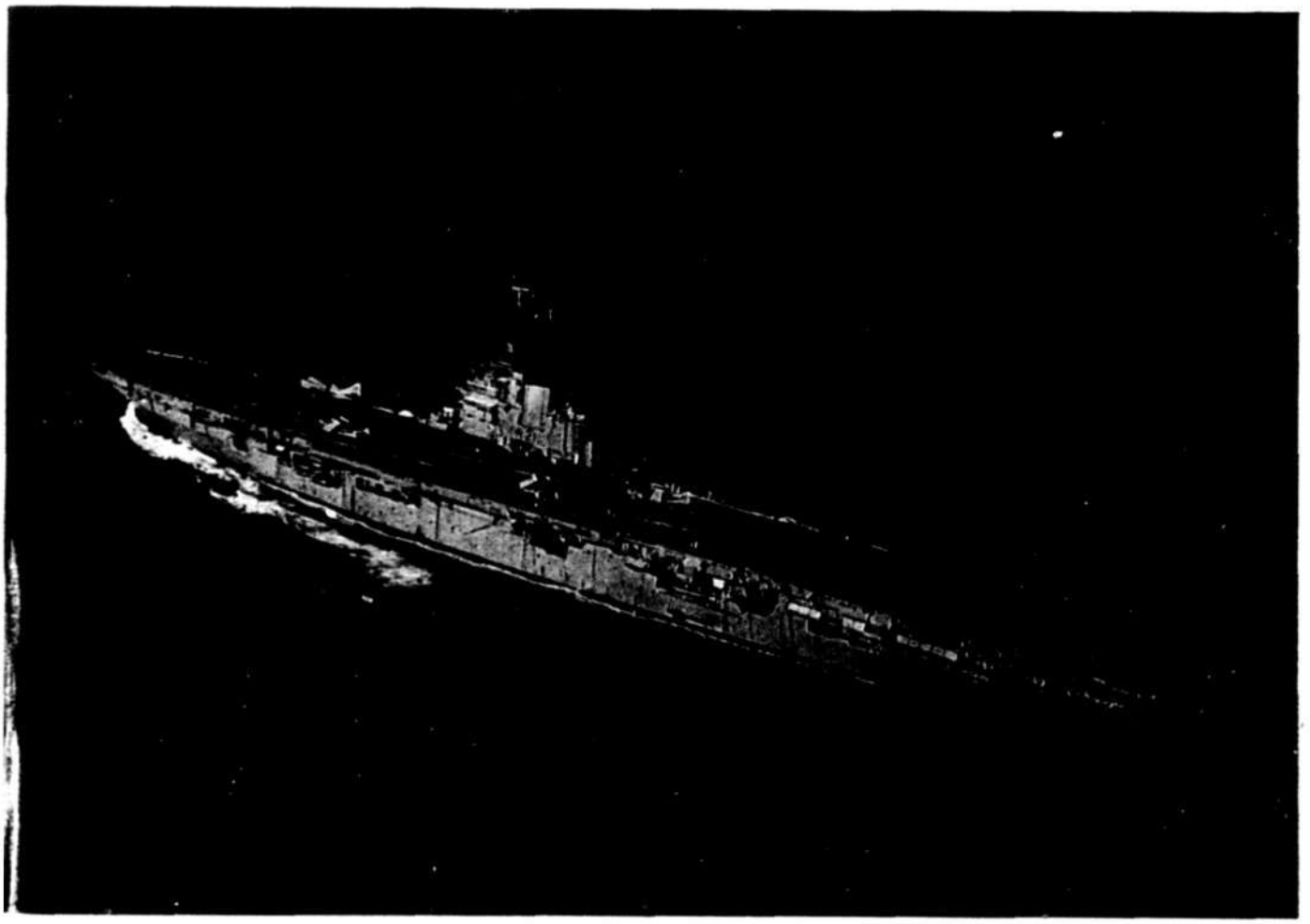
SEPTEMBER - OCTOBER, 1964

THE Navy

NAVY WEEK ISSUE



The Flagship of the Australian Fleet, H.M.A.S. MELBOURNE

Including Programme of Open Days at

H.M.A.S. "WATSON"
5th OCTOBER, 1964

H.M.A. NAVAL ESTABLISHMENTS, GARDEN ISLAND
10th OCTOBER, 1964

2/-

THE NAVY TODAY

A MESSAGE FROM THE MINISTER FOR THE NAVY, THE HON. F. C. CHANEY, A.F.C., M.P.

THIS IS the first occasion on which I have had the pleasure of writing an introductory message to the "Navy Week" edition of "The Navy".

My association with the Navy began at a sad and difficult time for the R.A.N. But I have had the great advantage of observing the R.A.N. from the inside, and of studying events in perspective.

As the Prime Minister stated in Parliament:— "The loss of VOYAGER and the report made upon that loss may have induced some to reach sweeping adverse conclusions about our Navy. This would in our opinion be grossly unjust and unwarranted, since . . . uphappily accidents occur in all navies and should not be hastily used as a reason for attacking our Navy as a whole. . . . We do think that justice requires that I should set out certain facts which show that whatever improvements may, on examination, be found desirable in the overall organisation of the Navy and its officers, we have every right to be proud of the Navy for the way in which it has handled the problems which have come to it in recent years."

In talking of perspective, it is worth considering some of the Navy's recent and future developments, and the operational commitments undertaken by the R.A.N.

This year has seen the commissioning of two fine new ships—one a missile-equipped warship and the other a hydrographic vessel of world class. The warship, H.M.A.S. DERWENT, is the R.A.N.'s first ship with the "Seacat" sea-to-air guided missile system. The survey ship, H.M.A.S. MORESBY, is the Navy's first ship designed specifically for hydrographic research.

Work has started in Australia on a new escort maintenance ship which will provide repair facilities in operational areas and make an important contribution to the mobility of the Australian Fleet. Next year, construction of two new anti-submarine frigates will begin in Australian shipyards.

In Britain, work has begun on the first of four OBERON Class submarines, while in the United States the first two of three versatile CHARLES F. ADAMS Class guided missile destroyers will commission next year.

R.A.N. ships steamed over half a million miles during the past year, and the Navy is now contributing to the security of Malaysia in addition to its continuous contribution to the British Commonwealth Strategic Reserve. Four R.A.N. minesweepers are being maintained on patrol duties off the coast of the Borneo states of Malaysia.

During "Navy Week", I hope that some of you will take advantage of the opportunity to see something of the R.A.N. for yourselves. I am sure you will be proud of what you see, and will be impressed by the calibre of the officers and men who are devoting their careers to the security of the nation.

THE NAVY

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THE NAVY LEAGUE OF AUSTRALIA

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A Representative from each Navy League Division, also—
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BOYS!

This is your chance to take part in Australia's Naval programme and learn an interesting and useful trade.

NAVAL DOCKYARD APPRENTICES

PARENTS Here is an opportunity for your son to be apprenticed and receive training in all branches of Naval Repair and Refitting work in the largest and best-equipped Naval Yard and Dry Dock in the Southern Hemisphere.

APPRENTICESHIP is available at Garden Island Dockyard, Sydney, controlled by the Commonwealth Government, under conditions which will enable you not only to become an efficient tradesman, but give you the opportunity of qualifying as a Draughtsman in Mechanical or Electrical Engineering, or Ship Construction. The period of apprenticeship is for 5 years, and subject to satisfactory progress, Technical College fees will be paid by the Commonwealth Government.

RATES OF PAY are in accordance with the Arbitration Court Award made between the Department and the Trade Unions. On completion of the first year, an additional weekly payment is made, subject to satisfactory progress. Three weeks' annual leave and liberal sick leave are granted, and an allowance is payable to apprentices who are obliged to live way from home owing to distance.

ELIGIBILITY Age limit is 15 years and under 17 years at date of taking up appointment. A satisfactory pass at the Intermediate Certificate examination is desirable, but not essential.

VACANCIES exist for the following trade apprenticeships: Fitter and Turner, Electrical Fitter and Mechanic, Radio Tradesmen, Boilermaker and Welder, Shipwright and Boatbuilder, Ship's Plumber, Painter and Moulder, Coppersmith, Enginesmith, Motor Mechanic, Sailmaker, Sheetmetal Workers.

APPLICATION must be made on the form prescribed. For application form and copy of conditions of entry, apply to your District Employment Office, or the General Manager, Garden Island Dockyard, Sydney, by letter, or telephone FL 0444, Extension 325 (Mr. Kimber). Closing date is 16th November, 1964.

