

THE
Navy

August—September—October, 1970

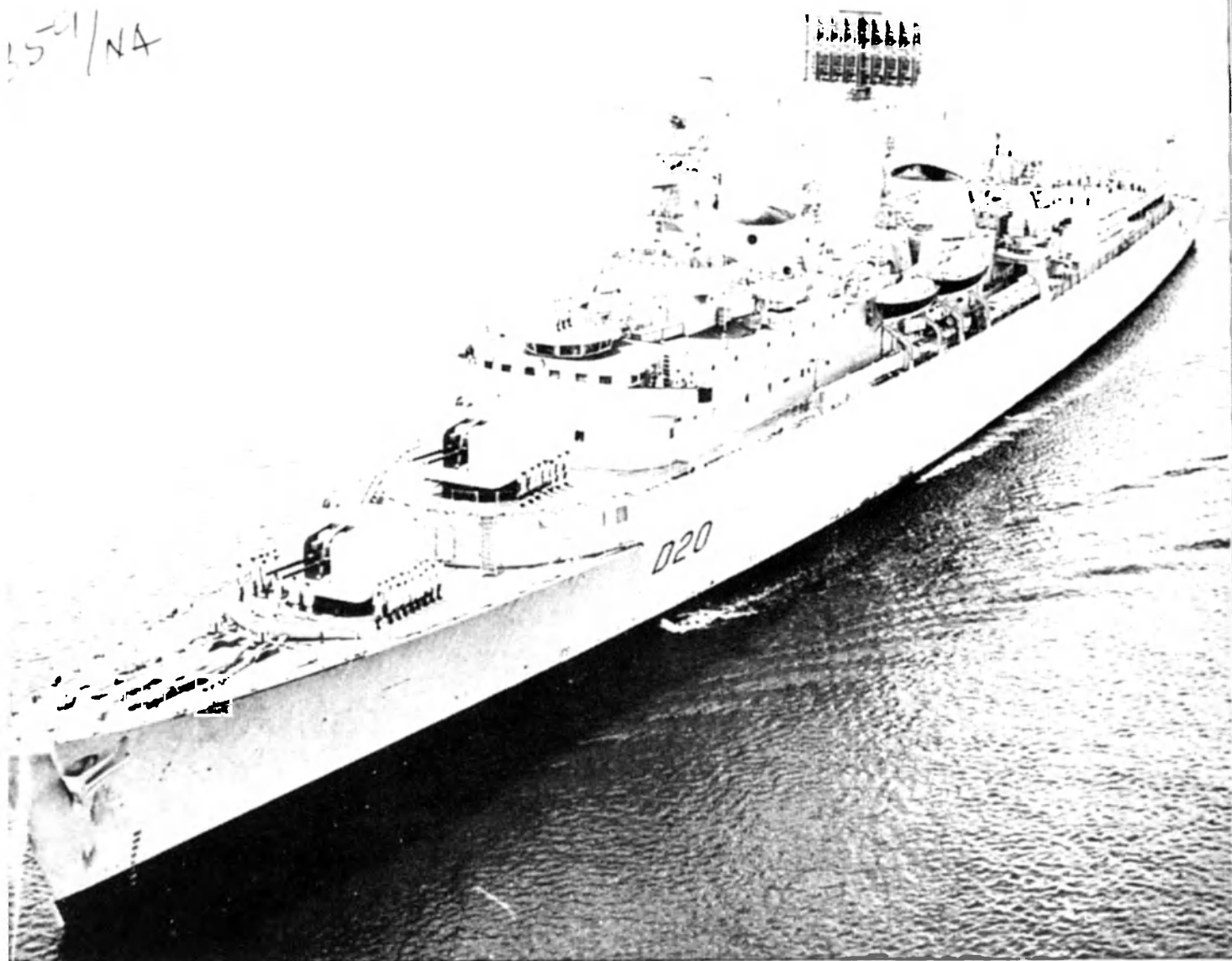
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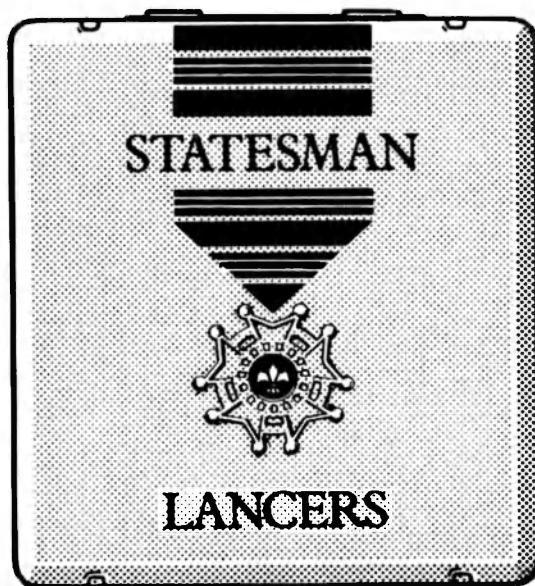
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THE NAVY

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

Vol. 32

AUGUST-SEPTEMBER-OCTOBER, 1970

No. 3

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A Message from . . .

The Minister for the Navy

THE HONOURABLE D. J. KILLEN, M.P.

This year the Royal Australian Navy has 53 ships of various types in service. Never in peacetime has it had a Fleet of this size, a fleet which is shaping the Navy towards a balanced force possessing versatility and flexibility and a capacity for rapid deployment in a wide range of situations.

Never before has the Navy's development been directed towards such a high degree of self-reliance. As each year goes by the R.A.N. becomes more noticeably an Australian Navy. New projects announced in the past year will further these trends.

These projects include the designing of a new class of Australian light destroyer, the building of a fast combat support ship, an oceanographic ship and a small hydrographic ship.

Two more Oberon class submarines will be bought in England, 10 further Skyhawk fighter-bombers are to be purchased, new training and support aircraft will be bought, communications facilities ashore will be improved and several existing ships will be modified to improve their fire-power and efficiency.

Those who have an understanding of our Navy have always been proud of the fine fighting service and of the men who serve it.

I can assure those who take pride in the Royal Australian Navy in 1970 that their faith is not misplaced.

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

Vice-Admiral
**SIR VICTOR
SMITH**

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



In this 1970 Message I am happy to inform you that the R.A.N. has the largest peacetime fleet in its history. Fifty-three ships of various types were in service on 30th June, 1970, shaping the Navy towards a balanced fleet possessing versatility and flexibility and a capacity for rapid deployment in a wide range of situations.

