of the Navy's contribution to the 200th Birthday programme is scheduled in this early springtime period, but the RAN will figure prominently from Day One, 1988.

Navy bandsmen and other personnel will take part in the big march through Sydney to Centennial Park January 9.

Other events involving the RAN include the opening of Darling Harbour and the arrival of the Tall Ships in mid-January followed by the handover ceremony for the brigantine YOUNG ENDEAVOUR, Britain's gift to Australia.

There is also to be a Fleet entry by RAN ships to Sydney Harbour January 22, and the Navy will be part of the massive birthday celebrations January 26 — including the arrival of the First Fleet Re-enactment vessels.

The RAN is also participating in many other Bicentennial highlights — details of which will be advertised as 1988 draws closer.

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PRESERVED FOR POSTERITY

Restoration and repair work is under way on the AURORA cruiser at the Zhdanov Dockyard in Leningrad. A thorough preparation for restoration, research in archives, a study of the material collected by specialists, an investigation of the hitherto inaccessible hull structures and equipment, and the way the repairs are being carried out shows that the shipbuilders in collaboration with researchers have a whole complex of problems on hand whose solution will help to preserve the ship which heralded with its salvo the dawn of the era of socialism for the centuries to come.

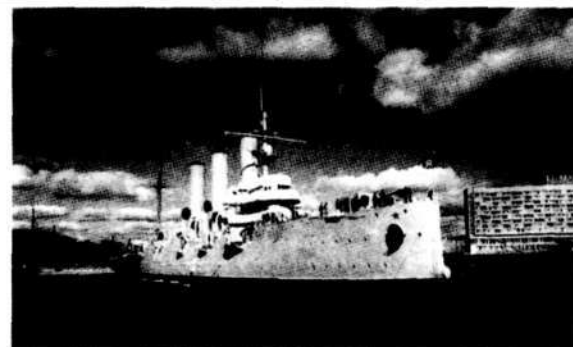
In the spring of 1886 the famous ship marked its 86th birthday.

THE word "cruiser" denotes the most numerous class of warships that were first introduced in the 1860s. These fast warships with a big operational range performed patrol and reconnaissance duties. They protected merchant ships in wartime and participated in sea battles as part of naval squadrons. These ships differed in displacement, number and calibre of their guns, and sailing equipment. Built at the start of this century the AURORA was one of the best warships in the class of armoured-deck cruisers and, as such, is a monument of science and engineering reflecting the state-of-the-art in shipbuilding at that time.

Its construction began on May 23, 1897 at the New Admiralty shipyards in Petersburg. A silver plate with the name of its builder, engineer K. Tokarevsky, was placed in the keel, a sort of certificate of the date and place of construction. Three years later an honorary escort sailed up the Neva on a fine day in May. A battleship, the OSLYABYA festively decked out for the occasion, took up its place by the New Admiralty Shipyard. Berthed further downstream were two cruisers, the ASIA and the DZHIGHT, and two steamers, the NEVA and the ONEGA. A gunshot was fired and the newly-built cruiser began to move down the wooden slipways towards the river. The ships of the honorary escort fired a 31-salvo gun salute in honour of the birth of the AURORA and the skill of the Russian naval engineers, shipbuilders, ordnance specialists and mechanics — of all those, who had helped to build and outfit the new cruiser of the first class at the St Petersburg shipyards.

The hull of the ship is made of 12-millimetre steel plates, and the upper deck of 15-millimetre plates. The hull below the waterline is protected with a planking of teakwood. This wood is known for its resistance to seaweeds and corrosion. On top of these protective wooden planks the builders put a plating of copper sheets. The upper deck was also covered with teakwood. The main engines, steam boilers and munition stores were protected by an armoured carapace deck of plates from 50 to 75 millimetres thick. Originally, the cruiser carried eight 152-millimetre guns, with another six such guns being added to them later on — at the expense of medium-calibre guns. There were also eight 37-millimetre rapid-fire guns, two 64-millimetre guns on wheel mounts and four machine guns of the Maxim-type, which could be used by landing parties.

The ship's firepower was further augmented by three torpedo tubes. One was located in the



AURORA.

bow above the waterline, and the two beam ones below the waterline, on starboard and port sides.

The effective range of the ship's artillery was 70 cable lengths and the cruiser carried two optical 3 metre long range finders, one fore and the other aft. Searchlights were provided on special platforms on the foremast and the mainmast. They were also used in signalling. With the personal assistance of Alexander Popov, the famous Russian scientist and inventor of the wireless, a radio station was installed on the ship, one of the first in the Russian Navy. The AURORA also boasted an electrically-driven steering engine, which was among the first in the world. The cruiser was equipped with anti-torpedo nets suspended on special outriggers. The three main piston steam engines with an aggregate capacity of 11,610 horsepower were manufactured at the French-Russian Engineering Plant in St Petersburg. They were powered by 24 water-tube Bellevue-Dolgoletnik boilers. The cruiser had three 3-blade propellers 3.5 metres in diameter that gave it a top speed of 20 knots (37 kilometres an hour). With a displacement of 6730 tons, the AURORA had a crew of 580.