Message from Rear Admiral A. W. R. McNicoll

FLAG OFFICER IN CHARGE, EAST AUSTRALIA AREA

Open days at H.M.A.S. WATSON and at H.M.A. Naval Establishments at Garden Island and in H.M.A. ships, give you, the taxpayer, the opportunity to see some of the ways in which your money is being applied to the defence of Australia.

The Navy is proud of its ships and installations and I have pleasure in welcoming you and hope that you, too, will be impressed by the ships, equipment and men that you will see.

H.M.A.S. WATSON is the establishment where officers and men are trained in Anti-Submarine and Radar techniques. You will see some of the complex equipment used in that training, which duplicates so far as possible the equipment which the Navy uses in its seagoing ships.

At Garden Island you will see the facilities used in refitting the Fleet and several displays and demonstrations will also be given.

Because of the Navy's commitments there will only be a few H.M.A. ships in the dockyard. Two Daring class destroyers, H.M.A.S. VAMPIRE and H.M.A.S. VENDETTA are on active service with the Commonwealth Strategic Reserve in Malaysia and four minesweepers are also on active service in Malaysian waters. In addition, ships of the R.A.N. are busily engaged in oceanographic and survey work in Australian and New Guinea waters and other ships are working up and exercising off the coast.

However, this year at the invitation of Rear Admiral Becher, you are invited to inspect the flagship of the fleet—H.M.A.S. MELBOURNE—and H.M.A.S. DERWENT and H.M.A.S. ANZAC.

H.M.A.S. DERWENT is the newest ship in the Fleet. She is an Anti-Submarine frigate with the latest variable depth sonar and with an improved anti-aircraft capability provided by the Seacat short range sea to air guided missiles.

I hope you will also meet the men of the Navy and take the opportunity to talk to them. You will find they are young Australians of the highest calibre, well worthy of your support, and men deserving of being capable of carrying on the independent tradition of Australian naval courage and efficiency laid down by the first H.M.A.S. SYDNEY when she sank the EMDEN fifty years ago on 9th November, 1914. . . .

WELCOME

BATTLE OF THE NILE

Master's Medal

The medal reproduced here by courtesy of Mr. Kenneth C. Bruff Macdonnel, of Sydney, grandson of Mr. Bruff, Master of one of Nelson's ships, "Orion", at the Battle of the Nile, has come down to Mr. Macdonnel as a family legacy.

"Orion" carried 74 guns with a complement of 500 men and was commanded by Captain Sir James Saumarez, of Norman descent but born in the Island of Guernsey. A distinguished naval officer, he was a member of Nelson's Band of Brothers.

A commemorative victory medal in gold to Admirals and Captains engaged in naval actions was not exceptional, but the gift after the Battle of the Nile of gold medals to Admirals and Captains, silver to Lieutenants and Officers ranking with them, copper-gilt to inferior officers and copper-bronze to the men by a private individual, Mr. Alexander Davison, an intimate friend of Nelson's, was exceptional. Mr. Davison was, in this case, agent for sale of the prizes. The device is remarkable in another way; the engraver is said to have made the mistake, on the reverse side, of showing the French Fleet at anchor with the British Fleet advancing to the attack and the sun setting in the East. The figure supporting Nelson's profile on the face of the medal is that of Hope.

H.R.H. Princess Marina

TO VISIT H.M.A.S. HARMAN

During her visit to Canberra late in September, Her Royal Highness Princess Marina, Duchess of Kent, will see at first hand the contribution which Wrans make to the operation of the Navy's main shore radio station, H.M.A.S. HARMAN.

The Minister for the Navy, Mr. Chaney, said recently that Princess Marina would spend 45 minutes at H.M.A.S. HARMAN on Tuesday the 29th September. The Princess, Honorary Commandant of the Women's Royal Australian Naval Service, would be making her first visit to an Australian Naval establishment.

More than 100 Wrans are serving at H.M.A.S. HARMAN, making it the biggest W.R.A.N.S. establishment outside of the training school at H.M.A.S. CERBERUS in Victoria. Most of the Wrans at HARMAN are involved in the work of the Naval radio station.

On her visit to H.M.A.S. HARMAN, Princess Marina will watch Wrans radio operators handling messages linking ships and Naval headquarters around the world. She will see meals being prepared by Wrans cooks, and will inspect the Wrans' living accommodation. The living quarters, Alexandra House, were opened by her daughter, Princess Alexandra, in 1959.

The Princess will be welcomed at HARMAN by the Minister for the Navy, and will also meet the Captain, Commander C. J. Schmitzer and the Director of the W.R.A.N.S., Chief Officer J. Streeter. The Senior Wrans Officer at HARMAN, First Officer E. M. McNamara, will accompany the Princess on her tour of inspection.

H.M.A.S. HARMAN, which is a major centre in Naval communications network, was the first Naval establishment to employ Wrans in the Second World War.

Princess Marina, who is Honorary Commandant of the W.R.N.S. in Britain, accepted a similar appointment in the W.R.A.N.S. soon after the Australian Service was re-established as a peacetime unit in 1951. Wrans serve at Naval establishments throughout Australia as stewards, sick berth attendants, cooks, radio communication operators, radar plotters, writers, stores assistants and motor transport drivers.

Three Wrans are playing an important "behind-the scene" role in the Navy's new missile program.

The Wrans, Jan Fenwick, Betty Stanley and Bonita Cartwright, all gunnery trials assessors, are working on the results of the firings of the R.A.N.'s first SEACAT ship-to-air missiles from H.M.A.S. DERWENT recently.

RIGHT: Jan Fenwick records from test films the position of the missile as it heads towards its target.

SYDNEY-EMDEN ACTION

Fifty years ago Australia won her first naval victory. This is the story of the action that ensued between the SYDNEY and the EMDEN as told in the official dispatch of Captain Glossop, dated from Colombo on November 15, 1914.

I have the honour to report that whilst on escort duty with the convoy under the charge of Captain Silver, H.M.A.S. MELBOURNE, at 6.30 a.m. on Monday, November 9, a wireless message from Cocos was heard reporting that a foreign warship was off the entrance. I was ordered to raise steam for full speed at 7.00 a.m. and proceeded thither. I worked up to 20 knots, and at 9.15 a.m. sighted land ahead and almost immediately the smoke of a ship, which proved to be H.I.G.M.S. EMDEN, coming out towards me at a great rate. At 9.40 a.m. fire was opened, she firing the first shot. I kept my distance as much as possible to obtain the advantage of my guns. Her fire was very accurate and rapid to begin with, but seemed to slacken very quickly, all casualties occurring in this ship almost immediately. First the foremost funnel of her went, secondly the foremost, and she was badly on fire aft, then

The mast of H.M.A.S. SYDNEY being taken from Bradley's Head to Cockatoo Dock for repairs. It will be replaced for the 50th Anniversary of the action.

the second funnel went, and lastly the third funnel, and I saw she was making for the beach on North Keeling Island, where she grounded at 11.20 a.m. I gave her two more broadsides and left her to pursue a merchant ship which had come up during the action.

Although I had guns on this merchant ship at odd times during the action I had not fired, and as she was making off fast, I pursued and overtook her at 12.10, firing a gun across her bows, and hoisting International Code Signal to stop, which she did. I sent an armed boat, and found her to be the S.S. BURESK, a captured British collier, with 18 Chinese crew, 1 English steward, 1 Norwegian cook, and a German prize crew of 3 officers, 1 warrant officer and 12 men. The ship unfortunately was sinking, the Kingston knocked out and damaged to prevent repairing, so I took all on board, fired four shells into her, and returned to EMDEN, passing men swimming in the water, for whom I left two boats I was towing from BURESK.

On arriving again off Emden, she still had her colours up at mainmast head. I inquired by signal, International Code, "Will you surrender?" and received a reply in Morse, "What signal? No signal books." I then made in Morse, "Do you surrender?" and subsequently, "Have you received my signal?" to neither of which did I get an answer. The German officers on board gave me to understand that the Captain would never surrender, and therefore, though very reluctantly, I again fired at her at 4.30 p.m., ceasing at 4.35, as she showed white flags and hauled down her ensign by sending a man aloft.

I then left EMDEN and returned and picked up the BURESK's two boats, rescuing two sailors (5.00 p.m.), who had been in the water all day. I returned and sent in one boat to EMDEN, manned by her own prize crew from BURESK and one officer, and stating I would return to their assistance next morning.