Then, as I hope you are already aware, the design of a new generation of destroyers has begun and approval has been given for the Navy to acquire a fast combat support ship, two more submarines, an oceanographic ship, additional aircraft and a hydrographic ship. These are the major projects, but there is also good progress in many other spheres.

I wished to let you know the foregoing in order to assist you in achieving that object in your Memorandum of Association which states:—

"To spread information showing the vital importance to the British Commonwealth of maintaining such sea and air power as will ensure the permanent safety of the British Commonwealth of our trade and of our supplies of food and raw materials, and will secure British prestige on every sea and in every port in the world."

Finally, in this special edition of "The Navy" I would like to take the opportunity of wishing The Navy League of Australia continued success during the next twelve months.

DESTROYER IS REBUILT

A large part of the workforce at Williamstown Naval Dockyard is being progressively switched to the \$8 million project to rebuild the destroyer H.M.A.S. *VAMPIRE*.

The 3,600 ton warship is lying alongside at Williamstown with practically all its superstructure cut and removed.

Although the rebuilding job will last until mid-1971, the first of the new prefabricated sections of superstructure has been hoisted onto the ship.

VAMPIRE, built at Cockatoo Island Dockyard in Sydney and commissioned in June, 1959, is having a modernisation that will change her appearance and update her equipment. The three twin-gun turrets are being modernised by improving the drive and other systems.

The present analogue fire control systems will be replaced by digital systems, and will include new radars. This will lead to a reduction in the number of sailors required to man the fire control systems. It will also reduce *VAMPIRE*'s weight, take up less space and will simplify maintenance.

The ship's sonar will be improved and the ship will also be fitted with a new air-warning radar and new navigation/surface search radar.

The present open bridge will be enclosed.

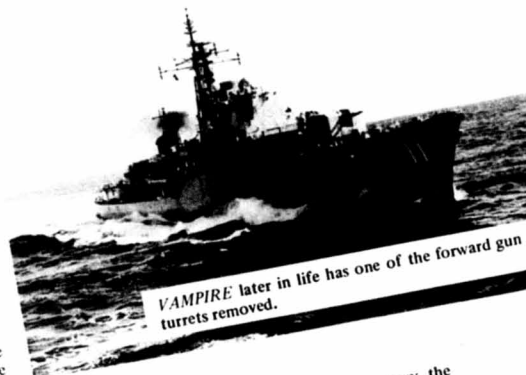
Dockyard workers at Williamstown are carrying out the refit by using fabrication methods developed during the construction recently of the destroyer escort, H.M.A.S. *SWAN*.

After the new sections have been added to the ship, a team of electricians will move in to replace miles of electrical cable needed for the ship.

When the task is finished, the sister ship H.M.A.S. *VENDETTA* will be docked at Williamstown and the \$8 million process will be repeated.

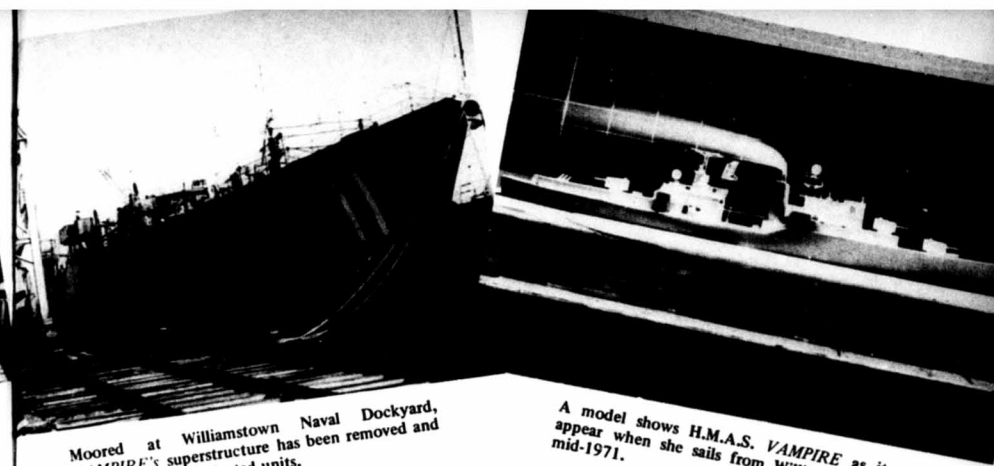


H.M.A.S. *VAMPIRE* as she looked early in her life with three main guns.



VAMPIRE later in life has one of the forward gun turrets removed.

On her way to Williamstown for major surgery, the *VAMPIRE* guns have been removed.



Moored at Williamstown Naval Dockyard, *VAMPIRE*'s superstructure has been removed and she awaits new fabricated units.

A model shows H.M.A.S. *VAMPIRE* as it will appear when she sails from Williamstown about mid-1971.

NOTICE OF MEETING

Notice is hereby given that the Annual General Meeting of the Navy League of Australia will be held on Friday, 16 October, 1970, at Industry House, National Circuit, Canberra, A.C.T.

More detailed information is available from the Federal Secretary, Lieutenant Commander A. A. Andrews, M.B.E., Box 1719, G.P.O., Sydney, N.S.W. 2000 — telephone Sydney 31 5830 or 41 4218.

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The principal 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".

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Nautical Notes from all Compass Points

By "Sonar"

ARGENTINA PURCHASE OF BRITISH NAVAL WEAPON SYSTEM

The Armada Argentina — the Argentine Navy — has ordered the Hawker Siddeley Dynamics Sea Dart anti-aircraft area defence guided weapon system, as the main armament for two Type 42 destroyers which they are purchasing from Vickers ship building group.

Sea Dart is the most advanced naval anti-aircraft guided weapon in the world and is being installed in the Royal Navy Type 82 and 42 destroyers, as the main British naval air defence system in 1970/80 long range planning. Sea Dart also has a powerful anti-ship capability.

The missiles and other equipment will be supplied direct to the Armada Argentina.

BRAZIL SH-3D SEA KINGS

The Brazilian Navy has taken delivery of four Sikorsky SH-3D Sea King A.S.W. helicopters. The five earlier model Sikorsky SH-34Js which they will replace in the A.S.W. role, are being transferred to Brazil's Marine Corps for troop transport and assault work.

The Navies of Italy, Spain, United States and United Kingdom, already operate the SH-3D (see photo).