In June 1903, the AURORA was commissioned and sent to reinforce the Russian fleet in the Pacific. The news of the war with Japan reached her when she was in the African port of Djibouti. The cruiser was ordered back to the Baltic and in October 1904, she set out as part of a special Russian naval task force from Libava (now Liepaja) for Vladivostok. On May 14, 1905, the Russian warships sighted the

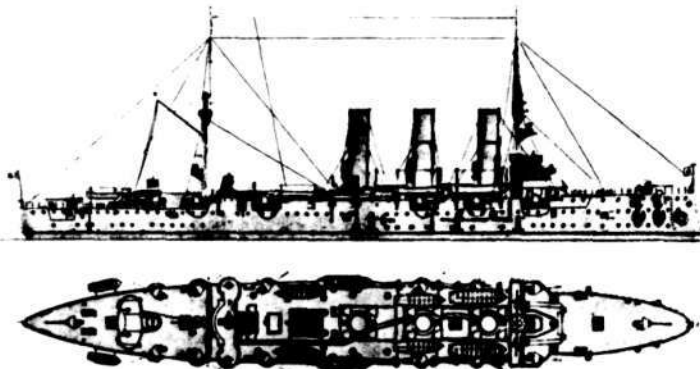
battle-ready Japanese fleet in the Straits of Korea off the Island of Tsushima.

The Russian sailors fought with fortitude against heavy odds and the AURORA sustained appreciable damage. It took a whole year to put her back in fighting trim. Then there were numerous voyages of the ship used for naval training and patrol duty on the approaches to the Gulf of Finland. Then the AURORA went for repairs to what is now the Admiralty Shipyards in Leningrad and remained there during the bourgeois-democratic revolution that took place in February 1917.

Close association with the shipyard workers heightened the revolutionary awareness of the crew and helped them to form a correct idea of the revolutionary developments. The sailors took control of the cruiser into their own hands.

Acting in keeping with Order Number One of the Petrograd Soviet of Workers' and Soldiers' Deputies, the crew of the AURORA elected their own ship committee, the first committee of revolutionary sailors in the Baltic Fleet and set up in April of that year a Bolshevik party cell, numbering 42 members.

ON the eve of the revolutionary uprising, a session of the Central Committee of the Russian Social Democratic Party (Bolshevik) adopted a special decision on the use of the AURORA. It was decided to use it as a reserve command post. The events developed at a breathtaking pace. Detachments of military cadets loyal to the government captured and drew the Dvortsov and Nikolaevsky bridges (now the Lieutenant Schmidt Bridge)



across the Neva. The Military-Revolutionary Committee sent a signal to the AURORA to employ all available means and restore normal traffic across the Nikolaevsky Bridge.

But the ship's commander refused to comply with that order. His place on the bridge was taken by a sailor, A. Belyaev, the revolutionary commissar on board the cruiser. He ordered the sounding of the channel and cast off from the shipyard berth. At half past three the AURORA cast anchor by the Nikolaevsky Bridge. A landing party was sent which took control of the bridge and helped to restore normal traffic. In the morning the ship's historic appeal to the citizens of Russia. By a signal from the Petropavlovskaya Fortress which came late that evening, the gun crew under the command of senior gunner Ye. Ognev, fired a blank shot from a 6-inch gun in the direction of the Winter Palace. That was the signal for the final assault on the palace by a combined force of revolutionary soldiers, Red Guards militia of factory workers, and sailors. Among them were crew members of the AURORA.

In the grim years of the Civil War crewmen of the AURORA fought and shared the hardships with the victorious working class of Russia. Sailors from the AURORA helped to establish the new life on the battlefield and worked hard to assist the country's economic recovery.

In 1924, the AURORA took part in the first foreign voyage of Soviet warships. All in all, the cruiser paid a total of eight visits to Norway, Sweden and Germany. This diplomatic activity produced a strong effect on the international scene and was of great importance for the young Soviet government.

The leader of the German working class Ernst Thälmann was elected honorary member of the AURORA crew and during a visit to the ship he was presented with a sailor's uniform.

For the next 18 years, till the start of the Great Patriotic War, the AURORA was used as a naval trainer for future officers of the Soviet Navy. When Leningrad faced the threat of a Nazi siege, guns of the ship's main battery were taken ashore and sent to give fire support to the men in the trenches. They helped to foil enemy attacks on the approaches to Leningrad. The cruiser itself moved from Kronstadt to Oranienbaum (now Lomonosov), and defended a vitally important beachhead.

In these battles the cruiser sustained heavy damage. During one day alone in October 1941, the Nazis fired a total of 200 shells at the ship. There were numerous shell holes below the waterline and the ship was flooded with water. But the crew managed to set her aright and beach her. Later on, the sailors literally had to dive for the fuel that was left in the holds. But even then the cruiser continued to fire back under constant enemy shelling, defending the beachhead, until the enemy was thrown back. After repairs, the cruiser was towed back to its berth opposite the Nakhimov Naval School and it continued to be used as a naval trainer. A small museum of the history of the Revolution was set up on board the ship, which was among the most popular ones in the city. Suffice it to say that nearly 19 million visitors have been to see it since 1948, including foreign guests from a total of 154 countries.

The old cruiser was destined to become a historical landmark of truly unique importance, a milestone of the new era. But time took its ruthless toll of the old warship, which bore upon its hull the cruel marks of the long voyages and past battles. The AURORA was badly in need of thorough repairs and of painstaking restoration. So, what is being done to save the AURORA for posterity?

The man in charge of the scientific programme of restoration and conservation of the AURORA, Vice-Admiral Prof. V. Burov, DSc (Tech), told me that in the process of previous repairs involving alterations of some of the compartments to accommodate classrooms for the naval cadets and revolution museum, and also as a result of the conservation and dismantling of some of the machinery and equipment, the cruiser's interior and exterior has undergone appreciable changes. Therefore, in choosing the project of restoration experts set before themselves the goal of doing their utmost in order to make the old cruiser look exactly the way it did on the historical day of October 25, 1917. All staff engaged on the project were advised to lay emphasis on background historical research, providing documentary evidence for each of their proposals. As a result, the ship's interior and exterior have been restored to the original — from keel to mast top — using drawings of 1917, old photographs and descriptions. This was done with the active participation and able assistance of specialists of the Central Naval Museum. Historians were consul-

ted on all the slightest details of the proposed alterations.