I lay on and off all night, and communicated with Direction Island at 8.00 a.m., November 10, to find that the EMDEN's party, consisting of three officers and 40 men, one launch and two cutters, had seized and provisioned a 70-tons schooner (the AYESHA), having four Maxims with two belts to each. They left the previous night at six o'clock. The wireless station was entirely destroyed, one cable cut, one damaged and one intact. I borrowed a doctor and two assistants, and proceeded as fast as possible to EMDEN's assistance.

I sent an officer on board to see the captain, and in view of the large number of prisoners and wounded and lack of accommodation, etc., in this ship, and the absolute impossibility of leaving them where they were, he agreed that if I received his officers and men and all wounded, "then as for such time as they remained in SYDNEY they would cause no interference with ship or fittings, and would be amenable to the ship's discipline." I therefore set to work at once to tranship them—a most difficult operation, the ship being on weather side of island, the sea alongside very heavy. The conditions in the EMDEN were indescribable. I received the last from her at 5.00 p.m., then had to go round to the Ice side to pick up 20 more men who had managed to get ashore from the ship.

Darkness came on before this could be accomplished, and the ship again stood off and on all night, resuming operations at 5.00 a.m. on November 11, a cutter's crew having to land with stretchers to bring wounded round to embarking point. A german officer, a doctor, died ashore the previous day. The ship in the meantime ran over to Direction Island to return their doctor and assistants, send cables, and was back again at 10.00 a.m., embarked the remainder of wounded, and proceeded for Colombo by 10.35 a.m. Wednesday, November 11.

Total casualties in SYDNEY: Killed, 3; severely wounded (since dead), 1; severely wounded, 4; wounded, 4; slightly wounded, 4. In the EMDEN I can only approximately state the killed at 7 officers and 108 men from Captain's statement. I had on board 11 officers, 9 warrant officers and 191 men, of whom 3 officers and 53 men were wounded, and of this number 1 officer and 3 men have since died of wounds.

The damage to SYDNEY's hull and fittings was surprisingly small; in all about 10 hits seem to have been made. The engine and boiler rooms and funnels escaped entirely.

I have great pleasure in stating that the behaviour of the ship's company was excellent in every way, and with such a large proportion of young hands and people under training it is all the more gratifying.

JUNIOR RECRUITS TRAINING SCHEME

Rear Admiral V. A. T. Smith, 2nd Naval Member, inspects the drum and bugle band at the Junior Recruits Training Establishment H.M.A.S. LEEUWIN, designed to train 15½-16½ year old youths for eventual selection and technical training for the Seaman, Communications, Engineering, Electrical and other general branches of the R.A.N.

APPRENTICES AT H.M.A.S. NIRIMBA

Apprentices under instruction on various types of lathes.

The Navy Needs

GOOD MEN — WELL TRAINED

In this missile age, much publicity is given to the advances made in the design of weapons and equipment, but less public attention is given to the men who will maintain and control them.

In the Navy, each new item of equipment is more advanced than its predecessor, and requires a higher degree of skill and knowledge to work it. The searchlight, for example, which was maintained by a man with only a rudimentary knowledge of electricity has been superseded by radar, which requires for its maintenance, a detailed knowledge of electronics.

This trend has affected the Navy in two ways—firstly educational and aptitude standards for entry have been raised and secondly the training of the modern sailor is lengthy and thorough.

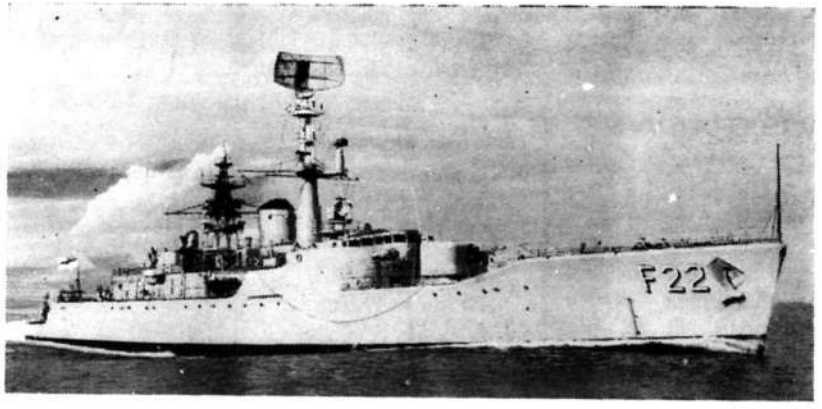
It has been said in the past that the greatest single factor in war has been "the man" and in the future this will be more than ever true.

MIDSHIPMEN GRADUATE

Nine N.S.W. Midshipmen talk with the Captain of the R.A.N. College before their graduation in July.

FIRST VICTIM

The crew of H.M.A.S. DERWENT's Sea Cat examines the propeller of the target aircraft which they shot down after only a few attempts.



H.M.A.S. DERWENT, the latest Frigate to join the Royal Australian Navy. Two sister ships are to be built to replace H.M.A.S. Voyager. They will be built at Cockatoo Dock and Williamstown Naval Dockyard.

NAMES SELECTED FOR AUSTRALIAN SUBMARINES

The names selected for the Royal Australian Navy's four new submarines will provide a link with history and with Australian geographical features.

The Minister for the Navy, Mr. Chaney, announced recently that the Administrator, on behalf of Her Majesty the Queen, had approved the names OXLEY, OTWAY, OVENS and ONSLOW for the submarines. The four submarines would be named in that order when they were delivered between 1966-1969.

Mr. Chaney said the R.A.N. names, while being distinctly Australian, would also provide continuity in the "O" Class identification adopted by the Royal Navy in giving all its OBERONS names beginning with "O".

The first of the submarines for the new Australian Submarine Squadron, H.M.A.S. OXLEY, is due to be ready in Britain in December, 1966. OXLEY, and the second submarine, OTWAY, will perpetuate the names of two Australian submarines associated with the early history of the R.A.N. Submarines with these names served in Australia between 1927 and 1931, and were the last submarines owned by the R.A.N. H.M.A.S. OXLEY was derived from the name of a former Surveyor-General of New South Wales, John Oxley (1781-1828).

OTWAY is named after Cape Otway in Victoria, OVENS after the Victorian River, and ONSLOW after the town in Western Australia.

A contract for a total of £16 million has been awarded to a Scottish shipbuilding company, Scotts of Greenock, for the construction of the four Australian OBERONS.

The OBERON is one of the most advanced types of conventional submarine in the world, combining high speed with great underwater endurance.

R.A.N. volunteers are already training in Britain ready for Australia's new Submarine Service.

SUBSCRIPTION FORM

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Sydney, N.S.W.

I enclose 24/- for Annual Subscription to "The Navy", post free.

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Please note that all annual subscriptions now commence in January. New subscribers after January should send only 1/11 for each month remaining up to and including December. Otherwise back copies from January will be posted.

ANNUAL GENERAL MEETING OF NEW SOUTH WALES DIVISION NAVY LEAGUE OF AUSTRALIA

At the Annual Meeting of the Navy League of Australia (N.S.W. Division) held in Sydney on Augusut 31, discussion took place on the Royal Commissioner's Report into the loss of H.M.A.S. VOYAGER. A motion expressing every confidence in the high command and all Officers and men of the Royal Australian Navy was carried (the motion was moved by Rear Admiral H. J. Buchanan, C.B.E., D.S.O. (Retd.) and seconded by Captain R. B. Stannard, V.C., D.S.O., R.N.R.

The meeting also noted the tribute paid by the Royal Commissioner to acts of "outstanding leadership, bravery and self sacrifice" on the part of certain individuals and his comment on the expeditious and efficient manner in which the rescue and subsequent search operations were conducted.

Rear Admiral H. A. Showers was re-elected President of the N.S.W. Division.

Sea Cadets:

The present number of Sea Cadets on Strength in N.S.W. is as follows:—

Ship	Officers	Sea Cadets
"Albatross"	2	61
"Condamine"	4	23
"Sydney"	3	46
"Shropshire"	2	23
"Sirius"	3	88
"Tobruk"	3	73
"Warrego"	2	46
	19	360

This shows an increase in total strength of 7, despite the paying-off of AUSTRALIA. As anticipated last year, good progress has been made in the formation of a Unit at Parramatta; the Unit presently is based on the Macquarie High School and although the initial response to calls for Youths to join was somewhat disappointing, it is hoped that with the early acquisition of some land and the erection of Headquarters Buildings the numbers will rapidly reach the required minimum establishment to become eligible for recognition by the Naval Board.