CANADA H.M.C.S. BONAVENTURE

Attempts to sell H.M.C.S. *BONAVENTURE* as an operational aircraft carrier were unsuccessful and the ship was turned over to Crown Assets Corporation for disposal earlier this year.

Last April *BONAVENTURE* was en route home from Norway carrying equipment used by the Canadian contingent in N.A.T.O. exercise *ARCTIC EXPRESS*.

When she returned to Halifax on 25 April, she was stripped of all classified equipment, armament and fittings which could be used as spares for the rest of the fleet. By July, all consumables, including ammunition, food and fuel had been removed and the ship ready for disposal.

FRANCE FRENCH H-SUBS BY 1975

French nuclear submarines would carry their first operational missiles with hydrogen warheads by the end of 1975 or early in 1976, the Defence Minister, Mr Michel Debre, stated last July.

He was speaking on his return from the French H-bomb test series in the Pacific.

Mr Debre said: "The main objective of the 1970 nuclear testing campaign

was to prove our ability to dominate, scientifically and technically, the thermonuclear phenomenon.

"We have established our ability to do so and military applications are now within our reach."

PROCUREMENT DECISIONS

Criticism of some procurement decisions affecting the French Navy has been voiced by Vice-Admiral Thabaud, who heads the navy's aviation division. Small budgets, he said, had compelled the naval air arm to link with air force procurement programs, not always best suited to naval requirements. He suggested that LTV Corsair would have been a better, and less expensive, choice than the Anglo-French Jaguar as a replacement for the Etendard. The naval, nuclear-armed Jaguar would not be operational until 1974, a year later than initially planned. He also regretted abandonment of the Mirage G3 as a Crusader replacement, and that the Mirage G1, which could have been a suitable replacement, was now being developed into the too heavy and too expensive G-4 version. Thabaud also supported West German Defence Ministry reports that the Breguet Atlantic had not come up to expectations. He said replacement of parts, because of corrosion, was costing the Navy about the equivalent of \$105,000 an aircraft. He added, however, that the French Navy hoped to prolong the useful life of its Atlantics (38 now in service) and that it may eventually order 10 or 20 more.

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MALAYSIA

MISSILE FIRE POWER

The Royal Malaysian Navy (R.M.N.) will acquire missile fire power as part of its expansion programme for the 70's.

The R.M.N. will be equipped with a new breed of patrol craft quite different from the existing ones. They will be missile-armed faster and more sophisticated.

Presently there are four squadrons

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of 24 patrol craft including the fast patrol boats.

The Chief of Naval Staff, Commodore K. Thanabalasingam said that the order for the new patrol craft would be out later this year and they were currently being planned into service by early 1973.

EXPANDING TRAINING NEEDS

Of the R.M.N.'s new frigate *HANG JEBAT*, presently undergoing trials in Britain, he said, the ship was commissioned in July, and, after further trials, will sail home in April or May next year.

The *HANG TUAL*, the R.M.N.'s present frigate and flagship would be converted later this year from a warship into a training ship to meet the navy's expanding training requirements.

New facilities for the maintenance of the ships were also being planned in Malaysia.

The Government had granted pioneer status to a private shipyard in Sungei Nylor, Butterworth, which would slip and refit R.M.N. ships.

The shipyard is now actively engaged in planning to meet Malaysia's requirements and it is hoped that it will be able to refit the first patrol craft at the end of the year.

NETHERLANDS

NEW FRIGATES

A new class of frigate to be built by the Royal Netherlands Navy will use Rolls Royce power.

Two of the ships are to be built and each will have two Tyne and two Olympus engines.

The £3 million (\$A6,428,700) order was announced by Rolls Royce recently and it brings the number of world navies using the firm's marine gas turbines to fifteen.

The 4,100 bhp Tynes will be used for cruising and the 27,200 bhp Olympus as boosters.

UNITED KINGDOM

NEW STYLE MARINE RADIO

Two new, multi-channel, single-band receivers, introduced by Eddystone Radio, provide a completely new concept in shipborne receiving equipment. They combine high performance and crystal-controlled accuracy and stability with the extreme simplicity of



operation provided by switch-selected spot frequencies. One of these models, Type EC964/1, provides a choice of no less than 52 spot frequencies in the medium and high frequency bands, while the other, Type EC964/3 offers a choice of 28 spot frequency channels in the medium frequency maritime band.

The new receivers have been designed to fit into the current plan for introducing single-sideband in the marine communications field during the period 1971/72 onwards.

Additionally, they satisfy the present trend towards greater simplicity of operation.

USE OF PLASTICS IN SHIPS

The Royal Navy may soon be building a small 160-foot long coastal mine-sweeper made of glass reinforced plastics (GRP). Currently, a large section of a minesweeper made of GRP is being put through trials by the Naval Construction Research Establishment (NCRE) at Dunfermline, Scotland.

"The main worry is the brittle character of GRP, which does not yield like steel and at the end of its elastic range just breaks," Michael Westlake, head of the Surface Ship Division of NCRE, said.

Advances being made at the research center are viewed as providing valuable spin-off data for private shipbuilding.

BIG NEW SEACAT

ORDER PLACED

MULTI-MILLION

ROYAL NAVY PURCHASE

The Royal Navy has placed a multi-million-pound order with Shorts'

Missile Systems Division for further quantities of the Seacat close-range ship-to-air guided missile. Already used widely throughout the fleet, in warships ranging from Leander-class frigates to the aircraft carrier H.M.S. *HERMES*, Seacat has been the Royal Navy's standard short-range shipborne anti-aircraft weapon since 1962 (see photo). Adopted by 14 other navies too, it is the world's most widely used shipborne guided weapon system. Primarily installed for defence against aircraft, it has a secondary role as a surface-to-surface weapon.

"The size of this latest order, involving many hundreds of missiles, indicates that the Royal Navy considers Seacat has a very long operational life ahead of it," commented Mr Martin Armour, general manager and chief engineer of Shorts' Missile Systems Division. "Further proof of this is that Seacat is being adopted for the forthcoming gas-turbine-powered Type 21 frigates, the first of which will not be completed until mid-1972. Aboard the Type 21s, Seacat will be integrated with computerised weapon-control systems, providing for control of both anti-aircraft and surface-vessel engagements, and with radar, TV or visual aiming. This will extend the capabilities of Seacat even further."

