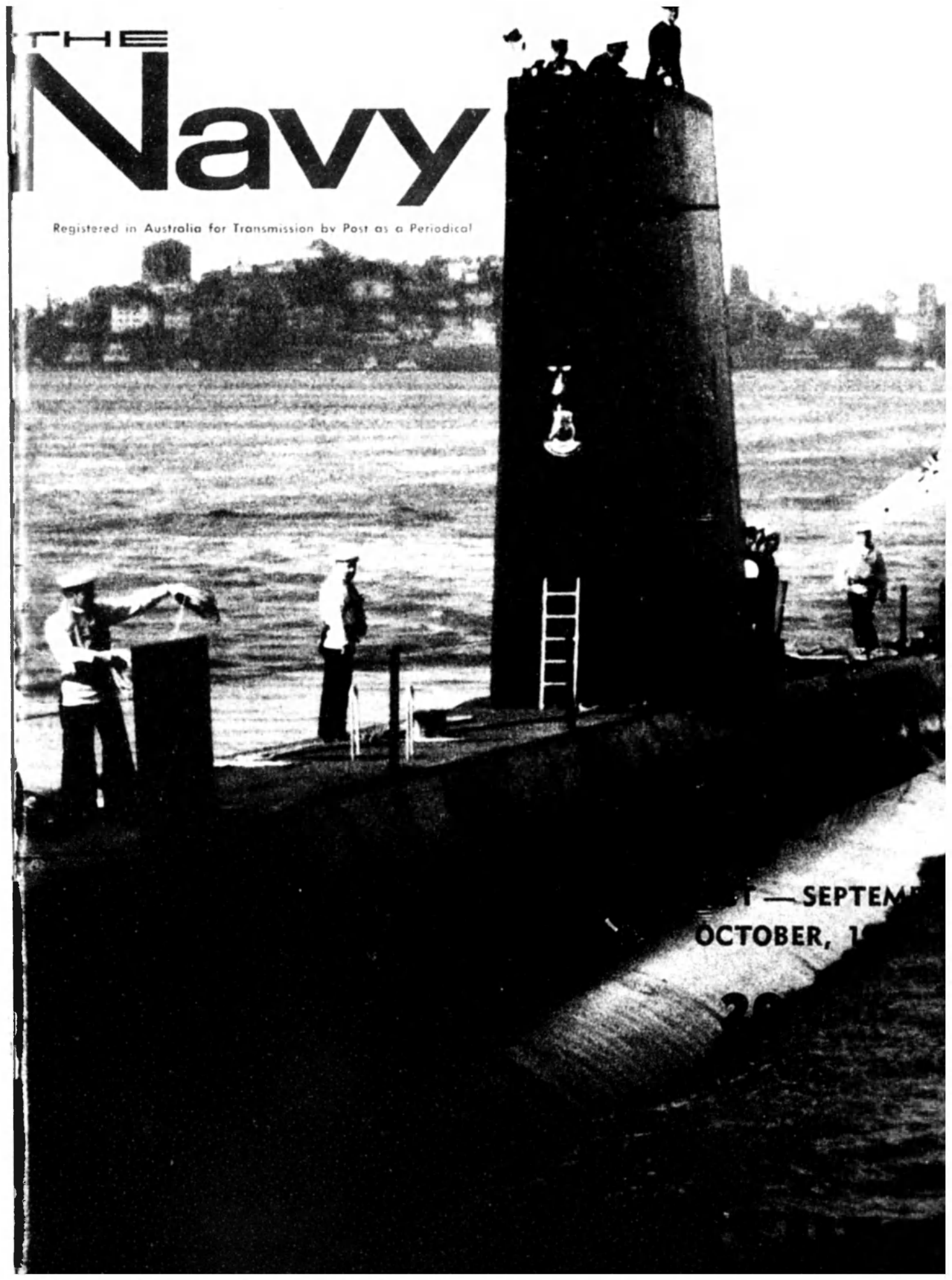


# THE Navy

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— SEPTEMBER  
OCTOBER, 1941

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# THE NAVY

The magazine of the Navy League of Australia  
(Registered in Australia for transmission by post as a Periodical)

Vol. 30

AUGUST-SEPTEMBER-OCTOBER, 1968

No. 3

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The views expressed in articles appearing in this publication are those of the authors concerned. They do not necessarily represent the views of the editor, the Navy League, or official opinions or policy.

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August-September-October, 1968

THE NAVY

Page One



# Scottish Cream

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A Message from the  
First Naval Member and  
Chief of Naval Staff

*Vice-Admiral*

## V.A.T. SMITH

C.B., C.B.E., D.S.C.



I am delighted to have this opportunity to write a few words for "The Navy", especially at this time of Navy Week. Whilst I realise that many readers of "The Navy" appreciate fully the need for a Navy, there may be some who do not and, for the latter, I would like to try and briefly illustrate the need in terms of insurance.

Most responsible people today carry insurance in order to protect themselves and their family or their property against certain risks. The size of the premium depends upon the risk involved and the protection required. If, happily, no claims are made then the premium can be examined, but if many claims are made or the cover is inadequate then the policy holder can be in trouble.

This analogy is readily applicable to the Navy (and I cannot do better than paraphrasing part of the introduction to the Naval Discipline Act) whereon, under the good Providence of God, the wealth, safety and strength of Australia so much depends.

I would ask all who believe in the need, to explain it to others who are less informed. In this manner we can play our part in ensuring the maritime safety of our country.

### OUR COVER

MORE POWER FOR THE NAVY — H.M.A.S. OXLEY ARRIVES

R.A.N. Official Photograph

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*Message from ...*

*The Minister for the Navy*

**The Hon.  
C. R. KELLY**

M.P.



Navy Day, 1968, comes at a particularly important time for the Royal Australian Navy. It sees the programme of shipbuilding, which began in the early sixties, nearing completion.

It was then that the Australian Government decided to buy first two and later three DDG-type guided missile destroyers for the R.A.N. This month, the third, HMAS BRISBANE, will reach Australia to take up duties with the fleet.

Her sister ships, HMAS PERTH and HMAS HOBART, have already shown their fighting prowess in Vietnam, earning high praise from the Americans for accurate gunnery and the general efficiency of the ships.

HMAS HOBART has now had two tours of duty with the U.S. Seventh Fleet and PERTH has just begun her second.

In Sydney this year, Navy Day sees the sixth Type-12 destroyer escort for the R.A.N., HMAS TORRENS, at the fitting out stage at Cockatoo Island dockyard in Sydney, thus almost completing the present building programme for Type-12's.

The second of the four Oberon-class submarines, HMAS OTWAY, has reached Australia from Scotland where the fourth, HMAS ONSLOW, was launched last month.

The flagship of the fleet, HMAS MELBOURNE, will soon compile an extended refit at Garden Island, Sydney. In the past year, she has been re-equipped with Douglas Skyhawk fighter-bombers and Tracker anti-submarine aircraft.

With the launching of HMAS BANDOLIER at Maryborough, Queensland, recently, 17 of the 20 patrol boats ordered for the R.A.N. early in 1966 have been delivered. A number of these fine boats are already in service in Australia and Papua-New Guinea waters.

The strength of the R.A.N. continues to grow both in men and ships. In the present financial year, the number of Permanent Naval Forces personnel is expected to increase by more than 1,000 to 17,510.

Over the past year, the Navy has proved itself once again in Vietnam. In the years to come, it will continue to play its most important role of protecting Australia and her allies.



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## "A Great Navy In Southern Seas"

### VICTORIA'S COLONIAL FLEET INSPIRED INHABITANTS

By JACK MILLAR

Puny by todays standards — some may even call them cockleshells — the ships of Victoria's colonial Navy, with regal and well-known names as Nelson, Victoria, Albert, Countess of Hopetown, Childers and Lonsdale, were once the pride and joy of all Victorians.

Whatever the shortcomings of Governor Sir Charles Hotham, history credits him with initiating the Victorian Colonial Navy. Fear of the Russians, who had a large squadron roaming the Pacific in the 1850's, brought this about.

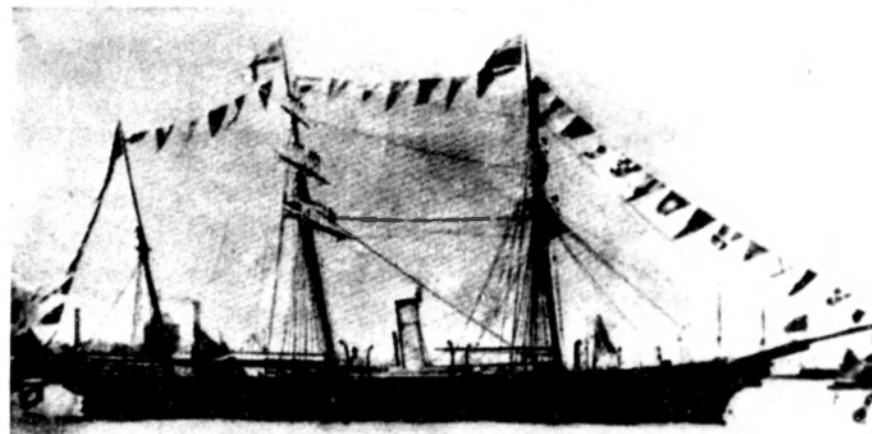
Worried by the lack of a man-of-war in Port Phillip, Victoria

saw little of the British squadron based on Sydney. Hotham, a naval captain in his own right, sent Commander W. Lockyer, Melbourne's Chief Harbour Master and a former Royal Navy officer, to England in 1855, with instructions to get the best war vessel he could with the £33,000 provided by the Legisla-

tive Council. Result was the sloop-of-war VICTORIA, the final cost being reported at £38,000.

Considerable interest was aroused in England, the "London Times" saying, "This event marks the foundation of a great navy in Southern Seas."

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H.M.V.S. "Victoria."

Valiant little VICTORIA — flag bedecked on the occasion of the visit of H.R.H. The Duke of Edinburgh, to Melbourne in 1867/8

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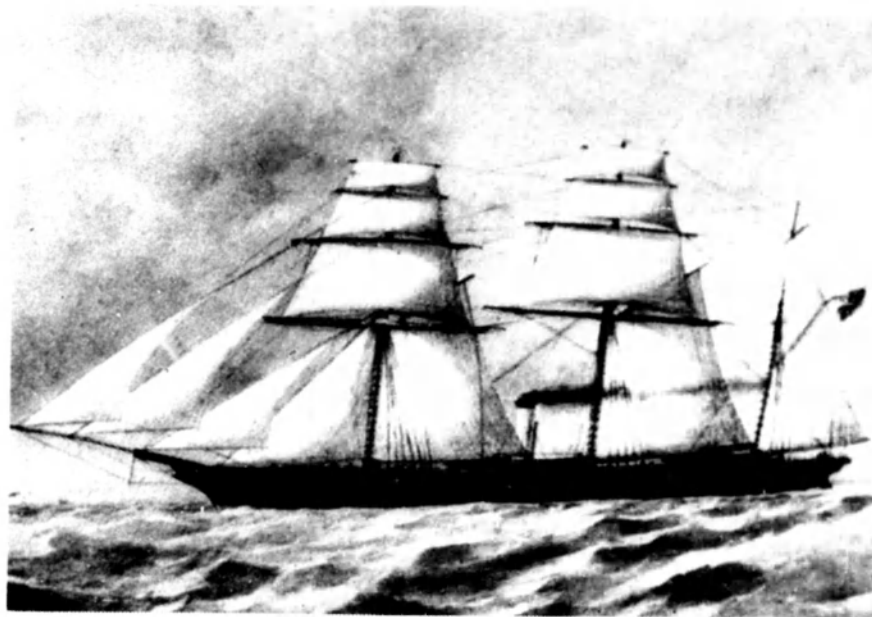


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An artists impression of H.M.V.S. VICTORIA entering Port Phillip Heads

Young and Co., of Limehouse, claimed her as the "first vessel of war built to the order of a British Colony."

A speedy vessel — 13 knots — for the times, VICTORIA was a 150 h.p. twin screw ship of 580 tons. Fighting power consisted of seven 32-pounder guns, one of which was mounted on a swivel. Her complement consisted of eight officers and 150 men, recruited from former Royal Navy and Merchant Service personnel.

H.M.V.S. VICTORIA arrived at Melbourne on May 31, 1856, under the command of Captain W. Norman. Melbourne gave this pioneer ship a tumultuous welcome. Her very presence engendered security. The occasion was also an historic milestone — being the first recognition of a British colony of its personal responsibility for its own naval defence.

Victoria's first 'war-like' act took

place early in 1857, following the murder by convicts at the Williamstown quarries of John Price, Victoria's Inspector-General of Prisons. No time was lost in returning the prisoners to their quarters, four penal hulks anchored a short distance off-shore. Two of these, the PRESIDENT and SUCCESS, housed the hard-core and unrepentant criminals. For days pandemonium reigned. Locked in their cells, prisoners hammered on doors, yelling abuse at prison officials.

The authorities, fearing a mass break-out and somewhat in panic, ordered the VICTORIA to range her guns at the offending hulks and sink them should the prisoners gain control by force. Fortunately, this was not necessary.

A real war came VICTORIA's way in April, 1860, when the gallant little ship was loaned to the Crown to assist in the fighting against the Maoris in the Taranaki region of New Zealand. The Im-

perial Government agreed to pay all expenses.

After loading 100,000 rounds of ball cartridges, VICTORIA sailed for Hobart Town, where 120 soldiers of the 90th Regiment were embarked. Then followed a six-day voyage to New Plymouth, at which port she arrived on April 30, her troops helping to swell those from other famous regiments already there. She was described as a "smart little craft with the appearance of a yacht."

Frustration, more than fighting, was the lot of her sailors, referred to as a "cheerful and lively lot of lads, mostly Australians recruited in Melbourne". Quite a deal of their fighting took place in bar-room frolics with the soldiers. However, some of their number helped augment the garrison at Fort Niger, while fifty were stationed at Mt. Eliot. Some skirmishing took place and one sailor was taken to hospital with two bullet holes through a leg.

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Captain William Norman — VICTORIA'S able Commander throughout most of her career. Capt. Norman died in England while supervising the building of the Monitor CERBERUS for the Victorian Colonial Navy.

It was at sea where VICTORIA performed her most valuable duties, running troops and guns to where the fighting was thickest. With other warships she maintained a tight blockade along the coast.

On one occasion her guns did boom in anger, following a scout's report that a renegade gun-running craft was supplying the Maoris in the Mokau River. By the time the VICTORIA and other warships arrived a westerly wind prevented the sending of boats to investigate. Huge breakers battered the entrance. Quickly the guns were run out and the range estimated on

the spot considered most likely as to where the gun runner was skulking. Shot after shot ripped across the waters into the likely area, but despite an eager lookout aloft, no sign of the mysterious vessel could be seen.

At the end of 1860 VICTORIA went to Wellington for a machinery overhaul, returning to the war zone with troops of the 65th regiment.

After about a year in New Zealand the situation had improved to the extent that Victoria was released to return to Australian waters.

While she was away, in her home port of Melbourne, an expedition set out to blaze a trail across the vast interior of Australia from south to north. Robert Burke and William Wills were the principals, their party departing in a blaze of glory before a cheering crowd of 10,000 people on August 20, 1860.

The Gulf of Carpentaria was reached on February 11, 1861, but tragedy struck on the return journey. Weakened by scurvy and short rations, Burke, Wills and one expedition member starved and perished. Another, on the brink of death, was rescued and cared for by friendly aboriginals.

Back in Melbourne great consternation was being expressed at the non-arrival of the now overdue Burke and Wills. Relief expeditions were sent overland and the Government made the VICTORIA available for another heroic mission to convey a search party to the Albert River, on the shores of the Gulf of Carpentaria, and work south from there.

Still under the command of Captain Norman, the VICTORIA sailed from Melbourne on August 4, 1861, accompanied by the ship FIREFLY.

At Brisbane the FIREFLY loaded stores and horses, and embarked a relief party under noted Queensland explorer William Landsborough.

Trouble struck in the Barrier Reef — in the shape of a cyclone — and the two ships lost touch. In the narrow confines FIREFLY was swept ashore on a coral island. The crew, relief party and horses managed to scramble ashore safely. Here the crew mutinied and broached the rum barrels.

Two days later Captain Norman came upon the sorry scene in the VICTORIA. Firm handling soon restored order. The mutiny was put down by the simple expedient of seizing the spirit casks and pouring their contents into the sea. By expert seamanship the FIREFLY was refloated and repaired. The horses were re-embarked and Landsborough's party transferred to the VICTORIA, which then towed the FIREFLY the rest of the way, to become a depot ship some miles up the Albert River.

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The man responsible for obtaining the "Victoria" — Captain Sir Charles Hotham, K.C.B., R.N., Governor of Victoria, June 1854 — December 1855

While the explorers were busy searching for Burke and Wills, Captain Norman, from a depot on Sweet's Island, carried out valuable exploration work in the Gulf. His name is perpetuated in the Norman River and the town of Normanton.

Empty handed, Captain Norman finally departed the Gulf on February 12, 1862.

The final scene in the tragic drama took place in Melbourne on January 21, 1863, with the State funeral of the remains of Burke and Wills. Following the principal mourners was Captain Norman, leading an armed party of sailors from HMVS VICTORIA.

The valiant little ship's part in history was not yet over. On April 15, 1864, the auxiliary steamship NORFOLK arrived in the Port of Melbourne from England. Packed in a huge ice box on deck were about 100,000 salmon and 3,000 trout ova. Previous attempts to introduce ova in 1860 and 1862 failed when the ice melted. It was imperative this consignment be taken to Hobart Town as quickly as possible, then to the Salmon Ponds at the River Plenty, a tributary of the Derwent, about 30 miles away, where special hatcheries were waiting to receive them.

Again the Victorian Government came to the rescue, making the VICTORIA available for this important job. In a flurry of steam she departed on April 18, arriving at Hobart Town on the 20th. The last few miles to the Salmon Ponds were undertaken by pack-horse.

It was not a moment too soon. On May 4th the first brown trout eggs were hatched in the Southern Hemisphere, while the following day the first Atlantic salmon made their appearance.

From such small beginnings the rivers and waterways of Australia and New Zealand were stocked with these succulent fish.

With all the pomp and ceremony the small ship could muster, VICTORIA played an honoured role during the visit of His Royal Highness, the Duke of Edinburgh to the colony in November, 1867, as Captain of HMS GALATEA. As the great day — the 23rd — dawned,

Melbournians were agog with excitement. All manner of small craft crowded the bay.

Waiting at the Heads to greet the Royal visitor was His Excellency the Governor, Sir T. B. Manners-Sutton, aboard VICTORIA.