A lease for a further block of land for T.S. ALBATROSS has been successfully negotiated.

The Efficiency award for 1964 has yet to be notified officially, but we are very proud to announce that not only was T.S. WARREGO awarded the title of most efficient Unit in N.S.W.—but are also assessed as the most efficient Unit in Australia. This is a very great honour and we extend our heartiest congratulations to the Commanding Officer, S.C. Lt. Wheeler, his Officers, Instructors and the Sea Cadets themselves.

Parades, by Units at various local functions, as well as the more and better known occasions, i.e., Trafalgar Day, Annual Church Service at Garden Island were efficiently carried out. The Parade at Garden Island was inspected by the F.O.I.C.E.A.A., Rear Admiral A. W. McNicol, C.B.E., G.M.

Training Camps in H.M.A. Ships and Establishments were well attended, and the Cadets selected for these added to the splendid liaison between the R.A.N. and the A.S.C.C.

Although no Sea training was possible from January/July, 1964, because of the programmes of H.M.A. Ships, the generosity of the Captains of H.M.A. Establishments in the E.A.A., made it possible to organise other camps for which we are most grateful.

A second successful Indoctrination Course for S.C. Officers was held in H.M.A.S. Penguin, and the co-operation of the R.A.N. in this regard is appreciated tremendously.

Morale continues to remain high.

T.S. SYDNEY—Affiliated Unit:

During the year SYDNEY purchased the 46-foot Motor Vessel "Beryl" and in consequence undertook extensive alterations to the existing wharf, and the whole of this work—with the exception of the pile-driving, was carried out by the Sea Cadets themselves.

The Victorian Unit — T.S. MELBOURNE — held a camp at Snapper Island from 27th December, 1963 to 7th January, 1964; the 33 Officers and Cadets who attended this camp spent most of their time sailing and expressed their appreciation of this grand opportunity to improve their seamanship knowledge. In October the first half of a splendid collection of Ships' Badges of the R.A.N. was unveiled by Instructor Captain M. Moyes, O.B.E., B.Sc., State President of the Naval Association of Australia.

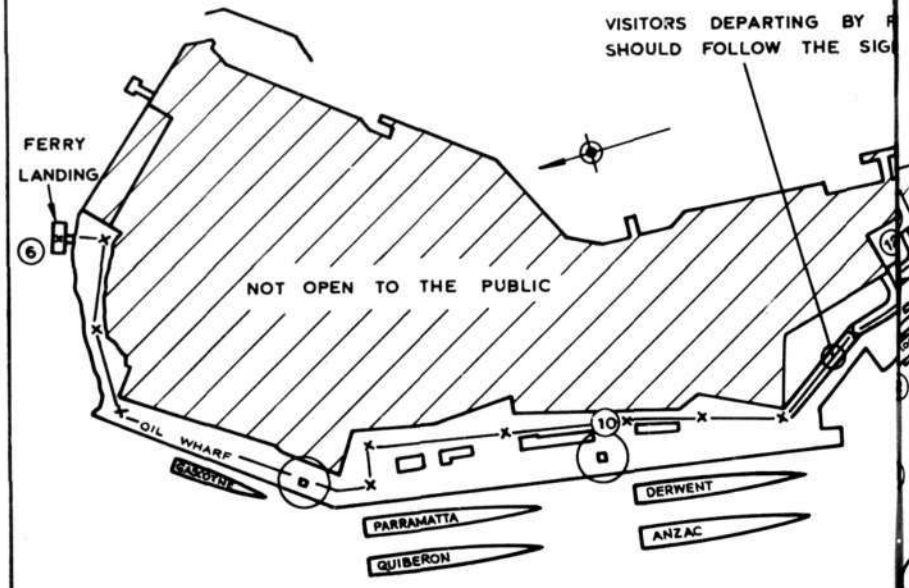
NAVY LEAGUE ANNUAL BALL

The annual Navy League Ball will be held this year at Princes Restaurant on Friday, 16th October, at a cost of £6/6/- per double.

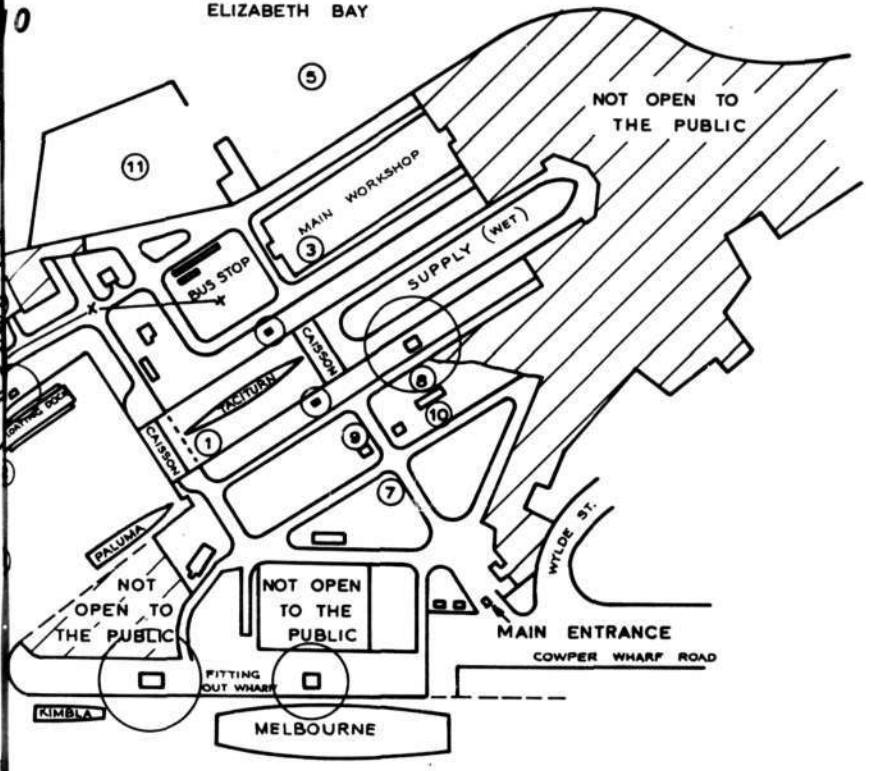
Members wishing to attend the Ball should contact: Mrs. H. G. Burgin, 27 Birdwood Avenue, Killara (Tel. 49-1680) or Mrs. R. Humbley, Flat C, 22 Wylde Street, Potts Point (Tel. 35-1498).

NAVY WEEK IN SYDNEY

DISPLAY AT GARDEN ISLAND, OCTOBER 10



H.M.A.S. GASCOYNE, hydrographic survey vessel, which will not be open to public inspection.



KEY TO GARDEN ISLAND DISPLAYS

1. Submarine in outer Captain Cook Dock.
2. Floating Dock.
3. Main Workshops.
4. Helicopter and Diving Display.
5. Navy Clearance Divers — "Drop and Pick Up" Drill.
6. Ferry Landing, Ferry Wharf.
7. Lost Children.
8. Ladies' Rest Room.
9. First Aid.
10. Ladies' Toilets.
11. Clearance Divers, South East Pound.
12. Dockyard Chapel.
13. Sail Loft.

NUCLEAR PROPULSION FOR NAVAL VESSELS

By D. J. HIGSON

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(Reprinted from "Atomic Energy in Australia"

The following paper discusses the advantages and economics of nuclear powered naval vessels. It appears that the increased effectiveness of nuclear-powered submarines and major surface vessels far outweighs the additional cost.

A major limitation upon the tactics and effectiveness of warships is imposed by the need to refuel at frequent intervals—of the order of two or three days for small, fast ships during periods of sustained high speed operation. Refuelling facilities can be obtained from land-based installations, from large ships with greater carrying capacity or from specialised oil tankers.

However, large warships must themselves refuel. In the absence of accompanying fast tankers, an operational task force generally arranges to rendezvous with shore-based tankers at regular intervals. In addition to the inconvenience, such a system obviously requires a large and widely dispersed refuelling organisation to give any scope to naval operations and this will be vulnerable to enemy attack in times of war. Furthermore, warships themselves are particularly vulnerable to attack during the refuelling operation.

Virtually complete freedom from these limitations is provided by the adoption of nuclear propulsion. Periods between refuellings are then of the order of years. It clearly cannot free ships from the need for other supplies, but the small size of nuclear power plant, compared with conventional boilers and

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The huge flight deck of ENTERPRISE covers 4½ acres.