"We know the RN is planning new Seacat installations up to the late seventies, which means that the weapon will remain operational to the mid-eighties or beyond."

Development of a new light-weight Seacat launcher, now operational, means that Seacat can now be installed in craft as small as 100ft fast patrol boats. For the first time, such light

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naval craft can now be equipped with effective guided-weapon defence against low-level attack aircraft.

Seacat is only one of three weapon systems of which Shorts' Missile System Division — a winner of the Queen's Award to Industry for the last three years in succession — is engaged. Tigercat, the highly mobile land-based derivative of Seacat, using a common missile, is in production for the R.A.F. Regiment and five customers overseas. Blowpipe, a man-carried supersonic anti-aircraft weapon fired from the shoulder, is in an advanced stage of development.



Loading the Seacat Guided Missile Launcher. Anti-flash head gear and gloves are worn.

**SMALL-BOAT SEACAT
SYSTEM FIRED**

The first live firing (see photo) of a Short Seacat close-range ship-to-air missile from a lightweight three-round launcher newly developed by Shorts was made recently in the Solent.

The new three-round lightweight system weighs about half as much as the standard four-round system widely used among the 15 navies which have already adopted Seacat. This means that for the first time such small naval



craft as 100ft (30m) fast patrol boats, and inshore minesweepers, can enjoy sophisticated missile defence against attacking aircraft and surface targets. Broadening of the Seacat market to embrace such small craft promises to lead to further widespread adoption of Seacat, already the world's most widely used shipborne missile.

The Royal Navy, Seacat-equipped for some years, is planning new Seacat installations as far ahead as 1978 and an operational life for the weapon to the mid-1980s.

**HARRIERS IN DISPERSED
OPERATIONS**

Further successful Harrier trials in a naval role have been carried out in recent weeks by the British ministries of Technology and Defence. Two Harriers, flown by R.A.F. and Hawker Siddeley test pilots, completed in a two week period nearly 60 V-STOL sorties in day and night operations from the carrier H.M.S. *Eagle*, with one take-off and landing also from H.M.S. *Ark Royal*. The aircraft carried what are described as "realistic warloads", including 1000 lb. bombs, high velocity rockets, 30mm

Aden cannon, and full internal fuel. With these 5000 lb. loads, operating weight was up to the maximum permitted for service flying. Wind speeds over the *Eagle*'s 500 ft. angled deck varied between 20 and 40 kt. This was the eleventh sea trial of the Harrier — previously it has been operated from H.M.S. *Ark Royal* (twice), H.M.S. *Blake*, H.M.S. *Bulwark* (twice), Italian, Argentinean and U.S. carriers and the U.S.N. helicopter platform ships *Raleigh* and *La Salle* — and it is believed that the latest trials will be followed by a clearance for the Harrier to operate from aircraft carriers leading to further sea exercises and an increase in interest by a number of navies. Currently the Harrier is powered by the Pegasus 101 vectored-thrust turbofan engine of 19,000 lb.t. Rolls-Royce announced in late March that the advanced Pegasus 10 (developing 20,500 lb.t.), which will power later versions including the U.S.M.C.s AV-6B version, had successfully completed its official 150 hr. declared type test at the Bristol Engine Division. Full type approval of the Pegasus 10 was granted before June. Also under development is the 21,500 lb.t. Pegasus 11.



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NEW TRAINING BOAT

H.M.S. *Scimitar*, the first of three fast training boats for service with the Royal Navy, is pictured manoeuvring off the South Coast of England. Built by Vosper Thornycroft Ltd., she is designed to give the Fleet practice in countering enemy missile-carrying vessels and although only lightly armed, she has the capacity to carry heavier arms.

Scimitar is fitted with two Rolls Royce gas turbines giving her a speed of over 40 knots, and with a third engine, for which there is accommodation, she could achieve 60 knots. The 100 foot long craft has a displacement of 100 tons and carries two officers, three senior sailors and seven junior sailors.

The other two boats in the squadron, H.M.S. *CUTLASS* was launched last February, and H.M.S. *SABRE* is nearing completion in the company's yard.

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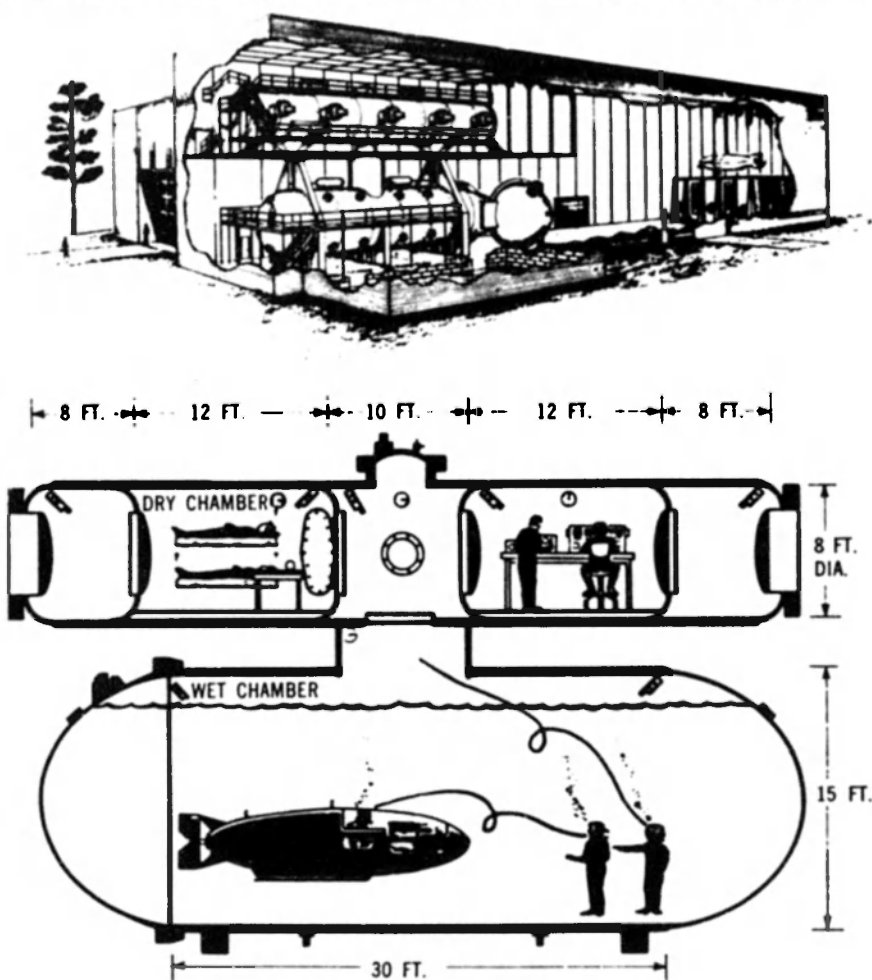
A \$7.4-million ocean simulation facility that will enable the U.S. Navy to develop, test, and evaluate underwater man-in-the-sea systems is under construction at the Naval Ship Research and Development Laboratory at Panama City, Florida, and is expected to be in operation by 1971.

