

August - September - October, 1966

Navy



NAVY WEEK ISSUE

Including Programme of Open Day at

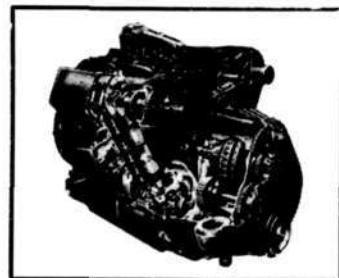
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THE NAVY

The magazine of the Navy League of Australia

Vol. 28

AUGUST-SEPTEMBER-OCTOBER, 1966

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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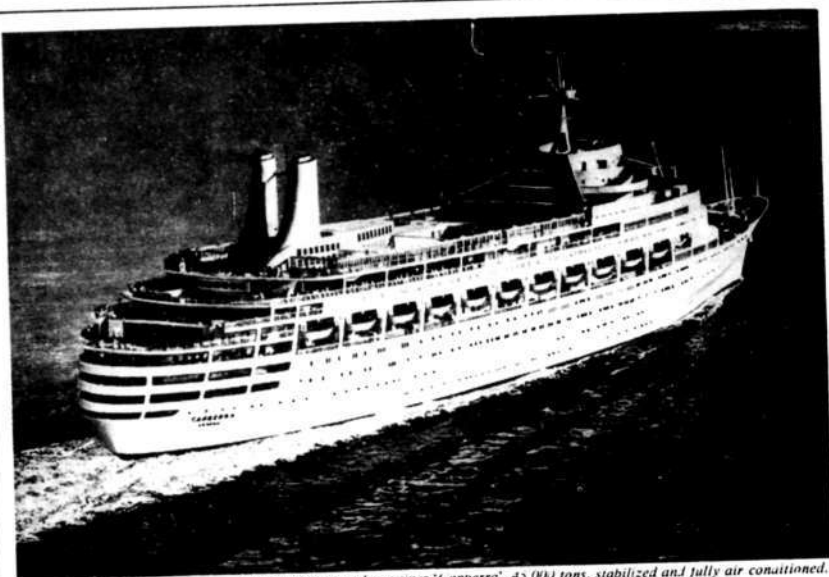
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P&O-ORIENT LINES

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

Vice-Admiral
Sir Alan McNicoll
K.B.E., C.B., G.M., R.A.N.



Readers of "The Navy" Magazine will know of the many new ships and aircraft which the R.A.N. has acquired in recent years or which will shortly join the Fleet. These ships are armed and equipped with many weapons and devices which are new to the R.A.N. and so the expansion of the Navy is not only in quantity. The expansion in quality is an extension of our maritime strength which is just as important.

Ships of high quality require sailors of high quality to keep them working. Sailors must be trained for the more complex jobs which they now face and this requires that the quality of the Navy's training equipment and training

methods must match the advances in Fleet equipment. The same applies to the dockyard and industrial facilities for the repair of ships.

These advances are expensive and it is therefore also important that our management techniques should be efficient so that ships are kept operational for the maximum time possible.

The Navy is striving to keep all these facets in balance so that the nation can be assured that the new ships and planes, which are the visible signs of our growing strength, are properly supported by an infrastructure which is equally strong and modern.



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Message from . . .
The Minister for the Navy

**The Hon.
F. C. CHANEY**

A.F.C., M.P.



Australians with an interest specifically in the Navy or concern generally for this country's defence, will share my satisfaction in the current development of the Royal Australian Navy.

At present shipyards in Australia, Britain and America are building 28 new vessels for the R.A.N.

Since last year's Navy Day, we have seen two of our guided missile destroyers, H.M.A. Ships PERTH and HOBART, arrive in Australia. In a few months we will see the first of our four submarines, H.M.A.S. OXLEY, enter Australian waters.

It is not just the number of ships which is strengthening our Navy. New armaments are improving fire power and fighting strength. The test firings of Tartar surface-to-air missiles by

both H.M.A. Ships PERTH and HOBART have proved the efficiency of the system.

Australia's own anti-submarine missile system, IKARA, has undergone an extensive series of successful trials including firings against a moving submarine. IKARA is already operational at sea in H.M.A. Ships STUART and DERWENT and is being progressively installed in other ships of the Australian Fleet.

This development, of course, costs money. The Navy's estimated expenditure for 1966-67 has increased by over \$64 million to \$234,634 million, largely due to the purchase of new equipment.

The people of Australia can be assured that the R.A.N. is continually maintained at a high state of readiness, and increasing its strength to meet its role in the defence of the country.

F. C. CHANEY

Periscope on Australia

by Grommet

THIRD OBERON SUBMARINE

The keel of Australia's third Oberon class submarine (H.M.A.S. OVENS) has been laid at the yards of Scotts Shipbuilding and Engineering Co. Ltd., Greenock, Scotland.

Of the four Oberon class submarines on order, the first, OXLEY, will commission at the end of this year; OTWAY, the second, will be launched during October-November, while OVENS will be launched in 1968.

There are twenty-four officers and two hundred and twenty sailors training in the United Kingdom to man the new submarines.

H.M.A.S. HOBART

Australia's second guided missile destroyer (DDG), H.M.A.S. HOBART, arrived in Sydney on 1st September, after having spent four days in Hobart, Tasmania, on the last stage of her delivery voyage from the United States.

SURVEY AND DEMOLITION

The R.A.N. Clearance Diving team has begun work on a number of projects in Western Australia, including demolition work and harbour surveys. The team's first task was to search for and render safe any explosive ordnance in Fremantle Harbour.

The team is scheduled to conduct a comprehensive survey of an area in the vicinity of Lancelin Island, which was used as a bombing range, and to complete demolition of Woodman's Point Jetty.

The team will give demonstrations at the Royal Perth Show from 22nd-29th September, 1966.

TRAINING CRUISE

One hundred and fifty men of the Emergency Reserve sailed in

H.M.A.S. SYDNEY on 11th July for a thirteen-day training cruise to Brisbane and the North Queensland coast.

QUEENBOROUGH RECOMMISSIONS

H.M.A.S. QUEENBOROUGH recommissioned on 28th July. The ceremony was held at the Naval Dockyard, Williamstown, Victoria; the commissioning order being given by Rear Admiral V. A. T. Smith, C.B.E., D.S.C., R.A.N.

FLYING CONTRACT TO ROYAL VICTORIAN AERO CLUB

Navy pilots, formerly trained to wings standard by the R.A.A.F. at Point Cook, are now being "flight graded" by the R.V.A.C.

Ten midshipmen began their three weeks pilot evaluation course on 20th June last, another thirteen commenced on 14th July, 1966.

The course is intensive, involving 25 hours of ground instruction and 15 hours of ab initio flying training and is being conducted from Moorabbin aerodrome in the club's CHIPMUNK aircraft.

It is understood that the Navy insisted that the five instructors involved be qualified to A2 rating and have a Service background.

Officers who pass the test will be sent to the U.S. Navy air schools in the United States for training on Skyhawks, Trackers or Helicopters.

It is understood that the R.V.A.C. contract is on a flat rate basis of \$13 per hour, dual or solo. Cost of U.S.N. training is unknown, but said to be at a cheaper rate than would have been possible in setting up a special school in Australia.

TARTAR MISSILE MAINTENANCE CENTRE to be set up at St. Mary's, N.S.W., will be established by General Dynamics Pomona Division under agreement with the Australian Government, but will be staffed by the Department of Supply. GD-Pomona will supply test equipment, missile spares, tools, fixtures and calibration equipment for the centre, and will train key technicians.

IKARA SUCCESS

An Australian frigate, H.M.A.S. STUART recently took part in a month-long U.S.N. Operational Readiness Exercise off Pearl Harbour. She was the first R.A.N. ship to participate in such an exercise with the U.S. Navy, who conducts these experiments to provide advanced training in anti-submarine warfare and to increase the efficiency of their anti-submarine warfare groups.

During the exercise STUART fired two IKARA anti-submarine missiles at "live" submarines, each resulting in a "kill".

INTEGRATION OF MEDICAL & DENTAL STORES SYSTEMS

The Minister for Defence has announced the integration of the medical and dental stores services of the Navy, Army and Air Force.

The Army will be responsible for the management of an integrated medical stores system, which will come into operation at the beginning of 1967.

Overall medical stores policy control will remain with the Department of Defence, through the Medical Services Rationalisation Committee.

The Navy hospital at Balmoral, Sydney, is operating as a joint Services institution, and Federal Cabinet has approved the construction of joint Service hospitals at the R.A.A.F. base, Laverton, Victoria, and for the Army at Holsworthy, New South Wales, and Townsville, Queensland.

NAVAL RESERVES

A 66-year tradition ended on 18th August, when 250 Royal Australian Navy Reservists of the Sydney Port Division paraded for the last time at H.M.A.S. RUSHCUTTER, in Sydney.

Naval Reservists have been training at Rushcutter's Bay since 1900, when the New South Wales Volunteer Brigade left Fort Denison ("Pinchgut").

In 1911 the various Naval volunteer groups were formed into the R.A.N. Reserves.

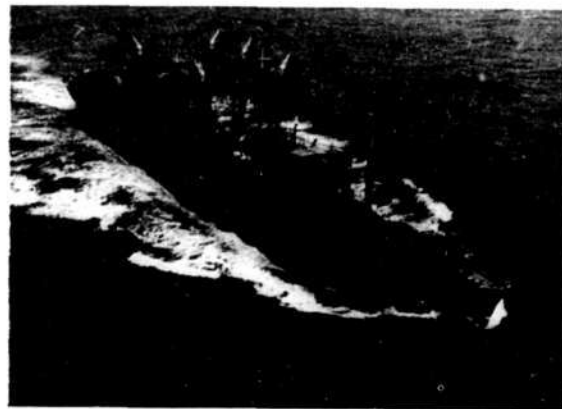
Training of Reserves is now being conducted at H.M.A.S. Watson, at South Head.

H.M.A.S. SYDNEY—FAST MILITARY TRANSPORT



Originally an aircraft carrier of the "Majestic" class, H.M.A.S. SYDNEY served in the R.A.N. in Korean waters and was converted to her present role in 1962. She has been in the news this year transporting troops and equipment to Vietnam.

H.M.A.S. SUPPLY



Fast Fleet Replenishment Oiler (open for inspection on Navy Day, Saturday, 8th October).

This tanker, with a full-load displacement of 26,000 tons and an overall length of 583 feet, is armed with six 40mm. anti-aircraft guns (2 twin forward, 2 single aft).

Double reduction geared turbines give her a shaft horsepower of 15,000, equal to 17 knots. Her complement consists of 13 officers and 120 sailors.

OUR COVER

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R.A.N. Official Photograph

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Nautical Notes from All Compass Points

By SONAR

BRAZIL WHIRLWINDS FOR BRAZILIAN NAVY

The Brazilian Navy has ordered three Westland Whirlwind Series IIIB helicopters. The first was handed over at Yeovil on 20th April. This order, worth over \$600,000, with spares, follows a previous one from the Brazilian Navy for three Wasps, which entered service last year.

The Brazilians intend using their Whirlwinds primarily for general duties, operating from both ship and shore bases. All three aircraft have also been fitted with anti-submarine detection equipment and provision has been made for carrying a torpedo. Over four hundred piston- and turbine-engined Whirlwinds have now been delivered to more than twenty civil and military operators throughout the world.

CANADA NAVY STRENGTH

Canadian Forces Headquarters have just issued details of the composition of the R.C.N. which show that the Navy has 43 warships (an aircraft carrier, helicopter-destroyers, destroyer escorts, ocean escorts, submarines and support ships) and more than 100 auxiliaries.

There are 23 helicopter-destroyers

and destroyer escorts in the Fleet and 20 of them have been completed in the last 10 years.

In January the headquarters of the integrated Maritime Command was established at Halifax with a Pacific sub-command at Esquimalt, and all R.C.N. and R.C.A.F. sea and maritime air forces have been placed under the control of the Commander, Maritime Command. The former Flag Officer (R.C.N.) and Air Officer Commanding (R.C.A.F.) appointments lapsed with the activation of the new functional command.

Strength of the regular Navy this year is 18,902 officers, ratings, cadets and Wrens. There are 2,487 officers, ratings, Wrens and cadets in the R.C.N.R.

Approximately two-thirds of the R.C.N.'s maritime force is based on the East Coast.

A/S RESEARCH

A 2,130-ton research ship being laid down this year for Atlantic services is to be named *Quest* and will be operated as a Canadian Naval auxiliary vessel for the Naval Research Establishment of the Defence Research Board at Dartmouth, Nova Scotia.

The *Quest* is to be used primarily in the field of anti-submarine war-

fare, but will also contribute significantly to general scientific knowledge of the Atlantic areas in which she will work.

A contract for the ship has not yet been awarded, but completion is scheduled for 1968 at an estimated cost of \$8,000,000. Her name was suggested by the Naval Research Establishment to which the ship will be attached and it was chosen because, apart from the fact that there is no *Quest* currently in the Canadian, British or American Navies, it clearly denoted the ship's role.

She will be about 250 feet long with a draught of 15 feet, and her hull configuration and equipment are being specifically designed to make her as silent as possible because so much of her work will be concerned with underwater acoustics. She will have twin screws, with a bow thruster and twin rudders to improve handling at low speeds. She is being designed by the R.C.N.'s marine architects and engineers in collaboration with Defence Research Board scientists and she will have a civilian crew of 36, supporting up to 15 scientists.

The new ship will be larger than the *Endeavour*, which entered service almost a year ago primarily for the Defence Research Board's Pacific Naval Laboratory at Esquimalt.

HOLLAND

DUTCH AID TO SAFETY AT SEA

An illuminated arrow at the mast-head to indicate in which direction a ship intends to travel is clearly a valuable safety device in today's crowded water. Such an apparatus has been perfected and patented by Captain A. Vreugdenhil at his technical establishment at Velsen, Holland, and is now being successfully used by several Dutch ships and one American naval vessel. Colloquially called "Trafficators", the invention's official name is "Optical Ships' Turn Indicators".



Westland Whirlwind 111B N-3007 for the Brazilian Navy

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Netherlands Navy

Captain Vreugdenhil's invention consists of a double headed arrow, 19 ft Long, mounted high on the position forward, and operated from foremast, or in some other elevated the wheel-house. The port or starboard head of the arrow, and its shaft, is illuminated according to whether the ship on which it is mounted intends to proceed to port or starboard. Such a signal is clear, instantaneous and unmistakable. While the device is referred to as "trafficator", the signal does not flash on and off but gives a continuous message.

HELICOPTERS

An order for 12 Westland Wasps powered by the 1,050 s.h.p. Bristol Siddeley Nimbus engine has been received. This, the largest export order so far placed for this aircraft, is valued at \$3 million, including spares.

JAPAN RESEARCH CRAFT

The Japan Science and Tech-

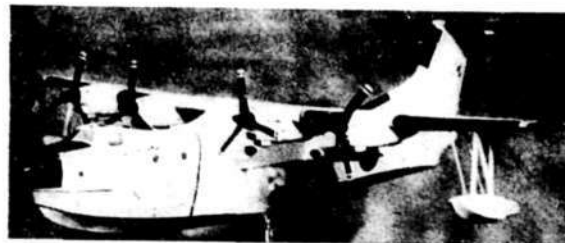
nology Agency is planning to build an underwater research craft over a three-year period. The proposed 50-foot vessel will carry four persons, including two scientists, and will be equipped to conduct underwater exploration to a maximum depth of 4,920 feet. The research craft is expected to benefit fisheries by contributing knowledge on the ecological behaviour, distribution, and migration of deep-water fish, and on oceanographic conditions.

LARGEST SHIP PROJECT

Japan is considering the possibility of building the world's largest ship — a 500,000-ton tanker.

PX-S TO FLY JULY, 1967

The prototype Shin Meiwa PX-S maritime reconnaissance flying boat for which a Yen 2,955 m contract was awarded in January is scheduled to fly in July 1967, a fatigue test airframe being completed simultaneously. The PX-S, 30 examples of which are scheduled for delivery to the JMSDF with 20 in service by the end of 1971, is to be powered by four General Electric T64-IHI-10 turboprops of 2,580 eshp with which it is expected to attain a maximum speed of 345 mph a cruising speed of 230 mph and a range exceeding 1,380 miles. BLC for high life and STOL characteristics will be supplemented by an airscrew slipstream-deflection system, and it is claimed that the high length-to-beam ratio will result in excellent sea-worthiness. Empty and normal gross weights will be 50,700 lb. and 72,750 lb. respectively, overload gross weight being 88,200 lb.



A model of the Shin Meiwa PX-S four-turboprop flying-boat being developed for anti-submarine and patrol duties for the Japanese Navy. Weighing 40 tons, it is expected to fly in 1967. Preliminary research has been done, using a converted Grumman Albatross.

NEW ZEALAND INCREASED DEFENCE VOTE

The R.N.Z.N. took delivery of the frigate WAIKATO in September. Tenders are to be called for the delivery of a fourth frigate for delivery in 1970-71.

The Government proposes hiring a frigate from the Royal Navy for the interim period.

ROYALIST DENIAL

New Zealand Navy Office has denied that a decision has been taken to scrap the cruiser H.M.N.Z.S. ROYALIST, and says the ship will continue to be used at her berth at Auckland as a training ship, and that there has been no decision on her future past that point.

"The decision about her ultimate disposal rests with the Royal Navy," said the announcement.

NORWAY

PLASTIC RIVER VESSEL

A Norwegian company, Oygard Plast, Askoy, near Bergen, which produces plastic articles, is building a 40ft. plastic river boat. The craft is designed for use on African rivers and has only a 2ft. draught. Previously the same company delivered two plastic tugboats as part of a development aid scheme for India.

RUSSIA

FISHING FLEETS AS NAVY

Russian fishing fleets are operating off Canada's coasts as a paramilitary force, according to Rear-Admiral William Landymore.

In testimony given to the House of Commons' committee on defence, he said that 800 Soviet fishing ships carrying 20,000 men operated in the Western Atlantic, often very close to the Canadian coast.

He said 200 Soviet fishing ships operated regularly off Canada's Pacific coast.

Admiral Landymore was recently dismissed as chief of Canada's Maritime Command because he publicly criticised the Government's plan to integrate Canada's defence forces.

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the latest specifications of a new Soviet patrol boat capable of firing subsonic missiles.

They are certain that the vessel, or one of similar class, has been in operation against the U.S. Navy in Vietnam waters this year.

The boat is capable of carrying at least four winged missiles in special after deck containers.

When the containers are opened they allow the missiles to be launched at an angle of 30 degrees from trough-like ramps with the aid of undertail boost.

The missile itself is described as similar to a small pilotless aircraft.

The length is given as 14ft. with sweptback wings and a tail assembly with a vertical fin and tailplane.

RUSSIAN NAVY "READY, ABLE"

The Russian Navy now has a submarine and nuclear missile fleet able to accomplish any task in present-day war, the Commander-in-Chief, Admiral Sergei Gorshkov, reported recently.

He said the number of long voyages by Russian submarines in recent years had increased many times over.

They were sailing from the Atlantic into the Pacific and back.

SPAIN

The Spanish Navy has signed a contract with Sikorsky Aircraft for the purchase of six SH-3D ASW helicopters. The aircraft are scheduled for delivery at a rate of one per month from June, 1966.

UNITED KINGDOM "EAGLE" ON OIL WATCH

H.M.S. EAGLE, Britain's largest warship, has created a peacetime record for British aircraft-carriers by remaining at sea for seventy-one days on non-stop oil watch patrol off Beira. The carrier recently returned to Singapore and has been relieved on patrol by H.M.S. ARK ROYAL. During the Beira patrol EAGLE launched her Buccaneer, Sea Vixen, Scimitar and Gannet aircraft on more than 1,000 sorties. Fixed-wing aircraft from the carrier flew more than 600,000 miles — equivalent to more than twenty-

seven round-the-world flights — in 2,000 hours searching for tankers over an area twice the size of Great Britain. Nearly 1,000 additional sorties were flown by the ship's helicopters — many of them at night — during plane guard and close-search operations.

An idea of the intensity of air patrols mounted can be gained from the fact that since patrols began in mid-March the EAGLE's aircraft identified and observed more than 750 ships in the Mozambique Channel area. During March and April the pilots of Buccaneers, Sea Vixens and Scimitars maintained intensive flying at a rate more than double their previously best monthly averages, carrying out a constant search for oil runners. Crews of AEW Gannets had the highest intensity of flying, using their complex radar to keep track of shipping movements. All this flying was carried out with the knowledge of all aircrew that no diversion airfield was available if an emergency arose; the carrier was the only base from which they could operate.

NAVY TOAST

Senior non-commissioned officers in the Royal Navy will no longer have to stand to toast the Queen.

The officers can now remain seated during the toast at informal

mess dinners, a privilege until now reserved for full officers.

CRACKS IN ATOM SUB.

Cracks have been found in a second British nuclear submarine.

The Defence Ministry said that the cracks were the result of impurities in the British steel used in the submarine's construction.

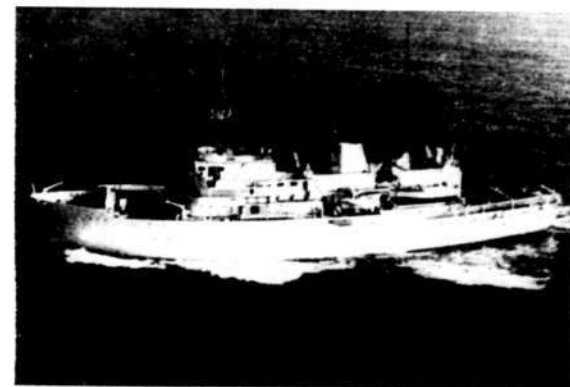
A Navy spokesman said ultra-clean steel had been ordered from the United States to reduce the incidence of cracking in future boats.

The latest cracks were detected in the final stages of the building of the \$50m. fleet-class submarine VALIANT, which went into service last month.

The 3,500-ton VALIANT, the first all-British nuclear-powered submarine, is slightly larger than its prototype, the DREADNOUGHT, in which cracks were found last September.

H.M.S. HECLA

New British Surveyor — the HECLA — is one of three new deep-ocean survey ships built for the Royal Navy, her sister ship being the HECATE and HYDRA. The ships are powered by a single-screw, diesel-electric plant and have a bow propeller mounted in a transverse tunnel. Other characteristics are a 2,800-ton displacement, 260-foot length, and accommodations for 117 men (including scientists).



H.M.S. HECLA

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FIRST POLARIS

The R.N.'s first Polaris submarine, H.M.S. RESOLUTION, was launched at Barrow-in-Furness on 15th September.

NINTH A-SUB.

Britain has placed a \$A37.5m. order for its ninth nuclear-powered submarine.

The nine nuclear submarines in service or on order include four equipped to carry Polaris missiles.

The new boat is to be completed by 1970.

CANCELLATION OF NEW NAVAL CARRIER

Cancellation of new Naval Carrier projects under the new British defence programme has resulted also in the shelving of the projected new jet AEW to meet Naval Air Staff Target 6166 — for which HSA had designed the airframe and Elliott Automation was making complete systems studies. Because it is realised that adequate aircraft early warning coverage is an essential ingredient for the island base scheme proposed for RAF, it is reported that urgency is being given to a new Air Staff requirement for a long range AEW aircraft for the 1970's. Conversion of an existing long range jet, possibly the MR Comet, to this task is regarded as probable.

UNITED STATES OF AMERICA SHIPBUILDING PROGRAMME Fiscal Year 1967

- 1 CVAN Attack Carrier (nuclear).
- 2 DDG Guided Missile Destroyers.
- 10 DE Escort Ships.
- 5 SSN Attack Submarines (nuclear).
- 11 LST Tank Landing Ships.
- 1 LSD Dock Landing Ship.
- 5 MSO Ocean Minesweepers.
- 2 AE Ammunition Ships.
- 1 AFS Combat Store Ships.
- 2 AOR Replenishment Fleet Oiler.
- 2 ATF Fleet Tug.
- 2 ATS Salvage Tugs.

STRAIGHT UP, STRAIGHT DOWN

For the first time in U.S. naval aviation history, a transport plane took off from and landed vertically on a carrier on the 18th May, 1966. The new XC-142A tri-service V/STOL (vertical short take-off and landing) went through its paces on the U.S.S. Bennington off California. The aircraft's top speed is in excess of 400 m.p.h.

THREE MILLION IN U.S. FORCES

America's armed forces have reached their highest strength in 11 years and are almost a year ahead of schedule in the build-up set in motion last year.

The total military manpower at the end of May reached 3,057,000.

TACTICAL DATE SYSTEMS

Hughes Aircraft recently received a \$19m order from the U.S. Navy to deliver improved Naval Tactical Data System (NTDS) consoles over the next three years. The Hughes NTDS consoles are part of what has been described as the "world's most advanced operational ship-board system for command and control of a tactical situation." It replaces the conventional combat information centre, and virtually eliminates the possibility of human error and delay.

SKYHAWKS

U.S.N. has been negotiating with Douglas for procurement of the developed A-4F Skyhawk attack bomber, which will incorporate improvements now being built into the two-seat TA-4F advanced combat trainer. The A-4F, powered by a 9,300 lb.t. P. & W. J52-P8A, would also have nose-wheel steering, modern avionics systems and a wing lift spoiler for improved performance in cross winds. The Royal Australian Navy, which is also to get Skyhawks, has so far nominated the A-4E, but this later version may prove more suitable for Australia's needs.

POLARIS SUBMARINE

The U.S.N. has commissioned its 35th Polaris F.B.M. submarine, the James K. Polk. She is armed with

16 A-3 Polaris missiles. The James K. Polk was launched on 22nd May, 1965, and commissioned on 16th April this year. Six more Polaris submarines are to be commissioned under the 41 submarine programme.

NEW MISSION FOR THE POLARIS

The Navy is studying blueprints to modify its sub-based Polaris nuclear missiles and allow them to deliver conventional warheads. The plans (worked up by Lockheed, the original Polaris designer) would enable the fleet to use the missiles for ground-support missions or against land targets—at ranges up to 2,500 miles.

TEST FIRINGS OF THE STANDARD MISSILE

Test firings of the Standard Missile, under development by General Dynamics for the U.S.N., are reported to have demonstrated promising performance capability against complex targets. Planned to replace both the Terrier and Tartar missiles in Navy use, with production scheduled for the 1967 financial year, the Standard Missile is being developed in two versions — one two-stage missile with a range of more than 30 miles, and the other with a range of more than 10 miles. They incorporate all-solid state electronics; all-electric control systems and adaptive autopilots, and have semi-active homing guidance systems. Both versions can be accommodated by existing Terrier and Tartar launching and handling equipment with only minor modifications to these.