Escorted up the bay by the VICTORIA, GALATEA dropped anchor off Williamstown to the cheers of the multitude.

From the batteries at Williams-town and Sandridge and from the VICTORIA, her yards manned by sailors, royal salutes boomed out.

For the great occasion, Melbourne's population of some 130,000 had been swelled by the addition of another 100,000 from the whole country around. Departure day — January 4, 1868 — saw the Duke step into the VICTORIA's barge for the return to his ship. He was accompanied by the Governor and Captain Norman.



LORD NELSON — The first Royal Navy ship named after the famous Admiral later became a training ship on Port Phillip for the Victorian Colonial Navy.

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As the GALATEA got under way the shore batteries and the VICTORIA again fired a royal salute. Age was now catching up on the VICTORIA, and with another fighting ship on order in England, her value as a means of naval defence lost value.

But she was far from done for. Down-graded, she was used to service Victorian lighthouses. When the clipper ship NETHERBY was wrecked on King Island on July 14, 1866 — luckily without loss of life — the VICTORIA and another Government steamer, the PHAROS, were used to bring the 452 emigrants and crew to Melbourne. Two trips by each ship was necessary. One of the last important jobs undertaken by the VICTORIA was in 1875, following the large number of wrecks on King Island, when she was commissioned to survey the island waters and those of Bass Strait. While so engaged she performed another heroic rescue, when the crew of the sinking ship TIENTSIN were taken aboard off the north-east coast of Tasmania. The TIENTSIN, severely damaged in a storm, was low in the water as VICTORIA attempted the tow to Hobart on December 2, 1875. Several hours later she sank.

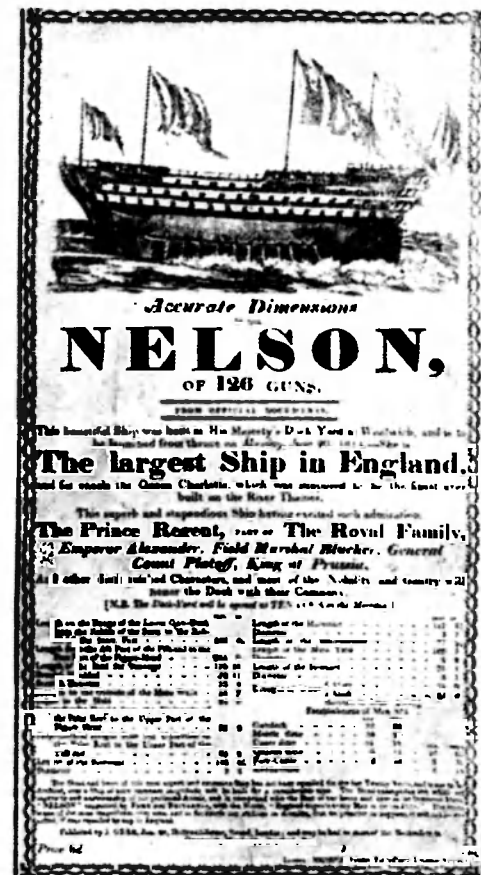
Valiant little VICTORIA disappeared from the record books in the 1880's. By now Victorians had other ships on which to lavish their praise.

### THE NELSON AND CERBERUS

Realising a modern and more powerful ship was needed for Victoria's defence, the Colonial Government sent its Treasurer, Sir George Verdon, to consult with the Imperial Government in England in 1866. He applied to Her Majesty's Government for an iron-plated ship, together with a wooden vessel suitable for naval training. His mission was successful and the NELSON and CERBERUS obtained for Melbourne. The Imperial Government provided £100,000 of the cost and Victoria contributed £25,000.

Under Commander C. B. Payne, NELSON sailed for Australia in October, 1867, finally arriving at Williamstown after a protracted voyage.

Laid down in 1805 in honour of Lord Nelson, and launched in 1814



A 6d handbill describing the salient features for the launching of H.M.S. NELSON — the first warship built in England after the battle of Trafalgar. NELSON later became a unit of the Victorian Colonial Navy.

on the Thames, NELSON was by far the biggest ship built to that time. With a tonnage of 2617, she was one of England's old wooden walls, carrying the amazing armament of 126 guns.

The Press described her as "super and stupendous, of immense magnitude and exciting much admiration, with a figurehead of our brave and ever to be lamented hero Nelson".

Unfortunately steam was soon in vogue and the NELSON lay for

the best part idle in a dockyard port until presented to the Victorian Government.

For the voyage to Melbourne NELSON was fitted with steaming machinery.

Until the turn of the century NELSON carried out her duties as training ship for the Victorian Navy ably and well, presenting a fine sight to early Victorians as she moved majestically about the bay. In 1870 NELSON had the honour of hoisting the new Victorian flag

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Huge crowds attended the gala launching of H.M.S. NELSON. This is the scene at Woolwich, on the River Thames, in 1814.

— the first in which the Southern Cross officially appeared.

As a coal hulk the historic old ship was finally broken up at Hobart in 1926 — 114 years after her commissioning in England.

CERBERUS was a different proposition, and can only be described as a monster, as in fact she was, being the first of that class of turret ship.

Armament consisted of four 18-ton muzzle loading guns mounted in two turrets. The 3,340-ton monitor ship was designed for a maximum speed of nine knots but seldom attained it.

Captain Norman of the VICTORIA was sent to England to supervise building, but died before completion. Ships of the monster class — which included CERBERUS, CYCLOPS, GORGON, HERCULE and HYDRA — were all named after dreaded figures in Greek mythology. To the ancient Greeks, Cerberus was the three-headed dog with a serpent's tail which guarded the entrance to Hades. Under Lieut. Panier, and with a nondescript crew of merchant seamen, CERBERUS sailed from England on October 29, 1870.

The voyage out of 153 days was long, slow and unpleasant. Designed mainly for harbour defence, CERBERUS was anything but a good sea boat. Storms in the Bay of Biscay caused many crew de-

sertions at succeeding ports of call and much time was lost in getting replacements.

Appearance of the CERBERUS in Port Phillip, with her big guns dominating, radiated confidence to Melbourneans until early this century, but some critics took unkindly to the new monster, describing her as an "elongated gasometer with masts".

Her career, however, was mainly an inactive one, with infrequent

sortees down the bay for target practice.

#### VICTORIA, ALBERT AND CHILDERS GO OFF TO WAR

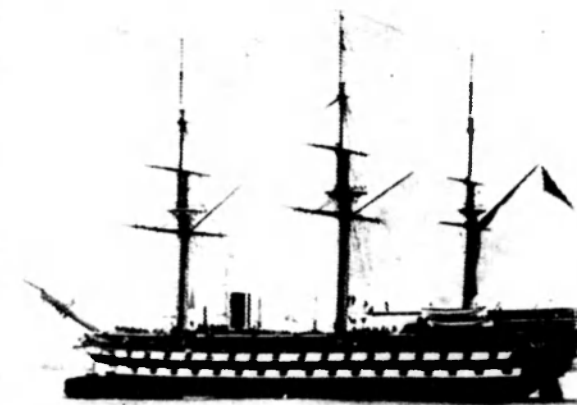
The year 1884 saw three more ships added to the Victorian Navy, the gunboats VICTORIA (530 tons) and ALBERT (350 tons), and the torpedo boat CHILDERS.

The squadron, under Captain A. Brodrick Thomas in VICTORIA, sailed from Portsmouth on February 14. CHILDERS, with a speed of 19 knots, was sent on ahead.

Before sailing the two gunboats were honoured by royalty, when Her Majesty the Queen presented her portrait to VICTORIA, and His Royal Highness the Prince of Wales presented his to ALBERT.

Malta was reached safely on February 26. Off the Portuguese coast CHILDERS ran out of coal, receiving emergency supplies from the steamer PATHAN. For this assistance the owners put in a claim against the Victorian Government.

At this time the Sudan War was raging in all its intensity, in which Australian soldiers fought shoulder to shoulder with their British brothers. Anxious to help the motherland, Victoria offered the three ships then on passage to the Imperial Government. This was gratefully accepted.



H.M.V.S. NELSON as a training ship for the Victorian Colonial Navy — soon here in Hobson's Bay, Port Phillip. It was from the NELSON'S dock that Victoria's own flag, the first to officially incorporate the Southern Cross, was flown. NELSON'S top deck was removed before sailing from England.



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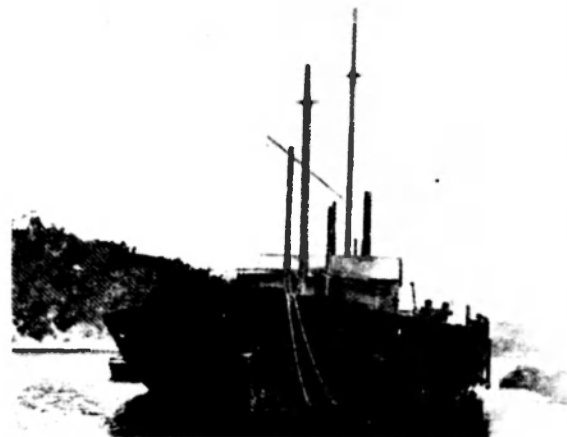
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The NELSON as a lowly coal hulk on the River Derwent, Hobart, in 1921.

A telegram from the Victorian Agent-General in London to Captain Thomas at Malta instructed him to report as soon as possible to Rear-Admiral William Hewett at the Red Sea port of Suakin.

Again CHILDERS was sent on ahead, with orders to coal at Suda Bay in the Island of Crete. Thus the wee ship blazed a trail for later units of the Royal Australian Navy, who saw much of Suda Bay during the evacuation of Greece and battle of Crete during the grim days of World War II. CHILDERS arrived at Suakin on March 16, followed three days later by the two gunboats. Alas for the sailors — victories of the Imperial troops ashore had gone so well that no use could be found for their services, and sadder but wiser, the squadron departed for Melbourne on the 22nd. The Commander-in-Chief, on behalf of the Admiralty, officially thanked the Victorian Government for its generous offer.

For the Indian Ocean crossing, CHILDERS was towed most of the way by VICTORIA. Hot, humid tropical weather while under steam made conditions almost unbearable, but was borne with great fortitude.

After a voyage of 135 days and 13,323 miles, during which VICTORIA's engines turned 10,415,380 revolutions, the ships arrived at Melbourne on June 25, 1884.

VICTORIA and ALBERT mounted two large guns, an 8-inch forward, and 6-inch aft. Their career was much the same as CER-

BERUS's, with occasional forays into Bass Strait for gunnery shoots. In this respect their aim was most erratic in all but the calmest sea. The slightest swell affected the fall of shell to a great degree. On an even keel gun ranges were restricted to four miles, but this could be increased by listing the ships.

Naval defence leaned heavily towards torpedo-boats in the 1880's, and the Victorian Government quickly ordered two more to follow CHILDERS. These were the second class boats LONSDALE and NEPEAN. Years later the much larger COUNTESS OF HOPE-TOUN joined the fleet to make the Victorian Navy — in ships, fire-power and men — by far the largest of all the Australian Colonies, and a worthy fore-runner of the R.A.N.

Of the other colonies, Queensland possessed two torpedo boats, New South Wales a training ship and two torpedo boats, South Australia one gunboat and one torpedo boat, and Tasmania one torpedo boat.

The South Australian gunboat PROTECTOR also went to war. During the Boxer uprising in China in 1900 her services were offered



The end of a historic ship --- NELSON being ripped apart on the River Derwent, Hobart, in 1926.

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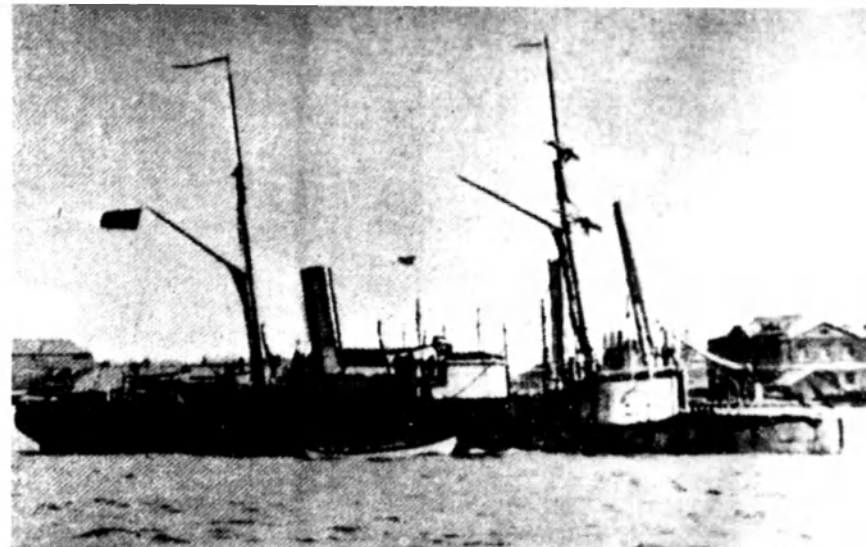
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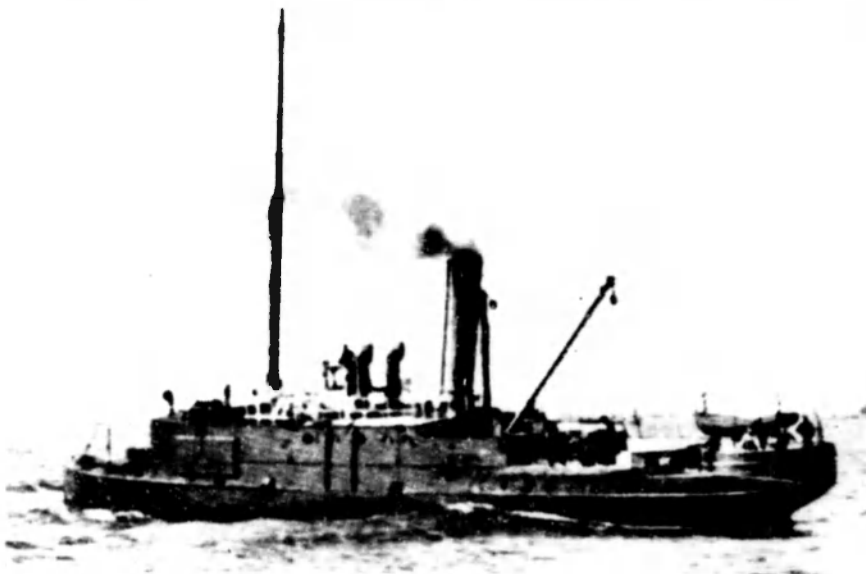
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The Gunboat VICTORIA — Second ship to bear the name in Victoria's Colonial Navy — at anchor off Sandridge (now Port Melbourne).



The Gunboat H.M.V.S. ALBERT — consort to Victoria — steaming down Port Phillip Bay. Aim from the guns of these small ships was most erratic in all but the calmest sea.

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The figurehead of the old NELSON — a bust of Britain's Naval hero, Lord Nelson — survives today at H.M.A.S. Rushcutter, a Naval Depot on Sydney Harbour. Here the proud relic is flanked by WRANS of a modern Australian Navy.

by her Government and accepted by the Admiralty. However, like the VICTORIA and ALBERT, PROTECTOR arrived too late to fire a shot in anger.

Following the formation of the Commonwealth in 1901 the Federal Government took over the remaining serviceable ships, designating them the Commonwealth Naval Forces.

Fewer still remained to be absorbed into the R.A.N. on its formation on July 1, 1911.

The gunboats GAYUNDAH from Queensland and PROTECTOR from South Australia, the turret ship CERBERUS and torpedo boat COUNTESS of HOPETOUN were all that could make the grade.

On this historic day the naval depot at Williamstown was com-

missioned as HMAS CERBERUS, to which the old CERBERUS was attached.

When the training establishment was transferred to Flinders Naval Depot at Westernport on April 1, 1921 the old CERBERUS was removed from the Navy List, being finally sunk as a breakwater at Black Rock in 1926.

Her name, however, was given to Flinders Naval Depot, thus forging a link between the old Victorian Navy and the modern R.A.N. of today.

Many relics of these long-gone ships exist in naval establishments, museums and public places today — proud reminders of the infant Navies of Colonial Australia.

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# Background of the DX/DXG Program

By Rear Admiral THOMAS R. WESCHLER, USN, Programme Co-ordinator, DX/DXG Programme

In 1962, Fleet Admiral Chester W. Nimitz said, "Of all the tools the Navy will employ to control the seas in any future war . . . the destroyer will be sure to be there." These words summarise succinctly why the DX/DXG programme was created and why it is urgent DX/DXG means destroyers.

Ever since the Revolutionary War when John Paul Jones asked for a fast ship "to go in harm's way", our Navy has recognised the need for swift and capable warships as an important part of our sea-power. As the United States moved into the twentieth century, this requirement became synonymous with destroyers; and since the first USS BAINBRIDGE (DD1) was commissioned in 1902, we have had a large destroyer force in our Navy.

The Navy has received long and valuable service from its destroyers. The "four pipe" and "flush deck" destroyers of World War I were still performing effectively during World War II — a span of almost 30 years. Our World War II destroyers continue to perform valiantly today in every ocean. To help forestall their obsolescence, we have modernised many of these ships over the past 10 years in our Fleet Rehabilitation and Modernisation (FRAM) programmes. We have reached the point, however, where further modernisation is either impracticable because of inadequacies of space and power, or not economically advisable because of high costs.

The problem we face in replacing the capability represented by these old ships is enormous. While a one-for-one replacement is not required or contemplated, the fact that over half of our anti-submarine and gun capability is carried by these 200-odd still-active World War II ships provides an indication of the scope of the problem.

Recognising the urgency of the situation in late 1966, the Office of the Secretary of Defence pro-

posed the DX/DXG Programme. The approach suggested was bold and imaginative, the most ambitious peacetime programme ever conceived for surface warships.

The essence of the proposal was to acquire the needed ships by large-scale action, using the "Contract Definition/Total Package Procurement" approach. In a departure from previous piecemeal procurement practices, a comprehensive plan was outlined and supported with \$30 million for contract definition of the proposed ship types. It was envisioned that the total procurement for a large number of ships might — though not necessarily would — go to one contractor to build the ships on a series basis. Details of this procurement aspect has changed slightly with each ship type now being considered as a separate but related programme.

A major advantage inherent in the Contract Definition/Total Package Procurement approach is seen as the opportunity to supplement Navy expertise with industry's ingenuity in warship design. It also provides an opportunity to re-examine the number of different destroyer types needed, to reduce the number of different "classes", and to achieve the economies of multiship production and standardisation by increasing production per class.

To appreciate the magnitude of change this approach entails, one need only to mention that 13 different destroyer-type ship classes have been acquired by 51 separate contracts from 12 separate bidders over the past 12 years!