The pressure complex will have the unique ability to test man and machine together in a simulated ocean environment to a depth of 2,000 feet. The man-rated facility will be the largest of its type in the world.

The ocean pressure simulation facility means a big step forward for the United States in the entire spectrum of ocean technology. Among other considerations, the accelerated emphasis in deep-submergence and swimmer-driver operations show a critical need for an advanced engineering research and development program for undersea equipment.

The Panama City ocean lab will be interconnected with an already installed and operating \$5-million hybrid computer complex, which will make possible simulation of complete missions in real environment under laboratory control.

A steel-frame masonry building will house the facility (see photo below).



Sea simulators — Depicted here is a cutaway view of a Navy ocean pressure simulation facility now under construction at Panama City, Florida (see story). Two dry chambers and a control room occupy the upper portion of the building, and a single, water-filled chamber is located below. Both wet and dry chambers are interconnected to permit use in several testing combinations.

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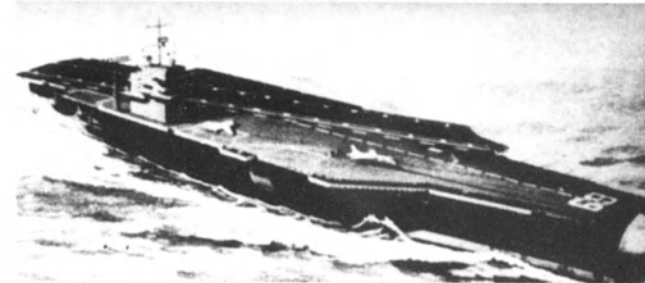
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The building will have an area of about 22,500 square feet and will include a three-story administrative section, a high bay area with mezzanine, a one-storey mechanical room, and a testing pool. The entire complex will cover an area of about three acres.

The research facility will center around an arrangement of two connected pressure chambers with diver supporting equipment and controls to permit simulating various depths of sea-water to 2,000 feet. All compartments can be operated independently at different pressures and with different gas mixtures. All chambers and associated locks can be operated to 1,000 psi.



This is an artist's concept of the USS Dwight D. Eisenhower (CVAN-69), the Navy's third nuclear-powered aircraft carrier and the first to be named for a U.S. president. She will be 1,092 feet long, have a waterline beam of 134 feet, and a full-load displacement of 94,400 tons. She will have a two-reactor power plant, and will be equipped with the naval tactical data system, and integrated operational intelligence centre, and the automatic carrier landing system. Construction of the carrier, beginning this year, will take approximately five years.

CONTRIBUTIONS INVITED

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

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

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An Advanced Sonar System

Under evaluation by
the U.S. Navy

The first of four pilot production models of an advanced integrated sonar system, developed by the Sperry Gyroscope Division of Sperry Rand, has been delivered to the U.S. Navy for installation aboard the destroyer U.S.S. *BROWNSON*, DD-868. Designated PAIR (Performance and Intergration Retrofit), the equipment is to be subjected to extensive technical evaluation and operational appraisal at sea.

PAIR is designed for ease of installation and integration with the existing principal sonar installations in the U.S. surface fleet, the AN/SQS-23 systems. Extensive use of microcircuitry, digital techniques and modular packaging has resulted in a lighter and more compact equipment having greater reliability, simplified maintenance and reduced logistic requirements.

The inclusion of built-in, computer-aided fault localisation enables PAIR to be maintained by fewer sonar technicians. Short,

Aboard the U.S.S. *BROWNSON* the new integrated Sonar system has been installed.



intensive maintenance courses for such technicians are being held by Sperry.

Operational capability is increased by using the latest signal processing methods and computer-aided displays. These features, together with built-in performance monitoring, greatly improve the operator's ability to detect and identify submarines. The performance monitoring permits a

rapid check of the system to ensure that all modes of operation are performing in accordance with the system requirements.

The other three systems of the quartet are to remain with Sperry to undergo environmental, reliability and maintainability tests. They will also be used for the operational and maintenance training of personnel.

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DARTMOUTH —

Where Prince Charles Will Learn The Ropes

by Basil Gingel

Through the impressive portals of the Royal Naval College, Dartmouth, standing with distinctive grandeur high on a hill overlooking the fast flowing river Dart, step the young men who will officer the ships and aircraft of the Royal Navy tomorrow.

And not only the future officers of Britain's navy, many from overseas as well.

To this naval academy, in the English county of Devonshire, next year will come the Prince of Wales under one of the more recent schemes for officer recruiting which enables a young man to complete his university career, take a degree, and then join the navy.

The scheme is new but the tradition of association between the Royal house and the college is not.

His father the Duke of Edinburgh was at Dartmouth and won coveted prizes as the outstanding cadet of his term. His grandfather king George VI was there and King Edward VIII also.

Working Knowledge

Both kings, when in their teens, were among the first to take their places in the college when it was built in 1905. The years have seen many changes, different schemes of entry, differing emphasis on the role of the navy, but the basic aim of the college has remained the same — to produce officers "all of one company" each with a working knowledge of all departments in ships.

Captain David Williams, R.N. the 31st to hold the important post of captain of the college, summed it up to me thus: "Our object is to get young men to act and re-act as officers. All training here is devoted to that end.

"In addition, however, we give them the necessary naval knowledge to aid them in the next stage of their career which may be either at sea with the Fleet, or flying.

"We work on the basis that all training has to be progressive and the curriculum therefore is constantly under review to meet the changing requirements of our modern navy.

"At the moment we have 550 under training of whom, about a hundred are at universities but remain my responsibility. Our numbers are divided roughly between cadets doing their first year course, and acting sub-lieutenants who return to the college in their third year for academic studies, having done a year at sea as midshipmen."