Hitler's Yacht for sale

Adolf Hitler's \$250,000 yacht is up for sale at the bargain price of \$90,000.

The yacht, on which Hitler supposedly took Eva Braun sailing, belongs to a retired naval officer who cannot afford to keep it.

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— SEA SAGA — BATTLE OF LEYTE GULF WAS DISASTER FOR JAPANESE

"WATCH KEEPER"

Perhaps least known of all the Allied victories at sea in the Pacific theatre of operations, the Battle of Leyte Gulf was possibly the most decisive naval encounter of the World War II.

In Australia the R.A.N. still celebrates the victory of Lord Nelson at Trafalgar. For instance, every October, the prettiest W.R.A.N. is sent to Martin Place, Sydney, to take part in a flag raising ceremony to celebrate the victory of Trafalgar.

Yet on the same day of the month in 1944 the Australian Navy itself was engaged in a life-and-death struggle. The Battle of Leyte Gulf was Australia's Trafalgar Day and should be honoured as such in humble tribute to the courageous men who beat off countless "Kamikaze" attacks, one after the other.

This great epic of Australian bravery is passed without mention in our schools, unhonoured in naval ceremonies and forgotten by almost all except those who took part in it and the relatives of the men who died under ferocious enemy attack.

This was the action in which Japanese Admiral Nishimura's fleet was destroyed by a naval force commanded by Rear Admiral Oldendorf in the night battle of Surigao Strait.

Meanwhile the famous Admiral "Bull" Halsey had followed a deception force of Japanese carriers which was intended to lure him to the north of the Philippine Islands away from the main battle. He had accounted for four carriers before he was obliged to break off to go to the rescue of Rear Admiral Sprague, whose squadron was outnumbered and being battered by Admiral Kurita's battleships and cruisers off Samar Island to the north of Leyte Gulf.

Kurita broke off the action when he was nearing the Allied transports. Anxiety about fuel and losses from air attack rather than fear of Admiral Halsey caused him to turn back and retire and he never regained the advantage.

His losses from air attack included the giant new battleship, the 45,000-ton *Musashi*. Kurita had made an expensive error of judgment earlier on when he was approaching the islands.

Seeing a force of U.S. carriers

moving towards San Bernardino Strait he had assumed they were fast fleet carriers and that he could not overhaul them. They were in fact 20-knot light carriers, which with his big-gunned ships, he could have destroyed at his leisure.

The story begins during the night of October 19, 1944, when a great armada of battleships, cruisers, destroyers and transports sailed north-bound for Leyte Gulf.

The flagship *Australia* began a fight with kamikaze suicide planes of unprecedented ferocity. The famous 13,000-ton cruiser was part of the great Allied armada that pounded the Japanese positions on the Philippines Gulf of Leyte on October 21.

Australian units, the cruisers *Australia* and *Shropshire*, and the destroyers *Aranta* and *Warramunga* pointed their bows towards Tacloban on the Philippines to cover the first assault wave.

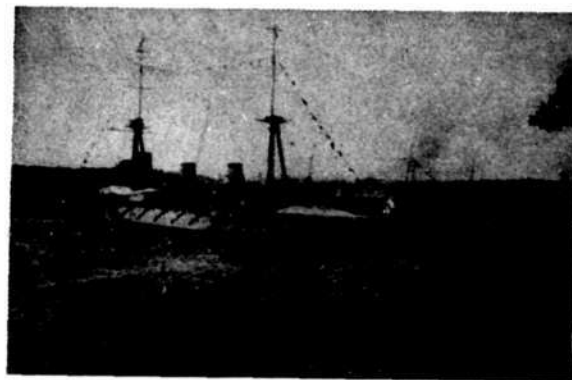
Shropshire was commanded by Captain C. A. G. Nicholls, R.N. Her gunnery officer was Lt. Cdr. W. S. Bracegirdle and she carried a crew of 1000. In the subsequent naval actions a Japanese force of two battleships, four cruisers and ten destroyers was completely wiped out by allied naval strength.

The *Shropshire* emerged practically unscathed, but the *Australia* on the other hand nearly met her doom. Her commanding officer, Captain E. F. Dechaineux, D.S.O., and 30 men died from suicide plane attacks, and a few months later in action at Lingayen Gulf, more kamikazes killed another 44 men.

Australia had gone inshore after the battle-wagons to pour a hurricane of fire from its 8 in. guns. One turret alone had sent 124 shells crashing into the enemy. Then it took up station to support General MacArthur's troops as they stormed ashore against the Japanese.

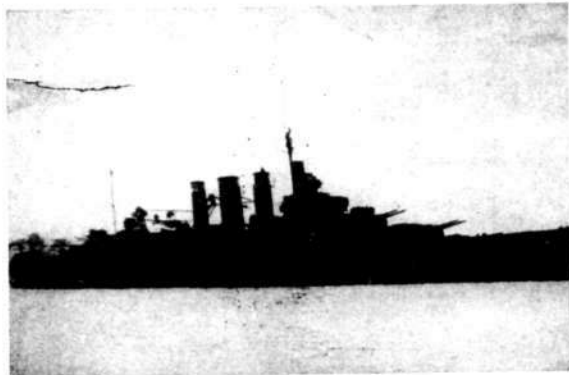
At this stage suicide planes swarmed to the attack. *Australia's* gunners shot several into the sea before they reached the ship.

One alone got through to crash, a mass of flaming death, on the



The first H.M.A.S.s Australia, Sydney and Melbourne at Farm Cove, Sydney.

Photo by courtesy of the R.A.N. Historical Section.



The second H.M.A.S. Australia.

Photo by courtesy of the R.A.N. Historical Section.

compass platform, bridge and forward turret. The explosion wrecked the massive superstructure and sprayed it with blazing petrol. The bridge was soon an inferno. Thirty Australian seamen lay dead in the wreckage.

With flames and smoke stifling its nerve centre, the Australian cruiser swung under emergency control. Rescue parties fought to quell the flames and aid the wounded. Anti-aircraft gunners kept up a barrage of fire to stave off another suicide plane which dove into the sea.

As the cruiser Australia steamed back to Manus Island for repairs, the medical personnel fought to save the lives of the wounded, including Commodore, later Vice-Admiral Sir John Collins, who suffered multiple shrapnel wounds and a collapsed lung.

Australia was quickly back in the fight, blasting the beaches at Lingayen Gulf while MacArthur's men poured ashore. Again of all the dozens of ships in the vast armada, Australia was chosen as the main target by Japanese suicide planes.

The gunners put a curtain of fire round the ship as the kamikazes dived low towards their target. Though 44 of the crew were killed, and a huge gash torn in her side, Australia was still in action after four days, although she had been hit by five planes.

After four days of savage fighting, with the Japanese making their

carried tore a great hole in the deck. Petrol set the area afire.

Every Japanese radio broadcast claimed the Australia had been sunk, but the ship continued to defy every effort of the suiciders.

Two twin-engined Japanese bombers attacked on the eighth. One was shot down into the sea, and the other hit 20 yards from the ship. It angled in and tore a great hole in the ship's deck, and exploded.

The blast shook the Australia from stem to stern, and her speed was cut from 30 to 19 knots. Water surged in through the hold compartments.

The Australia was still fighting though, and poured all available shells into the enemy positions ashore and in the air.

On January 9 the attacks were still maintained and two kamikazes crashed their planes on the cruiser. One tore away a funnel, and the second landed on a turret, killing the crew. The damage was near-fatal and Australia was ordered home as a watch-dog for a convoy.

The "Aussie" finally staggered back to Sydney with a crater in her deck, and a 15 ft. hole partly below the waterline.

Both the Australia and the Shropshire have since been condemned to the shipbreakers yard, a sorry but inevitable end for proud naval ships.

last stand on the beach, the Australia was hit again by kamikazes on January 5, 1945. Six suicide craft slipped under the curtain of gunfire, five of them were shot into the sea, but the sixth kept coming on, crashing into the third funnel and causing four inch shells to explode.

On the following day another four kamikazes came into the target. One reached the target and crashed into the starboard side of the ship. The six-inch shell it



Night Firing, H.M.A.S. Warramunga.

Photo by courtesy of Australian War Memorial Military Section.

Of the vast armada that secured the invasion of the Philippines the Australia beat off more enemy attacks than any other vessel, and won a place for herself in naval history.

When the gallant cruiser turned to leave the allied armada, the others wiggled saying: "We hate to see you go."

"This hurts us more than it hurts you," replied the "Aussie", in typical fashion.

The defeat of the Japanese in Leyte Gulf put the seal of doom on Japan's hope of escaping defeat. The attempt of the Japanese navy to thwart the allied invasion of the Philippines was about the last effective appearance of the enemy's navy in the Southern waters.

Australian and allied merchant ships, too, played their part in the Battle of Leyte Gulf. Australian officers were serving aboard the fleet tanker Bishopdale when a kamikaze hit her in the No. 1 hold.

Why the Bishopdale never exploded on the spot is an unsolved mystery to this day. When I went aboard the tanker later, her crew called her "a lucky ship" and that's a good enough explanation for most sailors.

In this action with the Japanese, Allied losses were surprisingly light. A number of motor torpedo boats were sunk by the Japanese and the U.S. destroyer A. M. Grant was put out of action.

Only a handful of Japanese, including the captain of the Yamashiro, were saved. The others would not allow themselves to be hauled in by the lifesaving lines thrown to them. Those who refused the lines were left in the water.

The Shropshire steamed back towards the landing beaches and played a noble part in the battle. The Australian ship's fighting tenacity enabled the transports to bring in the supplies and land more troops until the whole of the Philippines finally fell to General MacArthur.

The victory at Leyte was one of the few naval night actions of the war. There were few encounters to parallel this in World War II. This decisive action proved that for her security Australia has to maintain her own naval forces at fighting strength and to rely on powerful friends with massive sea power.





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H.M.A.S. WATSON — Open Day

8th OCTOBER, 1966

One of the first major functions during the 1966 Navy Week in Sydney will be at H.M.A.S. WATSON, when this establishment will be open for public inspection from 1 p.m. to 5 p.m., on Monday, 8th October.

HOW TO GET THERE

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

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

"WE FIND, WE FIX"

Visitors to H.M.A.S. WATSON on Saturday, 8th October, 1966, will gain an insight into the workings of a training establishment, which conducts Navigation, Aircraft Direction, Torpedo and Anti-Submarine Training. Training in these fields assumes great importance in an age of rapidly changing weapon systems and equipments.

WATSON occupies an eminent physical position, situated as it is on Sydney's South Head. Here it exercises control over approximately 35 acres and shares South Head with the Maritime Services Board, who operate the Hornby Light, and the Army with its Eastern Command Personnel Depot and Provost Corps Headquarters.

The years 1955 to 1962 saw a major building programme which added new accommodation and administration blocks, a modern T.A.S. School, a superb Chapel and a spacious Wardroom to the collection of wartime huts which were built when WATSON commissioned on the 14th March, 1945, as the R.A.N.'s radar school. Steady

progress has been made over the years towards beautification through the laying of new lawns and attractive rockwork.

COMMAND

Captain A. A. WILLIS, R.A.N., came from command of H.M.A.S. VENDETTA to serve as Captain of H.M.A.S. WATSON in December, 1964. The Executive Officer is Commander I. M. BURNSIDE. Lieutenant Commander K. HURST has been WATSON'S First Lieutenant for three years.

T.A.S. SCHOOL

T.A.S. training moved from RUSHCUTTER to WATSON in 1956. Since that time it has continued to train officers in tactical and material aspects of A.S.W.; UC sailors in the operation of sonar equipment; and UW sailors in operating A.S. weapons.

Standard promotion courses for Ords qualifying for Able Rank and Leading Seamen qualifying for PO's are the T.A.S. School's main training load, and with Officers' Tactical courses; pre-commission and pre-work up training and the training of personnel for mine-sweeping duties there is an increasing burden on the school as the R.A.N. continues to expand. To assist in T.A.S. training the school is provided with actual weapons, weapon models and up to date sonar and attack simulators.

Ikara, homing torpedoes, variable depth sonars and new long range sonars have introduced a complexity and diversity which will ensure an increasingly important role for this school in the future.

OC of WATSON'S T.A.S. School is Commander B. CLEARY, R.A.N.



COOKS

In WATSON'S Main Galley prepare part of the 750 lbs. of beef, 1,000 sausages, 200 lbs. of flour, 650 loaves of bread, 1,500 lbs. potatoes, 1,600 eggs, 250 gallons of milk over 200 lbs. butter that are just part of WATSON'S weekly grocery bill.

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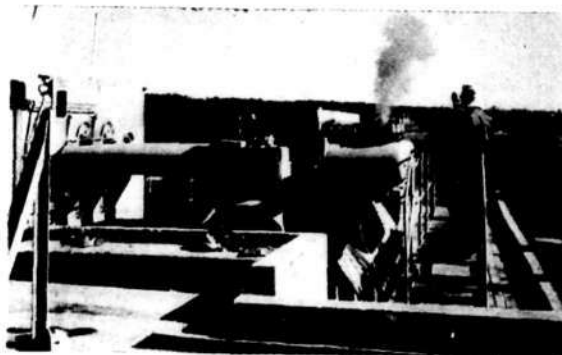
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MORTAR FIRINGS

give realistic training to the U.W. Sailors who operate these mountings. Here, cordite smoke from a previous salvo issues from the breech as a bomb is rammed for the next firing. The projectiles are fired across Lady Bay, land in the harbour and are recovered by boat.

T.A.S. SCHOOL



NAVIGATION DIRECTION SCHOOL

WATSON'S N.D. School is the direct descendant of H.M.A. Radar Training Establishment which started operations at South Head towards the end of 1943 and commissioned as H.M.A.S. WATSON in 1945. Its present O.I.C. is Commander R. RUST, R.A.N. Although many changes have taken place in the radar branch since World War II, the main function of the school is, as it was then, to train personnel in the use of radar.

Radar Plot sailors are taught to operate radars, and to plot radar and other action information so that the command can readily appreciate the situation. The WRANS also have an R.P. Branch, and as well as relieving sailors for sea duty they give a welcome relief from an all male training staff. These girls make a daily boat run from PENGUIN to work in the Radar Block and in the T.A.S. School's Tactical teacher.

Though the school still occupies the old green huts and can't boast of plush buildings to match those of the T.A.S. School, it can point with pride to a most modern installation — the SOLARTRON trainer. In this trainer two "ships" are provided with a realistic radar picture on which can be displayed a variety of controlled targets and

a coastline allowing the simulation of most aspects of naval operations.

The introduction of a Supplementary list of officers with short service commissions has increased the importance of the school's Navigation commitments. S.I. Mids receive all their shore navigation training here.



THE SOLARTRON TRAINER, a most modern training simulator, is in keeping with the R.A.N.'s policy of "the best in ships, men and equipment". Here, operators sit at some of the consoles.
N.D. SCHOOL

COOKERY SCHOOL

Sailors today demand good food, and WATSON'S School of Cookery helps to achieve a high standard of cuisine in Fleet and shore galleys.

The school was moved from PENGUIN to WATSON in 1957, and is located in the old Main Galley close by the Gap.

The main object of the school is to test Cooks and Leading Cooks professionally for promotion to the next rank. Four weeks Advanced Cookery courses conclude with cooks producing six course test meals. They receive further testing in bread and cake making and in the "Theory of Cooking".

Up to 100 Ord Cooks per year receive Basic Cookery Course of 16 weeks duration which covers all aspects of basic cooking.

The school also performs a function of testing and reporting on new products for use in R.A.N. Galleys.

A highlight of the school's activities in recent years has been the preparation by the cooks on course of a meal for the most discriminating palates in Sydney — the Wine and Food Society — Foodmaster's



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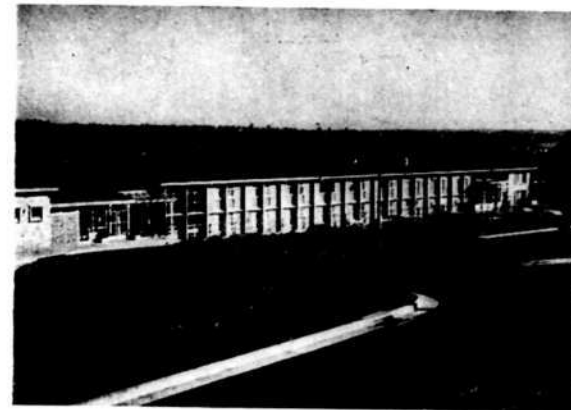
Comment? Excellent in both flavour and presentation.

IT'S NOT SO WELL KNOWN—

● that it is to WATSON that successful candidates from SD Officer Pre Selection Boards are sent at six-monthly intervals for six week courses designed to help these sailors pass their H.E.T. and hence qualify educationally for their final selection board.

● that WATSON houses the Port War Signal Station, which is staffed on a 24-hour basis to maintain communication with ships and submarines exercising in the Sydney area.

● that as from the 22nd of August, 1966, WATSON became the headquarters of the R.A.N.R. in Sydney. No doubt many Reservists shed a tear at this final separation from their Alma Mater. RUSH-CUTTER.



Wardroom completed in 1962. WATSON's new Wardroom provides new standards of officer accommodation and occupies one of the most desirable positions in Sydney. This picture, taken on 5th August, shows the Wardroom against the background of ESMERALDA'S second visit to Sydney.

H.M.A.S. WATSON

PROGRAMME OF EVENTS

Saturday, 8th October, 1966

Visitors are requested to ask any sailor for the location of displays and demonstrations

1.00 p.m.—

H.M.A.S. Watson open for public inspection.

1.15-1.30 p.m.—

Mortar firing demonstration—Mk. 10 Mortars.

2.00-2.15 p.m.—

Mortar firing demonstration—Mk. 10 Mortars.

2.25-2.35 p.m.—

Flying display—Westland/Wessex helicopters.

2.40 p.m.—

Helicopter "Fly Past".

2.45-3.00 p.m.—

Helicopters—winching divers from the sea, and Beach Assault by divers.

5.00 p.m.—

H.M.A.S. Watson closed to the public.

CONTINUOUS DISPLAYS DURING THE AFTERNOON
Diving Display Tank
Static Display of Anti-submarine equipment

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H.M.A.S. NIRIMBA

(APPRENTICE TRAINING ESTABLISHMENT)

OPEN DAY — SATURDAY, 8th OCTOBER, 1966

A modern defence force has a real and usually urgent requirement for skilled personnel. In the R.A.N. the skills required embrace pure skill of hand, a thorough technical knowledge of the system in use, a sense of responsibility, devotion to duty and qualities of leadership to enable the giving and receiving of orders.

It is the responsibility of H.M.A.S. NIRIMBA — the R.A.N. Apprentice Training Establishment — to develop these qualities in its members.

NIRIMBA has not always had this role, its first Service use being by the R.A.A.F. as an alternative

airfield to Richmond and then as an operational airfield during World War II. Before World War II concluded the British Pacific Fleet used NIRIMBA as an operational training field.

After the war the R.A.A.F. again assumed control and it was not until 1951 that the R.A.N. entered the scene and NIRIMBA became firstly the Air Repair Yard, with the School of Air Maintenance Engineering being added in October 1952. H.M.A.S. NIRIMBA was commissioned in April 1953 and during the following year SAM(E) moved back to N.A.S. Nowra, the area remaining dormant until July 1956.



Naval Shipwright Apprentice adds the finishing touches to the ship's crest.

The R.A.N. had for many years required tradesmen who displayed the qualities mentioned above and had obtained its number from those trained by private Industry or Government Organisations such as Dockyards. Besides the disadvantages to the Service of such an arrangement this was a serious drain on the technically trained resources of our country. The Government could not fail to see the advantage of the R.A.N. training its own technical staff as here would be an additional source of skilled labour for industry in years to come plus



Systems Artificers Apprentices—Electrical Engineering is easy once you master the basic principles.



Aircraft Artificer Apprentices examining an aircraft engine.

the obvious advantages to the R.A.N. in having men specially trained in the servicing of its highly sophisticated equipment.

On completion of his training the Apprentice is promoted to A/Petty Officer and advances in the R.A.N. in the normal manner. It is interesting to note that as the tenth anniversary approaches already some apprentices have been commissioned and the original entry are now Chief Petty Officers forming a nucleus for the future technical staff of the Navy.

Applicants for H.M.A.S. **NIRIMBA** should be between fifteen and seventeen years of age and must either hold the Intermediate Certificate or its equivalent, or be studying for this certificate. Apprentices are given a general course covering Mathematics, Science and English, and specialised training in subjects appropriate to their branch such as Marine Electronic, Electrical and Aeronautical Engineering and Ship Construction.

Skill of hand is developed by training in Fitting, Turning, Welding, Metal Work and Woodwork.

Religious instruction, physical training, sport, general lectures and parade training are given to provide

the necessary leadership qualities.

Apprentices on completion of their training are awarded a Certificate of Apprenticeship which grants a civilian trade recognition in one of the following fields:—

- (i) Fitter and Turner.
- (ii) Boilermaker/Welder.

(iii) Electrical Fitter.

(iv) Shipwright.

(v) Yet to be resolved, but embracing Electronics.

To achieve the aims of training some seven hundred apprentices the physical requirements of school buildings, workshops, accommodation administrative and logistic facilities are essential. Whilst all these are in existence at **NIRIMBA** it is true that they are unfortunately of a temporary nature and in many ways most unsatisfactory. The reasons for this are manifold:—

A. Some buildings were in existence and suitable for use at the commencement of Apprentice Training at **NIRIMBA**, financial considerations have dictated their continued use, despite the fact that the growth of the Establishment has rendered them unsuitable.

B. When the Federal Government decided in 1959 to disband the Fleet Air Arm, it was decided that combined Navy-Army Apprentice Training would be conducted at N.A.S. Nowra. All plans for the improvement of H.M.A.S. **NIRIMBA** were discarded, and it was not until 1962 when it was obvious that the Fleet Air Arm was not disbanding that it was decided to make **NIRIMBA** the



Engine Room Artificer Apprentices full speed ahead—at work on a diesel engine.

permanent Apprentice Training Establishment.

However, a master plan for permanent brick buildings to provide for efficient instruction, comfortable accommodation and modern amenities has now been produced and design work is proceeding.

The Marine Engineering Branch of the R.A.N. has for many years trained selected semi-skilled members to reach civilians proficiency in Fitting and Turning. This Mechanics' Course, which takes two years to complete, was transferred from H.M.A.S. **CERBERUS** (Victoria), to H.M.A.S. **NIRIMBA** in 1961. Civilian trained tradesmen entering the R.A.N. receive their initial technical instruction at H.M.A.S. **NIRIMBA**.

The breakdown of numbers under training at the moment is:—

| | |
|---|-----|
| Engine Room Artificers (Fitter & Turner) | 214 |
| Engine Room Artificers (Boilermaker/Welder) | 24 |
| Engine Room Artificers (Diesel) | 24 |
| Naval Shipwright Artificers | 112 |
| Aircraft Artificer Apprentices | 67 |
| Systems Artificer Apprentices — Electrical and Electronic | 227 |

Mechanics 44
Direct Entry Naval Shipwrights 11
Up until the present date 479 Apprentices have joined the Fleet from H.M.A.S. **NIRIMBA**.

H.M.A.S. **NIRIMBA**

PROGRAMME OF EVENTS FOR OPEN DAY

Saturday, 8th October, 1966
10.30 a.m.—5.30 p.m.

VISITORS ARE REQUESTED TO ASK ANY NAVAL PERSONNEL FOR THE LOCATION OF DISPLAYS AND DEMONSTRATIONS.

- 10.30 a.m.—Establishment open to visitors. Workshops, working exhibits and displays may be inspected.
- Sporting matches commence — inter-ship, and Navy versus local teams.
- Continuous screening of films in the Cinema.
- 11.00 a.m. to 12 noon—Morning coffee.
- 11.00 a.m.—Band display.
- 11.30 a.m.—Assault course—training display.
- 1.30 p.m.—Assault course—training display.

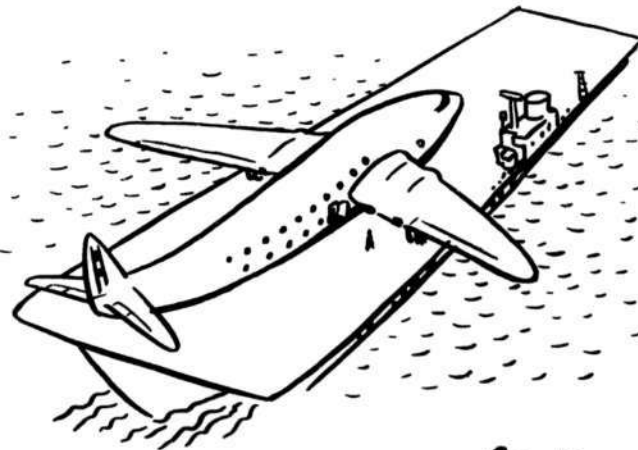
2.30 p.m.—Ceremonial Divisions.
3.30 p.m.—Workshops and displays closed to the public.
4.00 p.m. to 5.00 p.m.—Afternoon tea.
5.30 p.m.—Establishment closed to visitors.

WOMENS' ACTIVITIES IN VICTORIA

Members of the Womens' Committee of the Victorian Division of the Navy League of Australia have been particularly successful in their fund raising activities this year.

To date the women have already raised \$500, and as a result of the Melbourne Herald's "WEALTH-WORDS" competition, a further \$200.

The ladies are at present organising the Division's annual Ball, at which His Excellency the Governor of Victoria and Lady Delacombe will be present. A feature of the ball will be a marching display by the band of H.M.A.S. **Cerberus**. The ball will be held at the Palais de Danse, St. Kilda on 2nd November, 1966.



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— The Italian Navy Today —

A Survey

The editor expresses his appreciation for the assistance rendered by the Italian Department of the Navy and E. da. Rin, Charge d' Affaires a.i. at the Italian Embassy in Canberra A.C.T., in the compilation of this all too brief survey.

This article is the second of a series on the World's fighting navies. In the last edition of this magazine the Royal Swedish Navy was featured.

The Italian Navy, a member of N.A.T.O. (North Atlantic Treaty Organisation) has an active personnel strength of approximately 39,000 officers and ratings and in 1965 the Navy Estimates amounted to 178,000,000,000 Lire.

THE NAVY IN THE MEDITERRANEAN

The acquisition of independence by the African continent since World War II has been of particular interest to the Italian Navy. The Mediterranean coasts of Africa, once under the control of Western powers, are today under the sovereignty of independent States.