Specialists engaged on the project collected and studied scores of photographs, drawings, technical documents and also interviews with people who saw the ship in the days of the Revolution.

One of these old photographs was taken in 1916, and as one examines it, one is struck by some of the details which are quite different from what the ship looks like today. There were two massive anchors on the starboard with some smaller, auxiliary ones secured to the hull. On the mast there were so-called top-mast barrels, which no one can even recall today. The whole rigging was different and instead of the sculls, there were lifeboats and a steam cutter. Even the historic foredeck gun looks somewhat different.

"All these observations are correct", V. Burov said in an interview. The armour shields of the deck guns were indeed lower and of a different shape. When the anchor gear was rebuilt, the gun in the bow had to be moved forward about one and half metres. While trying to preserve as much as is physically possible in the ship's exterior, the authors of the project are aiming at restoring the ship — without prejudicing its present function as a museum of the Revolution — to exactly what it looked like during the days of the revolutionary uprising.

Studies of archives and of the old equipment preserved on board the ship suggested the idea to arrange a kind of memorial exhibition of Russian shipbuilding. It will be located in the premises under the carapace deck and visitors will be able to see the old marine steam boilers and engines, the steering gear and propeller shafts. Officers usually stayed away from the inferno of the ship's engine room with its temperature of plus 70° C, and one of the propeller shaft compartments was used for meetings of the revolutionary ship's committee and for secret meetings of the Bolsheviks from among the crew.

Plans are now afoot to restore all the preserved machinery of the old ship and replace the missing parts with assistance of experts from other Leningrad shipyards and factories.

SPECIALISTS engaged on the project found to their regret that during previous repairs and modernisations some of the original machinery was removed and lost, with much of the other equipment being much the

worse for wear. But many things have survived intact and required only a good overhaul. One of them was the stern machine with all its parts preserved intact. It will be given an overhaul and placed on the display of old marine equipment. To give visitors a better idea of the technology of those days and also of the conditions on board the old ship, the display will include models of the marine boilers. An effort will be made to recreate the conditions as they were on the ship at that time, with piles of coal in front of the furnaces burning and stockers' shovels. In a word, everything will be made to look absolutely true to life, save the searing heat of the old engine room.

Next to the engine room, there is the steering compartment which will be part of the display. Though the old steering engine is still in good order, an old telegraph and telephones have to be provided to make the picture absolutely true to life.

The fascinating display of old marine machinery and equipment will also feature an old air-driven refrigerator that kept the victuals fresh on long voyages, an electrically-driven water pump and fire pumps.

And last but not least, the display will include some of the old torpedoes, mines and artillery ammunition.

Considerable changes will be made in the conning tower and deckhouse which had been stripped of practically all the traditional instruments and gear. These will have to be made anew from old drawings or else borrowed from the Central Naval Museum. Specialists will put back in the places where they belong magnetic compasses, ship's clocks, the engine room telegraph, devices indicating the distance and direction, the electric steering gear and the old telephones. On top of the charthouse there will be an optical rangefinder and in the radio room there will be an old calendar on the bulkhead showing the historic date, October 25, 1917. The display of old ship machinery and equipment is expected to occupy an area of about 200 square metres, and the floor space of the revolution museum on board the ship will also be increased by 50 square metres to accommodate new documents, photographs and other historical relics collected in recent times by the museum staff. Among the latest additions there will be some hitherto unknown documents on the participation of the ship's crew in the October 1917 armed uprising and in the Civil and Great Patriotic Wars and on the involvement of the ship's crew in the revolutionary events of 1905 and 1906.

But the most complicated restoration work had to be done on the hull below the waterline, an area most affected by time and old wounds. To prevent leakage and corrosion of the hull, it was fitted with a reinforced concrete lining during repairs in the postwar period. But the jacket weighing 450 tons offered but temporary protection. With time, the concrete began to peel off the metal and crack, leading to what is known as crevice corrosion. Different remedies were tried out but, unfortunately, without any success. Attempts to remove the concrete casting also failed, for the old hull weakened by corrosion and breached by enemy shells in many places could not stand up to the impact loads involved.

A panel of experts comprising scientists, marine engineers and historians, decided after due consideration of the problem that the cruiser was in need of thorough repairs. This conclusion was borne out by checks conducted a few years later by metallurgical experts, specialists in the strength of materials and technologists.

It was now necessary to decide how the required repairs were to be carried out. Opinions split, with some of the experts suggesting the ship be pulled ashore and a special pavilion be built over it, while others thought it should be encased in reinforced concrete and placed on a floating pedestal. Both of the parties had some sound arguments in their favour. There are now over 50 old naval and merchant ships with a displacement of more than 5,000 tons preserved in various countries as historical monuments, and another hundred or so of smaller tonnage. Most of these "old ironrides" are still afloat and only the smaller vessels are kept on open-air pedestals and platforms on shore, which simplifies their preservation and makes them more accessible to the public.

The common view is that the best way to save big old ships of historical value from disintegration is to keep them in dry docks or on floating dock-type platforms. Keeping ships out of the water helps to stop corrosion and makes it possible for the public to see the hulls below the waterline.