Tough Training

"The training is reasonably tough, but no tougher than need be to produce the final result. We find the new entrants shape-up well and we are happy with the quality of young men who join." Captain Williams spoke enthusiastically about the surroundings in which the college is situated. "They are ideal in every way," he said. "Almost every kind of sporting opportunity is available, either on the splendid playing fields, on the moors nearby, or the river and the open sea."

The minimum age for entry to the college under any one of twelve different methods of joining is seventeen. The age is higher if the would-be officer has attained diploma status or holds a degree. Whatever technical qualifications are possessed, however, training starts initially with what might be called *Navalisation*.

The newcomer is made acquainted with the navy's way of doing things and the phraseology and terminology it employs. He learns to call floors, decks; beds are bunks; and rooms are cabins.



A young officer takes a sight aboard a frigate of the Royal Navy's Dartmouth Training Squadron, which is attached to the Royal Naval College. The young men who enter the college as cadets to be trained as officers, are soon to be joined by the Prince of Wales, who will follow in the footsteps of his father, the Duke of Edinburgh, and his grandfather King George VI. The College, with its great reputation and traditions, not only trains officers for the Royal Navy, but many from overseas as well.

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Young officers on duty on the bridge of H.M.S. Scarborough, a frigate of the Royal Navy's Dartmouth Training Squadron, which is attached to the Royal Naval College.



A cadet is transferred by jackstay from H.M.S. Torquay, to H.M.S. Scarborough, two frigates of the Royal Navy's Dartmouth Training Squadron, which is attached to the Royal Naval College.

In the present term there are, besides those destined for the Royal Navy, young men from Libya, Iran, Ireland, Nigeria, Malaysia, Singapore, and New Zealand. For these international cadets, who number 79, the course is varied after the first year to meet the requirements of the individual countries but some come back as acting sub-lieutenants in their third year for senior courses.

Of 220 entrants for the General List of seaman and supply officers who come annually to Dartmouth, 175 of them are from public schools and grammar schools with above average educational ability and who are over 17 but under 20.

24-Hour Programme

For the first month in their new surroundings there is no leave and, in a day that begins at 6.30 a.m. with what is called "early morning activity", the whole of the 24 hours is programmed.

Classrooms are spacious and well provided with models, plans, and diagrams and it is in these that most of the six hours of daily instruction is given.

Healthy appetites are well catered for. Meals are served to first year cadets on the cafeteria principle, but to older students at the tables.

The cadet's day leaves only two

hours 45 minutes of free time, but provision is made for seven and three quarters hours of sleep.

The sleeping accommodation varies between single and two berth cabins and many of them have been brightened by the individual taste of the occupants. At one time much of the sleeping accommodation at the college was in large dormitories, but these have been sub-divided to make the attractive cabins now available.

Besides the standard naval pattern bed with its counterpane bearing the Admiralty design, each cabin has a wash basin with hot and cold running water, a wardrobe, and a desk. Some even boast a settee as well as an arm

chair. Power points offer the means for tea and coffee making.

Sailing Trips

But whether the future officer is undergoing formal instruction, engaged in "other activities" or even on "free time", the objectives which the captain stressed — young men should be taught to act and re-act as officers — shine out. Weekend exercises with practical boat work becomes training in leadership; arranging and sponsoring some useful undertaking in leave time becomes an essay into community enterprise; while sailing trips across the Channel, to Royal Air Force stations, or tours of Germany develop initiative.

A young officer records pressures in the engine room of H.M.S. Scarborough, a frigate of the Royal Navy's Training Squadron, which is attached to the Royal Naval Training College.





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The planning in each case is left to the participants. Teams have recently worked with the Iona community in Scotland, while on the sailing side young men from the college regularly crew the Dartmouth sailing craft across the English channel and along the waterways of Europe.

College Frigates

For most of the students the last term of the first year is spent in one of the four frigates comprising the Dartmouth Training Squadron. Here an opportunity is afforded them of seeing a practical application of their classroom instruction.

Such time as he spends at sea with the squadron gives him some insight to what it will be like in his second year when he leaves the college for a year as a midshipman with the Fleet. In the search for the best method of training naval officers a year or two ago the system whereby an officer under training went to sea as a midshipman was dropped. It was restored however when it was recognised how valuable this training is in the overall education of the officer.

When the midshipman returns to the College he is an acting sub-lieutenant. He has been *Navalised*, undergone instruction in the broadest sense on all aspects of the service, and has gained a watchkeeping certificate.

Academic Life

In his third year he settles down to a mainly academic life. There was a time when naval officers, in common with other professionals in the services, were chided for the limitation of their knowledge outside their own particular field. That is far from the case today and the reason is largely to be found in this third year at Dartmouth.

There is a library of 20,000 books, and a wide variety of cultural activities are available. For those interested in music there is a musical society and a choir. Also a thriving drama group exists which recently entered their production, "A penny for a Song" for the Royal Naval Drama Festival.

The College is notable in many ways perhaps, not the least because all the staff officers there have at one time been students. As such they can appreciate the position of those now undergoing instruction.

Dartmouth is of course just the beginning. From here the young naval

officer goes on to courses in the navy's specialised establishments, or to university courses in his chosen specialisation. Whichever branch of the service he chooses, however, it will be the initial groundwork he receives at the Royal Naval College on which others will build. That is why it remains so important that the level is maintained.

Weekday divisions by cadets and midshipmen on the parade ground in front of the Royal Naval College, Dartmouth.

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From patrol boats for the Bahamas Police and the Panama National Guard to miniature but powerful warships armed with guided missiles; that is the range of small ships being produced by the Vosper Thornycroft Group of designers and builders of warships, patrol craft and hovercraft on the English south coast.

The name Vosper is particularly associated with the swift little sea-wasps of World War II, the motor torpedo-boats (MTBs) and motor gun-boats (MGBs). Those were the predecessors of the *Brave* and *Ferocity* classes of fast patrol boats today.

The *Braves* were born in the middle 1950's when the Bristol Siddeley and marine version of the Rolls Royce Proteus, gas turbine, became available. These hard-chine, 25ft. 6in. beam, planing boats, 99ft. were the first fighting ships to be powered by such turbines, and the latest developments of this class can approach 60 knots under full power from three turbines, in good weather. They were designed to be armed as torpedo-boats, with four side launching chutes for 21in. torpedoes, or as gunboats or a combination of both. They can also be armed as minelayers and raiding craft.