These States, tormented by pressing economic problems and subject to foreign countries for a large portion of their industrial requirements are considered by Italy to be areas of potential instability in the political situation of the Mediterranean.

The Italians believe this situation exists, bearing in mind the constant effort being exerted by the Soviet Block to draw the African States into its sphere of influence. At the moment the high ideals of independence of the new States opposes the Soviet blandishments, as these countries are not willing to barter their hardly conquered freedom with dubious economic and military advantages.

The interests of France and

Great Britain in the Mediterranean are rapidly declining and these countries are inclined to concentrate their naval power in the Atlantic thus demobilizing their once strongly manned Mediterranean bases.

These changes have conferred a greater importance to the naval position of Italy in the Mediterranean and have increased the tasks which the Italian Navy is called upon to perform.

Within N.A.T.O., the Italian Navy finds herself filling the gaps created by the withdrawal of French and British ships and she is wholly committed to the protection of merchant shipping—indispensable to the life and welfare of Italy.

At the end of World War II the Italian Navy was left with only 100,000 tons of combatant vessels and 60,000 tons of auxiliary ships, most of which were obsolete.

Now twenty-one years later the situation has entirely changed, Italy having built up a considerable force of fighting ships (details of which are given on a later page) and has made rapid strides in other fields affiliated with the sea such as Nautical Medicine.

MODERNIZATION AND SCIENTIFIC TRENDS IN THE MEDICAL SERVICES OF THE ITALIAN NAVY

In recent years, the medical services of the Italian Army, Navy and Air Force have undergone sweeping technical changes that

have improved efficiency and assured all ranks of far greater care and assistance. An inter-force scheme as is being implemented in the Australian armed forces, is already at an advanced stage of planning and, if approved, should introduce uniform procedure in all three services.

Organisation of the Navy medical branch has improved considerably in recent years and equipment and hospital premises have been renewed. A variety of new decisions have been taken which have given a completely fresh structure to organisation and quite a few branches—research on effects of living underwater, for example—have attained a marked national, and even international, primacy. The Navy has the following at its disposal on land: 2 base hospitals, 12 infirmaries, a Traumatic-Orthopaedic Institute, Institute of Neurology, Institute of Naval Medicine, Research Centre for Underwater Experimental Medicine and two Naval Blood Transfusion Units.

As far as naval hospitals are concerned, surgery of all grades is practised. The Blood Transfusion Units are able to intervene immediately if required and a great deal of new equipment has been purchased, including an Eliot 813 Audiometer.

As the more important warships of the Italian Navy have been equipped with modern medical apparatus while small units, with no medical officer aboard, have been provided with emergency equipment that is easy to use.

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Many advantages have been gained with the introduction of a mobile X-ray unit, an "Emergency Medical Unit" and a mobile refrigerator van. This refrigerator van is the first to be built in Italy in which the deep freeze compartments used for storing plasma are completely independent.

Some excellent results have been achieved by various units of the Italian Navy concerned with medical research. For example, the Research and Hygiene Branch has conducted some interesting experiments on atmospheric conditions inside submarines and has discovered some unknown factors about bacteria which may be present at any particular moment of time. This branch has also studied air regeneration and diets for crews of nuclear submarines, as well as emergency rations in wartime. Experiments have also been made on the biological effects of asdic soundings on the human organism, both as regards hearing and general reactions.

The "Centro Studi di Medicina Navale" and the "Centro Fisiopatologia Subacquea" have already completed several research cycles and are now planning others. Their programmes have included experiments on chemical pharmaceuticals used against radiation, the effects of high pressure on the respiratory organs, the effects of high pressure on the nervous system, comparative studies on the possible use of energy tablets by commando and sabotage units, the theory of decompression and calculation of decompression tables and analytical control of all gases used by personnel when employed in underwater tactics.

PHYSICAL TRAINING IN THE ITALIAN NAVY

Competitive sports activities generally take the form of competitions and contests between naval personnel who have undergone mass training. Naturally, major attention is given to those sports which have an immediate importance, such as rowing, swimming, sailing, motor boat racing, the marine pentathlon and such typically military sports as shooting, fencing, boxing, judo and wrestling. However, no limits are applied to competitive sports in the Navy and there are 20 Sports Training Camps where it is possible

to receive instruction. The Navy also encourages football, rugby, squash and basketball and its teams play in the national leagues.

The Italian Navy possesses the following equipment:

- 395 craft of varying sizes for rowing competitions;
- 197 sailing craft;
- 7 motor boats;
- 3 artificial lakes for rowing contests;
- 4 swimming pools (La Spezia, La Maddalena, Taranto and Leghorn);
- 18 fields for Marine pentathlon. Plans are now being made to increase the number of swimming pools so that one will be available at every naval base.

Typical military sports may be carried out at the following:

- 2 shooting ranges (Leghorn and La Spezia);
- 1 general weapons range;
- 2 gymnasiums equipped for fencing (Leghorn and La Spezia);
- 1 gymnasium for boxing (Rome).

health of its personnel, the Navy is also interested in taking part in national and international competitions and contests. Naval athletes have won many trophies, including the Gold Medal for sailing during the Olympic Games at Helsinki (Star class), a Silver Medal in the same class at the Melbourne Olympics, 3 world and 10 European championships for the Star class, 10 trophies won during Italian championships (Star and Lighthumping classes) and Olympic medals at Rome and Tokyo.

Much success has been achieved in rowing, and naval crews took part in the Olympics at Melbourne, Rome and Tokyo (eights). The Italian Navy also holds the European championship won in 1961 and a silver medal won during the Rome Olympic Games in the Canadian doubles.

In 1963/64, the Navy won 16 trophies for rowing and canoeing.

WARSHIP STRENGTH

Guided Missile Escort Cruisers (CG).



The Guided Missile Escort Cruiser "Caio Duilio"

For mass sporting activities the Italian Navy has stadiums at La Spezia, Taranto, Leghorn, Augusta, Ancona, Venice and La Maddalena.

Although chiefly concerned with the improvement of the physical

Two, "Andrea Doria" class, Andrea Doria and Caio Duilio (see photographs) both laid down in 1958 and completed in 1964.

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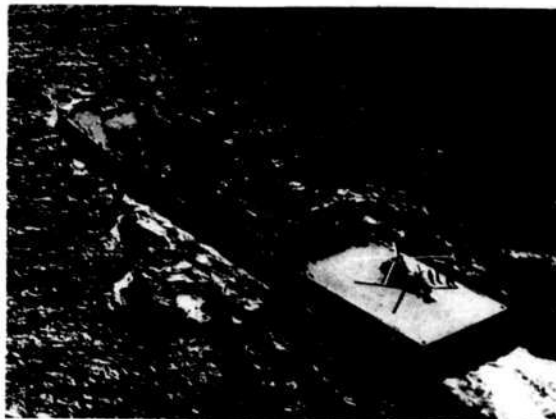
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Guided Missile Escort Cruiser "Andrea Doria"

armed with eight, 3 inch fully automatic anti-aircraft guns of a new pattern, disposed in single turrets, four on each side amidships abreast the funnels and the bridge and have a rate of fire of 65-70 rounds per minute. They are also equipped with two, 4.1 inch triple star rocket launchers.

Guided weapons include the "Terrier" surface-to-air missile operated from a twin mounting forward, and two, triple tubes for 12 inch anti-submarine torpedoes.

Both ships have been fitted with Gyrofin-Salmoiraghi stabilisers.

These cruisers carry four, AB-204 helicopters and their landing space, the large flight deck or hover apron, aft, measures 98½ feet x 52½ feet.

Main propelling machinery comprises four Foster-Wheeler boilers supplying high pressure superheated steam to geared turbines, turning two shafts and developing 70,000 shaft horse power = to a speed of 31 knots.

Ships complement is 500 officers and men.

Guided Missile Light Cruiser (CG).

One, converted "Garibaldi" class, Giuseppe Garibaldi (see photograph).

This sole operational survivor of the once large Italian Cruiser force was laid down in December, 1933 and completed in December, 1937. She was modernised and converted between 1957-1962; her full load displacement now being 11,050 tons, overall length 613½ feet and beam 61 feet.



"Giuseppe Garibaldi" Guided Missile Light Cruiser

Main armament consists of four, 5.3 inch dual-purpose guns (new automatic model) disposed in two twin turrets forward, and an anti-aircraft battery of eight, 3 inch automatic weapons, identical to those fitted in the Guided Missile Escort Cruisers.

Four ballistic missile launching tubes are installed aft in "Y" position, and her one twin launcher for "Terrier" surface-to-air missiles (she carries 72) is in "X" position.

Her armour protection is exceptionally strong — 4½ inch sides, 2½ inch deck, 2½ inch turrets and 5 inch conning tower.

A top speed of 31 knots derived from 6 of three-drum type boilers and Parsons geared turbines turning two shafts and developing 85,000 shaft horse power.

Ships complement is 650 officers and men.

Guided Missile Armed Destroyers (DDG)

Two, "Impravido" class **Impravido** and **Intrepido** (see photograph).

Modern, fully stabilised vessels completed in 1963-1964, their full load displacement is 3,941 tons and overall length 4,292 feet; they are comparable with Australia's new "Charles F Adams" class of DDG.

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NAVY

These destroyers are armed with two, 5 inch anti-aircraft guns (mounted forward) and four, 3 inch anti-aircraft guns.

The guided weapons system consists of one single launcher aft, for "Tartar" surface-to-air missiles (48 missiles carried).

Anti-submarine torpedo tubes are fitted abaft the bridge in two, triple mounts, and destroyers of this class carry an un-manned anti-submarine helicopter.

Both *Impravido* and *Intrepido* are air conditioned and are equipped with an automatic discovery and alarm system also a washdown mechanism for use when passing through an atomic fall-out zone.

Shaft horse power of 70,000, equals 34 knots. Complement consists of 25 officers and 319 men.

Destroyer Leaders, ex Light Cruisers (DL)

Two, San Marco and San Giorgio.



Guided Missile Armed Destroyer of the "Impravido" class, INTREPIDO

TABLE OF COMPARISON

SAN MARCO

SAN GIORGIO

| | | |
|-------------------------|---|--|
| Displacement: | 5,600 tons full load. | 4,450 tons full load. |
| Length: | 466½ feet overall. | 466½ feet overall. |
| Guns: | Six, 5 inch. Twenty, 40 mm., anti-aircraft. | Four, 5 inch. Three, 3 inch, anti-aircraft. |
| Anti-submarine weapons: | One, three-barrelled depth charge mortar, four depth charge throwers and one depth charge rack. | One, three-barrelled depth charge mortar; two, triple torpedo tubes. |
| Machinery: | Geared steam turbines, two shafts. S.H.P. 110,000 equal to 38 knots. | Four Fiat diesels and two Tosi gas turbines aggregating 31,200 horse power. Maximum speed, approx. 28 knots. |
| Ventilation: | | All ship board spaces are air-conditioned. |
| Complement: | 430 officers and men. | 290 officers and men. |

Destroyers (DD)

There are four DD's in the Italian Navy two were transferred to Italy by the U.S.A. under the Mutual Defence Assistance programme, in 1951 — *Artigliere* ("Mayo" class) and *Aviere* ("Gleaves" class).

Two destroyers of the "Impetuoso" class, Italy's first destroyers to be constructed after World War II

(completed 1958), are named *Indomito* and *Impetuoso*.

Having an overall length of 419 feet and full load displacement of 3,800 tons, these destroyers are armed with four, 5 inch and sixteen 40 mm anti-aircraft guns; two, 105 mm triple star rocket launchers; two, triple tubes for anti-submarine torpedoes; one, three-barrelled depth charge mortar; four depth charge

throwers and one depth charge rack.

The possible conversion and modernisation of these ships is currently under consideration, the 5 inch turret aft to be replaced by a "Tartar" missile launcher.

Four, Foster-Wheeler boilers, geared turbines turning two shafts and developing 60,000 shaft horse power give these vessels a speed of 34-35 knots.

General

Other ships in the Italian Navy include eight modern (those of the "Bergamini" class each carry one AB-47J anti-submarine helicopter) and three older frigates, 26 corvettes, six submarines—one, ex-U.S. "Balao" class, two ex-U.S. "Gato" class and three modernised boats of wartime construction, 78 minesweepers, 13 coastal patrol boats and gunboats, 23 landing craft and 126 other ships.

Aircraft

The Italian Navy has three anti-submarine squadrons (40 aircraft) equipped with S-2A Trackers (shore based), an earlier version of the S-2D Trackers being purchased for the Royal Australian Navy.

Other aircraft are attached to air-sea rescue squadrons and comprise the helicopter force of:—

Eight Sikorsky HSS-1's and three Agusta-Bell AB-204's—heavy mach-



An AB-47J anti-submarine helicopter

ines used for search and attack duties against submarines.

These machines are equipped with the Canadian PHI 10B2, A.S.W. Navigation and Rata Co-ordination system making them one of the world's most advanced and hophisticated search and detection vehicles.

Six AB-47J/3 — medium weight machine for anti-submarine warfare — attacking role only (ship borne).

Five AB-47G—light utility machines used for training and liaison.

A number of Sikorsky SH-3D Sea King helicopters have been ordered but will be land-based.

New Construction Programme

This programme includes the construction of:—

Two Guided Missile Cruisers (CG). "Vittorio Veneto" class, Trieste and Vittoria Veneto.

To be multi-purpose guided missile armed cruisers and helicopter carriers.

These ships are planned to be of approximately 9,000 tons standard displacement, have an overall length of 548 feet and beam of 62 feet.

They will carry nine, AB-240B A.S.W. helicopters and be armed with eight, 3 inch anti-aircraft guns; two, 4.1 inch triple star rocket launchers; one twin launcher (forward) for "Terrier" surface-to-air missiles and two, triple sets of tor-



The ocean minesweeper "Storione"



The frigate "Carlo Margottini"

pedo tubes for anti-submarine torpedoes.

Designed speed is 32 knots. Proposed complement is 550 officers and ratings.

Two frigates, "Alpino" class, Alpino and Carabiniere, of 2,700 tons full load displacement. Length 366 feet and beam 43 feet.

These well equipped frigates will carry six 3 inch fully automatic guns in single mounts; two, 4.1 inch rocket launchers, two sets of triple 12 inch (Mk. 32) torpedo tubes for anti-submarine torpedoes and one single-barrelled depth charge mortar.

Having a helicopter platform aft, they are designed to carry two AB-204B anti-submarine helicopters.

Machinery will include four diesels, brake horse power, 16,800 = 24 knots and two gas turbines, brake horse power 15,000 (two

shafts). Total shaft horse power being 31,800, which should give these frigates a speed of 29 knots.

Proposed ships complement — 264 officers and ratings.

Four, Hunter-Killer submarines—"Enrico Toti" class.

Attilio Bagnolini, Enrico Toti, Enrico Dandolo and Mocenigo.

The first submarines to be constructed since the War, their design has been recast several times, but it is expected that the first, Enrico Toti, will be completed in 1967.

They will displace 524 tons surface, 582 tons submerged, be 160 feet in length and armed with four 21 inch torpedo tubes. Maximum speed is expected to be 10 knots, surface; 14 knots, submerged.

The construction of one nuclear powered submarine is envisaged.

One Fast Fleet Replenishment Ship.

Exact specifications have not been finalised, and the following figures, viz: 10,000 tons displacement, length 500 feet and speed 20 knots are based on a tentative design.

The marines are back

The Italian Armed Forces will soon, once again boast a Corps of Marines. These will of course resume their old name of *Fanti di Marina*, the same which King Victor Amedeus of Piedmont gave them when he first established the corps in 1713. Those early seaprivates wore white stockings, bright green tunics and trousers, a flaming red cut-away coat, and a tri-cornered hat. The officers, appropriately, were even gaudier.

At that time people soon shortened "*Fanti di Marina*" (literally: soldiers of the navy) to "*La Marina*", a name which spread to other countries and armies. It is from this Piedmontese *Marina*, rather than from a slightly earlier English regiment called "*Maritime Infantry*" that the marines of our day got their name.

The needs of NATO now call for employment of Italian Marines and so the corps, which originally gave its name to similar units in other navies, is being reformed. A funny linguistic quirk about the project is that, in the meanwhile—through the medium of the movies—the American marines have become so popular in Italy that the new *Fanti di Marina* are being commonly called by the anglicized form of "*marines*".

In conclusion, Italy has a well-balanced fleet of ships which will be enhanced when her new construction programme has been fully implemented — a force to be respected.

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VARIABLE-DEPTH SONAR

A review by John Marriott in "NAVY" of a new Sonar device now in service or coming into service in the Navies of the world which will make the submariners' task in the future more difficult and hazardous.

In World War II, submarines made full use of a peculiar property of sea water known as temperature inversion. It was found that when the warm surface water met colder water underneath, a considerable and rapid change in temperature occurred and, at the point where this change was most marked, a layer was formed which had the effect of bending (refracting) or even reflecting the sonar wave emitted by a surface hunting ship. The submarine had only to get beneath such a layer to be virtually undetectable by sonar.

This peculiar property was known to both submariners and anti-submariners throughout the war, and a device for ascertaining the depths of such layers known as Bathymograph was developed, but it was not until after the war that any work was done on a device to get below or between the layers.

Development

In the early 1950's the United Kingdom, the United States and Canada all started work at the same

time to evolve a sonar set which could be lowered into the water to a sufficient depth to get below the layers.

After trials of prototype equipments Britain, decided to drop out of the race and to support the Canadian version which at that time seemed to meet most requirements. Thus two types of equipment started development. In principle they were the same but they varied in certain technical details and in the methods of hoisting the equipment in and out of the water.

It was found that the only possible solution was to tow a transducer in a hydrodynamic body astern of the ship and by varying the length of tow to control the depth of the transducer. The towing cable had not only to do the actual towing, but it also had to carry the electrical leads between the transducer and the electronic equipment in the ship. This raised quite a problem, but the Canadians solved it and have now produced a first class reasonably light cable with

some 20 electrical leads inside it.

The requirement was for a ship to be able to tow the transducer at high speeds, so the hydrodynamic design of the body in which the transducer is housed was very important. The first bodies either surfaced or plunged to the depths whenever speed was increased above a certain level. However, after considerable trial and error, a highly stable body was developed and has proved entirely satisfactory.

Handling Gear

The next problem was the very difficult one of launching and recovery. The towed body not only contains the transducer, in itself no small thing, but also lead to ballast it. It is a heavy unwieldy object some 12 feet long by 6 feet high and weighs nearly three tons. The towing cable has to be sowed inboard when the equipment is not streamed, and, of course, a winch is required to haul the tow in.

It was decided to launch over the stern, and a large hinged gantry was provided with a sheave at the top over which passes the towing cable. Hydraulic rams were fitted to push the gantry outboard and two topping lifts to lower it to the water's edge. There is also a main winch which stows the towing cable round its drum, and of course veers out and hauls in the equipment when it is in the water. As can be imagined, the whole equipment adds considerably to the weight in the after part of the ship and also requires a certain amount of deck space. When first fitted in destroyers it was usually necessary to land a gun or similar equipment from the after part of the ship to compensate for the additional weight. Nowadays ships are built to take the equipment, and indeed the Leander-class frigates and the Australian "Type 12" frigates, have a special cut-away well deck which conveniently houses the winch and the towed body.

Launching and Recovery

The method of launching and recovery is as follows. The towed



Taken aboard H.M.A.S. DERWENT, this picture clearly shows the variable depth sonar equipment mounted on the stern, the "Limbo" three-barrelled depth charge mortar and in the foreground the "Seacat" anti-aircraft missile launcher.

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body sits in a cradle on deck below the gantry, and the towing cable is taken round the sheave to the main winch. To launch, the towing cable is hove in on the winch to lift the body from the cradle and to bring it up until it takes against a saddle on the gantry. A pin is then inserted to keep it there and thus take the strain off the towing cable. The gantry is then pushed out by the rams through the vertical position until it overhangs the stern. As soon as it does this, the vertical strain comes on the toping lifts which lower it down to a position below the horizontal so that the body is just awash. The towing cable is then hove in until the body's weight is off the pin, which is withdrawn. The towing cable is then veered, and the body starts to sink and veer astern.

On recovery, the gantry is lowered until the saddle is just below the water and the body is then hauled up into it and the pin inserted. The gantry is then topped up until it touches the rams which allow it to ease back until the body can be lowered into the cradle.

The operation sounds complex but has proved comparatively easy to use and capable of operation in nearly all weathers.

Operational Use

The equipment has now been in use in the Canadian Navy for some three years, the British Navy for about two years and the R.A.N. for one year, and has more than proved its worth in peacetime exercises. Details of detection ranges, accuracy, etc., cannot be given for obvious reason, but it can be stated that detection ranges, under certain conditions, have far exceeded those obtained by conventional sonar sets. It was also found that in rough weather, the towed body, being well below the breaking of the waves, suffers none of the 'quenching' so familiar in hull mounted sets.

No Tail-trouble

The long tail was found to have very little effect on the manoeuvrability or speed of ships, but, of course, it is impossible to stop or go astern with the gear streamlined. Very few bodies have been lost due to fouling the bottom and the towing cables have stood up well

to the considerable strain to which they are subjected.

The art of using Variable Depth Sonar is still in its infancy, and over the course of the next few years we may expect to see many improvements both to the elec-

tronics and to the method of handling the cumbersome equipment. Even now there is no doubt that Variable Depth Sonar presents a formidable hazard to the submariner, who can no longer feel that he has safety in depth.

DOUGLAS A-4E SKYHAWK



The Douglas A-4E Skyhawk is an American designed Single-seat Shipboard Attack Bomber powered by one Pratt and Whitney J52-P-6A turbojet rated at 8,500 lb.s.t.

Maximum speed (clean) is 685 m.p.h. at sea level (Mach 0.9), 578 m.p.h. at 30,000 ft. (Mach 0.85) with a range of 920 miles. Drop tanks for use when ferrying increase the range to 1,800 miles. The service ceiling (clean) is 49,000 ft. or 45,000 ft. with 6,000 lb. external load.

Empty, the Skyhawk weighs 9,284 lb.; loaded (clean), 14,647 lb.; with a maximum overload of 24,500 lb.

This aircraft is armed with two 20-mm. cannon. A typical short-range interdiction load could consist of two AGM-12 Bullpup ASMs, six 500 lb. and twelve 250 lb. bombs. The maximum external ordnance load is 8,200 lb.

The final single-seat production model of the Skyhawk A-4E flew for the first time on 12th July, 1961. Other countries already equipped with this aircraft expect the type to remain in first-line service until 1973.

Following are the dimensions of the A-4E Skyhawk:

Span: 27 ft. 6 in.

Length: 42 ft. 10 1/2 in.

Height: 15 ft. 2 in.

Wing Area: 260 sq. ft.

Ten Skyhawks have been ordered for the R.A.N. and are scheduled for delivery late in 1967.

The Douglas Aircraft Company has begun flight tests for the two-seat TA-4E Skyhawk. The differences over the standard, carrier-based A-4E include a rear cockpit with dual controls, a more powerful engine and a 14-inch longer fuselage for an overall length of 42 ft. 5 in.

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SEA CADET CORPS NEWS

NEW SOUTH WALES DIVISION

Annual Report for the year ended 30th June, 1966

The number of Units in the Division is eight and has remained unchanged. However, rapid progress is being made by enthusiastic members of the Navalmen's Association in the Gosford area who are anxious to form a Unit and it is gratifying to learn that before long they hope to be able to meet all the requirements necessary to receive official recognition. The main problem confronting those associated with this project is the procurement of a permanent Unit headquarters building on a suitable water site but they appear confident that this can be overcome. Recent experience has revealed that this must be considered an essential prerequisite of any new Unit before an approach is made for official blessing. One must remember the immense disappointment to Cadets if they find themselves in temporary premises for any length of time and unable to devote their time and energy to something that can be said to be tangible and permanent.

Turning now to the state of the Units it can be said that the standard of operation whilst considered satisfactory last year has nevertheless improved and there is little doubt that this increase in efficiency is in no small way attributable to

the fact that an increasing number of Officers and Instructors are whenever possible making themselves available for evening, weekend and continuous training in H.M.A. Ships and Establishments. The desire by those engaged in the instruction of Cadets to obtain increased knowledge of Naval and Nautical subjects has in turn been reflected in the relatively high percentage of Cadets who during the year sat for and passed their Higher Rank examination. The strength and enthusiasm of any Unit may well be said to stem from the aptitude of its Officers and Instructors.

It is also pleasing to be able to report that as at this date it is apparent from the attendance figures of individual Units that the decline in the number of Cadets mentioned as causing concern in 1964/5, has now been arrested and enrolment is on the increase.

During the year the Division was honoured to be inspected by the Flag Officer-in-Charge, East Australia Area, Rear Admiral T. K. Morrison, C.B.E., D.S.C., R.A.N., on the occasion of the Annual Church Parade.

Close liaison has been maintained with the Headquarters Staff of the

Army Cadet Corps and the Air Training Corps. As an example of the excellent co-operation that exists with the former Service three senior Army drill instructors were made available at short notice for the purpose of instructing a Sea Cadet Guard in the use of the new drill for the .303 rifle. Unfortunately at the time, it was not possible to obtain the services of Naval personnel to undertake this duty.

Again the honour of being judged the "most efficient" Unit in the Division for 1966 has been won by one of the two country Units and T.S. Albatross is to be congratulated on this achievement.

To the Royal Australian Navy and The Navy League of Australia this Division expresses its sincere appreciation for both the physical and financial assistance received in various ways over the past year.

In concluding it must be said that there is still much to be done if as it should be, the ultimate aim is to raise the status of the Australian Sea Cadet Corps, to that on a par with our other Cadet counterparts the Army and the Air Force.

L. MACKAY-CRUISE
Lieutenant Commander R.A.N.R.
Senior Officer.

Report of Activities and Training Undertaken by the New South Wales Division for the Quarter Ending 30th June, 1966

An Officers' Indoctrination Course was held in H.M.A.S. PENGUIN for a period of 7 days and as in the case of the similar course last year, it proved to be most beneficial to the Junior Officers who attended. Needless to say the sequence to such a course should be for the Officers to undergo sea training the following year, and although every effort will be made to obtain suitable postings, the scarcity of billets in ships makes this very difficult to achieve.

Cadets carried out continuous training of 7 days duration in H.M.A.S. PENGUIN, H.M.A.S. CRESWELL and H.M.A.S.

WATSON from 15th May to 22nd May. In the former two establishments the emphasis was on Recruit training and boatwork, whilst a Cookery Badge Course was arranged in H.M.A.S. WATSON. In the latter case the report received indicated that the Cadets who qualified had reached a high standard in a relatively short time.