As a prelude to carrying out the engineering development of the

construction of warships, the Department of Defence requires examination of alternatives to accomplish the mission, adequate detailing of essential performance requirements, and determination that the contract definition approach is suitable. This process, called "concept formulation", has been accomplished for DX/DXG during the past year under the direction of the programme co-ordinator.

Concurrently, by an extensive operational analysis, another Navy group determined the missions, types, and numbers of escorts needed for the Navy-programmed forces of the mid-1970's, and the basic weapons and sensor suits for these escorts. This determination was made on the basis of required effectiveness at the lowest cost in the environment of a world-wide scenario.

As a result of these studies, DX and DXG were found suitable for contract definition, and a specific programme of numbers and ship types was proposed.

### DESTROYER REQUIREMENTS

The studies developed that there is need for three general ship types for our destroyer family of the future.

First, we need many unsophisticated ships for essentially anti-submarine work aimed at keeping the sea lines of communications free from the underwater threat. These smaller single-screw ships are generally called DE's, or ocean escorts. For the most part, these ships are being satisfactorily replaced and updated by the building programme now in progress. No additional DE's are contemplated at this time.

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The second type — one of our prime needs — is the twin-screw, multi-purpose destroyer, and this type we need to procure in significant numbers. Some of these ships should be configured with guns and others with missiles, but all of them are destroyers capable of attack carrier escort and differing in accent on capability rather than in basic functions. It is these ships we mean when we say DX and DXG — the DX being the "gun" version, and the DXG being the "missile" version.

Finally, there is the nuclear-powered, guided-missile ship (DXGN), which has all the versatility and capability of the conventional destroyer, coupled with greater staying power so that she can:

- Take the independent mission.
- Carry out an assigned task for days without relief, and
- Be rushed from one theatre to another for instant action as soon as she arrives on the scene.

These DXGN ships are the ideal escort for our nuclear and conventional powered carriers and for independent duty assignments as well. There is an urgent need for these ships as successors to the DLGN 36 class.

### DX—THE FIRST CHALLENGE

The Navy, then, has identified a pressing need for new destroyer types — DX, DXG, and DXGN. While many considerations are common to two or more, each has its own particular role. We have studied the questions of commonality and standardisation and determined that the desired end-result can be preserved with industry considering the ships separately. So it was that, on February 15, 1968, the Navy presented industry with the Request for Proposal for the DX programme. The first step will be Contract Definition for the gun version of the destroyer. This is an exciting challenge to industry and as complex a task as ever was faced by our industrial shipbuilding team.

The Navy is allowing unprecedented latitude to the DX contractors in the design of this ship. For example, they will be permitted

the opportunity to deviate from thousands of "mil-specs" which traditionally have been mandatory in ship programmes, as well as from Navy administrative and manning practices. In lieu of the tight requirements previously given, the contractors are required to propose guarantees and warranties to back up their engineering decisions in these areas.

### OBJECTIVES

To place the degree of challenge to industry in focus, let us examine what the programme objectives are as well as some things which they are not. The prime objective of the programme is to make a major breakthrough in procurement and operating costs for warships. Within this broad objective, there are several lesser objectives that should be considered. One of these is to gain the fruits of industry's ingenuity and input to combatant ship design. In using Contract Definition, we are seeking industry's creativity; to justify that search we need good, sound, well-considered ideas, and the best management we can get.

The Navy is not interested in "cheap" ships per se. What we want to see are capable, well-integrated ships that can do the required tasks in the most economical way, considering the total life of the ship. We are also interested in ease of modernisation so that these ships will remain capable over their lifetime in order to counter any changed enemy threat as well as incorporate improved potential for their mission. Modularity is a way to achieve this objective.

Another goal is acceptable effectiveness of the ship as a single, integrated system through the application of human engineering to reduce manning through automation. Where computers and displays may be needed in order to join systems, it is proposed that standard "building blocks" be used, such as those provided by the Naval Tactical Data System and already in government inventory. No specific command and control systems will be specified, since they are a necessary part of the matrix which binds these sub-systems into a single

functioning entity. By the same token, the number and location of control spaces is not specified. This allows full freedom to the contractor to group functions as desirable for performance or operation and to monitor the requirements of modernisation and modular replacement.

Considering that the destroyers of today carry nearly 250 tons of electronics with a resultant power requirement approaching 2000 KW the magnitude of the task should not be underestimated. It will require a marshalling of skills and experience in a team that will be able to cover most of the spectrum of modern warfare.

At the same time, the C/D approach offers the first real opportunity for a single agency outside the Navy to look across the vertical lines that normally break these many sub-systems into separate packages. This integration is the key to the destroyer's fighting efficiency and probably the area in which initiative and sound engineering will contribute most to the reduced costs of its life cycle.

Another goal is increased ship availability through careful attention to reliability, better fault isolation, and modular repair. In this manner, we hope to minimise tender support requirements and permit our ships to be as self-sufficient as possible.

We will get a ship design made by the contractor who will also build the ship. This means that it will be adapted for maximum efficiency to his construction methods and facilities. Design for ease of subsequent modernisation is also a requirement. Such procedure and large scale production of identical ships should result in decreased initial investment cost. We want a large class of ships standardised within itself and with as much commonality with the rest of the fleet as is economically justifiable. These are some of our major goals.

Of equal importance are some things that are not goals. No new shipyard or modernised yard is a requirement for this program. Obviously, new facilities could contribute to reduced costs and might be built as a result of individual con-

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tractor decisions. However, such decisions will remain as elective action to be initiated by a contractor and will not be required by the government.

The DX/DXG is not a research program. No engineering effort beyond that of engineering development is sought. The specified weapons systems are new and have Fleet readiness dates from today through 1974. The modularity approach will permit ready adaption to new systems based on changed enemy threat or improved weapons capability. The government already is investing large sums in designing, testing, and approving weapons and sensors to fulfill Fleet needs. A ship procurement program is not the place to incur large additional costs in the design and qualification of new systems.

#### DX TIMETABLE

The Contract Definition for destroyers (DX) is divided into three phases and will take about 18 months. Phase A lasted about 4½ months. In this phase, qualified bidders are preparing fixed-price proposals for Contract Definition. They will be expected to describe fully their understanding of the technical problem and their management set-up for production. These proposals are not expected to contain preliminary designs.

The Navy wants to know how the bidders plan to attack the technical problems they have identified, and how they plan to manage all aspects of Contract Definition, including engineering, planning, integrated logistics support, and life-cycle cost considerations. This effort is to be made by the company.

Of the offering bidders, two or more will be selected to be awarded Contract Definition contracts.

Phase B, which started about 1 July will last for about 9 months, and is a fully funded period. During this period the Contract Definition contractors will prepare firm proposals for conducting the Development and Production phase. Only one contractor will be selected to develop and produce the ships.

C and final Phase also involves a period of about four and one-half months. In this period, the government will evaluate contractor proposals and select the one to perform the remaining development, detail design, and production of the ships, including certain items of logistics support.

#### DXGN and DXG

It is expected that the DXGN program will move in parallel with the DX to get these ships in the earliest practicable time. Exchange of data between these two programs, as well as NAVSHIPS direction and emphasis, will help to ensure their commonality. Some form of modified contract definition will be used. The Navy's "in house" capability will provide central management and will handle all facets of the nuclear power plant which will be furnished by the government. The DXG program is expected to follow the DX and DXGN, after those ships go into production.

Perhaps the best way to focus the challenge the DX/DXG Programme provides to industry is to put it in terms of the people who run these ships — the destroyer-men. Written in 1962, Adm. Arleigh Burke had this to say about the men who man our destroyers: "Throughout the years, destroyer-

men have been a proud breed. They have achieved distinction and the respect of their fellow sailors through their performance and their ability to do anything asked of them. No task has been too difficult for them to tackle. They have plunged into each new requirement with . . . zest. . . . Through a combination of . . . advocacy, enthusiasm, hard work, and ability, destroyermen have carried on the traditions of seafaring men that have been characteristic of Americans since the inception of this great nation . . .

"But this is the way the destroyermen must take. New innovations must be tried. New weapons tested. New procedures checked out. And, as in the past, destroyermen are the ones to do the testing. This takes stamina, devotion, and above all, the integrity of an individual who will do his very best to see that the security of this beloved country is perpetuated. Destroyermen have established enviable records of achievement, and they are still steaming toward unknown horizons where developments of the future wait for discovery."

What we are asking industry to do is to join with the Navy in providing destroyers for these destroyermen — destroyers that will continue the proud tradition for years to come. We know we are challenging industry to the very peak of its current capability, and we have been given strong indications that the challenge is welcome. We know that when the going is rough, the call goes out to "send the destroyers."

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# AUSTRALIA'S NAVY IN SOUTH VIETNAM

By The Honourable C. R. KELLY, M.P. Minister For The Navy

What is the lasting effect of the inadvertent attack on the Australian guided missile destroyer HMAS HOBART by U.S. aircraft?

The Minister for the Navy, the Hon. C. R. Kelly, this month made his own "ties off" sea inspection of HMAS HOBART, now back in action off Vietnam after repairs at Subic Bay.

Here, he gives his assessment of how the crew of a modern Australian warship reacts in times of real crisis — and the aftermath.

The HOBART returned to the Vietnam "gun line" on July 25 after being damaged by the aircraft on June 17. I went aboard her on August 3.

I do not pretend to be an expert on naval matters, but I didn't need to be to realise that the ship and her company were in fine fettle. The damage had been repaired in the Philippines in a very efficient manner but the photographs taken at the time give an idea of the damage that the three "Sparrow" missiles did.

I couldn't help wondering how much would be left of an aircraft if hit by one of these air-to-air missiles.

The change in the crew since I saw them off from Jervis Bay in March was marked.

Then, they were in their "working up" period, and most had not been in action before.

Now they have — and they now know that the damage control training was soundly based, and even more important, that they stood up splendidly to the challenge of that eventful night.

In short, they now have confidence not only in their ship, their training, their leadership, but in themselves.

Two men were killed and seven injured on that night, but the stories told of narrow escapes were legion.

It was remarkable how the superstructure was cut about, with fragments of missile and aluminium flying in all directions.

The third missile did not explode but rammed itself through the stern of the vessel. It came to rest after going through various bulkheads, and eventually ended up in the bunk of a sailor who was fortunately up on deck at the time.

## DAMAGE CONTROL

Evidently the damage control training worked excellently.

I talked to the Engineer Officer in charge of damage control. He said that he had been always just a bit uncertain how he would react to a crisis like this, with the row of it all and the shock.

And also, in the past he couldn't really be quite certain that he was training his men to do the right things. But evidently the officers and men came through this ordeal splendidly, no one panicked even though Chief Petty Officer Raymond Hunt of the damage control party was killed on his way to his post.

Indeed, one lad was sitting at his post in the damage control communication centre and was surprised, after it was all over, to find he had a broken leg.

It was lucky there was not more fire damage.

A piece of a missile cut the top off two carbon dioxide gas bottles and these gave up their gas at just the right time. Another piece of missile cut through a water conduit and flooded out a small fire.

So HOBART was lucky, as well as well served.

And the crew of HOBART are certainly getting plenty of training.

I spent a good deal of time in the ship's gunnery control room. During the day when we were shooting in support of American and South Vietnamese infantry, I heard the excited comments of the American spotting plane pilot, "Say, boys," he said many times, "keep it there. Splendid. I have never seen better shooting."



H.M.A.S. HOBART, one of three of Australia's new guided missile destroyers.

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Royal Australian Navy helicopter pilot Sub-Lieutenant Jeffery Dalgliesh of Darribee, Brigalow, Queensland (centre) checks details of an impending lift of U.S. troops by Iroquois helicopter in Vietnam with two U.S. pilots. Sub-Lieutenant Dalgliesh is a member of the R.A.N.'s Helicopter Flight Vietnam which is integrated with the U.S. Army's 135th Aviation Company based at Black Horse. The R.A.N. pilots work with U.S. pilots in troop movements, rescue operations and other duties in support of the Australian Task Force in Phuoc Tuy Province.

### LONG HOURS

We were firing at given targets about every 15 minutes during the night.

I went to bed at midnight, thinking that the noise of the guns would make sleep impossible. However, I slept till 7.00 a.m. and was surprised to find in the morning that we had been shooting all night. (By the time I have told this story a few times I will be saying that I slept pretty well underneath the guns.)

Not many people realise the hours being worked by the crews of these ships. They must average 100 hours a week, and some key people do 24 hours straight off. As I wandered around the ship during the day, I saw people sleeping soundly in the oddest places, at the oddest hours.

I was aboard during a refuelling from a U.S. tanker. While we were doing this, they sent across bags of mail to us, and for the next few hours you would stumble across

people reading letters, with a far-away look in their eyes. Certainly, mail means an awful lot, and I couldn't help being sorry for the few lads who had missed out.

Later, I visited an American carrier force and learnt from the American Admirals what they thought of HMAS PERTH and HMAS HOBART.

These R.A.N. destroyers are, of course, American-built ships, so the Americans have others like them.

But many of their crews are not as well trained as ours because their period of service is shorter.

Everywhere I went I heard the same comment: "Your's are good ships, manned by aggressive people, excellently trained."

When I went to Subic Bay in the Philippines to thank the ship repair people for the speed and efficiency of their repairs to Hobart, I heard the same reaction from both Americans and Filipinos: "Don't thank us, we do not have

ships come here whose people know more about their ship, are more prepared and able to help themselves and are so friendly."

I left with the proud feeling that any Australian ship that goes into Subic will be looked after, not only with efficiency, but with affection.

### HELICOPTERS

While I was in Vietnam I saw the R.A.N. helicopter pilots and maintainers at Blackhorse about 40 miles north-east of Saigon.

These chaps are working with a U.S. Army Helicopter group and they are really living tough.

Helicopters make an awful lot of dust, and this prevents the grass healing the scarred soil. So, when it is raining, it is muddy; if the weather is dry, it is just awfully dusty.

Indeed, they tell me that you don't have to have radio aids to find Blackhorse.

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I also visited the R.A.N. helicopter pilots serving at Vung Tau with the R.A.A.F.'s No. 9 Squadron.

These boys are doing an excellent job, working hard and living like lords.

We also have a small R.A.N. clearance diving unit whose duty it is to inspect the bottoms of cargo ships. In between times they act as an explosion demolition team on land. They were living in a kind of a cave and I was very sorry for them until I visited the cave.

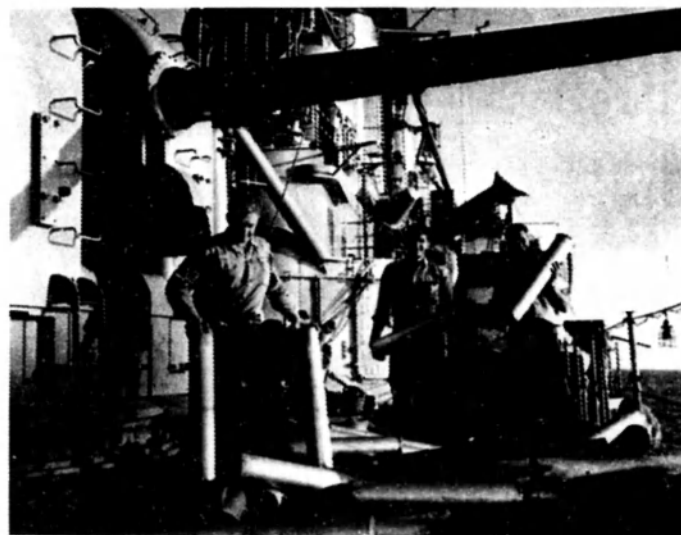
The only thing they lack is air-conditioning. They have fine beards, a fine reputation as clearance divers, and a most enviable reputation for acquiring things.

I remember asking the lieutenant in charge where he got a particularly fine piece of furniture.

There was a long pause and then he said: "Mr. Minister, Sir, I wish you hadn't asked me that". Whenever they say, "Mr. Minister, Sir," I know they're treading water.

It was an interesting trip and I was proud of the R.A.N.

I don't pretend that they are winning the war on their own, but they are giving an excellent account of themselves and are gaining most valuable experience. And they are doing Australia proud!



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a valuable reserve for the Naval Service.

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## THE NAVY LEAGUE OF AUSTRALIA

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# NAVY WEEK IN AUSTRALIA

## AND PAPUA NEW GUINEA

### — Programme of Events —

<b>VICTORIA</b>		
Sunday, September 29	11.00 a.m.	Ex-Naval Men and Women's Association Church service at Christ Church, South Yarra.
Monday, September 30	Noon	Lunchtime band recital and PT display in Melbourne city.
Thursday, October 3		Golf Day at Waverley links
Friday, October 4		Navy League dinner-dance.
Saturday, October 5	10.00 a.m.	Navy Week Ball at HMAS LONSDALE.
Sunday, October 6	10.00 a.m.	Open Day at HMAS CERBERUS.
	11.00 a.m.	Naval Memorial service at St. Patrick's Cathedral.
	3.00 p.m.	Annual Seafarers' Service at St. Paul's Cathedral.
		March to Shrine of Remembrance and service.

Displays will be given in city stores and shop windows in Melbourne and Navy cooks will give demonstrations at the Gas and Fuel Corporation's cooking centre in the city throughout the week.

<b>QUEENSLAND</b>		
Friday, October 4		HMAS PALUMA and HMAS BUNDBERG open to public, Brisbane.
		Talks by PNF and CNF serving and retired officers to secondary schools throughout Queensland.
		Ipswich sub-section Naval Association ball.
Saturday, October 5		Training ships open to public.
		Reunion function of all ex-Naval personnel at HMAS MORETON.
Sunday, October 6		Naval mass at Roman Catholic churches.
		Naval services at Protestant churches.
		Seafarers Service at Brisbane Cathedral.
		Naval Memorial service and wreath-laying at Shrine.
Tuesday, October 8		HMAS MORETON and T.S. GAYUNDAH open to public.
Wednesday, October 9		Navy golf day.
Thursday, October 10		HMAS MORETON "At Home".
Friday, October 11		T.S. ENDEAVOUR open to public.
Saturday, October 12		Navy Ball in Brisbane.
Sunday, October 13		Navy League dinner in Brisbane.
		Navy Bowls Day.
		Australian Sea Cadet Corps ceremonial parade and display, Brisbane.

<b>WESTERN AUSTRALIA</b>		
Saturday, September 28		Navy Race Meeting, Belmont Park by courtesy of the W.A. Turf Club, performance by the R.A.N.R. Band.
Sunday, September 29	11.00 a.m.	Church Parades to St. Georges and St Mary's cathedrals, Perth.
		The RANR band will play in St. George's Cathedral.

3.00 p.m.		
Wednesday, October 2	Evening	
Friday, October 4		
Friday, October 11	Evening	
Saturday, October 12	Evening	
Monday, October 21	7.00 p.m.	