Next came the *Ferocity* class, only 91ft. long overall carrying similar armament and having much the same performance as the *Braves*. This class has only two Proteus engines, of higher horsepower, for high speed attack, but is also equipped with two diesel engines for cruising at low speed on long patrols.

Ferocity was designed to cope with chemical, bacteriological or nuclear warfare conditions, having, besides the normal open bridge, a closed bridge from which the little ship can be sailed and fought. In event of nuclear fallout or chemical threat, this space and all manned areas can be shut down and supplied with filtered air while the upper deck and open bridge can be washed down automatically to remove contamination.

Variants of both the *Brave* and *Ferocity* classes have been sold to the West German, Danish, Malaysian and other navies. Finally, a unique type was produced for the Libyan Navy, three boats being equipped to fire eight wire-guided missiles which can hit an enemy target at ranges up to 3.5 miles, with the impact of a 4.5 inch shell.

Within the past year, Vosper Thornycroft took another big step forward in this field in presenting *Tenacity*, prototype of a new class which is practically a front-line warship in its own right. This latest

development in fast patrol boats is designed to carry guided missiles with warheads packing an impact equivalent to a 6 inch shell, and such guns as twin 35 mm Oerlikons for defence against aircraft or use against other ships at medium range. Both these items of main armament are operated by fire control equipment serviced by a small computer.

The Vosper *Tenacity* is 144.5 ft. long overall and has a full load displacement of 200 tons, drawing nearly 8ft of water.

The hull is welded steel, with upper deck and superstructure of weight-saving marine aluminium alloys. She has three Rolls Royce Proteus gas turbines to give her a top speed (in triple series) of almost 40 knots, with Paxman diesel engines on the two wing shafts for cruising and manoeuvring at 16 knots. Full power is available within one minute of starting the gas turbines, which can be completely controlled from the bridge.

Tenacity has been designed to maintain patrol for up to a week at sea, instead of being limited to sorties of about 12 hours by the earlier, conventional fast patrol craft. For this sort of duty her top speed of 40 knots is adequate.

The superstructure includes an open bridge, with a short ladder leading down to the wheelhouse where a compact, steering and engine control console is situated. Another short ladder leads down from wheelhouse to operations room housing the fire control, radar and navigational equipment.

This is certainly a formidable little fighting ship, representing a potential menace to other warships as large as destroyer or frigate.

At the other end of the scale are the four patrol boats being built for the Marine Division of the Royal Bahamas Police for fishery protection duty and to guard against infiltration

Below: The *TENACITY*, built by Vosper Thornycroft, shows her paces during trials. She has been designed to maintain patrol at sea for up to a week at a time and has a top speed of 40 knots.



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The R.L.N.S. SUSAN, the first of three gas-turbine fast patrol boats designed and built by Vosper Thornycroft for the Royal Libyan Navy. She is seen discharging one of her Nord-Aviation wire-guided missiles.

of remote islands of the group by undesirable. These boats are 60 ft. long, with hull and deck of glass-reinforced plastics. Their marine diesel engines will give a top speed of about 20 knots.

They will have an endurance of about 700 miles at 15 knots, and will carry light machine guns.

The two boats ordered for the Marine Wing of Panama's National Guard are of the 103 ft patrol craft design, with welded mild steel hulls and aluminium alloy upperworks, driven by two 12-cylinder diesel engines providing a maximum speed of 27 knots and a cruising range of some 1,500 nautical miles at a little over 17 knots. They can mount a wide variety of light armament, but will probably start life with light machine guns. Accommodation is for three officers and nineteen ratings.

These boats are intended for a wide variety of duties, including coastal patrol, fishery protection, air-sea rescue duties, servicing buoys and offshore lighthouses, anti-smuggling operations, and for the transport of medical equipment and government officers to and from isolated areas.

An expanded version, 110 ft. long, with more powerful engines, higher speed, heavier and more complex armament and accommodation for more crew was produced by Vosper Thornycroft for the Peruvian Navy. In this type, the armament includes an 80 mm Oerlikon rocket-launcher.

Six 110 ft. fast patrol boats are now being built for the Republic of Singapore, in two groups of three.

These boats are built of steel and powered by diesel engines providing a maximum speed of more than 30 knots. The armament of the second

three vessels differs from that of the first three in being more advanced, which places the craft among the most effectively armed patrol boats in the world.

Such boats take about 18 months to build and fit out and cost approximately stg.750,000. At the other end of the scale, a mighty little warship like *Tenacity* would cost from £Stg.1½ million to £Stg.2 million and take from 18 months to two years to complete.

Price, of course, largely depends on the advanced armaments and electronic equipment specified by the buyer and the building time is also governed by the state of the Vosper Thornycroft order book. But the company has substantial building capacity, and so the Vosper patrol boats and high-speed launches spread around the world in increasing numbers.

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BOOK REVIEW

THE OBSERVER'S BOOK OF AIRCRAFT

By William Green

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Price: \$1.10

Reviewed by: STEPHEN H. SCARLETT.

Like most of the books in the *Observer* series, this book makes life extremely hard for the reviewer, who finds it difficult to do anything but give praise. As usual, the book is extremely well produced — the photographs are for the most part first-class and the three-view silhouettes are superb. The book is printed on high quality paper and is refreshingly free from misprints. The text itself is full of accurate, interestingly presented facts. Having praised the book to the skies, what can the poor reviewer do now to fill up his quota of words? All that can be done really, is to make a few minor criticisms (at the risk of being accused of carping), draw the reader's attention to a few curious facts, and comment on a few trends, which is what I propose to do.

First, I am a little sorry to see that the table of International Civil Aircraft markings no longer appears. I know it is printed in the *Observer's Book of Basic Aircraft (Civil)*, but that was printed in 1967, which is a fair while ago now. I also feel that the text is getting a little vaguer than it used to be, whilst in some cases (for example, the piece about the Chinook on page 259) the text is barely altered from the 1969 edition.

The student of aviation and the general reader alike, will find much of interest in the latest edition. Various new types of aircraft are featured including the DC10, the Lockheed Tristar, the Dassault Mercure and the Grumman F-14A (in which the RAAF has expressed interest).

The curio award of the book goes to the photo of the Fokker F28 in the markings of MMA (with the big Ansett 'A' on the tailplane) wearing Dutch registration. Again, in the light of the

present controversy, the comments on the F111 are as non-committal as to be almost hilarious.