Most of the experts suggested that this mode of preservation be used for the AURORA too. Indeed, it offered some indisputable advantages and was quite feasible technically. But there were also some very strong objections to this scheme. If the floating concrete pedestal were to be made slightly above the water level, the general appearance of the cruiser would be lost to the viewer. Nor would the crevice corrosion be stopped between the concrete inner "lining" and the iron hull which cannot be reached by any appliances.

And if the pedestal were to be of a submerged type, then the threat of corrosion from the inside would be augmented by that from the outside, because the pedestal could hardly be made absolutely "sealed" to the hull. And besides, because of her hydrological regime the Neva would have to be dredged regularly at the ship's berth to accommodate the pedestal.

Finally, it was decided to keep the cruiser in its native element, afloat. A new hull will be made below the waterline using 32 millimetre steel plates instead of the old 12 millimetre ones. But the lines of the hull will, of course be preserved. The new hull will be rustproofed for at least 300 years.

IN August 1984, the residents of Leningrad and visitors witnessed a truly dramatic and unique event. The bridges spanning the Neva were drawn during the daytime to let tugs pull and push the AURORA downstream to the dockyards. The tugs also served as "safety buffers" when the cruiser passed between the supports of bridges. It took the tugs four hours to navigate a distance of under seven miles. Once safely installed in the dock, the repairs were started right away, including the removal of the ship's guns and machinery overhaul and repairs, scraping clean the hull and bulkheads from the old paint and rust, and sealing the numerous shell holes, some of which dated back to the Battle of Tsushima while others were added during the Nazi siege of Leningrad. All in all, there were more than 1300 such holes. The cruiser was then moved into a covered-in berth in a dry dock which also accommodates several other ships under construction.

The AURORA was given a place of honour and now it was completely exposed to view from keel to the upper deck. It is to that deck

that we climbed together with the chief engineer of the project O. Soldatkin.

"The repairs of the hull," he told me, "as we climbed, "are over the main. And that has been the most difficult part of it, because the nature of the job involved proved to be much more difficult than building a new ship. We tried to preserve every 'original' plate and beam, often encountering problems of unprecedented complexity. Thus, in order to extract the main steam engine we had to take off some 300 armour plates of the carapace deck. When that was done, we discovered that the plates were badly damaged by corrosion from the inside. We could not remove the rust ourselves and had to turn for assistance to specialists from the neighboring Kanonersky Repair Shipyard who are more skilled in that kind of work."

"The cruiser has a cast-bronze stempost and sternpost which together weigh more than 40 tonnes and are tightly attached to the hull. Joining them together would seem to be a task of no special complexity, but the snag was that in the presence of water a corrosive reaction can occur between the two different metals and that had to be ruled out. We did not want to imitate the original joint as being too complicated and not reliable enough. Our experts came up with their own solution: coating the hull with a special protective formula to rustproof it for several centuries."

As had been planned right from the start, the upper part of the hull had to be separated from the part below the waterline which had to be repaired separately. After that the two halves had to be joined together again. The job called for truly hairpin precision, especially considering that the ship is 127 metres long and 17 metres wide. The rejoining operation, which is performed very seldom indeed, requires of the workers a very high degree of skill and is very time-consuming.

To accomplish it, a theoretical blueprint of the cruiser had to be prepared with the help of a computer. This saved lots of time, and the computer blueprints were much superior to man-made ones. The result of it all was a truly perfect fit of the two halves of the old cruiser.

A total of more than 30 Leningrad plants and research organisations are involved in this truly unprecedented project and some of the jobs had to be done by plants in other cities. The work is proceeding without a hitch, with the people involved realising the importance of the project and trying to do their best to help.

At the present stage, work is nearing completion on the deck structures, many pieces of the ship's equipment have been put back in place and the power supply system has been restored. Donating many hours of free work to the project are young workers of the shipyards, sailors of the Leningrad naval base and the crew of the cruiser.

As the work progresses, all technical suggestions are submitted to the scrutiny and approval of historians who have the final say in all such matters. This is because the purpose of the project is not just to save the historic cruiser for posterity, but to let people see it both now and in the years to come just as it was at the time of the Socialist Revolution in Russia.

The veteran of the Revolution was refloated early in 1987. After outfitting and trials, the AURORA will take up her place on the Neva by the Petrogradskaya Embankment and will be open to the public by the 70th anniversary of the Great October Socialist Revolution of 1917.

V. Gerasimov

Book Review Article

"The Royal Australian Navy — A Pictorial Review"

By: JOHN MORTIMER

Reviewed by: "ACHERON"

THE 75th Anniversary year of the Royal Australian Navy was indeed spectacular, but up until now it has been a great pity to have had no permanent reminder of the 12 months, a period from January to December, 1986, when the RAN was seen at its best and proudest.

Fortunately, for those who participated and those who were unable, a new hard cover book has just been released describing and illustrating the numerous events of the year.

Titled "The Royal Australian Navy — A Pictorial Review" the publication features over 200 photographs, including 80 in full colour. From the outset, the book is highlighted by the superb photography, the dust jacket featuring the Fremantle class patrol boat HMAS WHYALLA practically leaping out of the water, and last but not least, the Daring class destroyer HMAS VAMPIRE, shown at the close of her career before "paying off".

Paper quality is 128 gsm glossy, with the pages measuring 35 x 25 cm.