Saturday September 28	—
Monday, September 30	
Friday, October 4	
Monday, September 30	—
Friday, October 4	

Saturday, October 5	
Sunday, October 6	9.45 a.m.
	11.00 a.m.

#### Darwin

#### Port Moresby

Monday, September 30	—
Monday, October 7	

Friday, October 4	—
Sunday, October 6	
Friday, October 4	

#### Madang

Saturday, October 5	—
Sunday, October 6	

#### Manus

Saturday, October 5	—
Sunday October 6	

Commemoration service and wreath laying ceremony at Fremantle War Memorial, followed by afternoon tea in the Mayor's Parlour.

Twenty-First Passing Out Parade and official opening of the new Mess and Recreation Building at the Junior Recruit Training Establishment.

The White Ensign will be flown at Perth and Fremantle War Memorials.

Navy Ball at Anzac House ballroom in Perth, organised by the W.A. Division of the Naval Association.

Navy Trotting Meeting at Richmond, by courtesy of the Fremantle Trotting Club, featuring the Navy Cup.

Navy Reunion Dinner at HMAS LEEUWIN in the new Mess and Recreation Building.

#### SOUTH AUSTRALIA

HMAS OTWAY visits Adelaide. Navy League giving Dinner (Sat.) for Personnel.

Cocktail Party, Naval Memorial House. Convened by Naval Association and Navy League.

Commemoration Service at State National War Memorial.

Navy Week photographic display at Kodak (Aust.) Pty. Ltd. store in Rundle Street, Adelaide.

#### TASMANIA

HMAS BASS open to visitors at a Hobart City Pier.

Wreath Laying Ceremony at Hobart Cenotaph with similar services at Burnie, Launceston and Smithton.

Church service at St. George's Church, Battery Point, Hobart.

HMAS BASS open to visitors

#### NORTH AUSTRALIA

Ex-Navalmen's and Women's Association Dinner.

Ceremonial divisions and Commemorative Service at Coonawarra.

Commemorative church services.

Window displays and film shows for children in Darwin Town Hall and High School.

#### PAPUA-NEW GUINEA

Display of model and photographs at Oil Fuel Installation, Champion Parade and Inspection of HMAS AITAPE.

A recruiting booth will be manned.

HMAS AITAPE to open for public inspection.

Ex-Naval Mens' dinner at Boroka R.S.I.

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THE NAVY LEAGUE OF AUSTRALIA

## NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the Navy League of Australia will be held on Friday, 11 October, 1968 at 8.00 p.m., in the Boardroom, P & O Lines of Australia, Industry House, National Circuit, Barton, A.C.T.

All members of the League are cordially invited to be present.

Business:

Apologies

Confirmation of minutes of previous Annual General Meeting

Election of Officers

General Business

20 September, 1968

A. A. ANDREWS, (Lt. Cmdr. R.A.N. Retd).  
Federal Secretary

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# SEA CADET CORPS NEWS

NEW SOUTH WALES DIVISION

## ANNUAL REPORT TO THE NAVY LEAGUE OF AUSTRALIA NEW SOUTH WALES DIVISION FOR THE YEAR ENDED 30 JUNE, 1968

The past year has been one of constant activity and expansion. Sea Cadet Units have increased in number from 8 to 9 and the present strength of Officers, Instructors and Cadets is now well in excess of 400.

It is of interest, I feel, to mention at this early stage of my report that on January 1, 1968, I was requested by the Naval Board to co-ordinate the training of the 3, RANR School Cadet Units in Sydney and subsequently assumed in June, full responsibility for administering both the Sea Cadet Corps and the Naval Reserves Cadets in New South Wales.

The combined Naval Cadet Force numbers over 600 Officers, Instructors and Cadets and I can say with the utmost confidence that all personnel are proud to be associated with the Senior Service.

Recruitment into the Permanent Naval Force remains at the same satisfactory level as last year and whilst not overlooking that we are primarily a youth organisation we nevertheless encourage and assist Cadets to join the Royal Australian Navy, the Royal Australian Navy Reserve or to continue their service with the Cadet Force as Instructors.

There is a need for more Officers and Instructors to bring the complements of one or two Units up to strength. However, the Selection and Promotion Board, which convenes in HMAS WATSON monthly, demands a high standard and this policy, which has been maintained over the past few years, has paid dividends. The youth of today have an unending thirst for knowledge and our Officers and Instructors must be of a calibre equal to meet this challenge. The morale in the Division is unquestionably high and I venture to suggest will reach even greater heights once the question of rationalisation is resolved. There is a pressing and urgent need for revised regulations

to be brought into force at an early date. However, it is known that rationalisation has its attendant problems.

After months of negotiations it is pleasing to be able to report that within a matter of weeks a lease should be finalised giving the Manly Unit a new site. We already have the authority of Manly Council to commence building but are seeking to have the overall area of land increased.

The utmost co-operation has been received from HMA ships and HMA Naval Establishments notwithstanding the scarcity of billets in general. This has enabled us to maintain a full and varied programme to include weekend postings and continuous training periods of 7 days' duration. Lack of accommodation for Cadets to undergo their 7 days' continuous training, particularly in January, continues to pose a problem. The Naval Board is aware of this and ways and means of providing this essential facility on a permanent basis are being investigated. Without question a requirement exists for permanent training quarters particularly in view of our growth pattern.

This year the maximum time for continuous training was reduced from 10 to 7 days and this limitation has helped to provide postings for more Cadets than has been possible in past years.

Two Indoctrination Courses each of 7 days' duration were organised by this Division for personnel from Queensland, A.C.T., and New South Wales. One was held in HMAS PENGUIN and the other in HMAS WATSON.

Our annual events, the Swimming Carnival, Sailing Regatta, Athletics Meeting and the Shooting Competition were all exceedingly well supported.

Saturday, April 20, 1968 was a memorable and historic occasion when the whole of the New South Wales Division had the honour to

be inspected by the Governor-General in the grounds of Admiralty House, Kirribilli. At the same time, His Excellency also accepted the invitation to present the Navy League Efficiency Trophy to the Commanding Officer of TS TOBRUK — the Unit declared the Most Efficient in Australia for 1967. Against considerable competition from other Units, TS TOBRUK, the Newcastle Unit, has again been nominated in 1968 as the "Most Efficient" in New South Wales. We are hoping we may achieve the seemingly impossible and win the Commonwealth award for the second consecutive year, a feat never before accomplished.

At the Annual Church Parade, the Division was honoured to be inspected by Rear-Admiral Wells, the Flag Officer-in-Charge, East Australia Area. It was gratifying to see so many senior Permanent Naval Force Officers at this social function.

We have provided Cadet Guards and Cadet detachments for Civic ceremonies when considered appropriate to do so. Our close liaison with our Army and Air Force Cadet counterparts has been maintained and has resulted in a most useful exchange of information.

To the Royal Australian Navy and the Navy League of Australia and in particular the Ladies' Committee, this Division wishes to express gratitude for the invaluable assistance, both financial and otherwise, received over the past 12 months.

I am sure that all of you will forgive me if I end my report by saying the Esprit de Corps that prevails in this Division of the Cadet Force is a credit to the Officers, Instructors and to the Cadets themselves and is a reflection of their devotion to duty.

L. MACKAY-CRUISE,  
Lieut.-Commander RANR,  
Senior Officer.

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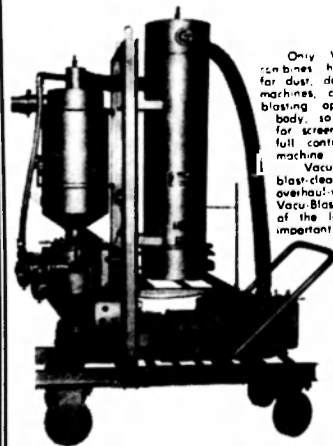
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## Report of Activities and Training Undertaken by the New South Wales Division for the Quarter Ending, 30th June, 1968

Weekend training was conducted for Sea Cadets and Naval Reserve School Cadets in the following ships and establishments:

HMAS PENGUIN	5-4-68 to 7-4-68
HMAS CRESWELL	5-4-68 to 7-4-68
HMAS PENGUIN	26-4-68 to 28-4-68
HMAS WATSON	26-4-68 to 28-4-68
HMAS QUEENBOROUGH	26-4-68 to 28-4-68
HMAS ALBATROSS	3-5-68 to 5-5-68
HMAS ANZAC	33-5-68 to 5-5-68
HMAS QUEENBOROUGH	17-5-68 to 19-5-68
HMAS DERWENT	24-5-68 to 26-5-68
HMAS DERWENT	31-5-68 to 2-6-68
HMAS ALBATROSS	14-6-68 to 16-6-68
HMAS ANZAC	14-6-68 to 16-6-68
HMAS DERWENT	21-6-68 to 23-6-68
HMAS ANZAC	21-6-68 to 23-6-68
HMAS ANZAC	28-6-68 to 30-6-68

No periods of continuous training took place.

A familiarisation course was held from March 31 to April 6 in HMAS WATSON for Chief and Petty Officer Instructors. Personnel attended from both the Queensland and New South Wales Divisions.

On Saturday, April 20, the whole of the N.S.W. Division was reviewed by the Governor-General and Commander-in-Chief, His Excellency, The Right Honourable Richard Gardiner, Baron Casey, G.C.M.G., C.H., D.S.O., M.C., K.St.J. The Sea Cadet Royal Guard and Colour Party led the parade with the East Australia Band to the grounds of Admiralty House, Kirribilli. After the inspection, His Excellency presented the Navy League of Australia Annual Efficiency Trophy to the Commanding Officer of TS TOBRUK (Newcastle Unit) — the winning Unit in 1967.

The Annual Church Parade was held in Garden Island on Sunday, April 28, and prior to the Service in the Dockyard Chapel the Division was honoured to be inspected by the Flag Officer-in-Charge, East Australia Area, Rear-Admiral D. C. Wells.

All day "efficiency" shoots were conducted in HMAS WATSON on May 11, 18 and 25, and June 1, 15 and 29.

Advancement examinations for Cadets to attain higher rank were held in HMAS PENGUIN on June 22 and 23. Candidates attending were posted to HMAS PENGUIN for the weekend.

The Representative of the Flag Officer-in-Charge, East Australia Area, Commander D. J. Beckley, D.S.O., D.S.C., R.A.N., accompanied by the Senior Officer, made his annual inspection of the following Units:

TS PARRAMATTA	6-4-68
TS SHKOPSHIRE	27-4-68
TS TOBRUK	11-5-68
TS SIRIUS	25-5-68
TS ALBATROSS	8-6-68
TS WARREGO	15-6-68

On Saturday, June 1, the Representative of the Flag Officer-in-Charge, East Australia Area, in-

spected the proposed new Unit at Gosford. Resulting from the inspection, it is anticipated that Naval Board recognition will be forthcoming shortly.

The annual Commanding Officers' Conference was held at Royal Naval House on Saturday, June 29, 1968, followed in the evening by an Officers and Instructors' Cocktail Party without official guests and restricted to wives and lady friends. This is the first such social event organised to embrace the Instructors and it will become a regular additional function to the Officers' Annual "At Home".

Boards were convened in HMAS WATSON to determine whether Officers and Instructors should be promoted and the suitability of personnel seeking an appointment in the Corps.

To assist the School Naval Reserve Cadet Units to obtain practical boatwork arrangements were made for them to use the boats and facilities at Snapper Island.

L. MACKAY-CRUISE, Lieut.-Commander RANR, Senior Officer.

## NEW SEA CADET UNIT

Naval Board recognition and "Corvette" Class status have been granted the Point Clare Sea Cadet unit, N.S.W., and approval given for the unit to be named "TS HAWKESBURY".

Recognition of the unit is gratifying to dedicated ex-naval men who have been "carrying on" for two years without official recognition and consequent difficulty.

Commander D. J. Beckley, R.A.N., Staff Officer Reserves, inspected the unit at Gosford on June 1.

In his report, in which he recommended recognition of the unit, Cdr. Beckley said a parade was held in the grounds of the Gosford High School, where each Saturday the unit had the use of outside

facilities and classrooms for instruction.

The unit's six instructors, two over 70 years of age, should be congratulated for the manner in which they had conducted the unit. To keep up the morale and enthusiasm of boys for two years without any form of uniform or training equipment, except for self-help items, was no mean feat.

Cdr. Beckley said the unit would have local support. A most suitable site had been obtained for unit headquarters at Point Clare with ample water frontage.

Name and address of the Commanding Officer (elect) is Mr. F. H. Lambert, Lot 9, Gosford Road, Saratoga, N.S.W. 2251.

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# JOIN THE AUSTRALIAN SEA CADET CORPS

If you are between the ages of 13 and 18 years

The Australian Sea Cadet Corps is a voluntary organisation administered by the Commonwealth Naval Board and The Navy League of Australia.

The aim of the Australian Sea Cadet Corps is to provide for the spiritual, social and educational welfare of boys and to develop in them character, a sense of patriotism, self-reliance, citizenship and discipline.

Uniforms are supplied free of charge.

Cadets are not required to undergo any medical examination and are fully insured against accident while on duty.

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

The interesting syllabus of training covers a wide sphere and includes seamanship, handling of boats under sail and power, navigation, physical training, rifle shooting, signalling, splicing of wire and ropes,

general sporting activities and other varied subjects.

Instructional camps are arranged for Sea Cadets in Naval Establishments, 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, the Mercantile Marine or the Royal Australian Naval Reserve, but there is no compulsion to join these Services.

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

Senior Officers, Australian Sea Cadet Corps:

NEW SOUTH WALES: "El Abrigo", 4 Rangers Ave.,  
Cremorne, 2090.

QUEENSLAND: C/- Box 376E, G.P.O., Brisbane,  
4001.

SOUTH AUSTRALIA: C/- Box 1529M, G.P.O.,  
Adelaide, 5001.

TASMANIA: C/-

VICTORIA: C/- Room 8, 8th Floor, 528 Collins St.,  
Melbourne, 3000.

WESTERN AUSTRALIA: C/- 182 Coode St., Como,  
6152.

AUSTRALIAN CAPITAL TERRITORY: Industry  
House, National Circuit, Barton, 2600.

NORTHERN TERRITORY: Box 444, P.O., Darwin,  
5794.

TO: The Senior Officer,  
Australian Sea Cadet Corps

I am interested in joining the Australian Sea Cadet Corps and would be  
pleased to receive further information.

NAME .....

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STATE OR TERRITORY ..... POST CODE .....

PHONE No. .... AGE .....

(Please print clearly)

Please address your envelope to the Senior Officer in your State or Territory—see  
list of addresses above

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## *Periscope on Australia*

*by Grommet*

### RE-ORGANISATION OF DEFENCE JOINT PLANNING

A far reaching reorganisation in the Defence Department's planning and staff arrangements was announced on June 30, 1968.

In place of the Joint Service Committee structure, a series of

planning staffs is being provided to deal with long-range policy, equipment requirements, joint warfare, joint operations, joint operational logistics and joint services communications. These staffs, which will comprise civilian officers of the Defence Department and, as appropriate, of the Department of External Affairs as well as Service

**IKARA**  
The Australian anti-submarine guided missile IKARA was fired publicly for the first time on Friday, August 9, 1968. The firing was observed by a party of foreign service attaches, members of Federal Parliament and journalists who travelled aboard the firing ship, HMAS PERTH, off Jervis Bay.

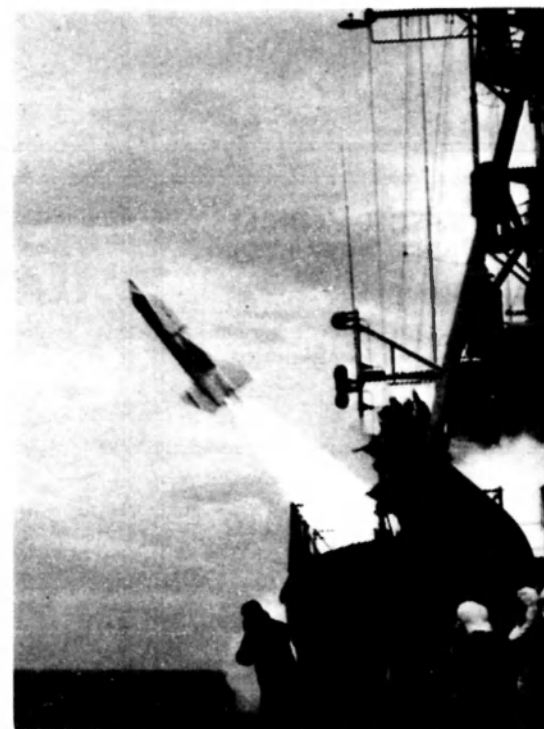
The firing was remotely controlled from the destroyer escort HMAS YARRA which radioed directional advice into PERTH's missile system. The visitors also witnessed a flypast by units of the fleet air arm, a "high-line" transfer, and a demonstration of naval gunfire support. (See photo).

### UNITED KINGDOM JOINT SERVICES' COLLEGE

The three Australian Service Officers selected to attend the 36th course of the Joint Services Staff College at Latimer, in the United Kingdom from August, 1968, to February, 1969, are Commander R. W. Lang, R.A.N., Lieutenant Colonel P. T. Johnson and Wing Commander B. J. Reynolds. The object of the course is to prepare officers in mid-career for future appointments, by broadening their knowledge in current political, economic, scientific and military fields in a joint service environment.

### HMAS BRISBANE SAILS FOR HOME

Australia's third guided missile destroyer, HMAS BRISBANE sailed from the United States for Australian waters during September. Her first port of call in Australia will be Brisbane which she is scheduled to reach on October 17. BRISBANE will arrive in Sydney on October 22 when the ship's company will take leave. (See photo next page).



First public firing of Ikara

Greetings to all H.M.A.S. Cerebus Personnel  
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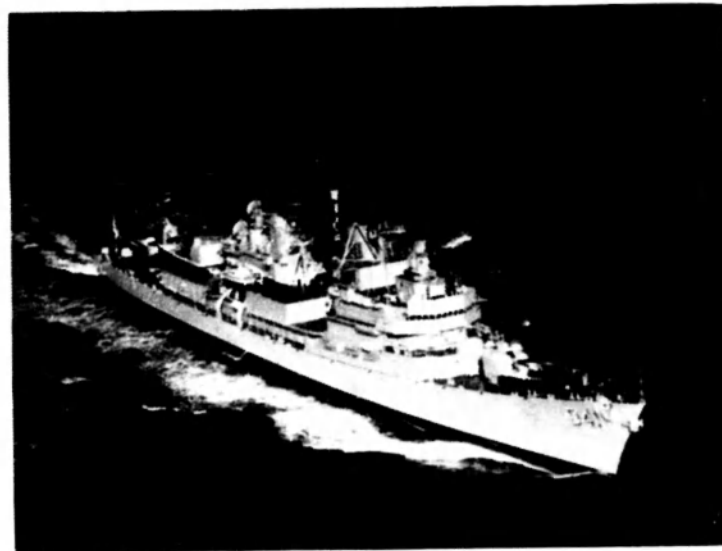
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HMAS BRISBANE

Officers drawn from the three Services, will work under the direction of a Director, Joint Staff. The work of the planning staffs will be subject to review by the present high-level Joint Planning Committee having the Director as its Chairman.