Training week-ends were conducted in the following ships and establishments:—

H.M.A.S. VENDETTA—
1st—3rd April
H.M.A.S. CRESWELL—
8th—10th April
H.M.A.S. STUART—
8th—10th April

H.M.A.S. WATSON—
15th—17th April
H.M.A.S. STUART—
15th—17th April
H.M.A.S. STUART—
27th—29th May
H.M.A.S. CRESWELL—
3rd—5th June
H.M.A.S. PENGUIN—
17th—19th June
H.M.A.S. WATSON—
17th—19th June
H.M.A.S. ALBATROSS—
24th—26th June

Arrangements were made for all eligible Cadets to be examined in

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H.M.A.S. PENGUIN on Saturday, 18th June for Higher Rank. The number of successful candidates was most gratifying and revealed that the Training Syllabus was being closely followed by all Units.

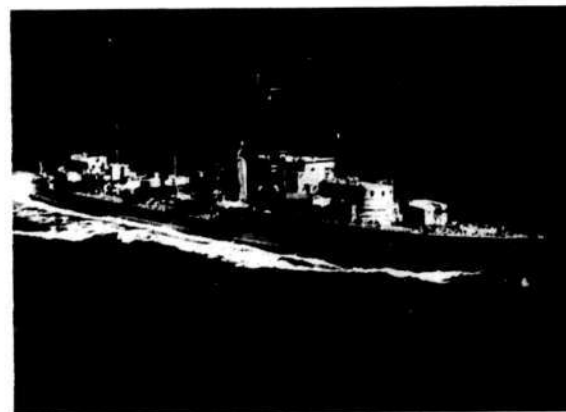
F.O.I.C.E.A.'s Representative, Commander R. E. LESH, the Captain of H.M.A.S. RUSHCUTTER, concluded the Annual Inspection of all Units for the year ended 30th June, 1966. Units inspected in the quarter under review were T. S. WARREGO — 16th April, T.S. TOBRUK — 23rd April, T.S. SHROPSHIRE — 14th May, T.S. SIRIUS — 4th June, T.S. ALBA-TROSS — 11th June.

The Annual Church Parade was held in Garden Island on Sunday, 29th May, 1966 when the Flag Officer-in-Charge, East Australia Area, Rear-Admiral T. K. MORRISON C.B.E., D.S.C. inspected the Guard and the Division prior to the Service in the Dockyard Chapel, and after the Service took the salute at the March Past. This was the first occasion that the A.S.C.C. had carried out the new rifle drill for the .303 rifle.

As previously reported to the Director of Naval Reserves, a tragedy occurred on the evening of Wednesday, 6th April, when Sea Cadet John Morris Teni of T.S. SYDNEY, was struck by a motor vehicle whilst making his way home from parade. This Cadet subsequently died in hospital on Monday, 11th April.

L. MACKAY-CRUISE
Lieutenant-Commander
R.A.N.R.
Senior Officer

H.M.A.S. ANZAC



Converted "Battle" class destroyer

Sister ship: TOBRUK (in reserve).

Built in Australia at Williamstown Naval Dockyard, ANZAC was completed on 22nd March, 1951. She differed from the "Battle" class destroyers in the R.N. as regards sleeping accommodation for officers and sailors, fore and aft; improved mess layout; modern radar fire control; close range STAAG armament (a then new type of twin 40mm. Bofors gun mounting). ANZAC was also fitted with four 4.5 inch fully automatic guns having a rate of fire of 25 rounds per minute and an accurate range of over 10 miles; six 40mm. anti-aircraft guns; ten 21-inch torpedo tubes and one "Squid" triple-barrelled depth charge mortar.

ANZAC has recently been relegated to fleet training ship and lost her director, torpedo tubes and two of her 4.5 inch guns.

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., 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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Reorganisation of the U.S. Navy Department

The following is the text of a statement by Secretary of the Navy, Paul H. Nitze, concerning the 1966 Reorganisation of the Department of the Navy:

"The Secretary of Defence has approved my proposal of 4 March for a reorganisation of the Department of the Navy. This reorganisation will increase the breadth of authority and responsibility of the Chief of Naval Operations under the continuing direction of the Secretary of the Navy and will strengthen the management of the Navy's material support organisation.

The purpose of the reorganisation is to enable the Navy more effectively to carry out its functions of preparing naval forces for assignment to unified and specified commanders and developing and providing the manpower and material resources to support Naval forces.

The principal elements of the plan are as follows:

(a) A restructuring of the bilinear Navy organisation into unilinear framework by placing the Navy's material, medical and personnel supporting organisations under command of Chief of Naval Operations.

(b) A reconstitution of the Naval Material Support Establishment as the Naval Material Command.

(c) A restructuring of the components of the new Naval Material Command into six functional commands (vice four material bureaus) as follows:

1. Air Systems Command
2. Ship Systems Command
3. Electronic Systems Command
4. Ordnance Systems Command
5. Supply Systems Command
6. Facilities Engineering Command

The reorganisation will not affect the internal organisation of the Marine Corps nor disturb the traditional relationship between the Chief of Naval Material and the Commandant of the Marine Corps.

Under the reorganisation, the office of the Chief of Naval Operations will not be affected directly; however, the CNO, in addition to having the operating forces under

him, will exercise command over the Chief of Naval Material, the Chief of Naval Personnel, and the Chief, Bureau of Medicine and Surgery.

In addition to improving the overall co-ordination of the Navy's support activities in the areas of material, medicine and personnel by assigning responsibility for these total functions to the Chief of Naval Operations, I expect that the new organisation will accomplish the following purposes:

1. Affirm and strengthen the systems management approach to weapons development and acquisition.

2. Re-inforce the management strength of the functional organisations under the Chief of Naval Material; achieve more balanced and efficient spans of control; and give more emphasis to ordnance and electronics.

3. Centralise and improve the co-ordination of RDT&E management.

4. Place more emphasis on the logistic support and maintenance of weapon systems.

5. Increase the efficiency and economy of the Navy's material organisation by exploiting opportunities for consolidation of common services.

It is expected that the reorganisation will be affected under the authority vested in the Secretary of Defence by law. The procedures will be identical to those used in the 1962 reorganisation of the Department of the Army. The Navy has recommended to the Secretary of Defence that the Department of Defence sponsor legislation to provide for the commanders of the new functional commands of the Naval Material Command certain privileges of rank, pay and retirement which are now accorded to Bureau Chiefs by law.

This refinement of the Navy organisation is the result of a long period of study and is concurred in and supported by the Chief of Naval Operations and the Commandant of the Marine Corps.

Subject to the concurrence of the congress, this reorganisation will be effective on 1 May 1966."

Navy League Ball

(New South Wales)

1966

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SEA CADET CORPS (QUEENSLAND DIVISION) NEWS QUEENSLAND SEA CADETS MAKE HISTORY

OXLEY—Launching, Scotland



Sea Cadets provided a Royal Guard of Honour for the Governor-General at the Official Opening of the Brisbane Royal Show on 17th August.

This is the first time such an honour has been bestowed on any Cadet Corps in Queensland and, probably, in Australia as far as the A.S.C.C. is concerned.

The Guard comprised 2 Officers, 4 Petty Officer Instructors and 96 Cadets drawn from T.S. *Gayundah* and T.S. *Paluma*. The average age of the Cadets was 15½ years.

T.S. *Gayundah* was formed 12 years ago in Brisbane and their present strength is 6 Officers, 11 Instructors and 121 Cadets. This Unit has won the Navy League Efficiency Trophy and has been adjudged the most efficient Unit in Queensland on several occasions. They provided 65 Cadets for the Royal Guard.

T.S. *Paluma* was formed 5 years ago and has a strength of 4 Officers, 8 Instructors and 84 Cadets. This Unit has been adjudged the most efficient Unit in Queensland this year and also last year. They provided 35 Cadets for the Royal Guard.

The Cadets made an excellent impression on the thousands of people at the Official Opening.

They were applauded for their marching on and off the Show-ground arena and in all respects upheld the high standard of the Navy. They had been issued with the new F.N. Rifle and the "new drill" "present" was perfect.

The Sea Cadets received the greatest support from the combined R.A.N. Band who were in Brisbane for the occasion. Three days were spent in Brisbane during their Concert Tour of Southern Queensland towns. Apart from the Official Opening they gave marching displays at the Show and lunch-hour concerts in the City.

As might well have been expected, the tension and excitement was too much for some of the Cadets and several collapsed during the hour long ceremony.

"Oberon" class attack submarines.

Sisters: ONSLOW, OTWAY and OVENS (named after Australian rivers).

These submarines are at present building and fitting out in the United Kingdom for the Royal Australian Navy. Crews are already in the U.K. undergoing training, and all four boats are to be handed over to the R.A.N. by the end of 1969.

"Oberons" displace 2,030 tons (surface), 2,410 tons (submerged), have an overall length of 295½ feet and are powered by Admiralty Standard Range diesels giving a surface speed greater than 15 knots. Their submerged speed is classified.

Fitted with 8 torpedo tubes, these boats can fire homing torpedoes. Complement: 6 officers and 62 sailors.

For the first time, plastic is being used in the construction of the superstructure. Before and abaft the bridge the superstructure is mainly of glass fibre laminate.

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U.S. NAVY'S ICE ISLAND

Reprinted from the United Service Journal

A drifting arctic ice island on which the United States Navy operates a scientific laboratory as part of its arctic research programme is making an historic transit of the Greenland Sea. The ice island's course southward toward the Atlantic Ocean will permit the study of an area which surface ships have never penetrated in winter and only rarely in the summer months.

Known as ARLIS II (Arctic Research Laboratory Ice Station), the ice island is 2½ miles long, 1½ miles wide, and averages 50 to 60 ft. thick.

ARLIS II is maintained and supported by the Office of Naval Research through the Arctic Research Laboratory, Point Barrow, Alaska. It is operated for the Office of Naval Research by the University of Alaska. Established in May 1961 when it was about 130 nautical miles north of Point Barrow, ARLIS II has since followed a meandering path until it is now about 2,000 nautical miles from the point where it was first manned. Its normal complement is 12 to 15, including scientists and support personnel.

The only other manned drifting ice station which has traversed the Greenland Sea was a Soviet station, NP-1, which made the trip in 1937-38. NP-1 was an ice floe, which is smaller and less stable than an ice island. Only one other ice island has ever been inhabited by the United States for arctic research—Fletcher's Ice Island or T-3, which is presently drifting between Point Barrow and ARLIS II.

The drift of ARLIS II through the Greenland Sea provides the United States with the first opportunity to study in detail this relatively unknown geographic area. The Greenland Sea is particularly significant to the Navy since it provides an important deep-water access route for submarines into the Arctic Ocean. It is also scientifically important, because it includes the broad transition zone where cold arctic waters and

warmer Atlantic waters are known to mix.

There are five research programmes in progress aboard ARLIS II:

- A programme, conducted by the U.S. Naval Oceanographic Office as part of its ice prediction and forecast mission, to measure ice strain and ice formation and to observe the drift of pack ice.

- A programme of geophysical investigations, including gravity measurements, carried out by the University of Wisconsin's Geophysical and Polar Research Centre.

- A programme in arctic marine biology, including the taxonomy and ecology of marine organisms, undertaken by the University of Southern California.

- A programme involving meteorology, sea ice physics, and celestial navigation to determine the daily geographic position of the station, conducted by the University of Washington.

- Studies in physical and chemical oceanography conducted by a team of Japanese oceanographers.

Three new programmes were begun on the station to exploit the drift through the Greenland Sea. These include a study of ocean bottom heat flow, a programme for measuring currents, and the testing

of a new precise, very low frequency navigation system.

More precise information on the station's daily progress will be needed since ARLIS II is expected to move considerably faster than during its previous wanderings. The Soviet NP-1 was reported to have made an average of 20 nautical miles per day.

The basic mission of the Arctic Research Laboratory is to accomplish those programmes of basic and applied research which contribute to successful Navy operations in arctic and sub-arctic regions. The use of temporary drift stations makes it possible to extend its research hundreds of miles into the Arctic Ocean Basin.

The fundamental knowledge of arctic environments that is being gained through this research will contribute to such naval objectives as improvement of under-ice sonic and electro-magnetic communications, navigation, detection, and surveillance systems, including through-the-ice communications; the marking out of major access and egress routes for nuclear submarines into and from the Arctic Ocean Basin; improving methods of submarines surfacing through sea ice; developing techniques for construction on permafrost terrain; and weather and ice forecasting.

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SEA CADET CORPS NEWS

(VICTORIAN DIVISION)

A.S.C.C. EVENTS WHICH HAVE TAKEN PLACE DURING THE PAST 12 MONTHS

OFFICERS' INDOCTRINATION COURSE

Six officers from Victorian Units were included in this Course, which took place in August, 1965. The object of the Course was not so much to increase the knowledge of the participants, but to improve their instructional "technique."

A similar course is being arranged for Instructors.

H.M.A.S. SYDNEY AND ANZAC

Sixty-five Cadets and a number of Officers and Instructors were accommodated in these ships during the period October 29-31, 1965, whilst the ships were in Melbourne.

The aim was to give the Cadets an idea of Naval routine, as actually practised in H.M.A. Ships, and although the period was short it was a most useful exercise.

SEA TRAINING WITH THE R.A.N.R.

The practice of sending small parties of Cadets to sea on the one and two-day exercises of the R.A.N.R. was continued during the year.

These trips, made in small vessels, provide Sea Cadets with valuable practical experience.

COURSE IN H.M.A.S. LONSDALE

The year opened with an 8-day course in January for sixty Cadets from Victoria's seven "open" Units, in H.M.A.S. Lonsdale, the Melbourne "home of the R.A.N.R." in Victoria.

Apart from general seamanship training, many instructional films were shown, and one day was spent

on the rifle range in H.M.A.S. Cerberus, and at the Gunnery Range at West Head.

The course was very successful.

OPERATION "SEASLING"

In February a number of Instructors and Cadets from T. S. Melbourne (Albert Park) and T. S. Voyager (Williamstown) took part in a night exercise in the You Yangs (a rugged outcrop about 30 miles from Melbourne), designed to test amongst other things, initiative and communications.

Some gaps in communication training became evident during the night, but all survived to eat "hot dogs" on the top of the mountain before returning to Melbourne in the early hours.

YOUTH GARDEN PARTY AT GOVERNMENT HOUSE

As has been the case for many years, a number of Sea Cadets were invited to a Saturday morning Garden Party given by the Governor of Victoria for Youth Organisations. During the morning displays were given by members of the Armed Services, including a P.T. display by a team from H.M.A.S. Cerberus.

DEATH OF SIR DALLAS BROOKS

Sir Dallas Brooks, Governor of Victoria for 13½ years, and Patron of the Victorian Division for many years, died on 22nd March at Frankston.

Over six hundred sailors from H.M.A.S. Cerberus took part in the State Funeral for Sir Dallas (a former Commandant-General of the Royal Marines), and many thousands of people witnessed the solemn scenes.

The Senior Officer of the Victorian Division of the A.S.C.C., Lieutenant Commander Geoffrey Evans, R.A.N.V.R., a former A.D.C. and Private Secretary to Sir Dallas, carried his late Chief's honours and awards during the ceremonies. They included the insignia of the G.C.M.G., K.C.B., K.C.V.O., and the D.S.O.

COMMANDING OFFICERS' CONFERENCE

The Senior Officer of the Division presided over the annual conference of Divisional and Unit Commanding Officers, held early in April

These meetings enable common problems and experiences to be discussed and are most useful.

The members of the conference subsequently attended a dinner given in a Melbourne hotel by the Victorian Division of the Navy League.

TRANSFER OF SEA CADET COLOUR

Also in April, custody of the Sea Cadet Colour, traditionally held by the Unit adjudged by the Director of Naval Reserves to be the most efficient in the Division, was transferred from T. S. Latrobe to T. S. Voyager.

The Director of Naval Reserves, Captain N. A. Boase, R.A.N., was Reviewing Officer, and about 70 Cadets from the two Units took part in the Transfer Ceremony which was carried out in Williamstown.

ANZAC DAY

Together with Army and A.T.C. Cadets, Sea Cadets lined the forecourt of the Shrine of Remem-

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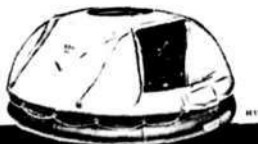


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brance during the Anzac Day ceremony.

COURSE FOR T.S. AVALON CADETS

Cadets from Victoria's only "closed" Unit, the Geelong Grammar School, attended a course in H.M.A.S. *Cerberus* in May. The course was well-planned and very successful.

SNIPPITS FROM THE UNITS T. S. BARWON (Geelong)

News was received early in the year that the Unit had been placed 5th in the Duke of Edinburgh Rifle Shooting Competition for 1965. This award is made annually after a "postal" shooting competition between British Commonwealth countries.

T. S. BENDIGO

Arrangements are being made by this Unit for a fund-raising drive to rehabilitate the Unit headquarters, which are situated on the shore of Lake Weeroona, in Central Victoria.

T. S. HENTY

Several Cadets from this Unit, based at Portland (near the S.A.-Victorian border) recently took passage in H.M.A.S. *Teal* from Westernport to Portland.

Teal is commanded by a former Victorian Sea Cadet, (Lieutenant Commander Peter Egan, R.A.N.).

T. S. LATROBE

This energetic Unit, which parades in the Army Drill Hall at Yallourn (in the Latrobe Valley) has recently erected a boatshed on the Hazelwood pondage. The pondage forms part of the power complex in the area and provides extensive boating facilities.

T. S. MELBOURNE

The wanderlust remains strong in T. S. *Melbourne*, and the latest expedition was made by the Commanding Officer and fifteen Cadets,

to Sydney. The object of the journey, which was made at their own expense, was to visit the Chilean training Schooner *Esmeralda*.

T. S. MILDURA

A \$3000 building project is approaching completion, and T. S. *Mildura*, situated on the Murray River, 350 miles from the Divisional Senior Officer, will then have a much needed classroom, and washing facilities.

T. S. VOYAGER

The Unit, situated in the R.A.N.R. boatsheds at Williams-town, continues to make use of its

own boats, the R.A.N.R. boats, and any other craft it can lay hands on.

A radio equipped whaler and dinghy, complete with antenna, make a sophisticated sight in Port Phillip Bay amongst lesser craft.

NAVY LEAGUE BALL

The Navy League Ball takes place at the Palais de Danse, St. Kilda, on Wednesday, 2nd November, 1966, and thanks to N.O.I.C., the Naval Band will play during the evening.



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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.

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

SOUTH AUSTRALIA: C/- 30 Pirie Street, Adelaide.

TASMANIA: C/- 11 Quorn Street, Sandy Bay, Hobart.

VICTORIA: C/- Room 8, 8th floor, 528 Collins St., Melbourne, C.I.

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

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

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

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

ADDRESS PHONE NO.

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(Please print clearly)

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



Navy Week In Australia

Navy Week is one week in each year when Australians from coast to coast are urged to pay grateful tribute to those who have served and those now serving Australia at sea. During this week it is fit and proper that a nation of free men and women give well-deserved honour and recognition to the patriotic and victorious achievements of its men of the sea. It is the week for Australians to re-dedicate themselves to those principles of freedom and self-government which they cherish. It is a week in which grateful citizens should salute their Royal Australian Navy and make sure that it is adequate to fulfill its contribution to our national security.

In the Royal Australian Navy the month of October has always held special significance. The 21st commemorates the 161st anniversary of the victory of the Battle of Trafalgar. Fought in the Atlantic, off the southern coast of Spain, it was the last great Naval battle to be fought under sail alone.

Fifty-three years ago, on the 4th October, 1913, the Australian Fleet steamed into Sydney Harbour. Navy Week 1966, was planned to coincide with the anniversary of the Fleet's entry.

The arrival of the ships in 1913 was an event Australians had looked forward to for half a century. They were their own ships, paid for by their own money and manned in large proportion by their own men; the nucleus of what they hoped would be their own Fleet.

The Squadron comprised the Battle Cruiser, Australia; Light Cruisers, Encounter, Sydney and Melbourne and the Torpedo Boat Destroyers, Warrego, Parramatta and Yarra.

It is appropriate at this time to recall the words expressed by the then Prime Minister of Australia, The Honourable Sir Joseph Cook:

"Since Captain Cook's arrival, no more memorable event has happened than the advent of the Australian Fleet. As the former marked the birth of Australia, so the latter announces its coming of age, its

recognition of the growing responsibilities of nationhood, and its resolve to accept and discharge them as a duty both to itself and to the Empire. The Australian Fleet is not merely the embodiment of force. It is the expression of Australia's resolve to pursue, in freedom, its national ideals, and to hand down unimpaired and unsullied the heritage it has received, and which it holds and cherishes as an inviolable trust. It is in this spirit that Australia welcomes its Fleet, not as an instrument of war, but as the harbinger of peace."

Navy League Ball

(New South Wales)
1966

GUESTS OF HONOUR

The Governor of New South Wales,
H. E. Sir Roden Cutler, V.C., K.C.M.G., C.B.E.,
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1913, the Australian Fleet steams into Sydney Harbour

Programme of Events arranged for Navy Week, '66

NEW SOUTH WALES

AUSTRALIAN SEA CADET CORPS

All Units of the Australian Sea Cadet Corps will be open for public inspection on Saturday, 1st October, 1966, between 2.00 and 4.00 p.m. Cadets will be provided to conduct visitors on tours of inspection.

A list of the training ships together with the names of their commanding officers is detailed hereunder:

| TRAINING SHIPS | ADDRESS | COMMANDING OFFICER |
|----------------|--|-------------------------------------|
| ALBATROSS | Wollongong Harbour Front, Below Flagstaff Point, WOLLONGONG. | Lt. Cmdr. D. Lindsay. |
| CONDAMINE | East Esplanade, MANLY. | Lt. A. Alexander. |
| PARRAMATTA | Macquarie Boys' High School, Rydalmere Avenue, PARRAMATTA NORTH. | Lt. R. G. Coldwell. |
| SHROPSHIRE | Hutton Street, CANTERBURY. | Lt. E. L. Causer, (Acting C.O.). |
| SIRIUS | Cahill Park, Levey Street, ARNCLIFFE. | Lt. I. G. Pirie. |
| SYDNEY | "Snapper Island", via Iron Cove Bridge, Launches run from Elliott Street Wharf, ROZELLE. | Cmdr. L. E. Forsythe. |
| TOBRUK | R.A.N. Drill Hall, Off Nobby's Road, NEWCASTLE. | Lt. V. C. Williams. |
| WARREGO | Gale Street, WOOLWICH. | Lt. K. Tovey. |

Tuesday, 4th October
12.30-1.30 p.m.
Lunch Hour

R.A.N. ships and Establishments to dress.

R.A.N. Band Recital—Northern End of Hyde Park.

Navy band to lead the Waratah Princess in procession from Hyde Park to Sydney Town Hall.

Navy cooking display at Roselands Shopping Centre, Wiley Park.
Cooks from H.M.A.S. Watson.

Wednesday, 5th October
10.00 a.m.-12 noon
Thursday, 6th October

Sydney: Lunch Hour
10.00 a.m.-12 noon

Newcastle: 12.15 and 1.15 p.m.

Friday, 7th October
10.00 a.m.-12 noon

Saturday, 8th October
10.00 a.m.-12 noon
a.m.

10.30 a.m.

12.30-1.30 p.m.
1.30 p.m.

Sunday, 9th October

R.A.N. Band recital in Hyde Park.
Navy cooking display at Roselands Shopping Centre, Wiley Park.
Cooks from H.M.A.S. Watson.
Diving display, including "Drop and Pick-up" drill by boat and helicopter carried out by Navy clearance diver operating in the Hunter river at Newcastle — opposite the State Dockyard (suggested vantage points—King's Wharf and Merewether Street Wharf).
Navy cooking display at Roselands Shopping Centre, Wiley Park.
Cooks from H.M.A.S. Watson.
Navy cooking display at Roselands Shopping Centre, Wiley Park.
Cooks from H.M.A.S. Watson.
Waratah Spring Festival Parade through the streets of Sydney. Royal Australian Navy Band will be participating.
H.M.A.S. Nirimba, Apprentice Training School, at Quaker's Hill, open for public inspection. Refer separate article and programme contained in this magazine.
R.A.N. Band Recital—Grace Bros. Department Store, Chatswood.
Garden Island Naval Dockyard open for public inspection. Refer centre of this magazine for map and programme of events.
H.M.A.S. Watson, Watson's Bay, open for public inspection. Refer separate article and programme contained on another page in this magazine.
Special Naval Commemoration Services to be conducted at:—
St. Mary's Roman Catholic Cathedral—10.00 a.m.
St. Andrew's Church of England Cathedral—11.00 a.m.
A Naval guard and band, also contingents of Naval and Ex-Naval personnel will attend both commemoration services.

QUEENSLAND

The Navy in co-operation with the Navy League and the Naval Association in Queensland has arranged a series of functions to Commemorate Navy Week. The following main functions have been arranged in and around the Brisbane Area:—

Friday, 30th September 7.30 p.m. Sea Cadet Corps Training Ships **Paluma** and **Stafford** open for public inspection (Director of Naval Reserves attending).
Saturday, 1st October 2.30 p.m. H.M.A.S. MORETON.
Exhibition by W.R.A.N.S.
Recital—R.A.N.R. Band.
7.30 p.m. W.R.A.N.S. Dinner—attended by Director of Naval Reserves.
Sunday, 2nd October 11.00 a.m. Sea Farer's Service at St. John's Cathedral.
3.00 p.m. Wreath Laying Ceremony Anzac Shrine.
7.30 p.m. Dedication at St. Mary's Kangaroo Point of **Voyager Plaque** — His Excellency the Governor of Queensland in attendance.
Tuesday, 4th October School Talks at selected High Schools by R.A.N. Officers and Navy League Members.
Wednesday, 5th October 7.45 p.m. "Old Ships" Reunion in H.M.A.S. Moreton (all ex-Naval Personnel, welcome).
Friday, 7th October (evening) Navy Debutante Ball at Wonderland Ballroom, Ipswich—Rear Admiral Perry, R.A.N. (Ret'd), to receive debutantes.
Saturday, 8th October 8.00 p.m. Navy League Dinner in Moreton (Guest of Honour—Capt. Hasler, R.N., the R.A.N. Hydrographer).
Sunday, 9th October 2.30 p.m. (Four Units participating and the R.A.N.R. Band).