The book covers most of the ships and establishments as well as the major naval events of the year, including:

- Australia Day weekend celebrations
- Fleet Visit to Hobart
- National Naval Memorial Unveiling
- Fleet Visit to Victoria
- Cerberus presentation of Colours
- The Great Patrol Boat Race
- Navy Week Northern Territory
- Fleet Visit to Western Australia
- Navy Week Queensland
- Fleet Entry to Sydney 29th September
- USS MISSOURI Firepower Demonstration
- Naval Review
- Nowra Air Display
- Navy Week South Australia

An interesting aspect of the book is its successful depiction of naval life in the RAN during 1986, featuring a cross-section of personnel, events, ships, aircraft and naval establishments, plus the Naval Reserves and Naval Association.

THE ROYAL AUSTRALIAN

NAVY

A Pictorial Review

JOHN MORTIMER



Some 13,000 words are included, both as narrative and captions. The former includes a brief description of the RAN's activities and achievements during the year. It also details the composition and structure of the RAN, including administrative and support infrastructure, the fleet, establishments and manpower.

The majority of photographs were taken by Navy's professional photographers and the author.

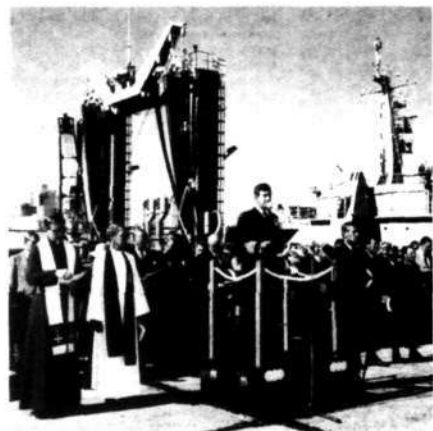
The book will be available for purchase in late October, 1987, through the Navy's canteen organisation or direct from the author, **John Mortimer, at 50 Harbison Crescent, Wannassa, ACT 2903.** Priced at \$19.95 plus packing and postage (\$4) if applicable, the book is the definitive 'line book' of the anniversary year.

I strongly recommend "The Royal Australian Navy — A Pictorial Review" to all League members. A small investment for a lifetime of memories.



THE NAVY

October-December, 1987



NEW KIWI NAVAL PROGRAMMES

Introduction

THE New Zealand Prime Minister, Rt Hon David Lange, announced in late July, plans for the expansion and modernisation of New Zealand's navy.

The announcement confirmed that the Government planned to go ahead with the acquisition of a multi-purpose logistic support ship together with the projected one-for-one replacement of the frigates during the 1990s.

A fleet tanker is also on order for delivery at the end of the year.

In announcing details of the naval development plans the Prime Minister emphasised that maritime forces were central to New Zealand's defence efforts.

"We are at the centre of a hemisphere which is mostly water", Mr Lange pointed out.

"New Zealand and the islands for which we have defence responsibilities are surrounded by large expanses of ocean. The ability of our navy to operate over those distances is a basic requirement", he said.

Mr Lange said that the logistic aspects of naval operations in the South Pacific had not previously been given the importance they needed. This deficiency had been compounded by the fact that the present frigates were not designed for long-range deployments without support.

REPLACEMENTS FOR THE FRIGATES: NEW SURFACE COMBATANT PROJECT Current Fleet

New Zealand's four Leander class frigates were built between 1963 and 1971. The two older ships, HMNZS WAIKATO and SOUTHLAND, will reach the end of their economic life early in the 1990s. HMNZS CANTERBURY and WELLINGTON are expected to remain in service until the turn of the century.

Joint Project

Plans for phasing out the frigates were announced in the 1987 Defence White Paper. The report pointed out that Australia had a similar requirement and noted the advantages in having a common design.

On March 6, Hon Kim Beazley and Hon Frank O'Flynn signed an agreement covering New Zealand participation in the New Surface Combatant (NSC) project established by the Australian Government in 1986. The RAN programme calls for the construction of eight ships in Australia at a total project cost of A\$3.5 billion (sailaway cost of the ships will be considerably less than this amount).

The memorandum of understanding between the two governments signed in March provides for New Zealand collaboration in the joint NSC project up to the stage of design selection and shipbuilder evaluations. At that point it will be up to the New Zealand Government to decide whether it wishes to continue into the acquisition stage on a joint basis and buy ships from the Australian yard.

Evaluation of short-listed designs is under



WELLINGTON being modernised.



HMNZS SOUTHLAND, due for replacement by a new surface combatant in the early 1990s.



Former New Zealand naval auxiliary, NUCULA.

way in Australia at present New Zealand defence staff representatives are part of the evaluation process. An announcement is expected within three months on the two designs selected for detailed development.

Specifications

The Australian technical requirements for the NSC were set out in the request for proposals sent to potential contractors in December 1986. The main features were summarised in a list of 'baseline characteristics' set out within the document.

The New Zealand baseline characteristics, which follow the Australian format, have recently received ministerial approval and have been passed on to the Australian authorities. Like the Australian specifications, the New Zealand baseline comprises a list of recommended features which will be used for costing purposes and will provide the basis for design development. However, actual decisions on the capabilities to be installed will not be taken until a later stage after costs and naval requirements have been more closely defined.

Features of the New Zealand baseline are:

- a range of 6000 nautical miles, (calculated at a transit speed of 18 knots, the comparable figure for the frigates is about 2500 nm);
- endurance of at least 30 days;
- a speed of 24 knots, (this is the required speed, the propulsion options being considered may offer a higher maximum);
- the ability to operate, hangar and maintain a medium helicopter;
- a medium calibre gun (ie. 76mm or larger);
- a point defence missile system, (for defence against air or missile attack);
- surveillance systems, (notably sonar and radar);
- ship-launched torpedo system.