The first Director will be Rear Admiral W. J. Dovers, previously Director, Joint Service Planning, Department of Defence.

To staff the Service component of the new organisation the Defence Department will invite the Services to submit nominations against criteria related to the jobs to be done. The officers selected will be seconded to that Department, normally for three years. Filling of posts on a Service rotational basis will not be the dominant consideration.

The conceptual approach that underlies the present organisation — that there should be involved in Defence Department planning those who will have to execute the plans in their own Services — will be maintained.

While Service Officers will represent the Defence Department, they will have full access to the Services from which they are drawn and to Service papers. Plans prepared by the Joint Staff will be remitted to the Services for comment.

### WRANS RESERVE

The Women's Royal Australian Naval Service Reserve came into being on July 11, 1968.

Former WRANS (married or single) who have served for at least a year within the last four or five years are eligible to join. Serving WRANS with at least one year's service can join immediately on resignation or retirement. Reservists are not required to attend parades but are eligible to volunteer for full-time duty for minimum periods of 30 days to fill vacancies in the WRANS. They can also be called up for full-time service in time of war or defence emergency.

The maximum age for members of the Reserve is 45 years.

### WESSEX CHOPPERS MODIFIED

The first of a new version of the Westland Wessex anti-submarine helicopter used by the R.A.N. has successfully completed its first test flights.

Twenty-three of the Wessex Mk. 31A helicopters are currently being converted to new specifications — scheduled for completion during 1969.

The new 31B has an improved sonar system, increased load carrying capacity, a more powerful engine, improved navigational aids, a station keeping radar and improved communication equipment.

The new choppers will closely resemble the 31A's. Distinguishing features will be a fairing aft of the main transmission platform, the Hudal radar antenna positioned above the cockpit and the Sonar funnel housing the submersible body, protrudes beneath the aircraft fuselage. (See photo next page)

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The Naval Association, a branch of which exists in all  
States, is the only organisation of its kind which is open  
to all serving men and women of the Navy.

Under Royal Patronage, its primary purpose is to assist in  
every way possible all members and their families.

The State office is at Room 404, Anzac House, College Street,  
Sydney, from whence application forms for membership  
are available. Joining fee is \$1.00 and annual fee is \$2.50.  
Amongst the specific assistance available to members is an  
Employment Service, Repatriation Appeals Assistance —  
Legal Advice, Housing Loans Assistance, etc.

A Charitable Purposes Fund (self-supporting) is operative  
for the benefit of members and their families, and a welfare  
fund which is assisted by the State Government provides  
financial relief where needed.

Applications for assistance from the Services Canteen Trust  
Fund and educational grants are dealt with at the State  
Office, and every assistance in all pension matters is readily  
available.

Club life is very active in some areas, and fresh Clubs  
are currently being built in the Sydney area. A quarterly  
magazine, The White Ensign, is posted free and post  
free to all members.

This is an Association which serves not only to assist,  
but to enable the Naval tradition to be cherished and  
maintained.

If you have worn the proud naval uniform or are wearing  
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Changes have also been incor-  
porated to improve aircrew safety  
in the event of ditching — the  
cockpit layout is similar but the  
cabin layout has been completely  
changed. The sonarman will now  
sit on the port side and the observer  
in the centre, thus ensuring maxi-  
mum use of available space and  
access to controls.

### DAME ZARA TO LAUNCH HMAS TORRENS

Dame Zara Holt will launch  
HMAS TORRENS (destroyer es-  
cort) on September 28, at Cockatoo  
Island, Sydney.

### DRACONE BARGES FOR AUSTRALIAN NAVY

The Australian Navy has ordered  
a number of Dracone barges from  
the Dunlop Company of Britain.

These flexible, towable contain-  
ers will be used for transporting  
fuels.

Each has a capacity of more  
than 1800 cu. ft. and is just over  
100 ft. in length.

A British invention, Dracone  
barges are used in many parts of  
the world, their tough synthetic  
rubber and nylon construction  
makes them suitable for carrying  
oils, fuels or fresh water by sea,  
even in severe weather conditions.

In inland waterways their flexi-  
bility and shallow draught are a  
great advantage.

### R.A.N. BUYS PLESSEY STD DATA SYSTEM

Plessey Automation and Elec-  
tronics has delivered a salinity-  
temperature-depth (STD) data ac-  
quisition system to the Royal Aus-  
tralian Navy Experimental Labora-  
tory in Sydney.

The system is an integrated, sea-  
worthy assembly of sensors, re-  
corders and associated equipment  
for obtaining accurate and con-  
tinuous profiles of basic ocean prop-  
erties. Salinity, temperature and,  
optionally, sound velocity are pre-  
sented as a function of depth.

Data is continuously acquired by  
high precision sensors, which are  
physically and electrically integrated  
as a multi-parameter, in-situ sensing  
system housed in an underwater  
"fish". All underwater elements of  
the system are suitable for deep-sea  
operation, having been tested to  
12,500 pounds per square inch.

The system is marketed in Aus-  
tralia by Plessey Automation and  
Electronics, under licence from the  
Bissett-Berman Corporation of  
America.

### PROMOTION FOR CHIEF WRAN

The Director of the Women's  
Royal Australian Naval Service  
since 1958, Mrs. Joan Streeter,  
OBE, has been promoted to the  
rank of Superintendent (equivalent  
to Captain R.A.N.)

Superintendent Streeter first join-  
ed the R.A.N. as a writer in 1943.  
She was promoted to Third Officer  
in the same year and continued to  
serve until the WRANS was dis-  
banded in 1946. She returned from  
Canada when the WRANS was re-  
formed and rejoined as a Second  
Officer in 1954.

Today she commands more than  
618 women.

### IMPERIAL DEFENCE COLLEGE

Two Naval Officers have been  
selected to attend the 1969 course  
at the Imperial Defence College in  
the United Kingdom. The officers  
selected are Captain G. V. Glad-  
stone, D.S.C.; R.A.N., and Cap-  
tain N. E. McDonald, R.A.N.

The objective of the College is  
to train selected members of the  
armed forces and senior civil ser-  
vants in defence planning.

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### U.K. BATTERIES FOR AUSTRALIAN SUBMARINES

"O" class submarines of the R.A.N. are to be fitted with a British-built battery which in an emergency can provide sufficient power to light a town of 10,000 houses for a short period.

The giant cells, standing as high as a man's shoulder, will also be used for cooking and heating as well as for the submarine's main propulsion. The batteries are manufactured by Electric Power Storage Limited, of Clifton Junction, near Manchester, the only submarine battery manufacturing firm in Britain.

### RECRUITING AND ARMED SERVICES STATISTICS

Strengths of the armed forces as

at June 30, 1968: Navy, 16,454; Army, 42,944 (27,152 regulars and 15,792 national servicemen); Air Force, 21,564.

### TITLE CHANGES — FLEET UNITS

The titles of R.A.N. Fleet Units will become all-Australian on January 1, 1969.

The three guided missile destroyers, PERTH, HOBART and BRISBANE will form the First Australian Destroyer Squadron.

The Daring Class destroyers, VAMPIRE, VENDETTA and DUCHESS will become the Second Australian Destroyer Squadron (Darings).

The Third Australian Destroyer Squadron (Rivers) will comprise

the destroyer escorts YARRA, STUART, PARRAMATTA, DERWENT plus SWAN and TORRENS, when completed.

Among other changes the Fourth Submarine Squadron will become the First Australian Submarine Squadron. The Sixteenth Mine Counter Measures Squadron will be known as the First Australian Mine Counter Measures Squadron.

Also on January 1, all R.A.N. ships will change the style of their hull numbers, thus ships will carry only numbers (square style) on their bows and on each side of their sterns.

Auxiliary vessels such as the fleet oiler SUPPLY and the troop transport SYDNEY will continue to carry a small letter prefix.

### NEW QUEEN'S COLOUR

As a result of the introduction of the Australian White Ensign, Her Majesty the Queen has approved a new Queen's Colour for the R.A.N. The design of the Colour consists of the new ensign with Her Majesty's Cypher superimposed in the centre.

His Excellency the Governor-General will make a formal presentation of Queen's Colours to the R.A.N. at a special parade at Olympic Park No. 2 in Melbourne during the afternoon of Friday, November 1, 1968. As is customary, one Colour will be held on board the Flagship and the other at HMAS CERBERUS.

The ceremony will be open to the public and members of the Navy League will be especially welcome.

H.M.A.S. OXLEY submerging. The latest version of the ("O") Oberon-class patrol submarine, OXLEY is one of the most advanced submarines of her type in the world. Specially designed for silent running, her equipment includes the most sensitive underwater listening apparatus and a new electronic fire control system.

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## Annual Report and Balance Sheet of the New South Wales Division of the Navy League of Australia — presented, 26 August, 1968

It is with much pleasure that I present the Committee's report for the year ended June 30, 1968.

**MEMBERSHIP:** During the year has decreased by 2 to 253. However, as we lost fourteen members due to death, departure for overseas or withdrawal of membership due to non-payment of subscription, the slight loss incurred is not alarming. In this connection, the Secretary has provided an informative pamphlet which is also an application form for membership and it is hoped that all present will take at least one and endeavour to obtain one or more members to improve our membership, thus increasing our potential to more vigorously influence public opinion with an understanding of the vital aims of the League as well as to enable us to continue to assist the Sea Cadet Corps.

"THE NAVY", our magazine, under the capable editorship of Mr. Dennis Trickett, continues its progress, and is becoming increasingly the subject of favourable comment. The varied subjects introduced in each successive issue show that a most commendable amount of research is carried out for the production of the magazine and we are very grateful to the editor for this most excellent publication.

**FINANCE:** The audited financial statement which will be presented shortly shows that during the year a slight decrease took place in our funds. The accounts are, however, in a healthy state. Grants to Sea Cadet Units totalled \$1,000 whilst a further \$999 was spent on insurance, sporting trophies, typists, etc. The training ship PARRAMATTA is now well established at Rydalmere and now has received the full amount of \$2,000 allocated as a grant toward the cost of erecting the Unit H.Q. Building. T.S. HAWKESBURY at Point Clare, N.S.W., has now received official recognition and \$2000 has been earmarked for assistance to this Unit for the building of its H.Q.'s on State Crown Land. T.S. CONDOMINE whose premises

had to be evacuated in May owing to severe storm damage is temporarily housed in the Manly Scout Hall. The Unit, which doubled its strength during the year, has obtained a new site at Manly Vale, and assistance will be made available when required. We are most grateful to Manly Municipal Council and to the Manly Boy Scouts for their timely help in this matter. Our investment of \$1,000 in Sydney County Council Debentures has matured and this amount, together with a further \$1000 has since June 30, 1968, been invested more advantageously in the State Electricity Loan.

During the year 1968-69 your Committee by its Budget estimates, anticipates the expenditure will exceed income by the amount approximating to the sum expended on the Australian Sea Cadet Corps. This sum will be met out of the funds that have been accumulated against such a contingency.

**SEA CADET CORPS.** The Senior Officer, Lt. Commander L. Mackay-Cruise, R.A.N.R., shortly will present his Annual Report on the A.S.C.C. in N.S.W. It is very gratifying to report that not only is the Divisional strength increasing but also its morale is of a very high standard. Your Committee acknowledges the credit that is due to Lt. Commander Mackay-Cruise for this most satisfactory situation.

**RATIONALISATION:** The Committee appointed to investigate this Naval Board proposal completed its N.S.W. enquiries during May, and it is anticipated that the full Commonwealth report will be published at the next Sea Cadet Council meeting to be held in Canberra on October 11, 1968.

**ENTERTAINMENT:** Several visits to ships of interest were arranged and the visit to the first of our own submarines, HMAS OXLEY was well attended.

**NAVY LEAGUE BALL:** Resulting from the 1967 Ball a splendid donation of \$1,000 was received from Mrs. T. K. Morrison who was President of the Ladies' Committee.

This year there will not be a Ball, but Rear Admiral and Mrs. Wells most kindly consented to make Tresco, the official residence of the Flag Officer in Charge, East Australia Area, available for the Ladies' Committee for a bridge afternoon. This was held last Wednesday and we are most grateful to the Ladies' Committee and, in particular, Mrs. Gordon Johnson, for organising such a successful function. I understand that from their endeavours we will receive a cheque for approximately \$500.

**APPRECIATIONS:** Your Committee desires to record its appreciation to the following:

P. & O. Lines of Australia,  
Mr. J. K. Bowen and Mr. J. B. McMinn,  
Messrs. Robertson, Darling and Wolfenden,  
Mr. R. I. Rae.

As your retiring President, I wish to express my gratitude to every member of the Executive Committee both for their monthly attendances throughout the year and their invaluable assistance. To Commander Reilly, who has been Vice-President throughout my long period in office, a special tribute is due; for his sage counsel and ever-ready willingness to share the many responsibilities of President, the League is deeply indebted and I say to him a very sincere thank you.

To our Secretary Lt. Cdr. A. Andrews, MBE, R.A.N. (Ret'd), the NSW Division is indeed indebted for his loyal service and his ability to anticipate requirements.

H. A. SHOWERS,  
Rear Admiral,  
President.

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## THE NAVY LEAGUE OF AUSTRALIA

New South Wales Division

**BALANCE SHEET AS AT 30 JUNE, 1968**

ACCUMULATED FUNDS		1968
1967		\$
\$		11,055
11,904	Balance — June 30, 1967	
1,922	Less: Loans to units at that date, now converted to grants	
9,982		11,055
1,073	Less: Excess of expenditure over income for the year ended June 30, 1968, as per accompanying statement	81
11,055		10,974
Employed as follows:—		
Fixed Assets — At Cost		
192	Office Equipment	520
520	Film Projector	198
198	Sea Cadet Equipment	
910		910
910	Less Provision for Depreciation	910
Investment — at Cost		
1,000	Sydney County Council — Inscribed Stock	1,000
Current Assets		
10,468	Bank of New South Wales — Current Account	10,190
23	Sundry Debtors	
11,491		11,190
Deduct		
Current Liabilities		
373	Sundry Creditors	151
63	Ada McMaster Trust	65
436		216
\$11,055		\$10,974

A. A. ANDREWS,  
Secretary.

H. A. SHOWERS,  
President.

### AUDITORS' REPORT

We report that we have examined the above Balance Sheet with the books of account of the League and have obtained all the information and explanations we have required. In our opinion the Balance Sheet is properly drawn up so as to exhibit a true and fair view of the League's affairs according to the best of our information and the explanations given to us and as shown by the books of the League.

ROBERTSON, DARLING & WOLFENDEN,  
Chartered Accountants.

SYDNEY, August 14, 1968.

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## THE NAVY LEAGUE OF AUSTRALIA

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### STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR 30 JUNE, 1968

1967 \$	1968 \$	General	Sea Cadets
	<b>Total</b>		
Income	722		
833 Subscriptions	523		
477 Donations	1,000	1,000	
2,000 Profit from 1967 Annual Ball	335	335	
411 Profit from 1967 Trafalgar Day Programmes	323	323	
304 Interest received	2953	2953	
4,025			
<b>Expenditure</b>			
1,048 Secretarial and Office Expenses	1,061	840	221
54 Editorial and Publication of "The Navy"	(67)	(67)	
247 Printing Stationery, Postages and Telephone	172	50	122
142 Rates, Rents and Insurances	435		435
— Federal Council Levy	200	200	
48 Cost Sporting Trophies	131		131
1,268 Grants to Units	1,000		1,000
102 Entertaining	80		80
43 Sundry Expenses	22	12	10
2,952	3,034	1,035	1,999
Excess of Expenditure over Income for the year ended June 30, 1968	\$81		

## — BOOK REVIEW —

### THE FAR AND THE DEEP

(Authoritative history of the development of the submarine throughout the world)

Author: Commander E. P. Stafford, U.S.N.

Publisher: Arthur Barker Limited, London, 1968 — 382 pages. Price \$5.05. Our copy from: Hicks Smith & Sons Pty. Ltd., Sydney.

Review by: Lieutenant Commander B. R. Nield, R.A.N.R. (Retd.).

In the two World Wars of this century, Britain was brought near to defeat by German submarine warfare. In the Second World War British submarines in the Mediterranean played a major part in the

campaigns of the Middle East. All this shows that by 1945 the invention of the submarine had become as important as any innovation in naval history. By now, submarines have developed such endurance and striking power that they are more formidable than anyone expected warships to be.

Commander Stafford, in this book, writes about the development of submarines from the first beginnings to the present day. In his bibliographical notes (pages 355 to 364) he indicates very frankly the limita-

tions of the research that he did; at the same time, he provides a useful guide to reading on submarines. He does not himself give a history of submarines. Instead, he gives narratives of the deeds of the great submarine captains, (page 269). The submarine captain was perhaps the last great master of single combat in an age in which even the fighter plane must fight in close and disciplined formation.

This book, then, while it is not a work of reference, is an excellent one-volume introduction to submarines.



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## Helicopter Destroyers For The Royal Australian Navy

By JOHN MORTIMER

This article is a reply to the feature by Mr. R. J. Mallett which appeared in the May-June-July edition of "The Navy" (page 25) — also entitled "Helicopter Destroyers for the R.A.N." The photograph of H.M.A.S. TOBRUK (D37) accompanying this article is the property of the author.

At first glance the idea of converting the "Battle" class destroyers and "Q" class frigates into helicopter destroyers appears to be worthwhile. However, after examining their age and condition it quickly becomes evident that such a conversion would be both impractical and uneconomical. These ships, especially the frigates, are too old and the cost of such a conversion would be too expensive to make the project worthwhile. The analogy between the Canadian ships of the "St. Laurent" class and the Australian ships is unreal as the ships involved belong to completely different eras. The Canadian ships were completed from 1955 to 1957, whilst the Australian "Q" class frigates were completed in 1942.