SOUTH AUSTRALIA

Monday, 3rd October 5.30-7.30 p.m. Cocktail Party—Naval Memorial House.
Tuesday, 4th October 12.30 p.m. Commemoration Service at War Memorial.
Wednesday, 5th October Ship re-unions.
Thursday, 6th October Ship re-unions.
Friday, 7th October Ship re-unions.
Saturday, 8th October Racing and Trotting Clubs meetings. A race to be given a Naval name.
Sunday, 9th October 10.00 a.m. Special Mass—St. Francis Xavier Cathedral.
7.00 p.m. Commemoration Service—Holy Trinity Church of England, North Terrace, Adelaide.

Other activities include:

Naval essay competition for Junior and Senior high school students.
Shop window displays—City and Suburbs.

TASMANIA

H.M.A.S. **Hoon** open for public inspection.
Naval Association Dinner.
Church services—Hobart and Launceston.
Wreath laying ceremonies, cenotaphs and war memorials at Hobart, Launceston, Burnie, Devonport and Ulverstone.
R.A.N.R. and A.S.C.C. Units to participate.
"Call of the Sea" film to be screened on Channel 2 in Hobart and Channel 3 in Launceston.
Shop window displays—Hobart, Launceston, Burnie and Devonport.

VICTORIA

Saturday, 1st October 9.00 a.m.-4.00 p.m. Williamstown Dockyard and H.M.A.S. **Yarra** open for public inspection.
Sunday, 2nd October 11.00 a.m. Special service at St. Mark's, Church of England, Forest Hill.
Monday, 3rd October Naval Association Golf Day, Royal Melbourne Golf Club, East Course.
Tuesday, 4th October 8.00 p.m. Smoko/Social, White Ensign Club, Exhibition Building.
Wednesday, 5th October R.A.N. Band Recital and P.T. Demonstration.
Friday, 7th October Dinner Dance, Earls Court—tickets available from any Ex-Naval Association (\$4.00 single).
Saturday, 8th October 10.00 a.m.-5.00 p.m. H.M.A.S. **Cerberus** open for public inspection.
Sunday, 9th October 11.00 a.m. Cathedral services (St. Paul's and St. Patrick's).
1.45 p.m. Naval and Ex-Naval men march to Shrine (assembly Alexandria Ave.).
2.30 p.m. Commemoration ceremony at Shrine.
3.30-5.30 p.m. Ex-Naval reception at H.M.A.S. **Lonsdale**.

Daily Events:—

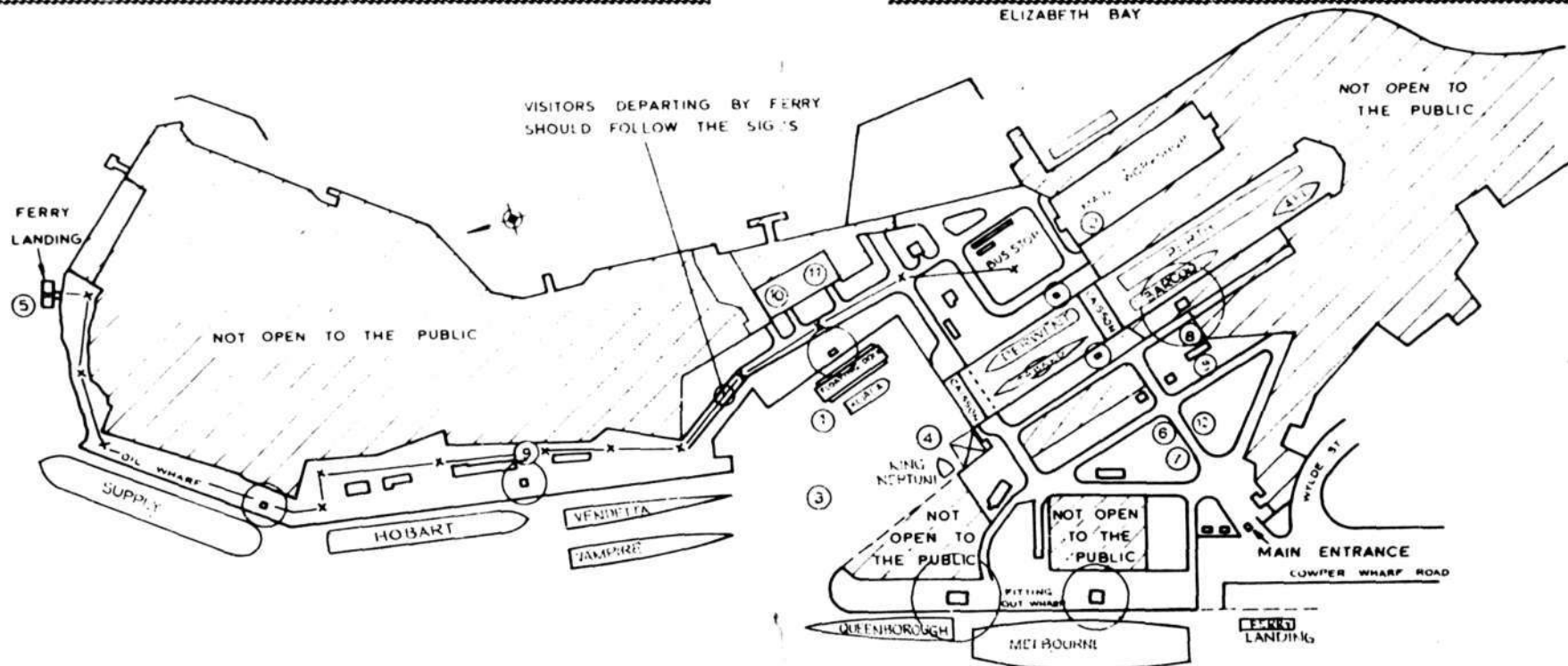
Naval Cooking demonstrations at City stores.
Columbia Pictures offices—exhibition of R.A.N. Band Recordings.
Melbourne Sports Depot—display of diving and firefighting gear.

WESTERN AUSTRALIA

Saturday, 1st October By courtesy of the Western Australian Turf Club all races at the Meeting at Helena Vale on this afternoon will have Naval names and a performance will be given by the Band of the Royal Australian Naval Reserve.
Sunday, 2nd October 11.00 a.m. Commemorative Services will be conducted in St. George's and St. Mary's Cathedrals in Perth. The R.A.N.R. Band will perform for the Service in St. George's Cathedral.
3.00 p.m. A Commemorative Service and Wreath Laying Ceremony will be held at the Fremantle War Memorial. A Naval guard of honour and the R.A.N.R. Band will parade.
Tuesday, 4th October — Navy Day The White Ensign will be flown at the War Memorials in Perth and Fremantle and H.M.A.S. **Leeuwin** will be dressed overall.
2.00 p.m. The 13th Passing Out Parade of the Junior Recruit Training Establishment, H.M.A.S. **Leeuwin** will be reviewed by Rear Admiral O. H. Becher, C.B.E., D.S.O., D.S.C., Director-General of Recruiting.
p.m. Reunion Dinner—Conducted by the Navy League and Naval Association.
Thursday, 6th October 7.00 p.m. for 7.30 p.m. The 1966 Navy Day Dinner will be held in the Drill Hall, H.M.A.S. **Leeuwin** and His Excellency, the Governor of Western Australia, Major-General Sir Douglas Kendrew, K.C.M.G., C.B., C.B.E., D.S.O., has graciously consented to be present.
The numbers this year will have to be limited to 400 The cost per head will be \$2.00. Dress will be Dinner Jacket or Lounge Suit.
Beat Retreat will be performed to conclude the evening's festivities.
Friday, 7th October New League Button Day — to raise funds for the new Headquarters Building.
Saturday, 8th October By courtesy of the Fremantle Trotting Club Inc., all races at the Meeting at Fremantle on this evening will have Naval names and a performance will be given by the Band of the Royal Australian Naval Reserve.
Sunday, 9th October 1.00 p.m.—5.00 p.m. H.M.A.S. **Leeuwin** will be open to the public and Beat Retreat will be performed.

NAVY WEEK IN SYDNEY - Display At Garden Island, October 8th

ELIZABETH BAY



GARDEN ISLAND NAVAL DOCKYARD

NAVY DAY, SATURDAY, 8th OCTOBER, 1966, 1.30 p.m. — 5.00 p.m.

(Key figures given below indicate positions of ships and where displays will take place, and related to the Map of Garden Island on this page).

1.30 p.m. H.M.A. Naval Dockyard and H.M.A.

Ships open to visitors.

1.45 p.m. to 2.30 p.m. Air-Sea rescue demonstration by Iroquois Bell helicopter (3).

Diving display, including "Drop and Pick-up" drill from boat and helicopter, of "saboteurs" (3) and (4).

2.50 p.m. "Fly Past" by Westland Wessex Mk. 31 helicopters.

2.55 p.m. to 3.05 p.m. Westland Wessex anti-submarine helicopters demonstrate "manoeuvring" and "dunking Sonar Buys" (3).

3.10 p.m. Introduction of "Miss Australia" finalists — led by band from main entrance to Captain Cook Dry Dock Dockyard.

3.20 p.m. to 3.45 p.m. Marching demonstration by the band of theoyal Australian Navy (12).

4.00 p.m. to 4.35 p.m. Air-Sea rescue demonstration by Iroquois Bell Helicopter (3).

Diving display, including "Drop and Pick-up" drill from boat and helicopter, of "saboteurs" (3) and (4).

5.00 p.m. Dockyard and Ships closed to visitors.

KEY TO GARDEN ISLAND DISPLAYS

- | | |
|--|---------------------|
| 1 FLOATING DOCK | 7 FIRST AID |
| 2 MAIN WORKSHOP | 8 LADIES' REST ROOM |
| 3 HELICOPTER & DIVING DISPLAY | 9 LADIES' TOILETS |
| 4 NAVY CLEARANCE DIVERS AND CROSSING THE LINE CEREMONY | 10 DOCKYARD CHAPEL |
| 5 FERRY LANDING FERRY WHARF | 11 SAIL LOFT |
| 6 LOST CHILDREN | 12 BAND |

DETAILED PROGRAMME OF EVENTS MAY BE FOUND ON PAGE 61

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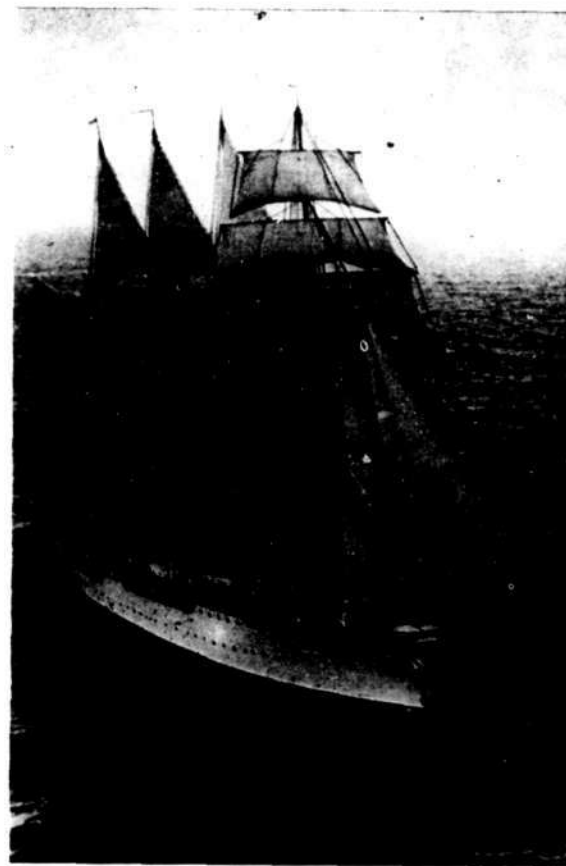
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Esmeralda Visits Sydney



Chilean training ship **ESMERALDA**

The four-masted training schooner **Esmeralda**, under the command of Captain Roberto Kelly Vasquez, entered Sydney Harbour on 5th August on a five-day goodwill visit. She was escorted to her berth at Circular Quay by more

than 40 launches, yachts and other pleasure craft.

Esmeralda has a full load displacement of 3,673 tons and an overall length of 309 feet. She carries two 75-mm. guns. Her

total sail area is 26,910 square feet.

Many of her crew were entertained in private homes.

She sailed during the morning of 10th August bound for New Zealand.

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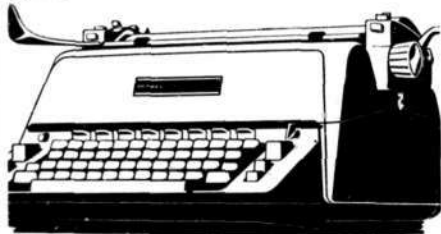
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Helicopter Attracts Schoolchildren

By JACK MILLAR

During April-May-June the Navy's
latest surveying ship, H.M.A.S.
Moresby, operated off Tasmania's
north-east coast.

The area surveyed included
Banks Strait, off Swan Island and
a party was landed at the Eddy-
stone Lighthouse.

A smaller group using the spe-
cially equipped small vessel Fan-
tome worked from the east coast
fishing port of St. Helens, charting
George's Bay and the coast around
to Falmouth.

When helicopter pilot Lt. Cdr. C.
Wheatley landed his machine on
the St. Helens sports oval on April
28th for a test of blade alignment,
he had to withstand a verbal "bom-
bardment" on all aspects of the
Westland Scout helicopter.

Firing the questions were pupils
from the nearby St. Helens School,
who flocked to the oval on his



(Pictured) are some of the children from the St. Helen's School inspecting the
helicopter on the local sports oval.

H.M.A.S. MORESBY



The R.A.N.'s first specially designed survey ship (commissioned on 6th
March, 1964). She is fitted with the most modern hydrographic equipment
and also carries a "Westland Scout" helicopter.

MORESBY's full load displacement is 2,500 tons. She is 284½ feet in
length and has a beam of 42 feet.

arrival. Lt. Cdr. Wheatley said they
asked some very sensible questions,
although one lad had "strained the
bonds of friendship a little" when
he asked to be taken for a ride.

H.M.A.S. Moresby is now
operating in Northern Australian
waters.

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THE PHILIPPINE NAVY

1939-1966

The 9th February marked the 27th Anniversary of the Philippine Navy.

The Republic of the Philippines has a total population of 30,500,000, total strength of the armed forces is 36,500, of which 4,000 are Naval personnel.

Why We Should Strengthen Our Navy—a Message from Commodore Felix M. Apolinario, Flag Officer in Command, Philippine Navy.

Not many of our people know the importance of the Philippine Navy to our national security. I wish to take this occasion, therefore, to inform you why we have a navy and why we should strengthen it.

GEOGRAPHICAL CONSIDERATIONS

Our country is divided into more than 7,000 islands. It has a coastline measuring 14,700 miles or twice the length of the coastline of the United States.

Three-fourths of our national territory is composed of water or

about 462,000 square miles of water area compared to the United States which has a water area of only 66,237 square miles.

The Philippines is proximately located to the troubled spots in Southeast Asia; Vietnam in the west, Red China in the north, and Indonesia and Malaysia in the south.

Our country is exposed to infiltration on all sides.

Water transportation is still the cheapest and best means of communication in the islands.

WHY A NAVY IS NEEDED

Any defence of the Philippines, to be effective, must use the sea as a barrier since the country is not only surrounded by water but also divided in many parts by the sea.

A Navy is needed to harness the sea to repel enemy aggression in wartime or to carry on with the economic pursuits of a growing nation in peacetime.

A Navy is needed:

To meet and destroy the enemy invasion force before it can land troops and supplies;

To bring fresh troops and supplies to beleaguered defences ashore anywhere in the Philippines where the enemy might have succeeded in landing;

To carry out our international commitments with friendly nations with whom we have defensive alliances such as the United States and other member nations of the South-east Asia Treaty Organisation;

To protect our coasts from the clandestine entry of aliens and enemy agents;

To safeguard our inter-island commerce and means of transportation and communication;

To enforce laws against smuggling, illegal fishing and maintain peace and order in the high seas; and

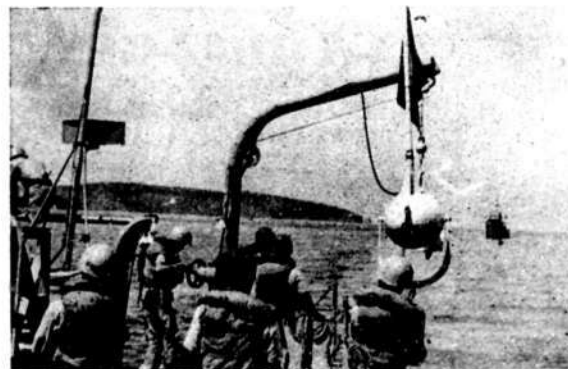
To provide rescue and transport services whenever they are needed.

The increasing demand for the services of the Philippine Navy underscores the need for strengthening this major seagoing arm of the Republic.

ROLE OF THE NAVY IN NATIONAL DEFENCE

The Philippine Navy performs two vital defence functions in peacetime. These are training and round-the-clock patrol of our territorial waters against clandestine forces.

Training is divided into personnel and unit training. Personnel training is aimed at developing the professional ability of officers and enlisted men. This starts with the Naval Officers Qualification Course for officers and Basic Training for enlisted men at the Naval Training



MINE SWEEPING: R.P.S. Zambales and Zamboanga del Norte clear Manila Bay of sunken mines.

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Command. As they finish the course
and gained experience, specialised
courses in naval warfare are offered
either in local naval schools or
abroad.

Unit training consists of drills
and exercises aimed at developing
teamwork and combat readiness of
surface vessels at all times. This
involves the various phases of naval
warfare such as surface patrol and
naval gunfire techniques, anti-
submarine warfare, protection of
shipping, amphibious warfare, mine
warfare, underwater operations and
harbour defence.

ROLE IN BILATERAL AND MULTILATERAL DEFENCE

The Philippine Navy as part of
the Armed Forces of the Philippines
constitutes one of the forces in
being that implements the bilateral
and multilateral commitments of
the country in defence of the free
world.

As signatory to a mutual defence
pact with the United States and
the South-east Asia Treaty Orga-
nisation the Philippines has partici-
pated in various defence exercises in
the treaty area.

These exercises designed to de-
velop the close working relation-
ship of the armed forces of the
member nations have resulted in
improving the ability of each nation
to integrate its forces with the

other member nations into one col-
lective defence team.

It is significant that both the
United States and the South-east
Asia Treaty Organisation emphasize
the necessity for constant defence
exercises to secure the treaty area.
This is significant because the
nations that comprise South east
Asia are bounded by the sea from
all sides. It is therefore logical for
the Philippines to develop a naval
defence to protect their geographical
resources.

THE STATE OF THE OPERATIONAL FLEET

12 Escort Patrol Vessels.

- 2 Command Ships.
- 2 Coastal Minesweepers.
- 6 Landing Craft.
- 6 Submarine Chasers.
- 33 Patrol Boats—including two
"hydrofoil" type being built
in Italy.
- 6 Tugs.
- 1 Oiler.
- 1 Water Carrier.
- 1 Repair Ship.

All vessels are of U.S. origin
having been transferred under the
Military Aid Programme (MAP).

A survey ship is being built in
Queensland, at a cost of \$A500,000,
as a gift from Australia under the
Seato Aid Agreement.



Minesweepers and Patrol Craft

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AUSTRALIAN NAVY

SOVIET DEFENCE POLICY

By R.Y. Malinovsky (Minister of Defence)

The imperialists can in no way reconcile themselves with the victorious march of the Soviet Union to Communism, the building of socialism in the people's democracies, the spread of the liberation struggle of the peoples. They have not rejected the frenzied idea of destroying the socialist countries by force. The American imperialists rage particularly; they have taken upon themselves the role of saviours of the capitalist system. The ruling circles of the U.S.A. are stubbornly whipping up the arms race, persistently perfecting their military machine, equipping it with predominantly offensive military means, intercontinental ballistic missiles and atomic submarines with "Polaris" missiles. Other Western Powers are taking an active part in this arms race. The Washington leaders are trying to strengthen the aggressive military political blocs with all their might, with NATO in the forefront. But events show serious contradictions becoming more and more acute in the North Atlantic aggressive bloc. Carrying through its colonialist policy, the United States brazenly interferes in the internal affairs of the peoples of other countries, organises reactionary coups, particularly in young national states, setting up regimes suiting itself. It attacks as it likes independent states, performing their unheard-of atrocities, thus calling forth the hatred and condemnation of the whole world.

A serious threat to peace is the war unleashed by the American imperialists in Vietnam, the land which the trans-oceanic brigands have turned into a kind of firing-range for testing all kinds of poison gases, modern weapons and military technology. Bringing to life in the memory of the people the grim times of fascism, the Pentagon bosses are subjecting the towns and villages of the Vietnam Democratic Republic to barbarous bombing and are carrying out scorched-earth tactics in South Vietnam. We are

profoundly convinced that these new invaders will not be able to break the will of the Vietnamese patriots and force them to their knees. The Vietnamese people does not stand alone. On its side are the people of the socialist countries — millions and millions of people throughout the world. The USSR has given and will continue to give selfless and resolute aid to heroic Vietnam in its just and courageous struggle for its freedom and independence.

In speaking of events in South-East Asia, one should not forget Europe. The embers of the last war continue to smoulder here, and could kindle the fire of a new, nuclear war, even more destructive and catastrophic in its aftermath. The United States is trying to legalise the access of West Germany to the nuclear arsenal. On its part, West Germany is taking all measures to become one of the leading members of the NATO nuclear club, even claiming leadership in it. In the last ten years, Bonn's military expenditure has amounted to DM 200,000 million, twice as much as was spent by the Hitlerites on preparations for World War II. The West German rulers openly demand approval of its revanchist policy by its Western allies, the recognition of its hegemony in NATO on a par with the United States, including full equal rights in planning and use of nuclear weapons. All these pretensions have been elevated into the framework of Bonn's foreign policy.

The CPSU Central Committee and the Soviet Government firmly and consistently implement Lenin's peace-loving policy, persistently struggle for the creation of favourable conditions for building a Communist society in the USSR, developing the world socialist system and preventing a new world war. At the same time the Party cannot fail to take account of the growing aggressiveness of the imperialist Powers, led by the USA.

Taking care of the security of our people and the peoples of other socialist countries, it takes all steps for strengthening the defence of the USSR. The USSR cannot be indifferent to the military preparations of the imperialists. Under such conditions we regard it as our main task to raise with unrelenting tenaciousness the combat strength of the Army and Navy and their preparedness for crushing any adversary if war is forced upon us.

For the Soviet armed forces, the period since the 22nd Party Congress has entailed the solution of many very complex and extremely important problems of military construction. The measures carried out in that direction have made it possible to increase the reserve of nuclear warheads for various purposes and to reinforce sharply the equipment of all types of armed forces with means of delivery. The CPSU Central Committee and the Soviet Government have been paying much attention in these years to the development of our strategic rocket forces and atomic submarines equipped with rockets. The main efforts of the leading branches of our military industry have been subordinated to the rapid expansion of these forces, the chief means for restraining an aggressor and decisively routing him in a war. All the latest achievements of Soviet science and technology have been used in perfecting them.

A number of basically new types of rocket armaments have been created through the heroic labour of our workers, engineers, designers and scientists. A whole complex of varied strategic means of warfare has been made operational in a short time. A large number of new—and this is of special importance — mobile launching installations have been built for the strategic rocket forces, and we express deep gratitude for this to the designers, engineers and workers of our defence industry.

Besides the strategic rocket forces

Greetings to R.A.N. Personnel on Trafalgar Day from ...

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PHONE 62-1350

we have created in these years a submarine fleet equipped with rockets capable of fulfilling strategic tasks of striking enemy targets on both sea and land. It includes new atomic, rocket-carrying submarines equipped with ballistic rockets capable of underwater launching and with a wide range. The nuclear strength of our long-distance rocket-carrying Air Force has also been increased. Simultaneously with the strategic nuclear weapons there has been a development of operational and tactical nuclear weapons, especially those of the land forces and the Navy.

The equipment of the armed forces with conventional weapons has also been expanded in corresponding proportions. The tank and motorised infantry divisions have received improved armoured, artillery and special equipment. In some important respects, Soviet tanks are superior to the latest models of tanks in the USA and other NATO countries.

The percentile armoured protection of military personnel against the lethal effects of nuclear weapons has been greatly increased; the mobility and manoeuvrability of land forces have increased; further development has been given to communications, engineering and other forces. Highly effective new anti-aircraft rocket systems and interceptor aircraft complexes have been worked out and adopted for use. Our defences ensure the reliable destruction of any aircraft and many of the enemy's rockets. The long-range air force has been qualitatively changed. A considerable section of the combat aircraft of the front-line, naval, rocket-carrying and especially military transport air forces has been renovated. Our airborne assault troops have been considerably reinforced. During recent years they have shown good results in combat training. The Navy has been equipped with new rocket vessels, forces and means of anti-submarine defence, specially to combat an aggressor's rocket submarines.

The technical equipment of all the armed forces has been accompanied by the constant perfection of their combat readiness and the

raising of the level of military and political training. Army and Navy personnel are successfully mastering the new fighting equipment and learning the methods of its use in battle and operations. In recent years the number of long-distance voyages by our atomic submarines has increased five times, which has shown graphically the ability of our gallant sailors to perform successfully any military tasks in the expanses of the oceans, from the Arctic to the Antarctic. A few days ago a round-the-world voyage was completed by a group of submerged atomic submarines. All this makes it possible to say with confidence that the Soviet armed forces are capable of carrying out any military tasks which they may be set by the Party and Government for the defence of our homeland.

I should like to stress specially that in recent years military collaboration has broadened and strengthened with the fraternal armies of the member-countries of the Warsaw Treaty, formed for the protection and defence of the peaceful work and development of their peoples and permeated with the identity of interests of the socialist countries. The fundamental qualitative changes which have taken place in the Soviet armed forces compel the Pentagon leaders to assess our military power more soberly and adopt a different approach to their evaluation of the balance of military forces which has developed in the world. We stand calmly and confidently guarding the peaceful work of our people — the more so now that the establishment of the "Blue Defence Belt" of our State has

PATROL BOATS



The R.A.N. has ordered 20 of these vessels for service in Northern Australian Waters and Papua-New Guinea. They are at present under construction in Queensland shipyards.

Their length overall will be 107 feet; beam of 20 feet and depth, 13 feet 5 inches.

Driven by two powerful diesels, the vessels will be fitted with twin screws and rudders.

These patrol boats will have steel hulls and aluminium superstructures. They will be fitted with two, 40mm guns in single mounts; radar and long-range communications equipment and will be air-conditioned for tropical service.

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been completed. In any event, should the imperialists attempt to unleash war against the Soviet Union and other socialist states, let there be no doubt that our blow will prove to be devastating to the organisers of the war.