Ship Type

The NSC designs currently under consideration are based on existing light frigate hulls. The New Zealand specifications, while demanding in their own way, differ from the conventional pattern to some extent because the basic requirement is for independent long-range operations in the South Pacific. Most European frigates, by contrast, are optimised for operations in more intense military environments but for shorter periods.

The level of self-defence capability needed to make the ship effective in a variety of roles is an issue that is receiving further study. The outcome of this work may affect some aspects of the specifications at a later stage, though the important hull characteristics are unlikely to change.

Cost

On the information now available the capital cost of the NSC will be comparable in real terms

to that of the frigates when they were originally acquired. However, the lifetime costs of the new designs are considerably lower. Whereas manning levels on the frigates are around 260 it is expected that that figure will roughly be halved on the next-generation ships. With a shift to diesel propulsion, fuel consumption will be much lower. Maintenance costs will also be reduced.

Effectiveness

In situations requiring continuous surveillance or patrol in a particular area the number of ships available is critical. In formulating the New Zealand requirements for the NSC there has been a deliberate decision to go for a basic rather than advanced specification in the interests of ensuring that the required number of ships can be purchased from the available funds.

In the Pacific range, endurance and sea-keeping are the other key factors in determining a ship's potential effectiveness. The hull characteristics for the NSC are largely determined by the range and endurance requirements and by the need for helicopter accommodation.

The new ships will mean a great improvement in the navy's capacity for sustained operations, particularly in the more distant parts of the region. This is important in a variety of situations, ranging from resource protection tasks to submarine surveillance.



HMNZS CANTERBURY, shown here under refit, will serve to the turn of the century.

An important aspect of the NSC specifications will be the capacity to operate a larger and more capable helicopter. Much of the effectiveness of modern ships depends on the ability to take advantage of the capabilities of the helicopter. The requirement for the NSC is to accommodate naval helicopters up to the size of those on order for the Australian navy. Selection of a next-generation naval helicopter for the RNZN is a subject now receiving detailed study.

LOGISTIC SUPPORT SHIP

The Government has directed the Ministry of Defence to go ahead with the initial design work for a logistic support ship. The design studies are expected to be followed by the letting of contracts for the construction or conversion of a ship for the Royal New Zealand Navy.

This decision was anticipated in the 1987 Defence White Paper released in February. The acquisition of a support ship is an important element in the strategy indicated by the defence review, which emphasises New Zealand's role in the South Pacific and stresses the importance of having the ability to deploy our forces throughout the region. The defence review was discussed with Pacific governments prior to the release of the white paper.

Requirement

The requirement for a multi-purpose ship to provide logistic support to New Zealand forces has been recognised by successive governments over a period of more than a decade.

The principal roles of such a ship are seen as:

- first, providing transport for military personnel with their equipment and stores to the scene of operations and, if necessary, putting them ashore;
- second, assisting with relief operations following natural disasters in New Zealand or elsewhere in the region.

The latter requirement can comfortably be met by a ship equipped for the first role. It is therefore the military requirement that sets the design.

The decision to acquire a ship for these purposes recognises the fact that deployment by air is not always feasible (access to airfields, even where they exist, cannot be guaranteed) and that logistic support by air is extremely difficult. Enormous resources are needed to supply even a small force by air with basic consumables — water, fuel and munitions — and the problem is compounded with distance. In New Zealand's situation this means that military operations without naval logistic support are in many cases not sustainable.

Operational Concept

The Government has endorsed a concept of operations for the logistic support ship which draws on the requirement outlined above.

Key points listed in the operational concept are:

- The ship will be required to operate through the area extending from the equator to 40°S.
- The requirement is to land vehicles, stores and some personnel at any location in the region. To achieve this requirement the ship is to be capable of:
 - embarking and operating two medium size utility helicopters.
 - carrying and operating landing craft.
 - loading and off-loading vehicles onto a jetty using an overseas ramp or by helicopter and landing craft.
- The ship will not require a beach landing capability. The coastlines typical of islands in the region limit the value of such a capability. The features listed above will nevertheless allow the ship to provide ship-to-shore transfer in most situations.

Capacity

For planning purposes the requirements that have been set are:

- a. deploying a small number of personnel (up to one infantry company with support elements — say 130 personnel altogether) with their stores and equipment and supporting them for periods of up to a month.
- b. carrying the heavy equipment, vehicles and logistic support (including 130 personnel) for a larger force (infantry battalion plus support elements) that has been transported by air to the area of operations.

The ship-to-shore transfer capacity of the support ship will vary depending on circumstances. Helicopters will be the only means available in some circumstances, in others the availability of full port facilities will allow unrestricted off-loading of heavy equipment. A crane has been specified for use in some situations.

Ship Characteristics

The logistic support ship is expected to be based on a merchant ship design. Whether an existing hull is converted for the purpose or whether a new ship is built to the modified design will be decided according to the relative economics of the different options. Basic acquisition and running costs are in any case expected to be low.

Required ship characteristics include:

- Speed — a continuous speed of not less than 18 knots fully loaded.
- Range — a range sufficient to allow a round trip of 8000 nautical miles at a passage speed of 15 knots.

- Endurance — endurance of at least 40 days with an embarked force.

A ship that meets these and the other detailed requirements is expected to have a length of about 160 metres and draft not exceeding 8.6 metres.

Stability, fire fighting and damage control requirements have been written into the ship characteristics.