One launch of her aircraft from her 4½-acre flight deck could unleash more destructive power than all the aircraft strikes in World War II.

Four steam catapults enable ENTERPRISE to launch her planes at the rate of one every fifteen seconds.

H.M.A.S. WATSON — Open Day

5th OCTOBER, 1964

The first major function during the 1964 Navy Week in Sydney will be at H.M.A.S. WATSON, when this establishment will be open for public inspection from 1 p.m. to 5 p.m., on Monday, 5th October.

How to Get There

H.M.A.S. WATSON is located at South Head, with an Army establishment adjoining. The entrance gates are in Cliff Street, Watson's Bay. Buses from Central Railway (Eddy Avenue), Bridge Street, corner of Park and Elizabeth Streets, and Kings Cross terminate at Watson's Bay, approximately 300 yards from the entrance gates. Naval buses will then be available to take you to H.M.A.S. WATSON.

Visitors arriving by private car should drive through the entrance gates. They will then be directed along Watson Drive to a car park.

Short History of H.M.A.S. WATSON

The establishment first commenced in the early years of the Second World War, when the need arose for a school in which to train operators of Radar, which had recently come into service in the R.A.N. The establishment was enlarged considerably in 1944, and in 1945 it was officially commissioned as H.M.A.S. WATSON.

In the meantime, navigation training had commenced at WATSON, and the two types of training were combined, under the title of Navigation Direction School.

The Torpedo Anti-Submarine School, which has been located at Rushcutter Bay, moved into its fine new building at WATCON in 1956, and, following this, new accommodation buildings, dining hall galley and amenities buildings for all ratings, plus a new Administration building, have been completed.

The new Chapel will also be open for inspection during the afternoon.

Torpedo Anti-Submarine Displays and Demonstrations

1.—Within the School there will be displays of torpedo anti-submarine equipment. Anti-submarine attack teams will show visitors how submerged submarines are detected and the sequence of events leading up to attacks by anti-submarine mortars.

2.—Perhaps the most spectacular events will be the anti-submarine mortar firings and the diving demonstrations by Naval clearance divers.

3.—Visitors will see at first-hand how the mortars are fired, in exactly the same way as in anti-submarine ships of the Royal Australian Navy.

4.—Naval clearance divers will demonstrate in Lady Bay how they enter the water and are retrieved by a fast-moving boat so that they may carry out their mission in enemy waters and make good their escape as quickly as possible.

Navigation Direction Displays

In the Action Information Training Centre and Radar Block available radar sets will be operating. Here, the visitor may witness how ships and aircraft are located by radar, and their movements plotted, so that the captain of a ship can see immediately the disposition of friendly and enemy forces, and make his plan for attack.

Refreshments

Around the establishment visitors will find refreshment stalls to cater for their immediate requirements, and afternoon tea may be obtained in the Amenities Building at 3.30 p.m.

Ratings Accommodation and Amenities

The lower floor of the northern Junior Ratings' Accommodation Block will be open, so that visitors may see the comfortable living conditions in H.M.A.S. WATSON.

Inspection of the first floor of the Amenities Building shows how pleasantly ratings may spend off-duty hours, with provision for wet and dry canteens, billiard and reading rooms, and television. On the ground floor of this building is a modern galley and first-class dining hall, with a seating capacity of 400.

Cinema

The cinema in the T.A.S. School will be operating throughout the afternoon, showing a film titled "This Is Torpedo Anti-Submarine".

Helicopters

A helicopter will be on display, and will be used to drop clearance divers in Lady Bay. It will operate from 2 p.m. to 2.15, and from 3.30 p.m. to 3.45 p.m.

A Wessex helicopter, which is probably the most up-to-date anti-submarine helicopter in the world, will fly over H.M.A.S. WATSON during the afternoon, and will give a display at 2 p.m. in Lady Bay.

PROGRAMME OF DISPLAYS

Anti-Submarine Attack Demonstrations

1.45 p.m., 2.15 p.m., 2.45 p.m., 3.15 p.m., 3.45 p.m., 4.15 p.m.

Teams will show how attacks on submarines are made, using underwater detecting devices. The demonstration will take place in the T.A.S. School.

Anti-Submarine Mortar Firings

1.15 p.m., 2.30 p.m., 4 p.m.

These firings will simulate attacks on enemy submarines, and will take place at the rear of the T.A.S. School.

Clearance Diving Demonstrations

1.45 p.m., 3.15 p.m.

Clearance divers will simulate action in clearing an enemy beach-head of obstructions. This will take place in Lady Bay, at the rear of the T.A.S. School. The divers will be dropped from boat and helicopter.

NAVY LEAGUE ANNUAL BALL

The annual Navy League Ball will be held this year at Princes Restaurant on Friday, 16th October, at a cost of £6/6/- per double.

Members wishing to attend the Ball should contact: Mrs. H. G. Burgin, 27 Birdwood Avenue, Killara (Tel. 49-1680) or Mrs. R. Humbley, Flat C, 22 Wylde Street, Potts Point (Tel. 35-1498).

NUCLEAR PROPULSION FOR NAVAL VESSELS

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their fuel tanks, permits the greater use of shipboard space for other storage purposes.

In the case of submarines, the advantage is even more marked. Submerged endurance of conventional submarines is limited by the need for air, not only for breathing but for the operation of the diesel power plant. These engines have to be run on the surface to charge the batteries upon which the electric motors run while the boat is submerged. Nuclear submarines can remain submerged indefinitely, the limit being the morale of the crew.

Nuclear Submarines

The application of nuclear power to marine propulsion started in the U.S.A. in 1947 when the Department of the Navy requested the Atomic Energy Commission (U.S.A.E.C.) to develop a nuclear reactor for submarine propulsion. In 1948, a contract for this work was placed with the Westinghouse Electric Corp. who designed, constructed and operated a land-based prototype reactor (the S1W) and subsequently designed and constructed the reactor plant (S2W) for the first nuclear powered submarine, the "Nautilus".

The keel of "Nautilus" was laid in the yard of Electric Boat on June 14, 1952, and the vessel was commissioned on September 30, 1954. "Nautilus" performed up to and beyond specification in every way, and her exploits have since become legendary.

The U.S. Navy has continued a vigorous program of constructing nuclear powered submarines of various types. By September, 1963, it had 32 commissioned, a further 16 launched, 16 under construction and 23 more authorised. The great majority of these are powered by the S5W reactor, designed by Westinghouse, which was first installed in the "Skipjack" (commissioned on April 15, 1959). However, prime contracting for the reactor plant is now shared with General Electric.

Seven shipbuilders have shared construction work (six, allowing for the recent take-over of Bethlehem Steel's Quincy yard by Electric Boat). Electric Boat have the largest output.

In the early stages of the American submarine development programme, there was considerable opposition to nuclear propulsion on the grounds of its high cost. However, the performance of "Nautilus" and her successors has vindicated the faith of their advocates, and has amply demonstrated that the increased effectiveness of nuclear powered submarines far outweighs the additional cost. This is now accepted generally and no further conventional submarines are being built for the U.S. Navy.

In 1955, the British Government decided to authorise development and construction of nuclear powered submarines for the Royal Navy. This work was assigned to a consortium of Vickers, Rolls-Royce and Foster-Wheeler (known as Vickers Nuclear Engineering), and reactor development work started at Rolls Royce (Derby) and A.E.-R.E. (Harwell) in 1956.

However, in 1958, agreement was reached to purchase an S5W core from Westinghouse for Britains first nuclear submarine, and the firm of Rolls-Royce & Associates (staffed from the same three British firms) was set up to handle the transaction. Simultaneously, Rolls-Royce was authorised to become the first private fabricator of nuclear fuel in the United Kingdom, so that it could manufacture replacement fuel elements and further reactor cores.

The "Dreadnought", powered by this Westinghouse reactor, was commissioned on April 17, 1963. "Valiant", to be powered with a reactor of similar principle designed and built by Rolls-Royce & Associates, has been launched at Vickers' Barrow-in-Furness yard; five more nuclear submarines have been ordered (three from Vickers and two from Cammel Laird), and the firm intention to build another has recently been announced by the British Government. Reactors for all those ships will be

provided by Rolls-Royce & Associates.

France plans to build three nuclear powered submarines, to come into operation by 1973. Their pressurised water reactor plant is being developed independently, and the land-based prototype at Cadarache is expected to start up during 1964.