The ships suggested for conversion are HMASs ANZAC, TOBRUK (destroyers), QUEENSBOROUGH, QUIBERON and

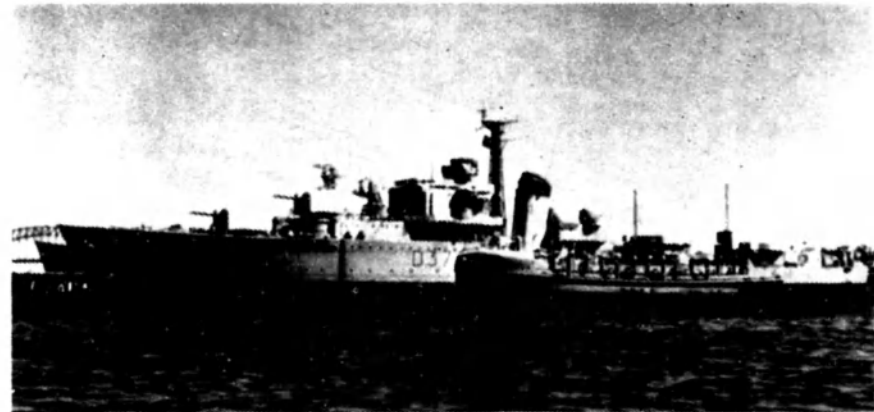
QUICKMATCH (frigates). The normal active life of destroyers is from 20 to 25 years. Battle class destroyers Completed HMAS ANZAC 22-3-51 HMAS TOBRUK 17-5-50 Q class frigates HMAS

QUEENSBOROUGH 10-12-42 HMAS QUIBERON 22-7-42 HMAS QUICKMATCH 30-9-42

Therefore the ships which were recommended for conversion to helicopter destroyers have either reached the end of their active life or are very near it. Accordingly, all but the ANZAC and QUEENSBOROUGH are laid up in mothballs awaiting disposal. Already two other ships belonging to the "Q" class have been scrapped. HMAS QUALITY was declared for disposal in 1957, while the QUADRANT was scrapped early in 1962.

There is more to the conversion of these ships than merely changing their superstructure. The main consideration to be made is an evaluation of the condition of the ship's hull and machinery, not whether its superstructure can accommodate certain modifications. It would be useless making modifications to a ship whose hull or machinery is worn out. This is obviously the case with the "Q" class frigates and to a lesser extent the "Battle" class destroyers.

All these ships have seen war service and it could be expected that they would have prematurely aged due to the constant activity at high speeds that a warship experiences in action. The ANZAC and TOBRUK served with the United Nations forces in the Korean War, whilst the QUEENSBOROUGH, QUIBERON and



H.M.A.S. TOBRUK

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QUICKMATCH served in the Second World War.

The stresses and strains that are exerted on a ship's hull is one of the main reasons why the average life of destroyers is limited to approximately 25 years. While at sea a ship's hull is subjected to a constant succession of varying stresses. At one moment the ship is supported on the crest of a wave, when there is a tendency for its decks to tear apart and its keel has a tendency to buckle (hogging).

The next moment the ship may be in the trough of a wave with her two ends supported and at this point the decks tend to buckle and the keel to tear apart (sagging).

Whilst the ship is rolling the stress on the hull has a tendency to act in a transverse direction.

Further stress is exerted on the hull by piledriving, that is, when a ship comes off the crest of a wave and crashes into the trough of the following wave. These and other stresses exerted on the ship eventually weaken the hull making it unseaworthy.

Evidence suggests that the hulls of these ships have deteriorated and that their conversion would be unwise. As early as 1943 structural defects had developed in the QUIBERON and QUICKMATCH, causing leaks in the bow section. Some of the gusset plates had either buckled or cracked. Also in QUICKMATCH there were leaks in the forward magazines and shell rooms caused by leaking rivets. An investigation into these defects concluded that these defects had been caused by maintaining high speeds in heavy seas, or coming alongside another ship in rough weather.

HMAS QUEENSBOROUGH, the only "Q" class frigate still in active service, has also had her share of troubles. On May 8, 1963, the QUEENSBOROUGH's hull was damaged in an accident with the submarine HMS TABARD. The TABARD was travelling only a few feet below the surface when the QUEENSBOROUGH scrapped over its topsides. After this accident the QUEENSBOROUGH was placed in reserve. However, she re-commissioned as a Fleet Training Ship in late 1966. About a year

after her re-commissioning the QUEENSBOROUGH was involved in another mishap. The condition of her engines were revealed when on December 7, 1967, a leak occurred in the forward boiler room. A young sailor was killed and another seriously injured when superheated steam escaped from a boiler. These incidents point to the fact that neither the hull or machinery in the frigates would be in a sufficiently good condition to make their conversion to helicopter destroyers worthwhile.

The state of the "Battle" class destroyers is probably better than the "Q" class frigates. However, the TOBRUK has had an unlucky existence. In April, 1957, during SEATO exercises off Singapore an unexploded star shell crashed through her deck, killing one rating and injuring another. The shell failed to explode in the air, burst through TOBRUK's upper deck and exploded.

TOBRUK was involved in another accident on September 14, 1960, when she was engaged in a stand-off practice shoot off Jervis Bay. She was hit by a 4.5 inch shell from HMAS ANZAC and although there were no casualties the engine room was filled with 14 ft. of water and a 12 ft. square hole was made in TOBRUK's hull.

Although the shell did not have an explosive warhead, it tore through TOBRUK's armour plated hull at the waterline and crashed into the engineroom, where it disintegrated spraying splinters about the engineroom and cut salt water pipes, putting the boilers out of action. Shortly after the accident steel plates were welded over the hole and a concrete block was poured in the engineroom as support for the weakened hull. After this accident TOBRUK was towed to Jervis Bay by ANZAC and from there she sailed to Sydney where she was paid off into reserve. Because of these accidents it could be expected that TOBRUK's hull would not be of a sufficiently sound standard as to make her conversion worthwhile.

Although HMAS ANZAC is still in commission her armament is obsolete, as is the case with the

other ships suggested for conversion. Unlike their British counterparts the Australian "Battle" class destroyers were fitted with the "Daring" type gun turrets. These turrets, although fully automatic and with a rate of fire of 25 rounds per minute are dated. The "Daring" class destroyers are to have improvements made to their gunnery control systems costing \$6,000,000 in an attempt to bring their 4.5 inch turrets up to date.

Also the 40 mm. hofors carried by both the "Q" class frigates and the "Battle" class destroyers have been replaced by the more accurate Seacat short range anti-aircraft missile. Therefore, if these ships are to be converted they would have to undergo an extensive modernisation of their existing armament. The cost of effecting these necessary modifications would be below the cost of a new ship. However, it would be so high as to make these ships' conversion uneconomical, when for a few more million dollars a new ship could be built.

With the introduction of missile systems and the wider use of electronics in warships the cost of each ship has vastly risen. This point is illustrated by comparing the cost of HMAS's ANZAC, TOBRUK and PERTH. The ANZAC cost approximately \$5,000,000, TOBRUK cost \$4,940,000, while the PERTH cost approximately \$50,000,000. Of this \$50 million the cost of missiles, electronics and spare parts cost \$36,000,000. Therefore, although the conversion of the ANZAC, TOBRUK, QUEENSBOROUGH, QUIBERON and QUICKMATCH to helicopter destroyers may appear an ideal plan, its cost, if the ships were to be suitably armed and fitted with adequate warning systems would be too high to make their conversion worthwhile. While the converted ships could expect to remain in service for ten years at the most, a new ship could serve with the fleet for 20 to 25 years. As the difference in cost between a new and converted ship would probably be in the range of \$10m. to \$20m. It would appear far more feasible to spend the additional money on a new ship, rather than convert ships that are already obsolete.



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Sir Francis had been guided on his course by British Admiralty charts and his voyage serves as a current reminder of the navigational service to seafarers of all nations which is provided by the Royal Navy's Hydrographic Department and of the work and achievements of the great sea explorers and surveyors of the past.

Today the Department publishes about 3,500 Admiralty charts, together with sailing directions, tide tables, lists of lights and many other navigational publications, which provide the information to guide the mariner across the oceans, along the coasts and to the ports and harbours of all parts of the world.

For the benefit and safety of mariners of all nations, they are sold through commercial agencies in major ports, and these Admiralty charts and publications will be found as vital instruments of navigation on vessels of almost every nationality.

## SALES AT RECORD LEVEL

Trade needs ships and ships need charts, so the demand for this service has expanded, especially in the post-war years when world economic activity and the volume of seaborne trade has increased at a faster rate than ever before. Admiralty charts are now being sold at a record level of more than 1,700,000 copies a year, about 1,200,000 of which are

sold to foreign mariners, compared for example with total sales of 1,000,000 in 1950 and 1,400,000 in 1960.

These achievements underline the international confidence in the Admiralty chart and show that more than ever before is Britain maintaining her role as a provider of nautical charts for all nations.

With such a long maritime history and tradition, it is surprising to find that Britain was slow to gain her rightful place in chart-making among the maritime nations of the world.

Even in the first half of the eighteenth century, when the maritime nations were becoming in-





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creasingly aware of the necessity for accurate charts and hydrographic offices had been well established in several countries, a commander of a Royal Navy ship had to find his own charts, and buy them from chart sellers in the City of London, who catered for the merchant traders. During the hostilities of those days, it is said that more ships foundered through the lack of accurate charts than were lost by enemy action.

## FIRST HYDROGRAPHER

It was not until 1795 that the first Hydrographer of the Navy was appointed, to select and compile charts and hydrographic publications for the Royal Navy. Some 25 years later, Admiralty charts were made available for sale to the public and in 1825 the first catalogue of Admiralty charts on sale was published.

Throughout the remainder of the nineteenth century, when British merchant ships were trading to all parts of the world, officers of the naval surveying service were at sea in every ocean and charting nearly every remote and distant shore: British hydrography progressed rapidly and the Admiralty chart gained then a reputation for quality and accuracy which has been maintained to the present day. Even so, the demand for charts increased slowly, from total sales of 375,000

at the turn of the century in 1900 to only 500,000 in 1939.

Since those earlier days, the science of hydrography and the arts of chart-making have naturally benefited, in common with other sciences, from the invention of new methods and technological advance. Modern survey vessels are fitted with accurate and efficient machines and equipment and aerial photography has greatly reduced the time needed for topographic surveys.

## IMPROVED DRAWING AND PRINTING

The drawing and printing processes of chart production have similarly improved and progressed, yet the quality and accuracy of the finally printed Admiralty chart continue to rely very much also on the zeal and craftsmanship of the surveyors, draughtsmen, printers and many other personnel of the Hydrographic Department, whose basic knowledge and skills have been passed on from one generation to the next.

The mutual interest of the maritime nations and the international aspect of hydrography was emphasised with the formation, in 1921, of the International Hydrographic Bureau. The Bureau, with headquarters at Monaco, was founded as an organisation for international co-operation, with the objective of achieving maritime

safety through the establishment of a close and permanent association among all national hydrographic offices.

It functions today with a membership of more than 40 nations, each with its own national hydrographic office and interest, but sharing their knowledge and experience towards improving the theory and practice of the science of hydrography. There is a free reciprocal exchange of data and charting information between the nations, the majority of whom, however, publish charts only of their own coastal waters. Britain today is one of the very few nations to continue to publish a world series.

## GROWING IN IMPORTANCE

With the progress of modern surveying methods and the establishment of new hydrographic services in many countries overseas, the influx of hydrographic data grows annually. At the same time the task of charting all the vital information from these sources, for the benefit and safety of the mariner, grows also in importance and complexity.

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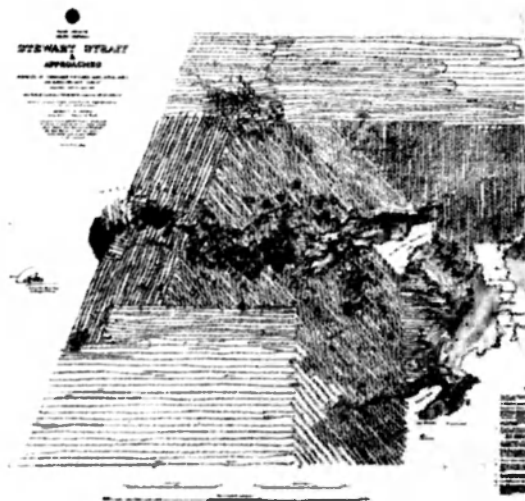
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with a draught of 65 feet (20 metres) or more calls, in itself, for some revision of hydrographic practice.

With a forward-looking view, therefore, some radical changes in style and content of the Admiralty chart are planned, both to fit the

future maintenance of the series to the advantages offered by modern production processes and to improve even further the Admiralty chart as an instrument of navigation to meet the changing pattern at sea.

Many changes in detail are plan-

ned which include additional colour printing, modern and improved styles of lettering and the introduction of metric units for the measurement of heights and depths. There will be considerable simplification and reduction of irrelevant detail, yet nothing of navigational importance will be omitted.

The many changes combine to achieve the primary aim of providing a navigational chart of the utmost clarity which can be read with ease by the seaman even in the most adverse conditions.

### CHANGES FOR THE BETTER

These changes in the traditional style can be achieved gradually, only as new charts are published so the image will change slowly and perhaps almost imperceptibly at first. But the changes to the Admiralty chart will always be for the better and will be designed with the practical needs of the mariner constantly in mind.

In such ways and by utilising to the full the scientific and technical developments of the future, the Hydrographic Department plans to continue to provide charts for all nations and to keep alive the legend that nineteenth century seamen used to swear by their "faith in God and an Admiralty chart".



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The R.A.N. flagship HMAS MELBOURNE is nearing the end of her extended refit at Garden Island naval dockyard, Sydney. The 12-months refit, costing about \$7 million, is keeping to schedule. MELBOURNE recently came out of dry dock at Garden Island and she is expected to return to the Fleet early next year.

The converted Majestic class carrier is being modernised to fly 680 m.p.h. Skyhawk A4G fighter-bombers and Tracker S2E anti-submarine aircraft. Modifications include major changes in electrical, radar and fuel storage systems. Alterations are also being made to the flight deck, hangars and magazines.

A complete alternating current system to supplement the existing direct current supply is being in-

stalled. This entails the fitting of a 750 KW turbo-generator, a 500 KW diesel alternator, elaborate switchgear and an AC distribution system.

Because Skyhawks and Trackers are larger aircraft than the Sea Venoms and Gannets previously flown by MELBOURNE, the flight deck is being strengthened, workshops and stores are being rearranged and a new flying control position has been selected.

A modified emergency crash barrier is being fitted on the flight deck to stop aircraft unable to pick up the arrester cables.

Existing magazines are being modified and rocket lifts updated to handle the missiles and ammunition for the new aircraft.

New radar and other electronic equipment will be carried on a new mast fitted behind the MELBOURNE's bridge. Communications systems are being modernised to increase the efficiency of ship-to-ship and ship-to-air communications.

A much larger air conditioning system is being installed. This will



The aircraft carrier H.M.A.S. MELBOURNE has left dry-dock at Garden Island, Sydney. MELBOURNE is undergoing an extensive refit costing \$7m. which will be completed by the end of the year. During the refit changes will be made to fuel storage and accommodation areas and much electronic equipment will be installed. H.M.A.S. MELBOURNE is being equipped with the latest air navigation aids for her new aircraft — Douglas Skyhawk jet fighter-bombers and anti-submarine Grumman Trackers.

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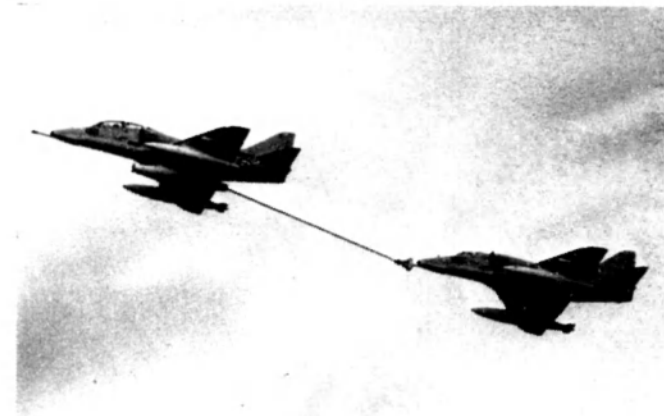
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MELBOURNE early in 1969.

reduce the discomfort to the crew when the carrier is operating in tropical areas.

In addition to these modifications, the normal shipyard task of a complete refit and overhaul of the ship's hull and machinery is being done.

Refitting MELBOURNE is by far the largest dockyard project involving computers and critical path methods (CPM) in Australia. It has proved the soundness of four years of Navy development of computer programming.

The Navy has used CPM on 16 ship refits at Garden Island. It was decided that CPM was essential to the MELBOURNE refit, which was to involve two million man-hours, 6000 individual activities, 1,500 workmen, 120 trade specialisations and more than \$2 million of complex equipment.

CPM is like a super-beehive. The hive is the complete project, the combs are the CPM networks and the cells are the network activities. A network activity is a portion of the task which can be separated as an entity and then completed in a specified period.

Activities are combined to make up a network which specifies how and when individual units are to be performed and ensures their commencement in the most efficient sequence. It enables the planners

to adjust the commencement of activities so that a maximum amount of work can be done by the available people in minimum total elapsed time.

Important constraints which must also be allowed for are the availability of plant, equipment and materials.

Completed networks are fed into a computer, 200 miles away at the EDP Centre in Canberra. The data is then automatically recorded and placed in its correct sequence on computer files ready for use when needed.

By using CPM, the Navy is avoiding production loss through poor scheduling.

On the job supervisors receive their work lists or work orders as computer print-outs. Each print-out lists the activities to be completed in a four-week period.

As each activity is completed, it is removed from the network. An accurate indication of job progress is thus available at all times. CPM also indicates delays and trouble spots.

Navy development of the technique leads the services and is the pioneer in application of computer-CPM in the Australian shipbuilding and ship repair field.

The MELBOURNE refit offers solid proof of the practicability of computer guidance in projects calling for a diversity of inter-related activities.

Continual refinements are being made to the Navy's system. Its application to commercial shipyards may be the injection needed to compete against increasing competition from overseas shipyards with lower labour costs.

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dock during her ex-  
tended refit.

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rine aircraft which will  
fly from MELBOURNE  
next year are now un-  
der training at H.M.A.S.  
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# **PRESIDENT'S REPORT FOR YEAR ENDED JUNE 30, 1968**

I would be grateful if Members would accept this Document as a "Newsletter" covering the six months ended 30 June, as well as the Annual Report ending at the same time.

In my previous newsletter I referred to the composition of the Executive Committee —

Cdr. G. Ashley-Brown.  
Mr. W. Bell.  
Mr. Sam Benson, MHR.  
Mr. R. H. Collins.  
Captain C. I. Flaherty.  
Captain G. J. Fowle.  
Sir Kenneth Luke.  
Mr. J. H. Paterson.  
Captain Ian McDonald.  
Mr. R. A. Nettleford.  
Mr. W. Speakman.