The strength of our armed forces consists not only in the first-rate armament at their disposal, but also in the morale of the troops, their whole-hearted devotion to their people and loyalty to the ideals of the Communist Party. The Soviet armed forces possess highly qualified, well-educated officer cadres who are absolutely devoted to the Party and Government and are, owing to their qualifications, able to lead troops in peace as well as war. Our officers, generals and admirals are the backbone of the Army and Navy. They are truly the treasure of the armed forces. Much has been done and is being

done in the way of training politically and theoretically mature military cadres who are highly qualified and devoted to their motherland. At present, one out of every four officers in the Army and Navy has a higher military or specialised education. The proportion of engineering and technological personnel in the forces is steadily growing. The command staff, political bodies and Party organisations are the leading inculcators of Party ideals; they skilfully and purposefully educate personnel in the spirit of socialist patriotism, proletarian internationalism, boundless devotion to their people and hatred toward the imperialist aggressors. I have the special satisfaction of reporting to you the remarkable qualities of our soldiers, sailors, non-commissioned officers and petty officers. They have a high political consciousness, boundless devotion

to our native Leninist Party and the people, heroism, and readiness for self-sacrifice in defence of the homeland. Every day of their service is filled with persistent training and the will to excel in military and political training. And, as always, Communists lead the way. At present 60 per cent. of Party members and candidate members who serve in units are exemplary soldiers (Russian, *otlichniki*) or classified specialists. Communists and Komsomol members are a vast force in our Army and Navy. They comprise over 80 per cent. of the armed forces and are the bedrock on which the high political awareness and morale of the troops is founded. I can also state with satisfaction that the young men who arrive for conscript service in the armed forces are well educated, technologically knowledgeable and physically fit.

WESTLAND SCOUT A.H.1



The Westland Scout helicopter is a British-designed, general-purpose machine, powered by one Bristol Siddeley Nimbus 102 turboshaft engine torque limited to 685 s.h.p.

Maximum speed is 132 m.p.h., service ceiling 17,700 feet and maximum range 317 miles.

Empty, the Scout weighs 3,084 lbs. and loaded 5,300 lbs.

Rotor diameter is 32 feet 3 inches, fuselage length 30 feet 7½ inches, overall height 8 feet 11 inches.

These helicopters operate from survey ships of the Royal Australian Navy.

The strength of our armed forces is founded on the inviolable unity of the Army and people. Therefore we consider an all-round expansion and consolidation of the ties between Army and Navy Party organisations, political bodies and military councils, on the one hand, and local Party, administrative and trade union organisations, on the other, as one of the main methods for enhancing the fighting capacity of our armed forces. The Soviet people has surrounded its armed forces with deep respect and care. It rightly regards them as the reliable shield of the homeland. In this unity with the workers of the country lies the inexhaustible source of the strength of our army and its superiority over the armies of imperialist states. To strengthen the defences of the country requires continuous attention to the military and patriotic education of Soviet people, especially the youth, wide dissemination of military knowledge among the population of the country and its active participation in perfecting the entire system of civil defence. The further strengthening of fraternal ties and the unity of the Soviet armed forces and the armies of the member-countries of the Warsaw Treaty and the entire socialist community must also be an object of our unremitting concern.



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Boomerang - The First Guided Missile Ikara - Australia's own Anti-submarine Missile

Modern scientists would like to know a great deal more about the Australian Aborigines who thousands of years ago designed the boomerang. To most who have heard of or seen it this curiously curved piece of wood is considered either as a remarkable and deadly prehistoric weapon, or as an amusing tourist trophy. In fact it would seem to have been the world's first guided missile, and what interests engineers and mathematicians particularly today is that its construction is based on the same principles as those involved in the complicated design of modern aircraft.

How did these Stone Age men come to develop so subtle a weapon? What other scientific knowledge did they perhaps have that has been lost down the ages?

One theory is that the boomerang may have been evolved accidentally from the curved throwing stick; another that primitive man may have observed and learned from leaves that, curled by the hot sun, fell slowly spinning from the eucalyptus trees to earth. But the secret, whatever it was, has been forgotten, modern aborigines have no knowledge of the origin of the boomerang. All they know is that it has always been part of their lives. The essential and intriguing factor is that not only could the soaring weapon kill man or beast at a distance of as much as a hundred yards, but that if it missed the prey a boomerang would return to the thrower, an important consideration in those days, because it must have taken quite a long time to make, and therefore the loss would matter.

There are now two main types of boomerang: the returning and the non-returning missile or throwing stick, variations of the latter being known in a number of other countries such as East Africa, India, Egypt and Arizona in the United States. A third, shorter type is used only for ritual cere-

monies among the Australian aborigines. According to the area, there are some twenty versions of the Australian weapon. Tribes in central and northern Australia use only the non-returning or hunting kind, more crescent-shaped than the returning boomerang with its pronounced angle and two straight arms, one rather longer than the other. The strange flight pattern is caused by the fact that one side of the weapon is flat, the other cambered, and the ends are very slightly twisted in contrary directions, one up and the other down.

Various types of wood are used, many of them very lovely; in the heart of Australia gidgee (an acacia), jarrah — one of the eucalyptus species — or myrtle are employed, in Western Australia mulga wood is preferred, and in New South Wales the wood of the mangrove that grows only in salt water and though soft and easy to work can be tempered to steel-like strength. The chosen wood, cut to approximate shape, then has to be carefully sanded to its peculiar and exact form; the skewing of the ends is sometimes achieved by soaking, sometimes by heating, after which many boomerangs are beautifully incised or decorated with designs burnt in with a hot iron before being finally polished.

To become expert in catching as well as throwing a boomerang requires considerable skill, as the weapon returns at high speed, and failure to grasp it correctly can result in badly split fingers.

THE "IKARA"

This missile, designed and manufactured solely in Australia with some financial support from the United States, has also been modified and adapted for use by the Royal Navy.

"Ikara" is a highly accurate, long-range, anti-submarine torpedo carrying missile, fired from surface ships.

The missile, which is propelled

by a rocket motor, has low aspect-ratio swept wings and a vertical stabilizer, consequently can easily be manoeuvred in flight.

"Ikara" is an all-weather, rapid reaction system.

The potential of "Ikara" has been increased with the installation of the latest long range "Variable



The "IKARA" missile.

Depth" sonar (see separate article) systems aboard ships of the Royal Australian Navy.

It has been reported that the type "46", acoustic homing torpedoes are used with "Ikara".

How the Missile Works

After the initial guided flight from the surface warship, the torpedo is dropped into the water. The torpedo then has a maximum time of approximately 20 minutes to angle itself 10 degrees off the noise emitted by the submarine. The torpedo is designed to hit any contact amidships.

After dropping the torpedo, the missile carrier is recoverable and may be used for subsequent firings.

The missile can deliver its homing and active torpedoes over much greater distances than 8 miles, possible 15 miles.

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Annual Report and Balance Sheet of the New South Wales Division of the Navy League of Australia — presented, 22nd August, 1966

It is with much pleasure that I present the Committee's report for the year ended 30th June, 1966.

Membership:

During the year membership increased by 9 to 253, being 226 Fellows and 27 Associates. In the same period the losses due to death and resignation amounted to 13.

"The Navy":

Early in the year, Mr. F. James, the Editor, resigned on account of ill-health. By combining the positions of Editor and Administrative Editor, the vacancy was filled by Mr. Dennis Trickett. Under his capable guidance action to improve the magazine, that was initiated last year, has made outstanding progress; also a more stable situation has been reached with regard to printing and publishing. The distribution for Australia-wide public sale have placed larger orders for each issue, and it is anticipated the League will receive from this wider circulation an increased number of applications to become members.

Members, themselves, can do much to increase public knowledge of the objects of the League by endeavouring to introduce at least one new member each year. By passing on your copy of "The Navy" the interest of your friends could be aroused.

Finance:

The audited financial statement which will be presented shortly shows that during the year an increase in funds occurred, and the accounts remain in a healthy state. Loans and grants to Sea Cadet Units amounting to \$334.00 were approved, whilst expenses incurred on behalf of the Sea Cadet Corps for Sporting Trophies, Insurances, Typist services, etc., amounted to a further \$956.41.

The provision made last year for \$2000 as a building grant for T.S. "Parramatta" has not yet been utilised owing to difficulty being experienced by the Parramatta City Council in obtaining clear title of the land it has promised to make available. This situation has been under constant review, and it is

most sincerely hoped that the building will be commenced quite soon.

To the Local Committee of T.S. "Parramatta" we express our appreciation of their fervent endeavours and admiration of their patience.

Sea Cadet Corps:

The Senior Officer, Lieutenant Commander L. Mackay-Cruise, R.A.N.R., very shortly will report upon the activities in N.S.W. of the Corps. Your Committee, however, is experiencing great difficulty within the Metropolitan area in meeting the responsibility to provide Headquarters buildings suitable for the Units of the Corps. It is a challenge that must be met, despite the near complete swallowing up of all potential sites by the ever-growing metropolis of Sydney.

No alternative site for the Manly Unit, T.S. "Condamine", yet has been found. Also, as mentioned earlier, much delay is occurring in obtaining the lease of land at Ella Street for the T.S. "Parramatta", which Unit has now been established for 24 years.

The feasibility of establishing a new Unit in the Wyong district is being investigated. There is much local enthusiasm, and at present the prospect of being able to obtain a suitable Headquarters site at Point Clare is quite bright.

In December last, after giving 30 years of outstandingly faithful and enthusiastic service to the Corps, Mr. David Mort, who was then the senior Sea Cadet Lieutenant Commander in the N.S.W. Division, retired from the Active List.

That the Naval Board saw fit to honour his loyal services by promoting him on retirement to Sea Cadet Commander is a matter of intense satisfaction to your Committee, and I am confident is equally so to every member. In appreciation of his wonderful services to the League I am confident every Member would wish me to say a most sincere Thank You to Commander Mort and wish him

long life with all happiness and good health.

Incorporation:

The Navy League of Australia became a Public Company on 14th April, 1966, when a "Certificate of Incorporation of Public Company" was issued in Canberra for "The Navy League of Australia" by the Deputy Commissioner of Companies.

The Articles of Association provide that those members holding office in the Federal Council, Committee of Divisions, and the Committees of Branches in the unincorporated organisation shall be appointed the first office-bearers in like positions within the incorporated company.

Your Committee has made application to the Federal Council for consent to the formation of the New South Wales Division of the Navy League of Australia being the incorporated body, and will transfer all assets of the N.S.W. Division of the unincorporated organisation to the N.S.W. Division of the incorporated company.

Incorporation does not materially change the objects of the League, but does provide more flexibility to its administration and greater safeguards to the members, whose liability, in the event of the League being wound up, is limited to such amount as may be required, not exceeding two dollars (\$2).

The Companies Act requires all records to be maintained in standard books, including a Register of Members. Also provided within the Articles of the Company is that the first members of the League shall be those members of the unincorporated voluntary organisation as shall consent in writing to be members of the League. In due course the Secretary, by letter, will seek your consent.

The Memorandum and Articles of Association of the Navy League of Australia were produced by the Honorary Solicitor, Mr. John K.



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Bowen, Notary Public, to whom we are all very greatly indebted. Blending into a document, that met the requirements of the Companies Act and was acceptable to the Registrar of Companies, the numerous amendments to the unincorporated constitution proposed by the Federal Council together with the results of his own researches into the constitutions of overseas Navy Leagues, has been indeed a monumental task which must have caused many a headache.

I therefore ask you now to express your appreciation to Mr. Bowen for his great contribution to the future of The Navy League of Australia by acclamation.

Entertainment:

A most successful tour of inspection of H.M.A.S. "Perth" was arranged by kind permission of Captain I. Cartwright, R.A.N. Some 220 members and friends visited this latest addition to H.M.A. Fleet, and although somewhat awestruck by the complexity of the equipment, were most deeply impressed by the great pride every crew member had in his ship and the tremendous esprit-de-corps that prevailed.

The Senior Officer A.S.C.C. and his Officers arranged a most enjoyable cocktail party during December. This function, which was held at the Hotel Manly, provided to members of the Navy League an opportunity to meet Officers of the Sea Cadet Corps.

Navy League Ball

The Ball Committee last year presented the N.S.W. Division with a cheque for \$1,570. This splendid result is most gratefully acknowledged, and our thanks go out to the hard-working band of ladies, who so nobly support our work. This year the Annual Ball will be held at the Hotel Australia, on November 4th, and H.E. the Governor and Lady Cutler will be guests of honour.

Acknowledgements

I wish again to record and express our grateful thanks to: The P. & O. Orient Lines of Australia for yet again making facilities available for us to hold tonight's meeting, and also for the use of their Board Room for our monthly meetings.

Mr. John J. K. Bowen, senior partner of Ebsworth & Ebsworth for their careful supervising of our accounts.

Mr. I. Rae -- our Honorary Treasurer, and to Messrs. Robertson, Crane & Gib-

H. A. SHOWERS,
(Rear Admiral)
President

THE NAVY LEAGUE OF AUSTRALIA NEW SOUTH WALES DIVISION

Balance Sheet as at 30th June, 1966

| | | |
|----------|--|----------|
| 1965 | | 1966 |
| \$ | ACCUMULATED FUNDS | \$ |
| 9,284 | Balance -- 30th June, 1965 | 10,612 |
| | Add: | |
| | Surplus of income over expenditure for the year ended 30th June, 1966, as per accompanying statement | 1,292 |
| 1,328 | | |
| \$10,612 | | \$11,904 |
| | Employed as Follows:— | |
| | Fixed Assets — At Cost | |
| 192 | Office Equipment | 192 |
| 520 | Film Projector | 520 |
| 198 | Sea Cadet Equipment | 198 |
| | | |
| 910 | | 910 |
| 910 | Less: Provision for depreciation | 910 |
| | | |
| | Investment — At Cost | |
| 1,000 | Sydney County Council Inscribed Stock | 1,000 |
| 2,542 | Loans to Units — Interest Free | 2,522 |
| | Current Assets | |
| 7,412 | Bank of New South Wales — Current Account | 8,710 |
| | | |
| 10,954 | | 12,232 |
| | Deduct: | |
| | Current Liabilities | |
| 290 | Sundry Creditors | 270 |
| 52 | Ada McMaster Trust | 58 |
| | | 328 |
| 342 | | |
| \$10,612 | | \$11,904 |

(Sgd.) A. A. ANDREWS, Secretary.
(Sgd.) H. A. SHOWERS, President.

AUDITOR'S 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 state 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 CRANE & GIBBONS,
SYDNEY, 18th August, 1966. Chartered Accountants.

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The principle objective of the Navy League of Australia is to stress the vital importance of Sea Power to the Commonwealth of Nations and the important role played by the Royal Australian Navy.

The League in conjunction with the Commonwealth Naval Board administers the Australian Sea Cadet Corps, by providing finance and technical sea training for boys who intend to serve in the Naval or Merchant Services, also to those sea-minded boys, who do not intend to follow a sea career, but who given this knowledge will form a valuable reserve for the Naval Service.

We invite you to swell our ranks and so keep up to date with Maritime Affairs to help to build an ever-increasing weight of informed public opinion. The Navy League will then become widely known and exercise an important influence in the life of the Australian Nation.

The League consists of Fellows and Associates. All British subjects who support the objectives of the League are eligible for membership. Members receive copies of the League's magazine "The Navy". For further particulars please dispatch the form provided below to your local Secretary.

New South Wales — Box 1719, G.P.O., Sydney.

Victoria — Room 8, 8th Floor, 528 Collins Street, Melbourne, C.I.

Queensland — Box 376E, G.P.O., Brisbane

Tasmania — 11 Quorn Street, Sandy Bay, Hobart.

South Australia — 30 Pirie Street, Adelaide.

Western Australia — 182 Coode Street, Como.

Australian Capital Territory — 60 Limestone Avenue, Ainslie, Canberra.

Northern Territory — C/- H.M.A.S. Melville, Darwin.

TO: The Secretary,

The Navy League of Australia.

Please send me details of membership of the Navy League of Australia.

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(Please print clearly)

Address: _____

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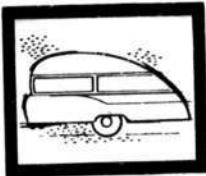
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Mr. Robert Tanfield

A Canadian Navy League Sub-Lieutenant, Robert A. Tanfield is in Australia as Matson Lines' Regional Sales Representative. He is accompanied by his wife and one young child.

Mr. Tanfield devoted considerable time in Toronto supporting the Sea Cadet and Navy League movement. He instructed Toronto Cadets in Naval History, communications and seamanship and assisted with fund raising campaigns and recruiting programmes.

A Canadian of British ancestry, Bob Tanfield is fluently articulate in the French language having spent three years at the Sorbonne in Paris studying French language and literature.

Mr. Tanfield, when mingling informally with members of the N.S.W. Division of the Navy League at the Annual General Meeting, mentioned that the Cadet

movement in Canada is very active and widely acclaimed as an organisation contributing heavily to National well-being. Most of the cadet training is done in high school gymnasiums throughout the country during the winter evenings with the opportunity for older cadets to spend several weeks at a regular Naval establishment in the Summer. H.M.C.S. York, the Toronto Naval Station, co-operates to all possible extents by providing needed

equipment and training facilities to support the movement.

Since his arrival in Australia, Mr. Tanfield has shown an active interest in Sea Cadet Activities. At the invitation of Commander L. E. Forsythe, A.S.C.C., Mr. Tanfield recently visited the Sea Cadet Corps training ship Sydney, at Snapper Island, and was impressed with the work being carried out amongst boys ranging in age from 13-18 years.

H.M.A.S. VAMPIRE



"Daring" class destroyers (open for inspection on Navy Day, Saturday, 8th October).

Sister ship: VENDETTA. On loan from the R.N.: DUCHESS.

These destroyers, with a full-load displacement of 3,600 tons and an overall length of 388½ feet, are armed with six 4.5 inch guns in twin turrets, and six 40mm. anti-aircraft guns, as well as five 21-inch torpedo tubes in quintuple mountings. Anti-submarine weapon is a "Limbo" three-barrelled depth charge mortar (DUCHESS has "Squid" instead of "Limbo"). Shortly to be refitted and modernised, these "Darings" will emerge minus one 4.5 gun, but will have in its place the anti-submarine weapon "Ikara".

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"Fantome" Surveyed Tasmanian Waters

By JACK MILLAR

Mention of the R.A.N.'s latest surveying ship, H.M.A.S. *Moresby* — recently operating in Tasmanian waters — and a former beautiful little surveying vessel, H.M.S. *Fantome*, recalls that the latter operated in Australian waters from 1907 to 1924, excluding the First World War period, when she was on active service. Some of this time was spent in Tasmanian waters, during which she surveyed the Port of Hobart. Her sleek lines drew much admiration from local ship-lovers.

Fantome replaced H.M.S. *Penguin* which, with H.M.S. *Dart* — another beautifully lined ship — also carried out survey work in Tasmanian waters.

From 1908 to 1910 *Fantome* was commanded by Captain F. C. C. Pasco — previously in charge of H.M.S. *Dart*, the grandson of Commander Crawford Pasco, who served on an earlier survey ship, H.M.S. *Beagle*.

It was the *Beagle* which brought Sir Charles Darwin to Hobart in the course of his round-the-world voyage. Crawford Pasco was the son of Signal Lieutenant Pasco, who served under Nelson on H.M.S. *Victory*.

It was he who hoisted Nelson's famous signal at the Battle of Trafalgar.

Vice-Admiral Sir A. G. N. Wyatt — now living in retirement at Woodbridge (Tasmania), served as a Lieutenant on the *Fantome* for a short period after World War I. In the late 1930's Capt. Wyatt commanded the survey vessel H.M.S. *Endeavour*.

H.M.S. *Dart*, built as a yacht for the Colonial Office in 1882, was intended to be the "Admiral's yacht" for the Australian squadron, but was switched to surveying duties the following year.

Although not suited for this task, she carried out her allotted hydrographic work nobly and well for the next twenty years — in waters ranging from Tasmania to the Great Barrier Reefs and from New Zealand to the Solomon Islands.

Since Tasmania was first dis-

covered, many famous ships have contributed to the knowledge of the island's shoreline. Others have put into the port of Hobart to replenish supplies.

Following on from Tasman's voyage of discovery, Captain James Cook in H.M.S. *Resolution*, together with H.M.S. *Adventure* (Commander Furneaux) and then H.M.S. *Discovery* (Capt. Clarke), added their findings to the island's history. So, too, did Captain Bligh in H.M.S. *Bounty* and *Providence* and the French exploration ships *Recherche* (Capt. B. D'Entrecasteaux), *Esperance* (Capt. Huon de Kerma-dec), *Geographe* (Capt. Baudin), *Naturaliste* (Capt. Hamelin), Lieut. Matthew Flinders in the schooner *Francis*, followed by his circumnavigation with Surgeon George Bass in the *Norfolk*, established without doubt that Tasmania was indeed an island, and not part of the mainland of Australia.

Capt. John Hayes in the *Duke of Clarence* surveyed the River Derwent, followed by H.M. Ships

Lady Nelson and *Calcutta* at the time of the first settlement at Risdon.

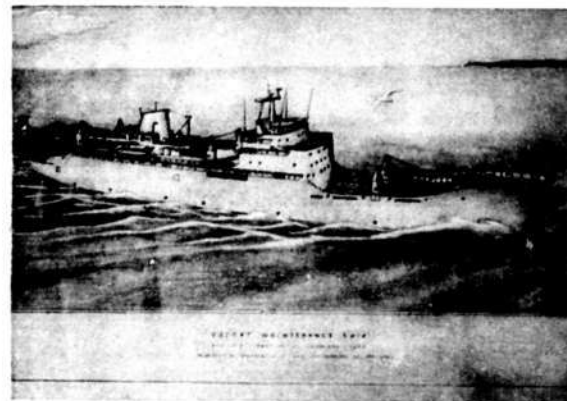
Then followed over the years H.M. Ships *Kangaroo*, *Mermaid*, *Bathurst*, *Beagle*, *Erebus*, *Terror*, *Herald*, *Challenger*, *Dart*, *Myrmidon*, *Penguin*, *Waterwitch*, and *Fantome*.

In addition the Victorian Colonial Government's warship *Victoria* and lighthouse tender *Pharos* carried out valuable surveys of Bass Strait, King Island and northern Tasmanian waters.

The steam yacht *Aurora* (Capt. Davis) — which took Sir Douglas Mawson's party to the Antarctic — surveyed Hasselborough Bay at Macquarie Island (a dependency of Tasmania) in 1914. The Australian vessel H.M.A.S. *Geranium* surveyed Tasmanian waters in 1924.

Today, H.M.A.S. *Moresby* carries on. The work, though exciting, is made easier with the latest modern navigational aids. Working with the *Moresby* is a small motor launch, appropriately named *Fantome*.

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Strategic Deterrent — Britain's Polaris Submarines

By 1970 the Royal Navy will have its four Polaris submarines in service and will have taken over from the Royal Air Force the vital task of providing Britain's contribution to the long range strategic deterrent forces of the Western Alliance. It was three years ago that the Government decided that the Royal Navy should build, man and operate the country's deterrent force to replace the V-bombers when they become obsolete.

The agreement between the United Kingdom and the United States was signed at Nassau in 1962 and provided that Britain should design and build the submarines and the warheads whilst the U.S.A. sold her the missiles. Since that historic agreement was signed the Royal Navy has embarked on its biggest single effort in history—the building of the submarines, a new submarine base at Faslane on the mouth of the Clyde, and all the many support facilities needed for this huge undertaking.

Each submarine will carry 16 missiles of the A3 design, which is claimed to have a range of some 2,500 nautical miles. It is believed to have cost the United States something in the order of £1,000 million to develop the Polaris weapon system, and a highly effective, reliable and accurate system has resulted. Britain's first Polaris submarine was laid down two years ago, and will be launched this year. The present construction state is:—

RESOLUTION, laid down February, 1964, launched this year, completed Mid-1968.

RENOWN, laid down June, 1964, launched this year.

REPULSE, laid down March, 1965, launched 1967.

REVENGE, laid down May, 1965, launched 1967.

Builders are: Vickers, Barrow and Cammell Laird, Birkenhead.

It is expected that RENOWN, REPULSE and REVENGE will be completed at six-monthly intervals after H.M.S. RESOLUTION.

Construction work at the new

Clyde Submarine Base at Faslane, from where the Polaris submarines will operate, is well under way. At the moment a number of Royal Navy personnel are undergoing Polaris training in the United States, but the R.N. Polaris School at the Faslane base is nearing completion and later this year, men will commence training there. Conventional submarines will also use

the base, which will have a new deep water jetty, a floating dock now being built at Portsmouth, offices, workshops and many other facilities.

Some 2,000 Naval personnel will be at the base and their recreational facilities will include a cinema, gymnasium, sports grounds and a shopping centre.

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Guided missile destroyer.

Sister ships: HOBART (in dry dock on Navy Day) and BRISBANE (building).

Destroyers of the "Charles F. Adams" class, built in the U.S.A., have aluminium superstructures and are fully air-conditioned.

This class of destroyers have an overall length of 440½ feet, a beam of 47 feet and displace 4,500 tons full load.

They are armed with such modern weapons as two 5-inch, single mount, rapid fire guns; one "Tartar" surface to air missile launcher, having a range of 15 to 20 miles; and the "Ikara" long range anti-submarine missile (2 single launchers).

Geared steam turbines turning two shafts and developing 70,000 shaft horsepower give these destroyers a speed in excess of 35 knots.

Complement, 21 officers and 312 sailors.

These versatile ships will be used to escort amphibious forces and to support them after their landings, to work with hunter-killer groups in attacking submarines and to protect ocean convoys.



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Naval and civilian families is well in hand in the area and some of the 1,500 houses are already complete and occupied. The armament depot to maintain the missiles is being built at nearby Couplport, on Loch Long, and backing up the new base will be refitting facilities in the Naval Dockyards and stores depots, which will be connected to Faslane by automatic data transmission links.