Canada plans to build two nuclear submarines. It is expected that the first will be powered by a Westinghouse built S5W and the second by a similar reactor built in Canada.

According to the 1963-64 edition of "Jane's Fighting Ships", the Russian Navy has 26 nuclear submarines and is adding to this at the rate of one a month.

Surface Ships

Three nuclear powered naval surface vessels have been constructed and commissioned in the U.S.A.—the cruiser "Long Beach", the aircraft carrier "Enterprise" (both commissioned in 1961), and the destroyer leader "Bainbridge" (1962). A further destroyer leader ("Truxton") authorised in 1961, is now under construction.

No further projects of this type have been started, pending operating experience with the existing ships. However, although they have met and exceeded their specifications, this hiatus has continued. A destroyer, authorised in 1962, has been cancelled (because its missile system was not ready). A new aircraft carrier (CVA-67) is to be built with conventional power plant. It would appear an unfortunate possibility that the history of the ill-founded initial lack of faith in nuclear submarines is to be repeated for surface vessels.

Reactors for Naval Propulsion

The S5W, which is the standard U.S. submarine reactor and is also used in the first British submarine, is a pressurised light water cooled and moderated reactor. An attack submarine powered by one such reactor has a range of at least 120,000 miles at full power or 3,000 full-power hours between refuellings (equivalent to two or three years' normal operation according to American experience). The first polaris submarine "George Washington", operated for 4½ years on its first core. Between refuellings only maintenance is necessary to keep the reactor operational, and experience has shown that the nuclear plant gives less trouble than conventional machinery.

The power plants used in "Long Beach" (C1W) and "Enterprise" (A2W) were designed by Westinghouse and based upon units similar to the S5W, but

H.M.S. DREADNOUGHT

Britain's first nuclear-powered submarine, H.M.S. "Dreadnought", which was commissioned in April, 1963.

about 50 per cent larger, generating about 100 MW of heat at full power (equivalent to about 35,000 s.h.p.) "Long Beach" has two such units and "Enterprise" eight. "Bainbridge" is powered by two D2G reactors, designed by General Electric (U.S.), which are pressurised water reactors of much the same principle as the S5W and about the same full-power core life.

Work is being directed towards prolonging the core lifetime of all these reactors, but this development is limited by the metallurgical endurance of the fuel. During its residence in a reactor, a fuel element becomes damaged by corrosion, fast neutrons, fission product accumulation, thermal cycling, steady thermal stresses, and so on. Metallic fuels are limited mainly by fission product swelling; ceramic fuels by swelling and thermal shock.

It is believed that the S5W core is based on zircaloy clad, uranium-zirconium alloy fuel, incorporating 93 per cent enriched uranium. The burn-up capability of this material is of the order of one per cent (10,000 MW day/ton). Improvement on this performance may be possible after further development, but at least double this burn-up is already considered a reasonable target for ceramic fuel elements (say stainless steel clad uranium dioxide) in land based nuclear power stations. "Cermet" fuels, containing ceramic fuel particles dispersed in a non-fissile metallic matrix, could further increase this by a large factor.

There are practical problems associated with the use of either of these latter fuel materials in marine reactors, but the kind of development which might be anticipated in future core design is clear. Some advanced fuel materials might possibly be used in fabricating replacement cores for existing reactor plant. An increase of at least 100 per cent has already been obtained in the range of the "Nautilus" since her first core was installed. The ultimate aim is a reactor core with the same lifetime as the ship it powers.

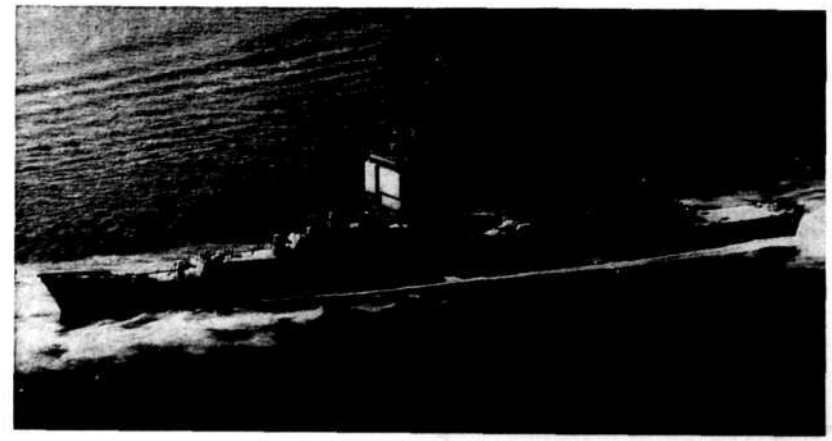
Other developments in marine reactor technology which are currently in progress are:

(a) The D1W project (Westinghouse) aimed at producing a 60,000 s.h.p. system with a single reactor the same size as two D2G's. This could be used to power ships smaller than 8,000 tons, which appears to be the present lower practical limit. Four such units could be used to propel an aircraft carrier of the size of "Enterprise". The U.S. Navy and the U.S.A.E.C. claim that a four reactor carrier propulsion system, with a seven year core life, is now available.

(b) The S5G project (General Electric) aimed at producing a submarine reactor with natural circulation cooling. This would reduce complexity and cost, and increase reliability.

(c) The Dounreay submarine prototype (Rolls-Royce) aimed at producing an independent British design. A feature of this plant is the use of low alloy steel, instead of stainless, in the coolant circuits. This would reduce cost and remove much of the danger of chloride corrosion to which stainless steel is particularly prone.

Any advanced industrial nation could probably develop a



nuclear propulsion plant for itself. However, the cost of such work (around a billion dollars to date in the U.S.) would be extremely high.

The Need for Nuclear Propulsion of Naval Vessels

The overriding advantages of nuclear propulsion for submarines have been amply demonstrated by American experience, even for minor tactical missions. It is reported that the first nuclear surface vessels have also proved "very much superior" to conventional vessels in all operational circumstances. This factor does not yet appear to be fully acknowledged by the U.S. Department of Defence, in view of their decision to construct an aircraft carrier with conventional propulsion.

As a result of this attitude, the Joint Committee on Atomic Energy (J.C.A.E.) of the U.S. Congress met to consider the question and the future of nuclear power for the Navy. During these hearings, naval officers who had commanded nuclear warships in normal peacetime operations and during the Cuban crisis testified to their superiority over conventional vessels. Many advantages of nuclear propulsion were cited, including:

(a) Virtually unlimited endurance at full speed, which also results in (i) tactical flexibility, (ii) improved operation in bad weather, (iii) reduced vulnerability to submarine and missile attack, and (iv) independence from fuel supplies.

(b) Ability to act with complete independence under threat or emergency.

(c) Increased space available (50 per cent in the case of CVA-67) to carry fuel for aircraft and conventional escorts, ammunition, etc., and hence further reduction in dependence upon logistic support.

(d) Reduced trimming problems connected with fuel use.

(e) Quick start-up and load change capability of the power plant, resulting in greater manoeuvrability and faster response.

(f) Ability to seal the ship against radio-active fall-out and chemical and biological warfare, as a result of the absence of air intakes for boilers.

(g) Absence of corrosive stack gases and exhaust turbulence (particularly important in the case of aircraft carriers).

(h) Increased electrical power available for auxiliary equipment.

After considering evidence from all informed sources, the J.C.A.E. concluded that: "It is an indisputable, demonstrated fact that nuclear propulsion increases the combat effectiveness of our surface warships . . . It is fundamentally illogical and wasteful to fit our new first line warships with powerplants that are, perhaps, already obsolete . . . It is apparent that the increased cost of nuclear power is not significant in relation to its demonstrated military advantages . . . the decision announced by the Secretary of Defence on October 25, 1963, to install conventional propulsion in the new aircraft carrier CVA-67 should be set aside and plans made to install nuclear propulsion in this ship . . ."

The J.C.A.E. in its report, made it clear that it did not address itself to the question of whether aircraft carriers or any other types of naval ships should or should not be built. However, it was the belief of the Committee that, if warships are built of the type for which nuclear powerplants have been developed, they should be propelled by nuclear power.

An examination of the proceedings of the J.C.A.E. hearings reveals no reason for disagreeing with its conclusions. That disagreement did exist previously is evidenced by the necessity for the hearings, and the decision to build CVA-67 as a conventional carrier has since been upheld. It is to be expected that doubts will be dispelled eventually, but in the meantime, billions of dollars may be spent upon ships equipped with conventional power, which are expected to last for 25 years.