Helicopters

The specifications call for hangar space to accommodate at least two medium helicopters and a flight deck large enough to allow two helicopters to operate concurrently. This requirement is one of the key factors in sizing the ship. For planning purposes a helicopter the size of the Blackhawk type now replacing the Iroquois in US and Australia's service has been assumed.

Armament

Light armament which could include a close-in weapon system will be fitted for self defence and provision will be made for the later fitting of additional air defence weapons if necessary.

Munitions

Facilities for carrying and handling munitions will be required. This will make it possible to replenish combat ships without their returning to port, a capability the navy presently lacks.

Replenishment at Sea

The ship is to be rigged to receive or supply fuel or stores while under way. This is important in situations where extended operations at long range are required.

Command and Control

Extensive provision for communications facilities will be made. This is important given the possible role of the ship in an emergency involving the co-ordination of a number of units (ground, air and naval) and requiring good rear communications.

Accommodation

Accommodation is to be provided for 250 personnel, of which the ship's complement would account for 60, embarked staff (air, medical and headquarters detachments) 40 and an embarked force (of company group size) up to 150.

Other Facilities

Medical facilities will be required, together with fresh water distillation plant and good electrical generation capacity.

Antarctic Operations

Ice strengthening for Antarctic operations will be costed as a separate option, although on the information available it is unlikely that such a course will prove to be justified. One difficulty is the fact that unrestricted Antarctic operations would call for the capabilities of an icebreaker rather than a strengthened merchant hull. The other is the fact that the Antarctic summer coincides with the cyclone season in the South Pacific, a period when the disaster relief capabilities of the ship are most likely to be called upon.

Acquisition Strategy

Initially an invitation will go out to qualified consultants inviting registrations of interest for a project definition study. After the responses have been evaluated contracts will be let for two funded studies. Following a further evaluation a

contract will be issued for detailed design development, leading in turn to tenders for the construction of a ship.

The Government is looking at a three-year timetable for the project.



"PORT JACKSON 200"

By GRAEME ANDREWS.

Published by A. H. & A. W. Reed.

Reviewed by Captain Ron Hart.

The sub-title "An Affectionate Look at Sydney Harbour" should sum up the feeling most people have towards this most beautiful waterway. The over-riding feature of ease of access and deepwater frontage in so many bays and inlets in the port, obviating the need for long jetties and dredged channels, made this place the ultimate choice for settlement in New South Wales so long ago.

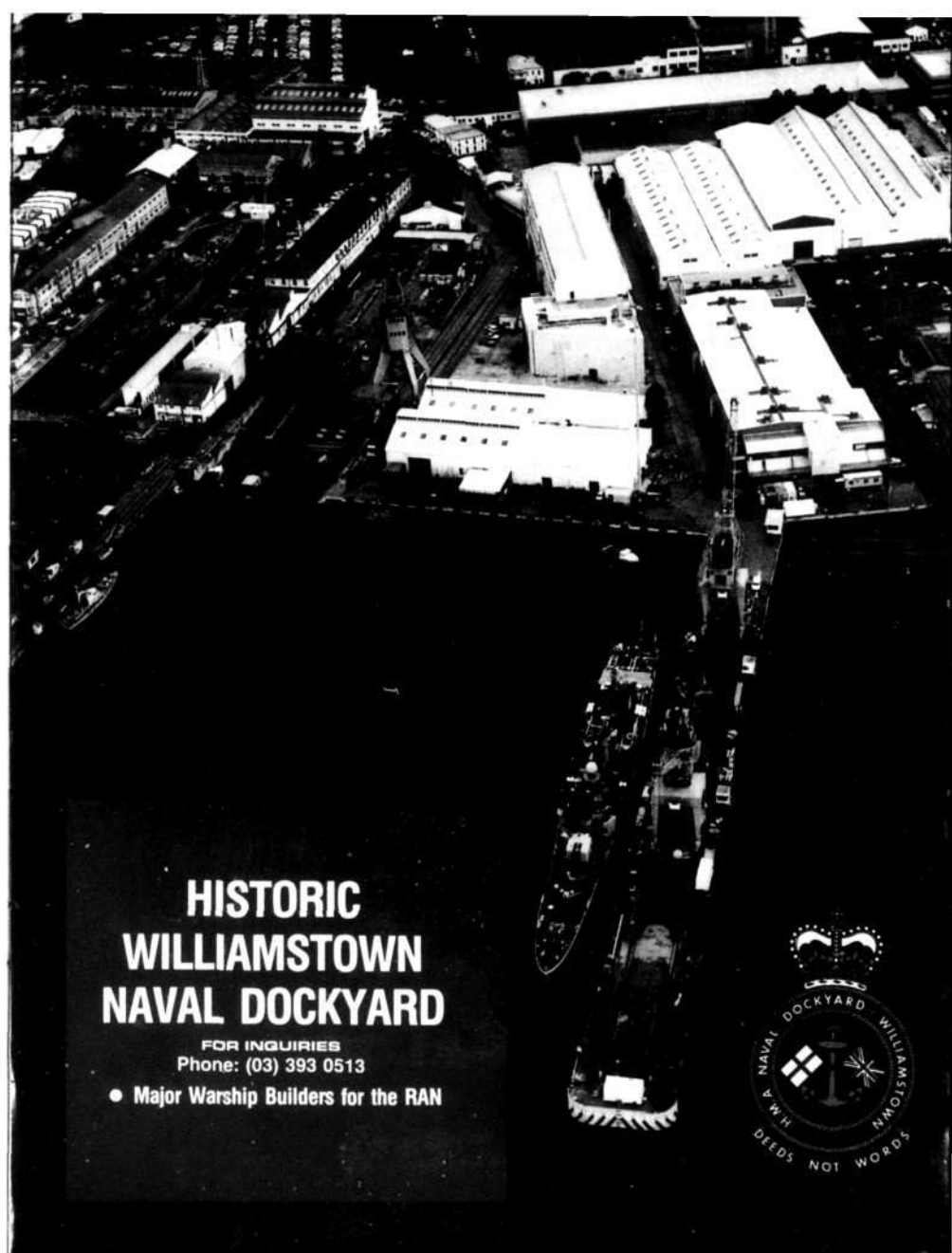
Graeme Andrews' book pays an excellent tribute to the foresight and understanding of those who explored this area in its pristine condition, later developers who laid out amenities and facilities to benefit the vital shipping services, general use by the residents of Sydney in both work and play and the present planners' aims to restore even more of the harbour to public use.