Since then Messrs. Bell and Paterson have left the Committee and Surgeon Captain A. Rowlands, OBE, State President of the Naval Association, has joined us.

I also referred to the 1967 League Ball; the projected visit to Chateau Tahbilk (which was very successful — although very hot and the venue therefore much appreciated); and the need of the ASCC for the funds raised at these functions.

I also wrote of the attendance of the Minister for the Navy at one of our monthly meetings, and the aim of the Navy League to support the R.A.N. and to ensure that it is able to play its part in the Australian defence organisation.

Having thus summarised our activities during the first six months, I turn to the last half of the year under review.

## **AUSTRALIAN SEA CADET CORPS**

As part of the ASCC rationalisation proposals, the accommodation situation has been under review, and irrespective of the fate of the proposals, action to improve the situation of several Units will be necessary:—

**BENDIGO — TS BENDIGO:** The small hall on Lake Weeroona (within the city boundaries) is quite inadequate, and arrangements have been made to acquire a site on

Lake Eppalock, some miles distant, but with good facilities for boatwork. New headquarters for the Unit will be required, and the Local Committee has already sought League assistance.

**LATROBE VALLEY — TS LATROBE:** The Unit at present uses the facilities of the Army Drill Hall in Yallourn. The Unit needs its own premises. (I understand the Military establishment will become a "hole in the ground" in any case, as the open cut extends), and we have entered into correspondence with the SEC concerning the reservation of a site on the Hazelwood pondage. Here also, a new headquarters will be required.

**PORTLAND — TS HENTY:** The Unit at present shares with several other organisations, a building which is due to become part of a civic centre, and will have to move in due course.

The Portland Council has very generously offered us a very good waterfront site which we would like to take advantage of. Once again, new premises will be required if the Sea Cadet Unit is to continue.

As the accommodation of Sea Cadet Units is a responsibility of the Navy League, I have mentioned the requirements of these three Units to indicate the importance of the League's fund-raising activities. In particular we depend very much on the Navy League Ball, to which I will refer in a later paragraph.

## **"BEST UNIT"**

The Captain, HMAS LONSDALE, has just completed a round of Annual Inspections and selected T. S. MELBOURNE (situated on the Albert Park Lake) as the most efficient Unit in Victoria. The best Unit traditionally assumes custody of the Sea Cadet Colour, and a transfer ceremony (T.S. BARWON to MELBOURNE) will be held in

LONSDALE later on in the year, with Commodore J. H. Dowson, C.B.E., as Reviewing Officer.

Members and their friends will be invited to this ceremony when dates and details are arranged.

## **SEA CADET ACTIVITIES**

Over 100 Sea Cadets have taken part, or will take part, in Courses at Flinders Naval Depot in 1968. Instructors took part in a Course in August-September, 1967, and an Officers Course is scheduled for September this year.

A number of Portland Cadets took passage from Portland to Sydney in HMAS SUPPLY and the destroyer VAMPIRE had Cadets aboard for a Port Phillip Bay exercise.

H.M.A.S LONSDALE has played "host" to country Units on a number of occasions, and has co-operated in many other ways.

These events demonstrate the increasing interest of the Service in the A.S.C.C.

## **A CLOSER ASSOCIATION OF EX-NAVAL ORGANISATIONS**

As many members know, there are several organisations related in one way or another to the R.A.N. The Naval Association of Australia; the Naval Commemoration Committee; the various ex-HMA Ships' associations, all with other organisations, help to provide "backing" for the R.A.N.

The League is playing its part to achieve a much closer and more coherent "association of the Naval Associations". I hope that I will be able to tell you more about this later on.

## **THE CHIEF OF NAVAL STAFF**

Vice Admiral V.A.T. Smith, C.B., C.B.E., D.S.C., became First Naval Member and Chief of Naval Staff at the beginning of 1968.

Admiral Smith very generously extended a short Victorian visit (to CERBERUS) so that he could



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attend, the April monthly meeting of our Executive Committee in Melbourne.

We greatly appreciated this gesture of good will on the part of Admiral Smith.

### THE NAVY LEAGUE BALL

Due to take place on Thursday, October 3 at the Palais, St. Kilda, the Ball this year promises to be really "a ball". The Ladies Committee has been working on the arrangements for several months already, and we hope for a record attendance.

On the "official" side, the Federal President of the League (Rear Admiral Harry Showers, C.B.E.) and Mrs. Showers are coming from Sydney, and the Second Naval Member (Rear Admiral Peek) and Mrs. Peek will come from Canberra to join us. His Excellency the Lieutenant Governor and Dame Mary Herring will be our guests of Honour.

I hope every member will support the League Ball; the welfare of the A.S.C.C. is so very dependent upon its success.

### PRESENTATION OF THE QUEEN'S COLOUR TO THE R.A.N.

A major Naval spectacle is planned for Friday, November 1 1968, where His Excellency the Governor General will present a new (Australian) colour to the R.A.N. at a ceremony at Olympic Park (No. 2 Oval).

Members will be advised of details as soon as they become available.

I have run out of words, but hope this resume gives you some idea of the activities of the Division during the year. I look forward to seeing you at the Annual Meeting on September 18.

Yours sincerely,  
F. G. EVENS,  
resident.

## Australian Sea Cadet Corps

### NEWS FROM THE VICTORIAN DIVISION

On Saturday, June 29, 3 Officers, 3 Instructors and 62 Cadets of the Victorian Division were the guests of Captain N. Boase, Commanding Officer of HMAS VAMPIRE for a 3 hour cruise on Port Phillip Bay during the ship's Radar and Gun-nery Trials. VAMPIRE slipped at 0815 and with the Cadets helping man parts of the ship and proceeded down river to the Bay. The Officers and Instructors were fortunate to be allowed in the wings of the Bridge whilst leaving harbour. The Cadets from TS BARWON, TS VOYAGER and TS BENDIGO gave a good showing of themselves as they went about their duties allotted them.

The Cadets were then divided into groups of about 8 and the First Lieutenant of VAMPIRE, Lt. Cdr. Williams had arranged for a Leading Seaman or Able Seaman to take charge of each group. Each group was given a comprehensive tour of VAMPIRE and there were indeed a great deal of questions and answers.

The Officers and instructors were also shown over the ship to their undoubted benefit.

One particular incident which was impressive was the firing of the anti-submarine mortars and their ultimate recovery by frogmen.

After nearly 3 hours in VAMPIRE all were taken ashore by workboat after scrambling down nets over the side.

Captain Boase, his Officers and Sailors made every effort to ensure the whole party not only enjoyed their trip but benefited from it. Of this there is no doubt, and from the Victorian Division we say thanks to them and wish VAMPIRE every success in the future.

TS VOYAGER are proud to report that Cadet (Acting Petty Officer) T. T. WALTON has just successfully completed a course in flying and has obtained his licence to pilot small type aircraft. Only 17 years of age, this is quite an accomplishment and all congratulate him on this achievement.



C/o 1st Floor,  
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The Editor "Navy".  
Box 1719 G.P.O.  
Sydney.

Dear Sir,

In your issue of May-July '68, on page 63, there is a photograph purporting to be that of HMS Hood blowing up in the Denmark Strait in May 1941, after being engaged

and sunk by the BISMARCK at a range in excess of 25,000 yards.

I am certain that this is an error, that has been used over the years since 1941, and that the actual photo is that of HMS BARHAM of the "QE" class exploding after being torpedoed in the Mediterranean, in either November or December of 1941.

The BARHAM was wearing the flag of an English VA Pridham-Whipple, a keen golfer, who was

2/IC of the the Med. Fleet, and it is stated on what authority, I don't know, that when he was fished out of the "occin" the C-in-C was alleged to have informed "P.W." that he had been "stymied".

Yours, etc.,  
O. G. HAINE

Editor's Note: Mr. Haine is correct about the photograph of the sinking — I do apologise.



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# WHAT'S NEW?

Compiled by "Periscope"

### STAND BY FOR WHAT?

Inspection of a ship's tailshaft, which normally requires dry-docking, removal of the propeller and complete withdrawal of the shaft, can now be accomplished while the vessel is afloat.

This is possible with a new Turnbull Split Shaft Bearing, developed by Turnbull Marine Design Co. Ltd., of Cheshire, England. The new stern-bearing housing (suitable for shafts ranging in diameter from 1 to 3 feet) is in two pieces. The bottom half is an integral part of the stern frame. The top half is located on the horizontal joint and the rear 180-degree radial face of the stern frame.

A built-in hydraulic system enables one man to lift the upper half of the bearing and move it forward on an overhead rail. This exposes one half of the tailshaft and stern-bearing surfaces for inspection, and the engine turning gear can be used to reveal the other half. The manufacturing firm offers a design service for shipbuilders and owners, or will supply complete, manufactured units. Price depends upon specifications.

### CAT'S EYE

A new navigational aid that enables pilots to see night-darkened terrain with the same depth, size and realism they would view in broad daylight has been announced by the Kollsman Instrument Corp. of Syosset, N.Y. The so-called Night Window employs advanced optics and highly light-sensitive television to give pilots catlike night vision. Unlike previous systems, the Kollsman system does not display the viewed scene as an image on a small picture tube below the pilot's eye level. Instead, it projects its images on a foot-square screen that mounts behind the aircraft windshield, making them appear to the eye like the real objects in daylight and in their true position (photo).



Unlike radar and infra-red equipment, Night Window is completely passive and emits no visible or invisible waves that an enemy could detect and jam. It can "see" in darkness as dim as an indoor sports arena lit by a single flashlight.

Originally developed for the military, Kollsman is studying its application for all-weather flying and landing.

### PLASTIC STEEL

Devcon Ltd., of the U.K., recently gave an interesting demonstration of their new repairing material, Plastic Steel SF. It is a putty-like material, consisting of 80 per cent steel and 20 per cent epoxy resin. When mixed with a hardening agent it forms a rigid metallic mass which can be drilled and machined in every way like steel. The remarkable feature of this material is that it cures some nine times faster than other epoxy materials even in temperatures down to — 20°C. This means that a hole in a pipe elbow, a worn flange or a defective bolt need not hold up the work of a system for more than about half an hour. The demonstration showed repairs to a 4 in. pipe elbow, a 4 in. gate valve,

and an example of lap-jointing which withstood an impressive test. The material is supplied in 1 lb kits for emergency use at sea. Each kit contains pre-measured proportions of Plastic Steel and hardener.

### FOR PARACHUTE SAFETY

A simple, rugged Czechoslovakian parachute release can be set to open the canopy after a delay of up to 5 seconds or at heights from 1,640 ft. to 13,100 ft. It is designed for automatic emergency operation and as a safety device in sporting events. Dials on the release mechanism allow time or height to be set. The manufacturer Chronotechna says its KAP-3P is guaranteed to stay within accuracy limits for 500 operations.

### CHEEKY

A lightweight radio headset that is worn on the cheekbones, leaving the ears uncovered by earphones and the mouth unobstructed by a microphone has been developed by Spemby Electronics of Andover, England, for use on aircraft, in air-traffic control, language laboratories, etc. The HS4 unit allows the user to carry on normal conversation while, at the same time, receiving and sending radio messages.

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### SPECIAL RADAR FOR HELICOPTERS

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In addition to the MinTech contracts for Wessex and SH-3D helicopters Ekco is negotiating with a number of European Governments.

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## U.S. Navy Orders Additional Targets

A \$4.7 million contract for approximately 300 AQM-37A supersonic target missiles has been awarded to Beech Aircraft Corporation by the U.S. Navy Air Systems Command.

The AQM-37A, in use by the Navy since 1963, simulates high performance, high altitude aircraft and missiles. About 1,500 of the rocket-powered missiles have been delivered to the Navy and the United Kingdom since the prototype was first flown in 1960.

Beech Aircraft is currently concluding a Navy contract for 444 of the missiles, said Roy H. McGregor, Vice-President of Aerospace Marketing and Contracts. As of November 1, more than 400 had been delivered under the present contract.

The missile target, powered by a liquid propellant rocket engine, was originally designed to operate at speeds up to twice the speed of sound from altitudes of 1,000 to 70,000 feet. However, it has performed at Mach 3 speeds at altitudes as high as 90,000 feet, McGregor said.

Beech Aircraft, winner of the original design competition for the AQM-37A, is currently using the airframe of the AQM-37A to develop the Sandpiper — a high performance target missile using a newly-developed hybrid-fueled engine — for the U.S. Air Force Armament Laboratory at Eglin Air Force Base, Florida.

The AQM-37A is currently being launched from Navy A-4, F-4, and F-8 aircraft, shore installations, and aircraft carriers.

It is propelled by an LR-64 rocket engine utilising mixed amine fuel (MAF-4) and inhibited red fuming nitric acid. Nitrogen gas is used as the pressurant.

The 123 foot long target missile is shipped from Beech Aircraft's Wichita facility in a hermetically sealed container, fully fueled and ready for use. It has a Beech Aircraft-proven shelf life of more than three years, is 13 inches in diameter and weighs about 600 lbs. fueled.

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# A GLIMPSE OF OUR MARITIME FUTURE

By LIEUTENANT D.J. S. HOPKINS, A.S.C.C.

Australia's future role as a maritime nation is just getting under way, and her prospects are very bright. Great Britain and Japan were forced to develop their sea communications because they are small islands, with advanced economies, off the coasts of large continents; Australia, at the end of a chain of islands, adjacent to the most populous areas of the world and much more advanced economically than any of them, also has all Oceania to the East and North. Sea-lanes are therefore of supreme importance to THIS island. Why have we not shown a strong maritime tendency already?

Until now, we have been very busy establishing ourselves in what was a strange and forbidding land, and we have done it well. Now we are ready for the great leap forward — in mining, primary and secondary industries, and export. Remembering that it took those other great maritime nations hundreds of years to achieve their pre-eminence, we, in spite of our pre-occupation with the land, have not done so badly to date.

Shipping — the transport of cargo — is just one of the main arteries of commerce. Australia is like a ripening cotton-boll, ready to burst open, so that its valuable contents can be carried far and wide by the trade winds. This "Lucky Country's" produce, from mines, fields, and machines, will spread to the vast populations to the North-West, North, and East of us. Most of it will be carried by sea, and we are preparing for that rapidly.

The spotlight of history and our current news is on the land, so we may be forgiven for not noticing just how far we have progressed already as a maritime nation. In the past, we have actually tried (in vain, fortunately) to stifle coastal shipping for the benefit of land-borne traffic, but this tendency has been outgrown. Now, we have an established and growing shipbuilding industry; both coastal and overseas shipping-lines are increasing; the latest cargo-handling systems are being installed right around our coast; and our fishing-industries are changing from small individuals to organised companies and fleets. Also, we have the potential for obtaining the manpower for our

merchant fleet of the future. I refer to the vast upsurge in interest in the sea shown by the multitudes who take their recreation at sea — sailing, power-boating, diving, venturing into the blue water and discovering a love of the sea. We are beginning to probe the scientific challenges of the oceans; we are opening new ports; our hydrographic standards have improved considerably, and they will continue to do so. Everywhere, with growing momentum, we are thrusting forward towards our inevitable maritime future. Already we occupy a position other countries took centuries to reach, and the foundations have been well laid to enable our merchant-service to grow with our export trade.

Of course, maritime commerce will require protection — integrated defence-forces. Obviously, a strong Navy is part of this, and no matter what the integration and interrelation, the sea-borne force is almost certainly the key. For this, too, very sound foundations have been laid. We have excellent shore training establishments, even if they are not spread around the coast adequately; we have good repair facilities; and we have the nucleus of all the important sections — submarines, Air Arm, anti-submarine, hydrographics, etc.

The building of a Navy to protect commerce naturally lags behind the Merchant Service. The obvious way to prevent this lag from becoming too serious is for the Navy to be closely associated with ALL scientific developments at sea, not just with those concerned with defence. The Navy's

close association with CSIRO Marine Sections, with various University Marine Biology and Geology Departments, and with oil and mineral exploration, will no doubt be augmented by the new Degree courses for officers. A growing Navy will help an increasing Merchant Service to expand further.

The Navy League, as the "civilian friends" of the Navy, has an important function. As a group, and as individuals, we must promulgate our belief in our future at sea, and our enthusiasm for expanding Naval participation in all the exciting new sea-frontiers. Only by multiplying the number of Australians imbued with this concept will it become an ingrained idea with our policy-makers. This is a wonderful contribution the Navy League can make for the ultimate benefit and strength of Australia.

# The Navy League Says "Thank You"

The New South Wales Division of the Navy League of Australia acknowledges with grateful thanks the generous donations made by the companies and Trusts listed hereunder:—

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# Future Role of the Soviet Navy

Soviet publications are giving increasing prominence to the role of the Navy, a service which has not been much in the public eye in the past. The following is a special condensation of three articles written on 27, 28 and 30 December, 1967, by a special correspondent to "Red Star". It is designed to appeal to the ordinary reader, and to popularise the Navy; but, despite some crude anti-Americanisms, it has interest for the picture it gives of the growth of Soviet activity in the Mediterranean.

The MAHOMET HADZHIEV is a floating transport base (PBS). In "Jane's" it is listed as 'a new Soviet frigate', but from a distance it can be taken for a cruiser. It has the most modern electro-mechanical fighting equipment, but best of all is its communications system. I had occasion to see this work when we were in the Tunisian straits: the contact we obtained with Kamchatka was as firm and clear as if it had been a close neighbour.

The ship has travelled many miles. On Captain Potekhin's desk lies a record — 1965, 7,600 miles; 1966, 10,630 miles — and in this anniversary year she has travelled far, for on May 30 the Commander radioed the Turkish authorities, 'I am approaching the Bosphorus', and from then on she has been sailing in the Mediterranean.

Since the HADZHIEV has been in the vicinity of the American Sixth fleet, she has been constantly buzzed by aerial spies who skim just above the masts. Destroyers are always investigating the arrival and departure of submarines from her sides. One in particular, the DAVIS, came dangerously close and was warned off by our signalman. The time has ended when the Yanks could behave like hooligans on the high seas; contact with the American Fleet has not left pleasant impressions.

As we were sailing to meet a submarine commanded by the veteran Captain Akatov, we heard an SOS from the Greek cargo ship ANGELICA, which had a fire in its engine room and required assistance. It was 120 miles away, and would mean a sharp change in course and a great loss of time, but we had to help. When we reached the ship they wanted to know how much we would charge: they did not realise that we wanted to help for the good of humanity.

However, we helped them, losing time, and later two other Soviet transport ships arrived. They had also heard the distress call. The Americans ignored the call: they were too busy on exercises bombing a rocky Greek island near Crete.

When we speak of the open sea, we have to explain what we mean. The open sea is that which lies outside territorial waters. The principle of free and safe sailing for all nations is the basis of its regime. Ships of all states may without hindrance sail the open seas, submitting only to the laws of their own country.