The U.S. Navy would like to adopt 100% nuclear power for all surface vessels over 8,000 tons, as well as for submarines, and seems likely to receive Congressional support for this. Its plans include the construction, by 1980, of from five to eleven new nuclear propelled task groups, each consisting of one aircraft carrier, one frigate and three or four destroyers. This would result in an eventual total of up to 73 nuclear surface ships.

It might be argued that many of the reasons making the adoption of nuclear propulsion virtually imperative for the U.S. Navy are not applicable to other countries. In particular:

(a) The U.S. Administration is in a position, probably enjoyed by no other government, to devote virtually unlimited funds to any defence project which it considers necessary to maintain the freedom of the nation.

(b) The U.S. have taken upon themselves a worldwide strategic military role which is not incumbent upon any other nation.

(c) In an extreme crisis requiring the best armaments, any ally of the U.S. can probably count upon the support of the U.S. forces.

Against these arguments, it must be remembered that nuclear warships are superior to conventional for **any** purpose. In attempting to evaluate this increased effectiveness numerically, the U.S. Navy found that it considerably exceeded the proportionate increase in overall cost.

Costs and Effectiveness

The initial capital cost of any nuclear powered vessel is appreciably more than its conventional equivalent, although the gap closes with development and mass production. The total cost of the 3,180 ton "Nautilus" excluding development, was $90 million. The cost of 3,747 ton submarines now being commissioned in the U.S. is $49 million, and of 7,000 ton submarines (including the Polaris missile system) $109.5 million. The cost of the S5W reactors has been reduced from $18 million (for "Skipjack") to £5.4 million.

The costs of the three American nuclear surface warships which were the first of their kind ever built, compared with the costs of their conventional equivalents, are shown in the table below.

Comparisons of this nature are complicated by the fact that nuclear powered ship designs generally seem to be bigger than their conventional counterparts and all prototype nuclear ships so far have carried novel and highly expensive electronic equipment which has nothing whatever to do with the nature of the propulsion system.

Nuclear power also possesses the potential advantage of providing increased speed without any significant loss in range. No appreciable use of this characteristic appears to have been made in the design of surface ships as yet.

Any detailed assessment of the additional cost attributable to nuclear propulsion would have to be made on the basis of a spe-

	"Enterprise"	"Long Beach"	"Bainbridge"
Displacement	86,500 tons	14,200 tons	7,600 tons
Total design and construction cost excluding nuclear fuel	$396,564,000	$316,350,000	$153,395,000
Cost of first fuel loading	$62,600,000	$16,500,000	$10,200,000
Estimated cost of conventional ship with identical weapons and electronics, but without fuel	$277,264,000	$244,150,000	$84,795,000

cific design. For example, the estimated cost of the nuclear carrier proposed in place of the conventional CVA-67 was $440 million, compared with $277 million for the conventional vessel. The difference of $163 million was made up as follows:

Increased size	$13 million
Additional squadron of aircraft	37
First nuclear core (fuel, control rods, etc.)	32
Reactor installation, etc.	81
	$163 million

The last item includes the improvements in all-round quality made necessary by the increased performance and reliability demanded of a nuclear ship. Some saving would therefore result, over the life of the vessel, from reductions in the cost of maintenance and time out of service.

Because of these difficulties in making comparisons, the U.S. Navy was asked to prepare a quantitative comparison of the effectiveness of the proposed conventional and nuclear carriers referred to above. By assigning numerical values where possible to the various performance aspects of existing and conceptual carriers, such as vulnerability to attack, response time, staying power and so forth, it was deduced that the nuclear CVAN-67 would be 21 per cent more effective than the conventional CVA-67.

In the case of submarines, the overwhelming superiority of nuclear propulsion would make a realistic comparison upon these lines virtually impossible. Although the difference in concept between nuclear and conventional surface ships is less obvious, it was readily admitted that this estimated increase in effectiveness was highly conservative.

As the J.C.A.E. pointed out, this analysis is "based on the assumption that, in wartime, logistic support forces will be able to operate unhampered and without losses as they do in peacetime. The defect in this analysis is immediately apparent."

Even on this basis, however, the additional capital cost attributable to the reactor installation (about 25 per cent leaving out the fuel) is very nearly justified.

However, a further factor to be taken into consideration is that the additional cost of nuclear propulsion becomes small when compared with the total costs of owning and operating a major warship. As recorded in the J.C.A.E.'s report "the total lifetime cost of the nuclear carrier with its aircraft is estimated to be only about three per cent more than the lifetime cost of the conventional carrier with its aircraft." The U.S. Department of Defence, which was arguing against the introduction of nuclear power in this instance, itself would not put this higher than 10 per cent, and these figures take no account of the worldwide oil distribution system required for conventional ships.

The above costs all refer to work executed in the U.S. for the U.S. Navy. Equivalent costs from U.K. sources might well be substantially different.

Conclusions

As a result of American experience, it can definitely be concluded that the adoption of nuclear propulsion leads to the most effective military vessels.

It also appears that nuclear propulsion gives the best value for money when applied to larger warships. All doubts on this point have now been dispelled in the case of submarines, but there is still some dissention regarding surface vessels. The basis for such reservations is not altogether clear but appears to be connected mainly with the high initial cost of nuclear ships. However, the total cost of nuclear propulsion spread over the life of such a ship would not be very great compared with the total cost of the ship.

There may also be some residual doubts as to whether the future of military shipping does, in fact, lie with nuclear power. However, it is difficult to see how any semblance of superiority could be maintained without the best ships, and it is becoming increasingly clear that the transition to nuclear propulsion is as inevitable as from sail to steam and from coal to oil fuel in the past.

It is now acknowledged that arguments against the introduction of nuclear powered submarines 10 to 15 years ago, ignored the fact that they are not merely better than conventional submarines but can perform functions which conventional submarines can never perform. Arguments against nuclear propulsion for surface vessels appear to have the same false basis. There are many subsidiary advantages to nuclear propulsion, but its essential feature is virtually unlimited full-speed endurance.

The benefit of this independence is even more marked for surface vessels than for submarines because of their higher conventional speeds. However, nuclear submarines have the additional advantage that the severe limitation on submerged endurance imposed by conventional power plant is removed completely.

The standard reactor for submarine propulsion in the U.S. Navy is the Westinghouse designed pressurised water reactor, S5W. A reactor of similar principle is being developed by Rolls-Royce for the Royal Navy. The adoption of one of these two designs is virtually essential for any such craft built in the near future. Similar reactors have been developed in the U.S. for application to surface vessels.

This paper is not concerned with naval strategy or with the number and type of naval vessels required in any circumstances. However, it concludes that non-nuclear military vessels are greatly inferior to nuclear in performance and effectiveness. In the case of submarines and major warships, the adoption of conventional propulsion for new vessels could be false economy for any country wishing to make a real contribution to sea power. Since developments in this field are taking place rapidly in relation to the life of ships, it is important to recognise this point at an early stage now that nuclear propulsion is a reality.

The author would like to thank the U.S.A.E.C. for permission to publish the illustrations.

"DUCHESS" READY SOON

H.M.A.S. DUCHESS, the Daring Class destroyer on loan to the Royal Australian Navy from the Royal Navy, will complete her refit at the Williamstown Naval Dockyard in Melbourne next month.

The destroyer will go to sea for the first time as an Australian ship at the end of September.

DUCHESS was due for a scheduled refit when she arrived in Australia from Singapore in April. During the refit, some improvements have been made in crew habitability, including air conditioning in the mess decks.

After a preliminary "work-up" in Victorian waters, DUCHESS will undertake a comprehensive exercise period off the coast of New South Wales. She is due to sail for service with the British Commonwealth Strategic Reserve in South East Asian waters towards the end of the year.

DUCHESS, with a ship's company of 327 officers and men, is under the command of Commander I. M. Burnside, of Canberra. The destroyer has been made available as a temporary replacement for H.M.A.S. VOYAGER. Two new Type 12 frigates are to be built as the permanent replacement.

Book Review:

CONVOY ESCORT COMMANDER, by Vice Admiral Sir Peter Gretton.

Publisher: Cassell & Co. Ltd., London (Price in Aust.: 44/9, post and packing 1/9).

Our copy from: Technical Book & Magazine Co. Pty. Ltd., 295-299 Swanston Street, Melbourne.