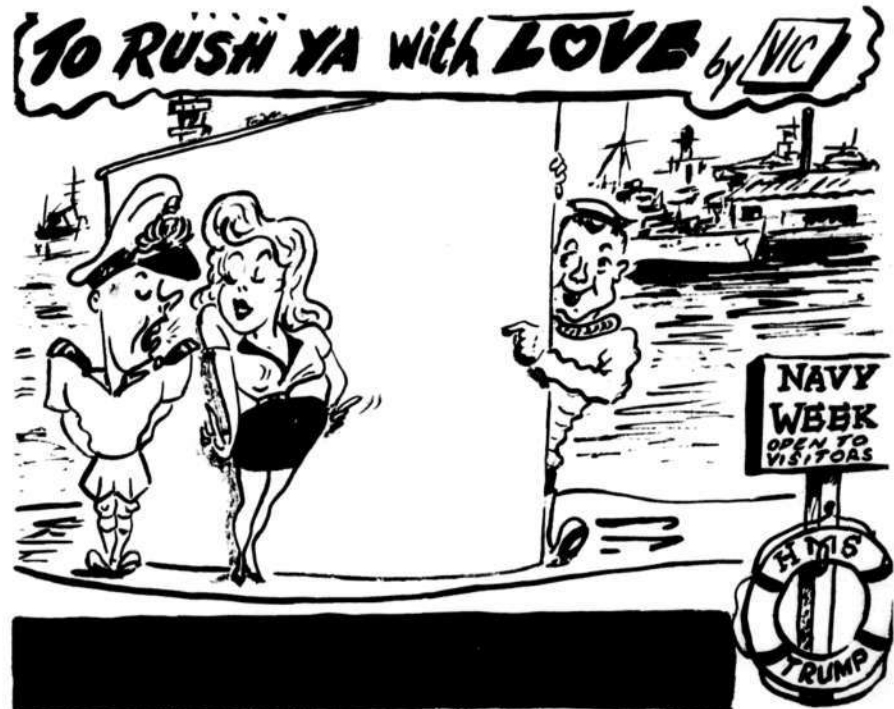
Each of the Navy's Polaris boats will have two crews in order to make the most of the submarines'

great potential. Each crew will consist of 13 officers and about 120 ratings, and while one crew is on patrol, the other will be ashore taking leave or carrying out refresher training. A patrol cycle of about eight weeks is being adopted, because experience has shown that a crew can remain fully efficient and alert at sea—and under water, for at least that time.

Four Polaris submarines does not seem, at first thought, a very impressive force. But in fact it is an immensely powerful deterrent. The

Polaris missile in a nuclear submarine can reach anywhere on land, and the explosive content of the 16 warheads carried in just one submarine is equivalent to more than the explosive content of all bombs dropped by both sides in the last war—including the atom bombs dropped on Japan.

The Chief of the Royal Navy's Polaris Executive has said that the motto will be "If we fire we've failed". It will certainly be a sobering deterrent to any would-be nuclear aggressor.



Miss — they may call me Jimmy, — or — James — but — I assure you — my surname isn't Bond.

HENCE:- JIMMY — THE ONE!? .007



FIRST IN EVERY FIELD

The Escort Carriers of World War II

By A. Cecil Hampshire in the "United Service Quarterly".

"The only thing that ever really frightened me during the war," Sir Winston Churchill confessed in his history of World War II, "was the U-boat peril." By the middle of 1940 German submarines were sinking an average of 60,000 tons of British shipping every week. That this figure was not higher still was due to the fact that within a few days of the outbreak of hostilities the Admiralty had introduced the convoy system for merchantmen sailing to and from the United Kingdom.

But at the outset of the war and until Britain's building programme of corvettes and frigates could get under way, the number of convoy escorts available was small and their capacity insufficient to meet the demands made on them.

The most that the Navy could do was to shepherd outward-bound convoys as far into the Atlantic as possible, usually about 200 miles west of Ireland, at which point the merchantmen were dispersed to proceed independently to their destinations. The warships then headed for a pre-arranged rendezvous where they collected inward-bound vessels and escorted them safely to harbour.

Cheated of their prey in the waters around the British Isles, the U-boats simply went deeper into the Atlantic where, with the aid of long-range aircraft to home them

on to their targets, they continued to take a growing toll of the merchantmen.

In the early weeks of the war the Navy's few fleet carriers were employed in using their aircraft on anti-submarine sweeps in the convoy dispersal areas. But after the *Courageous* had been torpedoed and sunk and the *Ark Royal* narrowly escaped the same fate, it was decided that these ships were too valuable to be risked in hunting U-boats.

In order to counter the enemy's long-range aircraft a number of British merchant ships were fitted with a catapult carrying one Hurricane fighter. It was intended that at least one of these CAM-ships, as they were called, should accompany each convoy, and for others to patrol the danger areas. But after being launched into the sky to deal with the enemy reconnaissance aircraft, the pilot of the Hurricane either had to bale out or ditch near some friendly vessel and trust to luck to be picked up, for it was impossible for him to land back on the parent ship.

WOLF PACKS

In March, 1941, German U-boats began operating in groups known as "wolf packs," and the real Battle of the Atlantic was joined.

A Commander-in-Chief, Western

Approaches, with headquarters on shore at Liverpool, was appointed to take overall charge of the war against the U-boat on the western ocean.

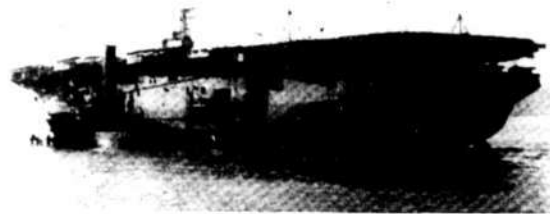
Coastal Command of the Royal Air Force was brought under naval direction in the fight to keep the U-boats down, and patrolled the skies in long-range aircraft from bases in Britain, Northern Ireland, and Iceland. Ships of the Royal Canadian Navy worked as far eastward as possible from Halifax, and later from St. John's in Newfoundland, to afford protection to arriving and departing convoys.

The United States Government, extending all aid to Britain short of war, instituted a Security Zone which covered north Atlantic waters west of 26 degrees West Longitude, and kept the Admiralty informed of any enemy activity within this zone.

But in spite of all these measures, shipping losses continued to rise. The Germans were building submarines with longer range and greater endurance, and these craft now patrolled the Atlantic to within a few hundred miles of the North American coast. In the first half of 1941 British shipping losses mounted from 32,000 tons a month to more than twice that figure.

The wolf packs found their happiest hunting ground in an area between 30 and 40 degrees West Longitude, beyond the range of all but a few of the British, American, and Canadian aircraft patrolling from Iceland, Greenland, and Newfoundland. Somehow this mid-Atlantic gap, which the Germans called the 'Black Pit,' had to be bridged.

In a directive to the British Chiefs of Staff in March, 1941, Mr. Churchill had ordered that extreme priority be given to fitting out ships to catapult or otherwise launch fighter aircraft against Focke-Wulf and other enemy bombers attacking British shipping. The CAM-ship



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soda fountain dispensing a widely flavoured variety of soft drinks. The well-equipped sick bay included also a bacteriological laboratory, X-ray apparatus, and a complete stock of drugs. There were three refrigeration rooms, one for meat, one for fruit and vegetables, and a third for dairy produce.

Lend-Lease was generously interpreted down to the last detail, for when the British crews arrived at the U.S. Navy Yards to take over the newly-converted carriers they found the ships' provision rooms crammed with flour, tinned foods, and a full supply of frozen meat. Complete outfits of mess utensils and crockery of U.S. Navy pattern were also provided.

"MADE IN U.S.A."

Conversion usually took about 70 days, and outfitting and sea trials five to eight weeks, after which the ships were handed over to the British crews at a brief commissioning ceremony. Speaking at one of these transfer ceremonies, Rear-Admiral Marquand, U.S.N., said: "Flying the White Ensign of Great Britain, this American-built, American-converted vessel has come to be commissioned at this U.S. Navy Yard on Wallabout Bay, once the stronghold of the British forces in the War of Independence. More clearly than any words do these circumstances bespeak the unity of the United Nations — the pooling of resources and men and materials which will one day repay the destruction wrought by the deceit and inhumanity of our enemies."

As each vessel sailed for Britain she took with her more evidence of this pooling of resources, for her flight deck was crowded with new aircraft for the Royal Air Force.

By early 1942, when the first of the U.S.-built carriers started to arrive from across the Atlantic, America herself was in the war, and U-boat sinkings once again increased. The majority of these were now concentrated in focal areas of America's eastern seaboard, such as Hampton Roads, North Carolina, and Cape Hatteras. In September, losses rose to 400,000 tons monthly. Since the United States was heavily engaged in the

GRUMMAN S-2E TRACKERS



These aircraft will join H.M.A.S. MELBOURNE early in 1968.

A four-seater Shipboard Anti-submarine aircraft, the American-built Grumman S-2E Tracker is powered by two Wright R-1820-82WA nine-cylinder radial engines, each rated at 1,525 h.p.

The Tracker has a service ceiling of 22,000 ft., economical cruising speed of 166 m.p.h. at 5,000 ft. and maximum speed of 280 m.p.h. at sea level. Maximum range is 1,352 miles, the internal fuel capacity being 3,762 imp. gals.

Empty, the aircraft weighs 18,315, the maximum loaded weight being 26,147 lb.

Armament (internal) consists of two electric acoustic homing torpedoes, two Mk. 101 depth bombs, or four 385 lb. depth charges. External armament consists of six 5 in. HVARs, Zuni rockets or 250 lb. bombs.

The S-2E has AQA-3 Jezebel passive long-range acoustic search equipment and its associated Julie active echo ranging equipment.

Dimensions of the Grumman S-2E Tracker:

Span: 72 ft. 7 in.

Length: 43 ft. 6 in.

Height: 16 ft. 3½ in.

Wing area: 499 sq. ft.

Twenty Trackers have been ordered for the R.A.N. and are scheduled for delivery during November, 1967.

Pacific, Lend-Lease began to operate in reverse, and the Royal Navy sent over to the U.S. Navy 24 anti-submarine trawlers and 10 corvettes to help combat the U-boats in the western Atlantic and Caribbean.

Meanwhile in Britain, as new escort ships came into service, support groups were planned by Western Approaches Command to operate in the North Atlantic and take the offensive against the wolf packs.

A typical support group would comprise five or six destroyers,

sloops, or corvettes, accompanied by a 'jeep' carrier with her own escort. It was not possible, however, to begin forming these groups until the spring of 1943.

By then, the first of the original U.S.-built escort carriers had taken part in one of the toughest convoy battles of the war and given a good account of herself. Two months after Hitler attacked Russia, supplies of badly needed war materials were being shipped from the United Kingdom to the Soviet Union. At first the convoys,

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numbering not more than ten merchant ships, got through without much difficulty. But in December, 1941, the Germans, operating from bases in northern Norway, began to intervene on a massive scale with U-boats, bombers and torpedo aircraft. The convoys were larger, and losses among the merchantmen began to mount.

ARCTIC ACTION

In the June convoy of 1942, the disastrous PQ.17, 23 ships were lost out of a total of 36. Ten were sunk by enemy bombers, ten by U-boats and three by aircraft torpedoes. Since the Arctic convoys could not be protected by shore-based aircraft from Britain, their only method of air cover was to include a carrier in the escort.

For the next convoy, which sailed in September, the escort carrier *Averger* sailed with the convoy. She carried 12 Sea Hurricanes and three *Swordfish*. Once north of the North Cape of Norway, this convoy, PQ.18, was continuously attacked for three days by heavy concentrations of Heinkel torpedo aircraft, Junkers 88 dive bombers, Focke-Wulf Kuriers, and Messerschmitt 109F fighters, as well as U-boats. "They came in layers like a wedding cake," said one of the escort carrier's pilots.

Thirteen out of the 40 merchantmen were sunk. Ten were destroyed by torpedo aircraft, only three by U-boats. On the third day of the battle the enemy aircraft concentrated on the carrier, losing 17 torpedoes at her. But her fighters got in among the Heinkels and Junkers and spoil their aim. All the torpedoes missed, and the carrier's fighter pilots shot down four of the enemy planes and claimed three more probable kills. The final assessment was five German aircraft destroyed, three probably destroyed and 14 damaged. Four of the carrier's Hurricanes were lost, but three of the pilots were saved. In addition, the *Averger's* *Swordfish* aided the destroyer *Onslow* to locate and sink U.589.

From then on at least one escort carrier was included in each outgoing Russian convoy. Significantly, no more merchantmen were lost to enemy aircraft attack.

In November, 1942, came Operation "Torch", the Allied landings in North Africa. Three of the four available U.S.-built carriers, the *Avenger*, *Dasher* and *Biter*, accompanied the initial troop convoy from Britain. Not a single transport or supply ship was lost on the outward voyage, but a week after the landings had been successfully accomplished the *Avenger* was torpedoed and sunk.

By June of that year more than 30 new escort carriers were in process of conversion in America for the Royal Navy. Among the earliest to be completed were the *Ameer*, *Atheling*, *Emperor*, *Queen*, *Fencer*, *Stalker*, *Begum*, *Nabob*, *Pursuer*, *Ravager*, *Searcher*, *Striker*, *Premier*, *Ranee*, *Tracker* and *Trumpeter*. As these vessels became available they were allocated to Western Approaches Command for attachment to the Atlantic support groups then forming. Under the command of Admiral Sir Max Horton, who had taken over from Admiral Sir Percy Noble in November, 1942, Western Approaches now ran its own training school for group commanders, and operated a tactical unit for the instruction of individual captains in U-boat warfare.

Under the direction of Admiral Sir Lumley Lyster, who had launched the Fleet Air Arm attack against the Italian fleet at Taranto in 1940 and was now Flag Officer, Carrier Training, the escort carriers and their aircraft crews were put through a series of large scale realistic exercises to fit them for the coming battle. Their aircraft included Martlets, Seafires, *Swordfish*, *Avengers*, *Corsairs*, *Wildcats* and *Hellcats*.

The crisis in the Battle of the Atlantic was reached in March, 1943. At that time there were more than 100 U-boats at sea, and no area of the oceans was immune from their attention.

On 25th April the *Biter* was operating in the North Atlantic with her support group when her planes sighted U.203 and dived to attack. At this stage of the war U-boat commanders had adopted the policy of remaining on the surface to fight it out when spotted

by aircraft. But the *Biter's* airmen crippled their victim, then called up the surface ships of the support group who finished her off. Two weeks later the carrier's aircraft accounted for U.89.

Soon after this, when the *Archer* was escorting an inward bound convoy to the United Kingdom, one of her patrolling *Swordfish* spotted U.752 on the surface some 750 miles to the west of Ireland. Taking advantage of cloud cover, the plane was able to approach unseen. Diving out of the clouds, the pilot opened up with rocket projectiles and holed the U-boat's pressure hull. Intended for use against tanks, the rocket was a new weapon barely eight weeks out of the blueprint stage. But Admiral Horton had at once perceived its possibilities as an anti-U-boat missile.

Unable to dive, U.752 tried to fight it out, but the *Swordfish* pilot called up the *Archer*, which despatched a Martlet fighter to help. The Martlet machine-gunned the U-boat's bridge, killing the captain and several of the crew. The German engineer officer then scuttled the boat. U.752 was thus the first enemy submarine to be sunk by an escort carrier plane, and also the first to have attacked with rockets. A few months later aircraft from the *Chaser*, which was escorting a Russian convoy, sank three U-boats in three days with rockets.

A NEW ROLE

By the autumn of 1943 the tide had turned against the enemy in the Battle of the Atlantic, and more U-boats were being sunk than merchantmen. Horton was operating more than 20 escort carriers with his support groups, and as additional carriers came into service they were sent to work in other theatres of war.

Supporting the allied landings at Salerno in September, a force of five escort carriers under the command of Rear-Admiral Sir Philip Vian provided fighter cover over the beaches. During the three and a half days the force operated in the area, Vian's aircraft flew more than 700 sorties.

Early in 1944 it was possible at last to reinforce the Eastern Fleet which, under the command of Ad-

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miral Somerville, had for long comprised several old battleships, two fleet carriers and a handful of cruisers. Fortunately, after their initial sortie into the Indian Ocean in 1942 when Japanese aircraft attacked Ceylon and sank the small carrier *Hermes*, the Japanese fleet had become heavily involved in the Pacific, and Somerville's ships had not been challenged.

By April, 1944, the ageing battleships of the Eastern Fleet had been replaced by modern capital ships and augmented by the U.S. carrier *Saratoga*. Later on, more allied warships joined, together with a number of escort carriers, and mounting air attacks were staged against the Japanese in Java and Sumatra.

With the Atlantic no longer a happy hunting ground, German U-boats were now operating further afield. Twelve were sent to work in the Indian Ocean. But with the attachment of escort carriers to overseas fleets and stations, their few successes were short-lived. When an allied merchantman was torpedoed near the entrance of the Mozambique Channel in August, 1944, search for the U-boat responsible went on relentlessly for a week and covered a thousand miles of ocean. Aided by aircraft from the escort carriers *Shah* and *Begum*, the enemy was finally tracked down and sunk.

Earlier in the year four of the escort carriers attached to the home Fleet took part in a Fleet Air Arm attack on the German battleship *Tirpitz* in Kaafjord. An important convoy to Russia was scheduled, which included the battleship *Royal Sovereign* being lent to the Soviet Navy. It was necessary to immobilise the *Tirpitz*.

The two fleet carriers *Victorious* and *Furious*, accompanied by the escort carriers *Emperor*, *Fencer*, *Pursuer* and *Searcher*, arrived off the Norwegian coast and launched a strike of 42 Barracuda bombers escorted by 80 Corsair fighters against the German battleship. The attack was successful, the *Tirpitz* sustaining 15 direct bomb hits.

In August, aircraft from the es-

cort carriers *Nabob* and *Trumpeter* crippled the *Tirpitz* still further. Before the year was out she had been sunk at her moorings by heavy bombers of the R.A.F.

Also in August came the allied landings in the south of France. Under American naval command, the invasion fleet included nine escort carriers.

The wheel finally turned a full circle when, in April, 1945, the British Pacific Fleet was formed to aid the Americans to close the ring around Japan. In addition to the battleships *King George V* and *Howe*, the British Pacific Fleet included four fleet carriers and seven escort carriers, comprising the 30th Aircraft Carrier Squadron.

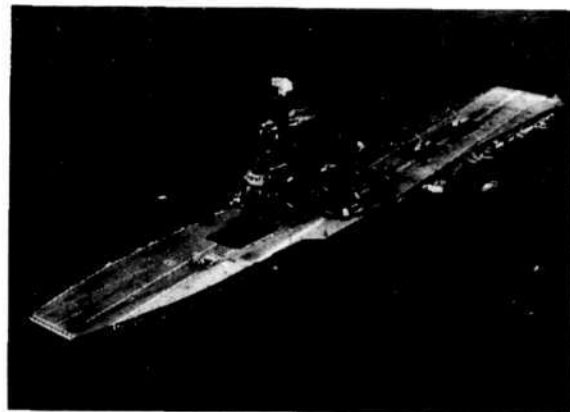
During the American invasion of Okinawa the four fleet carriers and the escort carriers *Speaker*, *Striker* and *Slinger*, operating under orders of Admiral Spruance, U.S.N., attacked and neutralised Japanese air installations on Sakishima Gunto. In June and July British and

American carrier-based aircraft, under the overall command of Admiral Halsey, U.S.N., struck at the Japanese home islands.

In the following month when the Japanese surrendered, the British element of the powerful allied fleets anchored in Tokyo Bay included ten escort carriers, only one of which was British-built. Three had been lent back to the U.S. Navy, 15 more were operating in the East Indies, and the remainder were serving with the Home Fleet and in the Atlantic.

For Britain, the most vital battleground of the whole war was the Atlantic. In winning this battle of "groping and drowning, of ambush and strategy, and of science and seamanship", as Churchill phrased it, the escort carrier, product of British and American ingenuity and contrivance, played a most decisive part by keeping the U-boat down, hampering its movements, and finally driving it from the seas.

H.M.A.S. MELBOURNE



The Flagship of the Royal Australian Navy since 14th May, 1956, MELBOURNE is an aircraft carrier of the modified "Majestic" class, displaces 16,000 tons standard, is 701½ feet in overall length and has a 6-degree angled deck. She is to be refitted next year at a cost of \$5 million. The refit will include provision of long detection and height finding radar, Seacat missile systems and improved habitability.

Early in 1968 Melbourne will receive her new aircraft — Douglas A-4E Skyhawk attack bombers and Grumman S-2E Trackers, anti-submarine aircraft.

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was the result, to be followed by a notion that would eventually turn the tables on the U-boat and its aerial aid, the Focke-Wulf, so that the hunter became the hunted. This was a floating platform from which fighter aircraft could be operated for the protection of convoys; in short, a cheaply and quickly produced form of aircraft carrier.

In June, 1941, an experimental form of escort carrier was converted in a British shipyard from the hull of a merchantman. The selected vessel was the 5,600-ton ex-German ship **Hanover**, a blockade-runner which had been captured off San Domingo earlier in the year by the British cruiser **Dunedin** and the Canadian destroyer **Assiniboine** and renamed **Empire Audacity**.

The ship's normal top hamper was removed, and a flush deck built over from stem to stern upon which aircraft could take off and land. Below this deck fuel storage tanks and a workshop were installed, but there was no room for a hangar and there were no lifts. Thus the aircraft had to be parked on the flight deck when not in use, which left only a limited runway for take-off.

As soon as the ship was ready she was commissioned as H.M.S. **Audacity** and, with a complement of six American Grumman **Martlet** fighters, made her first trip with a convoy to Gibraltar in September.

The mock-up carrier quickly proved her worth. Flying continuous anti-submarine patrols, one of her **Martlets** drove off a U-boat, and another shot down a shadowing Focke-Wulf.

On her next outward voyage the **Audacity's** airmen did even better; they shot down three Focke-Wulfs for the loss of one **Martlet**. Her return trip from Gibraltar was the most successful, but unhappily it was also to be her last.

The convoy she accompanied was an important one, comprising 32 ships, and its escort was under the charge of Commander F. J. Walker. During a 96-hour continuous day and night battle which developed once the convoy had passed beyond the range of shore-based aircraft from Gibraltar and Britain, no fewer than 17 U-boats joined in

the attacks. Aided by the **Audacity's** **Martlets**, five of the submarines were destroyed by the convoy escort, and the airmen shot down two Focke-Wulfs. In the evening of the fourth day of the battle the **Audacity** was herself sunk by a U-boat, but by that time Donitz had decided to call off the attack. Only two of the merchant ships had been lost.

The Battle of the Atlantic Committee was greatly impressed by the performance of the first of these auxiliary carriers, and other merchant ships were hastily put in hand for conversion. In March, 1941, the Lend-Lease Bill had been passed by Congress, and under its terms the Admiralty now requested that six more of these carriers be constructed in the United States for the Royal Navy.

Within a few months five were ready. They were named **Avenger**, **Attacker**, **Battler**, **Biter**, and **Dasher**. Originally built as freighters, they had been converted at various U.S. Navy Yards for their new role, and constituted a considerable advance on the **Audacity**. They were the forerunners of a fleet of 41, of which 38 were built in the United States for the Royal Navy.

All the vessels were of similar dimensions. Their displacement varied between 10,000 and 12,000 tons; they measured 496 feet overall and had a 70-foot beam.

Some were engaged by Westinghouse geared turbines with Foster-Wheeler water-tube boilers; others by Busch-Selzer or other type diesels. Top speed was between 16 and 19 knots.

Scarcely any wood was used in the conversion work, all internal

fittings being of steel, including the crew's bunks, lockers, and mess furniture. The 450-foot flight deck was wooden, however, being planked over with lengths of Oregon pine placed athwartships.

Forward on the starboard side a narrow streamlined "island" carrying the navigating bridge and flying control platform was constructed, and above this a stump mast and yard for the wireless aerials and radar antennae. The flight deck was fitted with arrestor wires and a crash barrier, and had two lifts, one forward and one aft, for aircraft handling. Below was a spacious hangar and workshops.

The ship's armament usually comprised two 5-inch dual purpose guns, and sixteen 40-mm. and twenty-six 20-mm. short range automatic weapons. The carriers could operate up to 30 fighters or a smaller number of bombers or torpedo planes.

Internal construction included a gallery deck immediately beneath the flight deck, carrying sea cabins for the captain, navigator, and air staff officer; also the air operations room, meteorological office, wireless office, signal distributing office, and aircrew ready-room.

The ship's company messdecks and other domestic spaces were below the hangar deck. The ratings' quarters were fitted with folding bunks — at that time a new innovation for the British sailor, long used to slinging his hammock on shipboard wherever he could find room. Another novelty which met with the whole-hearted approval of the British crews of these "Woolworth" or "jeep" carriers was cafeteria messing; not to mention the



H.M.S. **BATTLER**

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— BOOK REVIEWS —

"MARITIME STRATEGY"

(A Study of British Defence Problems)

Author: Vice-Admiral Sir Peter Gretton, K.C.B., D.S.O., O.B.E., D.S.C.

Publisher: Cassell & Company, Limited (1965) Price: \$5.65

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

In the last twenty years we have been deluged with the political jargon of the Cold War. By now some of us have come to disregard these slogans completely, and others have come to believe that they have nothing to do with real warfare. While we are surrounded by all this noise and paper warfare, little is said or published about fighting forces and their tactical or strategic problems.

There are, of course, excellent works of reference, such as Jane's Annuals on warships and aircraft and Brassey's Annual.

Every year a great amount of literature is produced on all aspects of Naval, Army and Air problems, and much of this literature is of very high quality. Ordinary readers, however, are often repelled by the technical terms or simply have not the time and the interest to read large quantities of this specialist literature. There is, in naval matters, a need for concise books written by experts who in presenting material useful for other experts can still be understood by ordinary readers. Sir Peter Gretton, by writing this book, certainly helps to satisfy this demand.

In the first part of this book Sir Peter discusses recent and conceivable wars. He argues that full-scale war is prevented by the nuclear stalemate, but that wars of smaller dimensions have occurred and are likely to break out. He writes (page 67): "The days in which the threat of massive retaliation was supposed to inhibit all

Communist activities have gone for ever, and it is widely agreed that the need for more and better conventional weapons to deter or counter Communist moves all over the world has dramatically increased."

In the second half of the book, Sir Peter deals with tactical questions, and gives clear explanations of the methods and problems of present-day Naval warfare. For example, Chapter 8 (pages 99 to 132), which is called "Instruments of Maritime Strategy" is divided into the following sections.

1. Introduction to the study of environmental forms of warfare at sea.
2. Amphibious warfare.
3. Underseas warfare.
 - (a) submarine operations.
 - (b) anti-submarine warfare.
 - (c) mine warfare.
4. Surface ship warfare.
5. Air warfare over the sea.
 - (a) general.
 - (b) aircraft-carriers.
 - (c) aero space.