In more than two decades the warships of the Americans have been prowling sinistly about the open waters of the Mediterranean. Their Sixth Fleet alone consists of about 50 ships. But there are also POLARIS submarines. And that's not all: there is the SARA-TOGA, with its 62,500 tons displacement and deck bombers, and the seagoing tug ETAPEKA, an inveterate spyboat. On more than one of our boats sailing in the Mediterranean I read an entry in the log book, 'ETAPEKA approached our anchorage'. Why did it approach? In order to watch and listen. And you can't drive it away: it's the open sea.

One evening, just as the submarine drew up beside the floating base, the ETAPEKA appeared. As it grew dark, the ships became invisible from a distance, and were marked only by their anchor lights. When it grew light, she saw they were not anchor lights but two little lamps thrown overboard from the floating base. The trick had deceived the spy. She rushed to one side and then to the other and then, obviously in answer to her call, two NEPTUNES flew from the direction of Crete and began to tear about above the waves.

The NEPTUNES spy on any

unknown boat. As our ship left the Dardanelles, they flew dangerously low over us, and the captain ordered 'Uncover the guns'. Two first-year sailors, not without pleasure, bared the barrels of the anti-aircraft guns. Seeing this, the Americans flew off.

"Since the ship is Soviet territory," said one of the sailors, "we have a perfect right to shoot down anybody flying over us — as we did Powers". Our sailor found some good words about restraint and the art of not giving provocation, and referred to naval orders where it is stated that any foreign interference in the life of a naval vessel of the USSR 'must be stopped in the most decisive manner' but that force of arms is to be used only in 'an extreme case'.

The tactics of the dirty tricks of the Americans on the open sea are commonplace. On one occasion the torpedo boat RICHARD KRAUS circled in order to determine the time of the departure of boats. They sent TRACKER aircraft to help her. She dazzled the bridge with searchlights and then dropped flares.

The composure and control of the Soviet commanders is to be admired. Nothing hinders them while they are carrying out on the open sea their duty in defence of the state interests of the USSR.

In the Western press they used to write that the Sixth Fleet was always on the move. Its position was always secret. Only when it was in port was its secret temporarily disclosed. Then the boats would vanish again, and nobody knew where they had gone. Now they write that the Soviet ships followed the Americans constantly during the period of the Middle East crisis. During the crisis, Admiral Grace gave a press conference, saying that the Americans were not going to act on behalf

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of the Israelis against the Arabs, and he called as witnesses the Soviet ships.

But the Americans supported Israeli aggression. Ten days after Israel's attack on the UAR, all the bars in Naples were quiet. Their regular customers, the marines of the Sixth Fleet, were on the CAM-BRIA and on the other six transport ships: 'to carry out training manoeuvres', wrote the ubiquitous correspondent of Associated Press. And naturally enough the area of

the 'training manoeuvres' turned out to be close to the shores of Israel.

But the situation in the Mediterranean has changed and will change even more, and not to the advantage of the aggressors. Our sailors in the Mediterranean are watchful and steadfast. They have an excellent understanding of their lofty mission.

A young political worker, Kalinin, said, "And so we have sailed

into the Mediterranean. We must dig into history, but not only to the times of Ushakov and Senyavin. What about the Battle of Rhodes? That wasn't the eighteenth century, but 1941!"

Visits of Soviet warships to the UAR have become traditional. Last year there were visits by the rocket ship BOIKI, by the anti-submarine vessel PANTERA, by submarines and by the MAHOMET HADZ-HIEV — and there is always a warm welcome.

## DEEP REACHES RECORD DEPTH

Lockheed's research submarine "Deep Quest" planted an American flag on the bottom of the Pacific Ocean recently as the submersible reached a record depth of 8310 feet.

Interested in spotting old shipwrecks lying in water some 3000 ft. deep off the Southern Coast of the United States? Or in how it looks and feels to inch along the ocean's floor at depths ranging to 9000 ft.

The dive was a major milestone for the company-funded submarine as it reached its maximum designed operating depth — surpassing depths reached by other true submarines.

Only observation bathyscaphs with limited manoeuvrability and restricted working capability have penetrated deeper.

The record breaking deep dive was carried out south-west of San Diego. The 40 ft. long sub surfaced after spending more than eight hours under-water.

The DEEP QUEST was built by Lockheed Missiles and Space Co.,

Sunnyvale, California, and was launched last June at the Lockheed ocean laboratory.

Protecting the crew from the crushing pressure of great depths is DEEP QUEST'S inner hull which is made of alloy maraging steel nearly an inch thick.

Water pressure at 8000 feet is approximately 3500 pounds per square inch, or more than 230 times the 15 pounds per square inch pressure at sea level.

The submersible's shark-shaped outer hull is made of aluminium and is free-flooding. Water pres-

sure inside and outside the outer hull is thus equalised.

The battery powered DEEP QUEST is capable of continuous submerged operations for 24 hours at speeds of up to four and a half knots, and is equipped to support a crew for 48 hours.

This enables DEEP QUEST to be used for developing advanced under-water search and recovery techniques and to train aquanauts in these techniques.

Other missions for which DEEP QUEST might be used include man-in-sea diver support — providing a mobile pressurised platform for scuba divers — taking core samples from the ocean floor for scientific or ocean mining or drilling operations — and performing research and check out of advanced under-water acoustic systems and equipment.

## Contributions Invited

The editor invites persons to submit articles and photographs for inclusion in the magazine, but regrets that no payment can be made for contributions submitted. Contributions should be addressed: The Editor, "The Navy", Box C178, Clarence Street Post Office, Sydney, N.S.W., 2000, Australia.

The editor does not hold himself responsible for manuscripts, though every effort will be made to return those with which a stamped and addressed envelope is enclosed.

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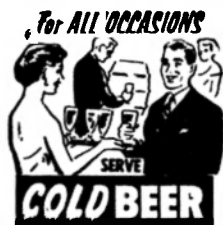
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# NEWS FROM BRITAIN

(The Editor is indebted to the officers of the Information Service of the British High Commission in Australia for their ready assistance in the compilation of this article)

## TELEVISION SYSTEMS FOR 30 BRITISH AND U.S. SHIPS

Marconi television systems will be used for flight deck surveillance on all British aircraft carriers, following orders placed with the Marconi Company by the Ministry of Defence. (Navy). HMS EAGLE and HMS ARK ROYAL are the last of the Royal Navy to be fitted, making a total of thirty British and U.S. aircraft carriers now equipped with Marconi closed circuit systems.

The two British ships will each have a single closed-circuit television channel with the camera mounted on the carrier superstructure. The lens angle and direction of this can be adjusted by re-

mote control from the control tower, where a television monitor displays pictures of the flight deck.

Already, Marconi systems on the British aircraft carriers HERMES, VICTORIOUS and CENTAUR have established that such installations can substantially improve the efficiency of flight deck operations. A much better view of all areas of the flight deck will be seen by operators in the control tower.

American aircraft carriers, also equipped with Marconi closed-circuit television equipment, have several other camera channels in order to monitor the marshalling of aircraft and landing operations as well as surveying the flight deck.

The system allows the whole aircraft landing procedure to be video tape recorded for playback to trainee pilots. To date, nearly 100 television cameras have been supplied to the U.S.A. for this application.

(Marconi Company Ltd., Chelmsford, Essex, England, Australian Agents: Amalgamated Wireless (Asia) Ltd., 47 York Street, Sydney, N.S.W. 2000. Also branches in Melbourne and Brisbane.)

## FAST SURVEYING OF SHALLOWS

Shallow water surveying is now being carried out in a quarter of the normal time by the use of a



"ACTION STATIONS" — IN BRITAIN'S NEW SIMULATOR FOR SUBMARINE CREWS

An instructor keeps a watchful eye on trainees and the numerous vital dials on the control console of Britain's newest simulator — for instructing crews of nuclear submarines.

The console — a replica of the actual control position in nuclear submarines — is now being supplied to the British Navy where every real-life situation likely to be encountered will be reproduced. The instructor, who also has his own console, can either inject routine operational conditions into the training programme — or face his pupils with the sort of emergencies that could not be reproduced with a real ship.

Generation of the simulator is carried out by a 4100 series computer.



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hovercraft fitted with a new portable echo-sounder.

The sounder, demonstrated recently off the south coast of England, has been developed by an English company in collaboration with Britain's Defence Ministry and Hydrographic Office.

The main advantage of the new unit — called the Surveyor — is its ability to take soundings which could only previously be made on non-portable instruments costing many times as much.

The new unit's use in a hovercraft enables it to take soundings down to 240 feet at speeds of up to 35 knots. Such soundings are normally made at ten knots on a ship or eight knots on a small boat. The hovercraft also has the ability to skim over waters which until now have not been charted because they are not deep enough for a normal survey ship.

#### Neon Light

When permanent recordings are not required the instrument will simply indicate readings by a neon light. Speed of the actual charting can be varied between 10 and 60 inches per hour. The unit also has a manual setting to allow it to compensate for local temperature and salt water density conditions.

The echo sounder is contained in a metal case measuring 91 in. by 71 in. by 4 in. deep and weighs only 8 lbs. It is powered by a twelve-volt battery.

A prototype has just successfully completed 18 months' trials in many parts of the world, including Ascension Island, Libya, Bahrain and the Caribbean, and the first production units are now being completed. The unit will be in full production by the end of the year.

(Electronic Laboratories Ltd., Leigh Road, Haine Industrial Estate, Ramsgate, Kent, England. Australian Agents: Sample Marine Products Pty. Ltd., 48 Chippendale, Chippendale, Sydney, N.S.W. 2008. Also branches in Melbourne and Adelaide.)

#### INEXPENSIVE PORTABLE OSCILLATOR TO REPLACE KLYSTRON IN MARINE RADAR

A portable, low cost oscillator designed to replace the klystron in marine and other radar systems, is

claimed by its British makers to be smaller, to have approximately 25 times the life of a klystron, and to be considerably safer since no high voltages are involved.

The oscillator requires only one 24v portable supply as opposed to the klystron which requires three high voltage supplies for anode and reflector. This makes for greater safety and efficiency. Furthermore the oscillator is solid state.

Frequency is in the "X" (marine

radar) band and bandwidth is 200 MHz with tuning over the entire band. Output is 5 milliwatts minimum and temperature range minus 40 degrees C to plus 80 degrees C. Spectral purity is 40 DB. Noise is 40 DB less than the klystron. Weight is 8 oz. and size 9 cu. in. Power consumption is 24-28V 100 milliamps 3 watts. Output waveguide is 16.

(Frowds Ltd., Harree House, Queensway, London, W.2.)



#### DRY DOCK TIME CUT BY NEW BRITISH TECHNIQUE

A new British-designed plant — claimed to be the first of its kind in the world — is said to cut by two-thirds the time ships spend in dry dock for descaling and repainting.

Evolved as the result of over two years' research into the ship-repair market, the ingenious technique works by closed-circuit grit blasting on the vacuum cleaner principle.

In the past, descaling and repainting of a tanker of 50,000-60,000 tons had to be spread over two or three dry dockings and could take up to three weeks, depending on the degree of corrosion.

Now, the whole operation, including an annual overhaul, can be completed in a single docking taking only eight or nine days.



## RADAR SIMULATOR FOR NAVIGATION SCHOOL

A marine radar simulator, believed to be greater in scope than any at present in use by a navigation school, has been ordered for the department of navigation of the Sir John Cass College, City of London.

The simulator, to be used by ships' masters and senior officers for "rule of the road" and pilotage navigation, will provide a picture of coastlines and four other ships, as seen from three separate radar-carrying vessels, with all radar echoes in the correct relative positions.

The U.K. firm that developed the system has recently received seven other orders for marine simulators. Among them were two from the United States Marine Administration for installation at San Francisco and New Orleans, and one from the United Nations Organisation for training purposes in Formosa.

(The Solartron Electronic Group Limited, Farnborough, Hampshire, England. Australian Agents: The Solartron Electronic Group Ltd., 112 High Street, Kew, Vic. 3101.)

## LIFEJACKET IS COMPACTLY STOWED, DOES NOT RESTRICT MOVEMENT

A new kapok lifejacket provides maximum protection for the non-swimmer, turning him on his back at a safe angle within five seconds of his entering the water, and enables maximum freedom of movement for the swimmer.

Developed by a British firm, the jacket occupies relatively little stowage space — said to be only

two thirds of the space needed for most standard life jackets.

Worn like a waistcoat, the jacket has two vertical buoyancy pads at the front and two horizontal pads at the back, the top pad forming a headrest.

## Row or Swim

It allows the wearer to row or swim and members of a ship's crew to perform duties such as launching lifeboats, operating life-saving equipment and so forth, without encumbrance.

If the wearer jumps into water from a height, the buoyancy pads cannot thrust up sharply under the chin, causing injury. The jacket will turn him on his back in five seconds, keeping the mouth well clear of the water and supporting the body at an angle of about 45 degrees.

The jacket weighs 4 lb 14 oz and can be stowed in a space measuring 10 inches by 12 inches by 15 inches.

It complies with the requirements of the 1960 Convention for Safety of Life at Sea.

(Solus Marine — The Marine Safety Division of Dreamland Electrical Appliances Ltd., Shipyard Estate, Hythe, Southampton, England. Australian Agents: A. G. Glenwright Pty. Ltd., 181 Clarence Street, Sydney, N.S.W. 2000.)

## SUBMARINE BOLT GUN FOR SHIPYARD AND SALVAGE USE

An explosively-actuated gun developed by a British firm drives solid or hollow-screwed bolts and punches holes in steel plate either above or below the water line.

It is invaluable in submarine salvage work. Once a hollow screwed

bolt has been driven into the side of a stricken submarine, the nose of the bolt can be unscrewed from inside the shaft, thus allowing air line equipment to be attached.

Divers can use the equipment as an emergency aid during initial general salvage operations, and there are many applications in ship repairing yards and dry docks. The gun fires without recoil, flash or report, and can be used for the rapid attachment of steel plate patches, splinter boxes and similar work. It can also be employed in the construction of cofferdams, and the attachment of eye-plates and other fixtures for lifting and salvage purposes.

The hollow bolt instantly produces a means of supplying air for breathing; compressed air for lifting; liquids or gases for fire fighting; or for introducing small wires for electrical circuits. This process is independent of any access to the inner side of the plate.

Loading of barrels is performed above water, and the loaded sealed barrels can be carried by the diver, or the diver can remain submerged with the gun and have the loaded barrels lowered to him. He inserts these into the gun; discharges them, and returns them to the surface for reloading. In the meantime he carries on with a fresh supply. Speed of operation thus depends on a sufficient number of barrels to keep the diver constantly supplied.

The gun weighs 36 lb (30 lb under water due to displacement).

(Temple Cox Development Co. Ltd., Walters Yard, High Street, Bromley, Kent, England.)

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## December

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Dec. 30, Orsova to Noumea, Lautoka, Auckland, 11 days. From \$495 First only.

## Seven Seas Cruise

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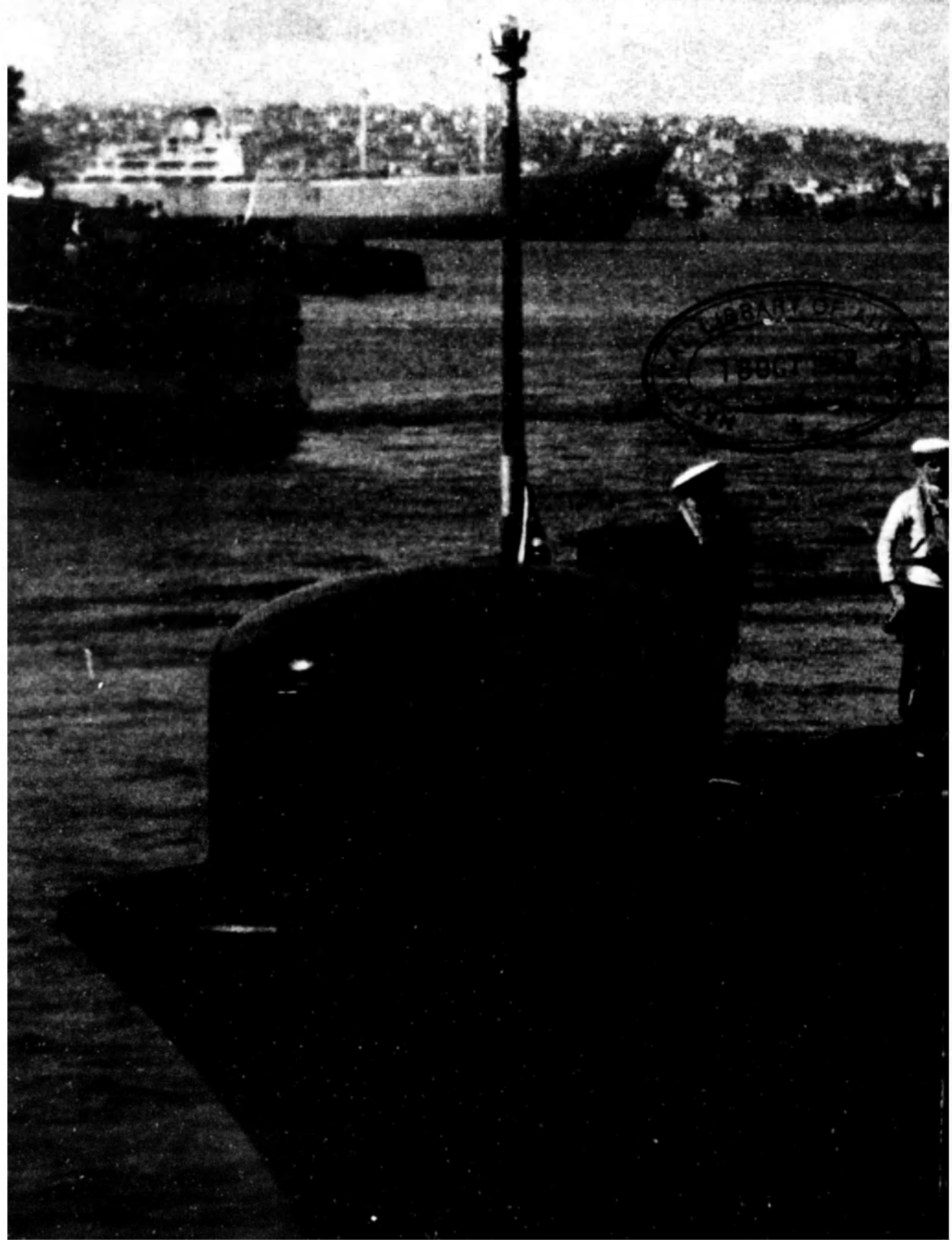
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