The writer presents the record of his command of a British escort group in the Atlantic during World War II, with admirable modesty and an engaging sense of humour. Curiously, this light touch seems to highlight the tension and the horror of some of the decisions that had to be made, rather than detract from it. His accounts of the early convoys, when the merchantmen's signalling was not so good, and the routine of convoy work was new to everyone, when ships strayed off and had to be chased up, rather like wandering sheep, is hair-raising, and really funny.

This is a very readable book, and the author emerges as an attractive character, as well as a strong and dedicated commander. The photographs are interesting, but fairly run of the mill, except for one impressive shot opposite page 160, North Atlantic convoy weather. Vice Admiral Sir Peter Gretton, then a mere First Lieutenant, takes this sort of weather in his stride, as he does disasters, such as damaged steering. When this happened in April 1940 in Narvik harbour, his ship having been hit several times, it became increasingly evident that all was not well below, "and despite the fact that the telegraphs had been put to full speed astern, we were firmly heading for the shore at the south side of the harbour."

However, as the book progresses, so also does the seriousness of the war, and the author writes with feeling and sensitivity of the men lost overboard in the icy bleakness of Scapa Flow. The Commander, alone and quickly, must make the dreadful decision, again and again, as to whether to stand to in order to pick up survivors, or whether to keep station in protect the convoy, and let men drown in the freezing seas. When Doenitz withdrew his U-Boats, with the exception of a few, from the North Atlantic at the end of May, 1943, life became dull for the convoy escort, but not for long. In the autumn of that year, new enemy weapons, and an escort supporting role, as against acting as close escort, made the convoy work even more lively.

The chapter, "Thoughts in Retrospect", is enlightening, with some constructive criticism, but the author points out that the fog and ice cause as much hazard in the North Atlantic winter, as a resourceful and determined enemy.

ANARE RELIEF VOYAGE TO MACQUARIE ISLAND

Dr. P. G. Law, C.B.E., Director of the Antarctic Division of the Dept. of External Affairs, has written to say he has selected the two Sea Cadets to accompany the ANARE relief voyage to Macquarie Island next December. It was also pleasing to hear from him that, because the standard of all the Cadets nominated was extremely high, he found great difficulty making his final decision.

The Cadets successful were Thomas Crofton Brown of the Western Australian Division and Bruce Eddes of the New South Wales Division. Paul Howard Martin of the South Australian Division has been named as a Reserve in case either of the two chosen find that, for some reason, they have to withdraw between now and December.

Comment was made that Cadet McConnell of Queensland was too young but that he should have a good chance another time.

Later in the year, the Antarctic Division will communicate with Cadets Brown and Eddes advising them details of the arrangements for their departure and the equipment they will need.

The Federal Executive would like to extend their congratulations to the two Cadets selected and wish them a successful and happy voyage. We would remind those who were not fortunate enough to be chosen of the Director's words on the standard of those who presented themselves for interview and we wish them every success in the future.

ALMOST A VISITOR

H.M.S. HAMPSHIRE

The Anglo Saxon Chronicle records that King Alfred ordered an entirely new type of ship to be built. H.M.S. HAMPSHIRE, also designed to meet new concepts of Naval Warfare, has many connections with King Alfred and the inscription on the Alfred Jewel "Aelfred Mec Heht Gewyrcan", which means literally "Alfred had me made", has been adopted as the ship's motto.

H.M.S. HAMPSHIRE, the second of the Royal Navy's new County Class Guided Missile Destroyers, was launched on 16th March, 1961, by her Royal Highness the Princess Margaret at Clydebank. HAMPSHIRE was built by Messrs. John Brown Ltd., and was commissioned for service on 15th March, 1963 in the presence of H.R.H. the Princess Margaret.

Ships of the County Class are well equipped for the many tasks which they may be required to carry out, being fitted with all the latest equipment for the detection of enemy aircraft, submarine and surface ships. A twin Seaslug surface to air guided missile launcher is located on the quarterdeck while Seacat close range surface to air guided missiles are sited on either side of the helicopter hangar.

In addition the ship's Wessex helicopter carries equipment for the detection of submarines, and homing torpedoes with which to attack them.

The ship's propulsion machinery consists of two sets of Steam Turbines and four Gas Turbine units. The latter can be used by themselves in an emergency, without the delay involved in raising steam. Speed is in excess of 30 knots.

Four sets of stabilisers are fitted, to keep the ship steady in rough weather. The ship can be steered automatically.

Vital Statistics: Displacement 6,000 tons, Length 517 feet, Beam 54 feet.

Ship's Company: 36 Officers and 420 ratings.

Accommodation and living conditions are of a very high standard. Extensive use has been made of modern materials and techniques which reduce the cleaning and maintaining effort.

All ratings sleep in bunks, and meals are served in a cafeteria. The ship is air conditioned throughout.

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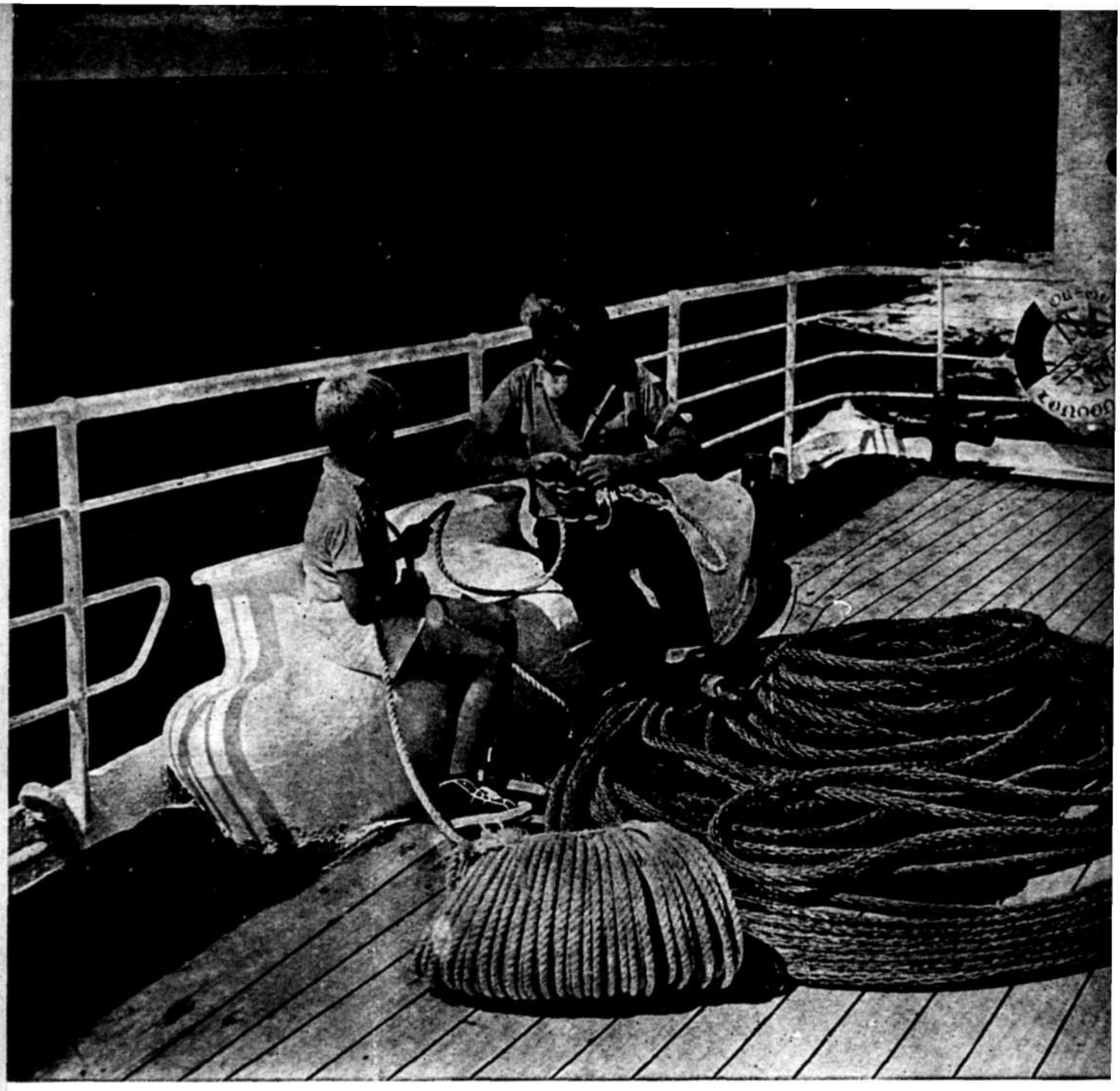

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