In his discussion of tactics, he explains and defines terms so clearly that this book can be read and understood by those who have little knowledge of Naval affairs. In his bibliography and footnotes he does not list many works, but he does draw to the reader's attention some first-rate recent literature, such as the book "Soviet Navy", edited by M. G. Saunders, and articles in the United States Naval Institute Proceedings.

This book, then, provides a very

useful introduction to present-day naval questions. It is, however, useful for more advanced students. Sir Peter stresses in particular the importance of historical studies for naval planners. For example, he refers (page 118) to the ineffectual mine barrage laid between the Orkneys and Iceland in the Second World War. He makes the comment: "The sad part of this story is that we had laid a similar type of mine barrier between Norway and Scotland in 1917-18 with similar ineffective results. But, due to the misuse of the rules of secrecy, the planners of the Second World War minefield were informed only of the war-propaganda-magnified claims of success, and the true figures — three U-boat losses only — were kept in the 'too secret' safe. Thus, a decision to lay a second great anti-submarine barrier was taken on wholly inaccurate information."

In discussing the protection of merchant shipping, he writes (page 159): "Time and again highly placed officers and statesmen who should have known better have sought, with uniformly disastrous outcomes, to discard convoy whenever an opportunity arose. These mistakes were due to ignorance of the past and to a failure to analyse scientifically current operations."

The whole book provides a thoughtful discussion of traditional maritime strategy as affected, modified or confirmed by recent technical developments.

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THE ROYAL AUSTRALIAN AIR FORCE An Illustrated History

Author: George Odgers. Publisher: Ure Smith and Co. (1965)

Price: \$6.95

Review by: Stephen Scarlett (Our Aviation Correspondent)

This is a book which has to be taken at face value. It is just what the title says it is — an illustrated history of the Royal Australian Air Force. It is not nor does it claim to be, an epic of documentation like the excellent histories published by the Australian War Memorial, and (despite the fact that its author is the R.A.A.F.'s Director of Public Relations) it is a lot more than just a fancy P.R. handout. The book is readable and interesting history condensed into one volume, relying to a large extent on its wealth of photographs.

As an overall history it covers most of the main events, from the rickety beginnings of the Central Flying School at Point Cook in 1914, to the R.A.A.F.'s commitments in Malaysia and South Vietnam. Not unnaturally, the largest section of the book deals with World War II, the time when the R.A.A.F. was at its largest, fighting in every campaign to a larger or lesser degree.

An illustrated history will stand or fall on its illustrations. The book has 273 different pictures, including 8 maps. Wherever an aircraft is mentioned, the reader can be fairly sure of what that aircraft looks like, since the book contains photographs of 65 different aircraft. Exceptions are the Messerschmitt ME109 and the Hawker Hurricane. The photographs themselves are of a high standard, including the excellent colour shot of two Mirages on the front cover, and an evocative night photograph of a Lancaster on page 86. Other pictures, and Mr. Odgers has picked action shots which have not been seen very often before, show such unpleasantities of war as burning ships, crashed aircraft, and an unforgettable picture of the falling pieces of a Boston light bomber whose bombs exploded prematurely.

However, Mr. Odgers is not quite so successful with his text. At times he writes in the most appal-

lingly flowery language, especially when describing events that took place during the First World War. A gem like: "Thus, in the limitless sands of the Arabian desert died the adventurous young Australian doctor" (P.25) brought tears to my eyes and a sick feeling to my stomach. At several places in the book one gets the impression that every third Australian airman was both dauntless and gallant, itching to add "a page of glory to the history of Australian arms" (P.114).

What is even more irritating is Mr. Odgers' dreadful habit of quoting the words of patriotic songs and alleged air force ditties. If Australian soldiers of 1915 really sang "Rally round the banner of your country, Take the field with brothers o'er the foam" then they were a lot different from Australia's new Army. Again, some of the ditties that Mr. Odgers quotes may have sounded alright when bellowed out by fifty beery voices round the piano, but in print they look corny and amateurish. I find it hard to believe that grown men could bring themselves to sing:

"So we grabbed some P40's and went to the fight,
But soon found the Japs had a nice little kite,
It's a bright shiny silver, and Zero by name,
But it makes a good show when it comes down aflame.
Down aflame, down aflame,
But it makes a good show when it comes down aflame."

They don't sing songs like that in the Army.

Despite all the tomfoolery, Mr. Odgers brings out some hard-hitting statements. His description of the beginnings of Australian aviation I found intensely interesting; his descriptions of the controversies of the 'thirties', the war-time disputes between Australians and Americans over the use of Australian forces, and the reaction against Air Commodore Cobby's alleged wasting of lives on "worthless targets" are impartially described, with no attempts made to gloss over the troubles. Mr. Odgers appears at his best in his terse criticism of the inadequacies of the equipment supplied to the Australian airmen, from the BE2C's to Wirraways to Meteors. Impartial reporting extends to the giving of credit to the enemy when such credit was due. The style of George Odgers, journalist, is a lot better than that of George Odgers, Public Relations man.

With its faults and limitations, viewing this book in its proper context, it is a creditable and highly readable short history of the Air Force. It is seldom boring and hard to put down. When I first saw the book, I opened it at random at the chapter on the Korean War, which I read through to the end. Then I went on looking at the pictures. The book is attractively presented and would make an excellent gift. I would like to see Ure Smith, the publishers, bring out similar books on the other two services.

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Visit To Australian Waters By Units Of The Japanese Maritime Self-Defence Force

As reported in the last edition
of "The Navy," a training squadron
of the Japanese Maritime Self-
Defence Force visited Sydney from
15-19th August and Melbourne
from 22-25 August.

Members of the ships' companies
visited Canberra and Cowra, Cadets
and Officers visited the Royal Aus-
tralian Navy College at Jervis Bay
and Cadet Midshipmen of the
R.A.N. inspected the Japanese
ships.

At sunset on Friday, 20th Aug-
ust, each destroyer cast wreaths to
the sea, while travelling down the
Southern New South Wales coast.
These wreaths were cast to com-
memorate the Japanese and Aus-
tralian dead of World War II.

TEXT OF A STATEMENT
MADE BY REAR ADMIRAL
HIDESUMI MIZUTANI, COM-
MANDER, JAPANESE TRAIN-
ING SQUADRON.

"It is a great pleasure that I have
an opportunity of visiting your
beautiful Sydney in command of
the Japanese Training Squadron,



Right: Rear-Admiral Hidesumi Mizutani, Commander of the squadron of four
Japanese destroyers visiting Sydney, is saluted smartly by members of the
crew of his flagship Akizuki as he steps ashore.



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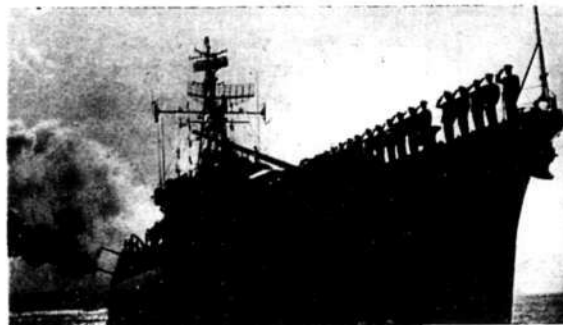
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Four Japanese destroyers arrived in Sydney recently, led by the Flagship of the Squadron, AKIZUKI. Japanese crew members, left to right: Masahiko Imamuya, Yoshitake Komatsu, Takao Fujita, Kiyohiko Tero, of the "Akizuki", wait patiently for their shore leave. In the background are destroyers "Makinami" and "Onami".

which consists of four destroyers: the Akizuki, Onami, Takanami and Makinami.

We recall vividly the warm and cordial welcome extended by the officers and men of the Royal Australian Navy and the citizens of Sydney during the previous visit of the Training Squadron of our new forces, four years ago in 1962. On behalf of all the officers and men of our Squadron, I wish to express our sincere gratitude for the heartfelt and cordial welcome which is being extended to us.

It is thirty-one years since I visited this beautiful city as a midshipman. I am very happy and deeply moved to be able to see again the Harbour Bridge and the beautiful view of Sydney.

The main purpose of our visit is to strengthen the bond of friendship between Australia and Japan. We are delighted that Australia and Japan are co-operating with each other closer and closer in the field of trade, culture and sport. It is a great honour for me to perform my duty in this visit of friendship to your city by carrying on board a message from the Mayor of Kure, which is our home port, a message from the Mayor of Yokosuka and paintings by children in Yokosuka.

Although our visit here is very short, we would like to make as many friends as possible with the citizens of Sydney through OPEN SHIP, sport matches, band concerts and receptions.

Another purpose of our visit is to provide the newly commissioned Ensigns on board with practical experience and knowledge in seamanship and to broaden their knowledge by learning more of your excellent form of society and your respectable national character of common sense, frankness, honesty, sense of justice and courtesy, this latter character being shown by the way treatment was given to the Japanese crews of our midjet submarines sunk during the war.

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WHAT'S NEW?

Compiled by "Periscope"

Water, Water, Everywhere: A simple, low-cost system for automatically converting sea water to potable, fresh water aboard motor vessels and auxiliary yachts has been perfected by Braby of Britain Group, London. The unit, weighing only 100 pounds and about the size of an electric typewriter, uses the waste heat from a diesel engine to evaporate sea water and remove its salt. The converter is said to require servicing and cleaning only once a year and is available in two sizes, producing either 120 or 240 gallons of fresh water daily, depending upon the size of the engine available. Price: from \$686 to \$714.

Portable Airfield: A rugged, portable, floating airfield that converts marshes, rice paddies and similar unlikely terrain into "hardened" operating areas for aircraft has been developed by Aluminium Co. of America of Pittsburgh, Pa. Alcoa's Floating Landing Mats have undergone landing and taxi tests executed by a 13,000-pound UH-34D helicopter with the aluminium panels used both on water and marshy ground. The panels withstood 13-ton landing impacts and resisted bending and shearing when the helicopter taxied to within 2 feet of the landing mat's edge. The panels (8 feet long, 3 feet wide and 6 inches thick) are formed of poly-

urethane blocks (for buoyancy) sandwiched between aluminium panels. Panels are bonded together with adhesive. Damaged elements can be quickly replaced. And the landing strips are claimed to have a two-year life expectancy under heavy use. While originally developed for military use in Vietnam, the Floating Landing Mats are expected to have many civilian applications.

New and Improved Self-Seal Materials

A lightweight self-sealing material for covering aircraft fuel tanks has been developed by FPT Industries Ltd., Portsmouth. When applied to tank surfaces it is 0.2 in

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(5 mm) thick and weighs 0.6 lb.
per sq. ft. (2.9 kg/cm²), a weight
reduction of 30 per cent on earlier
materials.

Trials at RAE Farnborough have
shown that tanks covered with this
material, designated FTP/442/LS,
exceed requirements covering the
permitted leakage when struck by
7.62 mm ball ammunition.

Another advantage claimed for
the self-sealing material is its im-
proved flexibility which helps the
installation of tanks in bays with
limited access.

Shipshape: A new spray-on, dry
lubricant, specifically made for ma-
rine use, has been introduced by
Sealectro Corp. of Mamaroneck,
N.Y. The base of Skippers' Glide is
powdered Teflon in a volatile car-
rier. When sprayed on sticking
chocks, pulleys or other fittings, it
deposits a film of Teflon powder that
gives a slick, dry coating to the
surface. Skippers' Glide is clean,
greaseless, stainless and odorless.
Price: \$1.98 for a 6-ounce can.

Light That Bends: A flexible
plastic fibre that bends light around
corners has been developed by du
Pont technicians. Fibre optics—the

science of using thin glass fibres to
transmit light to inaccessible areas
or to illuminate many locations
from a single light source—has been
hampered by the inflexibility of
glass. Du Pont says that its "Cro-
fon" light-transmitting plastic fibres
are far tougher, easier to work than
glass fibres. Du Pont already has
contracted with General Motors for
the use of Crofon fibres to illumi-
nate dashboard accessories on sev-
eral 1967 model cars. Other possible
uses: in appliances, vending
machines, control panels, signs, toys
and electrical equipment.

are designed primarily to combat
the dangers of exposure, especially
in water. A normally healthy per-
son survives only 60 minutes in a
water temperature of 5° C or five
minutes in freezing water. The out-
fits are not buoyant and where
personnel are working over deep
water an approved life jacket needs
to be worn.

'With the Greatest of Ease': A
new one-man Gyrocopter, that can
be assembled from a kit and which
is claimed to be the safest flying
machine on the market, has been
introduced by Bensen Aircraft Co.

of Raleigh, N.C. The aircraft is a
blend of scooter and helicopter (it
can be driven along the highway
when the rotor is disengaged), and
the manufacturer says that if the
engine fails the rotor blades will
continue turning, in a pinwheel ef-
fect, for a safe landing. Kits cost as
little as \$1,095.

NEW JET OIL able to withstand
bearing environment temperatures
of 1000 deg. F. are currently being
perfected by Mobil in anticipation
of the demands of the supersonic
jet engines. Mobil reports that much
of the current SST engine develop-
ment is being conducted with Mobil
Jet Oil 11, which has had such
acceptance by the operators that in
Australia, for instance, all modern
jet engines—civil and military—
were lubricated with it. Tests on
the new synthetic oil conducted at
Mobil Oil Australia's Yarraville
laboratory (Victoria) had proved
that even after up to 2000 hours'
service the oil had scarcely altered
from new condition. Mobil also re-
cently signed a five-year extension
of its world-wide Avgas contract
with Qantas.

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again during the middle of this year
for anti-submarine training, operational
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and to give seamanship experience to
recruits and reservists. Fully loaded, she
displaces 2,700 tons, is 359 feet in
length and has a beam of 35 feet.
She is armed with two 4-inch (twin
mount) guns, two 44-mm Bofors anti-
aircraft guns and two "Limbo" three-
barrelled depth charge mortars for use
against submarines. Sea speed is 31.25
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— GARDEN ISLAND —

What was formerly an almost barren island in Port Jackson is today one of the most modern Naval bases in the world. From supplying vegetables to the men of the First Fleet, it now can, and does, supply and maintain some of the most modern machinery and equipment in H.M.A. ships.

It is recorded in the log of H.M.S. Sirius, one of the units of the first fleet, on February 11, 1788, 16 days after the settlement of the colony, that a party of men was sent to "Garden Island" to clear it for the purpose of planting a vegetable garden for the use of the ship's complement.

The carvings on a rock at the northern end of the island FM 1788 and IR 1788, presumably made by members of one of these gardening parties are probably the first carvings made by white men on the eastern shore of the continent.

The topography of the Island then consisted of two rocky hummocks with a saddle, where the gardens were cultivated, in between. The northern hummock still remains but the southern one was levelled to provide a site for buildings.

The gardens must have been successful for after H.M.S. Sirius was lost on a reef at Norfolk Island, other ships including H.M.S. Lady Nelson, the first ship to make the passage through Bass Strait and to hoist the new Union Jack in the Colony, are recorded as having obtained supplies from the Island.

This association between the Navy and the Island was broken, however, in September, 1811, when Governor Macquarie, by proclamation, appropriated the Island to His Excellency's Establishment and excluded H.M. Ships from using it.

Reference to the Island for many years after this appropriation are few but it is recorded that the remains of Mr. Ellis-Bent, Judge Advocate, were placed in a vault on the Island after they were removed from the George Street Cemetery (the present site of the Town Hall) when this graveyard fell into disuse.

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His remains together with those of his friend Major John Ovens, which had also been placed in the vault, and those of Commodore Goodenough and others which had been interred on Garden Island, were removed to St. Thomas Cemetery North Sydney, in 1885 or 1886. In 1856, the Colonial Government offered and Captain Fremantle, on behalf of the Admiralty, accepted, the Island for the use of H.M. Ships in Australian waters.

The formal notice of the dedication did not appear in the Government Gazette, however, until January 10, 1865, for the southern portion and June 5, 1866, for the remainder.

Differences of opinion as to the merits of Garden Island compared with such places as Dawes Point, Fort Macquarie, Goat Island, Cockatoo Island and Potts Point, as a Naval Depot: held up work until May 31, 1866, when a start was made on the Rigging Shed and Sail Loft, which building was completed in 1887. The establishment by 1896, when it was taken over by the Admiralty, comprised buildings known as the Barracks, Boathouse, Spar Shed, Engine and Boiler Room, Anchor and Chain Store, Sawmill, Blacksmith Shop, Naval Stores and Main Office, either in being or in the course of construction.

Admiralty House "Kirribilli" was acquired at a later date, as a residence for the Naval Officer Commanding the Australian Naval Station but when the Governor General (Lord Denman) was evicted from Government House, Sydney, as a result of the Government of N.S.W. not considering itself to be responsible for providing an official residence for Commonwealth purposes, Admiralty House was taken over as the Governor General's official residence.

Rapid Growth

With Federation came a strong feeling that Australia should maintain its own Navy but it was not until several years later that it was definitely decided that it should be found. Once the decision was made,

events moved rapidly and in 1913, the Royal Naval Squadron was relieved by the Royal Australian Naval Squadron. With the transfer of the station the control of Naval Establishments passed to the Commonwealth with effect from July 1, 1913.

During the intervening years many alterations and additions have been made to the engineering establishments on Garden Island in order to keep abreast of modern Naval engineering.

In addition it has been found necessary to construct other subsidiary establishments and today in Sydney, we have H.M.A.S. **Penguin** (Balmoral Naval Depot), H.M.A.S. **Watson** (Radar Training) H.M.A.S. **Rushcutter** (Anti-Submarine Training), Torpedo Factory, Armament Depot R.E. Victualling Yard.

With the construction of Captain Cook Dock it can be claimed that Garden Island is one of the best equipped Naval bases in the Southern hemisphere if not the world.

H.M.A.S. STUART



"Type 12" frigate (open for inspection on Navy Day, Saturday, 8th October).

Sister ships: DERWENT, PARRAMATTA and YARRA. Building: SWAN and TORRENS.

STUART was completed in June, 1963. She has a full-load displacement of 2,700 tons and an overall length of 370 feet.

Anti-submarine frigates of this class mount two 4.5 inch dual purpose guns, are fitted with "Seacat" close-range, surface to air missiles, the "Ikara" (see article) anti-submarine missile, and one "Limbo" three-barrelled depth bomb mortars.

Two Babcock and Wilcox boilers and geared turbines turning two shafts and developing 30,000 shaft horsepower give STUART and her sisters a speed of 30 knots.

Ship's complement is 250 officers and sailors.

News for Model Makers

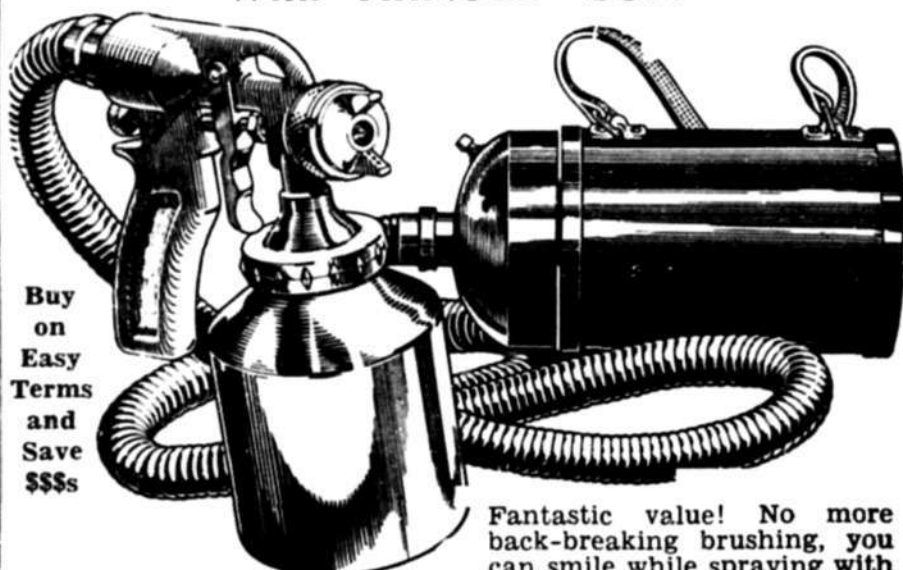
NEW NAVAL AIRCRAFT FROM AIRFIX

The Airfix company's latest releases depict two Allied carrier-borne aircraft nearly as well known as the Hellcat and certainly longer-lived than the Grumman fighter from the service viewpoint, these being the Fairey Firefly and the Grumman Avenger. The Firefly, which represents a Mk 5 in service with the Royal Australian Navy during the Korean War, makes up into a really beautiful little model. It is accurate, the component parts fit together with extreme precision, the detailing is fine, and the kit includes a number of items not found in appreciably more expensive offerings, such as separate spinner and exhaust pipes, and wings that may be assembled in either folded or extended positions. The only feature which is **not** quite up to standard is the instruction sheet; some of the drawings are extremely small and the instructions accompanying them are by no means easy to follow. It is suggested that the component parts be studied with extreme care before a start is made on assembly.

The Avenger, which depicts a TBM-3 of the U.S. Navy, is also an excellent model if not quite up to the standard of the superb Firefly. Detail is a little coarser, some of the surfaces are slightly wavy, and the fit of the parts is not so precise. Nevertheless, these faults are minor, and in making these criticisms it should not be thought that one is deprecating what is, in fact, an excellent kit, incorporating as it does such features as a highly detailed two-row radial engine and alternative markings on the transfer sheet.

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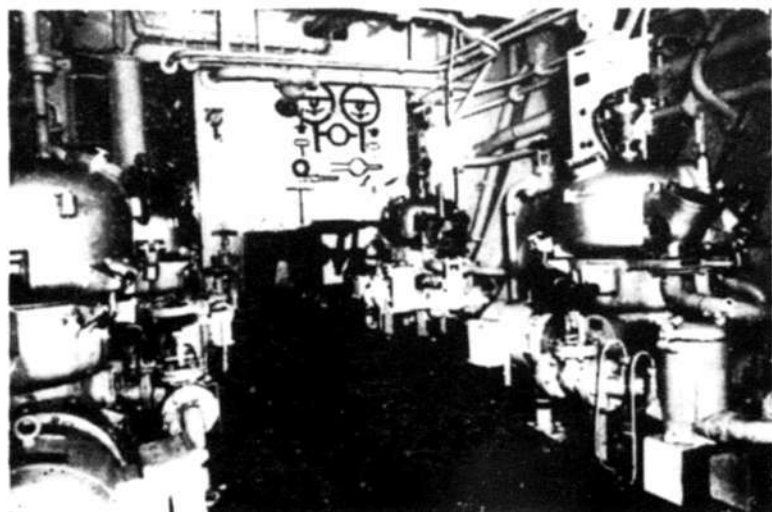
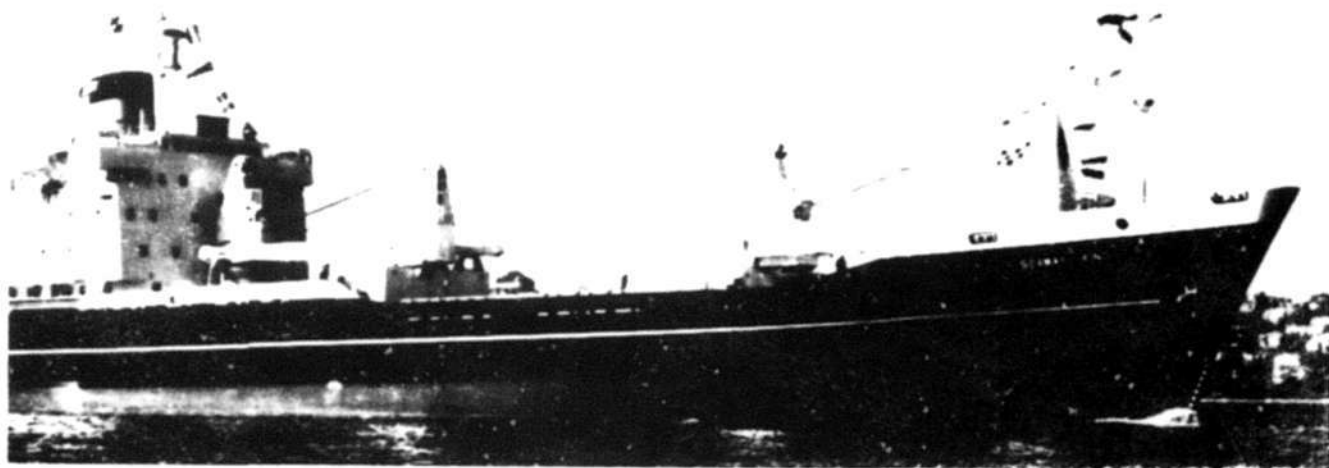
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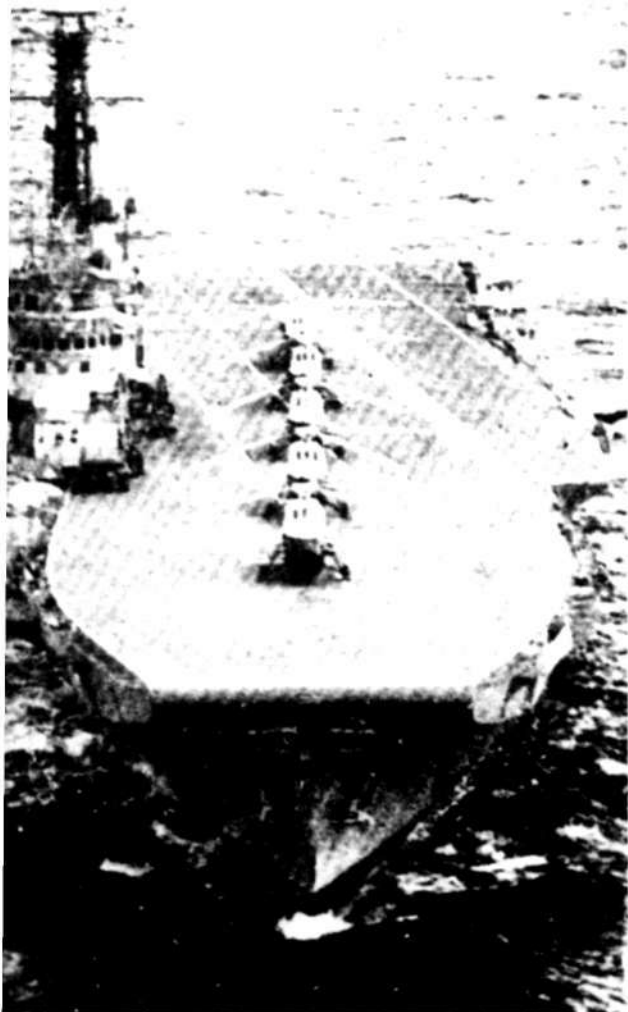
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