This is an excellent book, using a mixture of well-known illustrations and some not seen in print before. Graeme's relaxed style of writing flows from an expert knowledge of his subject and a genuine love of this priceless asset with which he has had a close working attachment for so many years.

As with so many subjects like this, as soon as the book is printed it becomes somewhat out of date and any minor errors are caused by the swift changes taking place. As well, two photographs of working craft identified as being in Walsh Bay and definitely in Darling Harbour with Millers Point or Caltex House in the background.

This work brings back many nostalgic memories, particularly the magnificent liners that formed the lifeline to the outside world for so long, the tugs, ferries and service craft that became household names for so many years and the services that were provided by various Government Departments that have been terminated in the name of economic necessity.

A solid book that makes some of the more recent volumes on this subject pale into insignificance.



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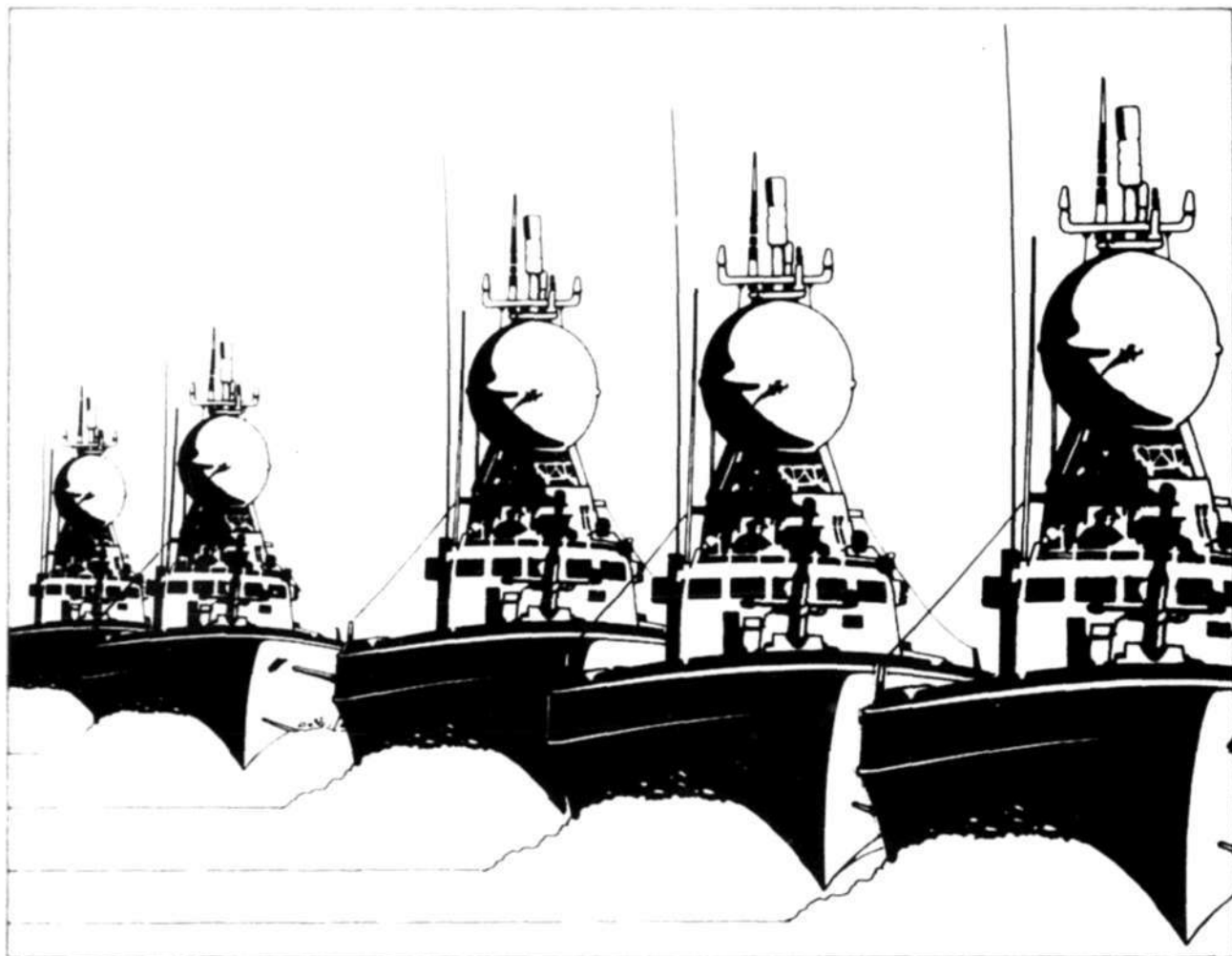
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