The book causes so many other thoughts to spring to mind. In the helicopter section, the piece about the Bell Hueycobra illustrates the stage to which the helicopter gunship has developed. George Orwell made a surprisingly accurate prediction of the helicopter gunship in his chilling novel, "1984".

Whilst on the subject of helicopters, the model of the Bell Iroquois described, the UH-1H, is no longer the latest model of this highly successful helicopter. The Canadian Armed Forces have recently purchased the UH-1N, which has two T74-CP-400 turboshafts mounted in a twin-pack arrangement.

Still on helicopters I note that in the 1960 edition, of the 30 helicopters featured, 13 were American and 4 were Russian. In the present edition, of the 31 helicopters featured, 11 were American and 7 were Russian, including the Mil Mi-12, the world's largest helicopter. Russia has certainly made great strides in helicopter development over the last decade.

In the present edition, no Australian designed aircraft are to be seen. This seems a tragedy, when one considers the thriving Canadian aircraft industry, four of whose products are featured in this book (including the excellent Buffalo). Again, 3 Swedish designed and built aircraft appear in the book. The Swedish aircraft industry has reported contracts for 86 aircraft, which will no doubt help Sweden's balance of trade. I hope that Australia will not have to pay too dearly for its neglect of its aircraft industry.

A grain of comfort can be gleaned from this book by noticing that Australia and New Zealand are at last making some attempts to come together on the question of aircraft types. Both countries now operate the Lockheed P-3B Orion and slightly different models of the McDonnell Douglas Skyhawk and the Lockheed C-130 Hercules. Well, at least it's a start.

There is so much to be gained from this little book that I recommend that you do not borrow this book from the Library — you should buy a copy. At only \$1.10, you will find it an excellent investment.

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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 required to produce a certificate from their doctor to

confirm they are capable of carrying out the normal duties and activities of the Cadet Corps. If injured while on duty, Cadets are considered for payment of compensation.

Parades are held on Saturday 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: Staff Office Cadets, H.M.A.S. Watson, Watsons Bay, N.S.W., 2030.
QUEENSLAND: C/- Box 376E, G.P.O., Brisbane, 4001.
WESTERN AUSTRALIA: C/- 182 Coode St., Como, 6152.
SOUTH AUSTRALIA: C/- Box 1529M, G.P.O., Adelaide, 5001.

VICTORIA: C/- Room 6, 2nd Floor, 528 Collins St., Melbourne, 3000.

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

NORTHERN TERRITORY: Mrs. V. M. Slide, 12 Allen Street, Fannie Bay, 5790.

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

STREET SUBURB

STATE OR TERRITORY POST CODE

PHONE No. AGE

(Please Print Clearly)

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

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 rededicate 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 165th 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-seven years ago, on 4 October, 1913, the Australian Fleet steamed into Sydney Harbour. Navy Week 1970 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*, *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."

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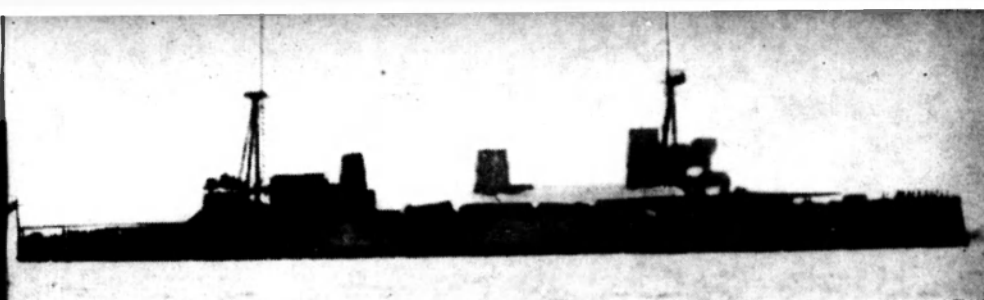
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1913—The Australian Fleet steams into Sydney Harbour.

Programme Of Events arranged for Navy Week, 1970

NEW SOUTH WALES AUSTRALIAN SEA CADET CORPS

Units of the Australian Sea Cadet Corps will be open for public inspection on Saturday, 26 September, 1970, between 2.00 and 4.00 p.m. Cadets will be available to conduct visitors on tours of inspection.

A list of the training ships is detailed hereunder:

TRAINING SHIPS

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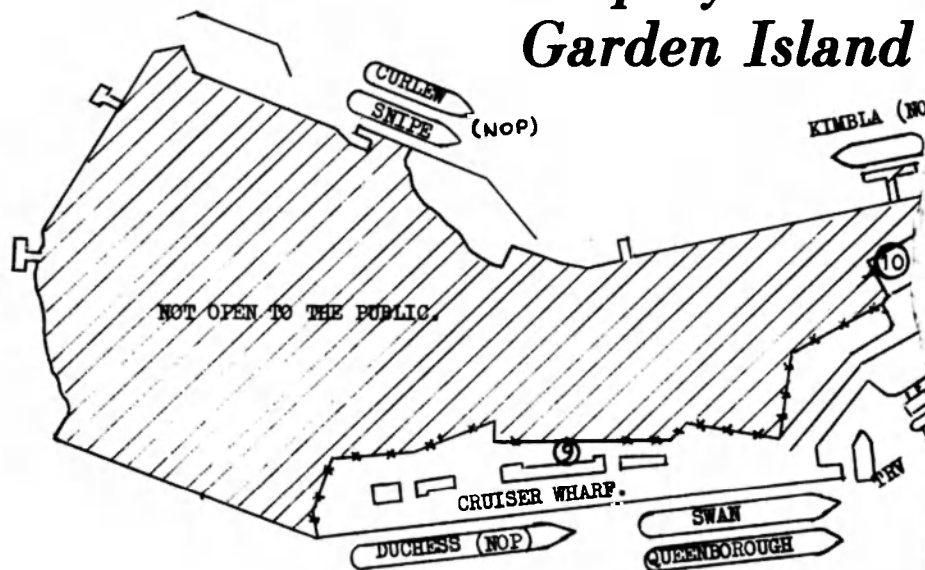
"Snapper Island",
via Iron Cove Bridge.
Launches run from
Elliott Street Wharf,
ROZELLE (2.00-2.30 p.m.).

R.A.N. Drill Hall,
Off Nobby's Road,
NEWCASTLE.

Gaie Street,
WOOLWICH.

Navy Week in Sydney

Display at Garden Island



GARDEN ISLAND NAVAL DOCKYARD OPEN DAY

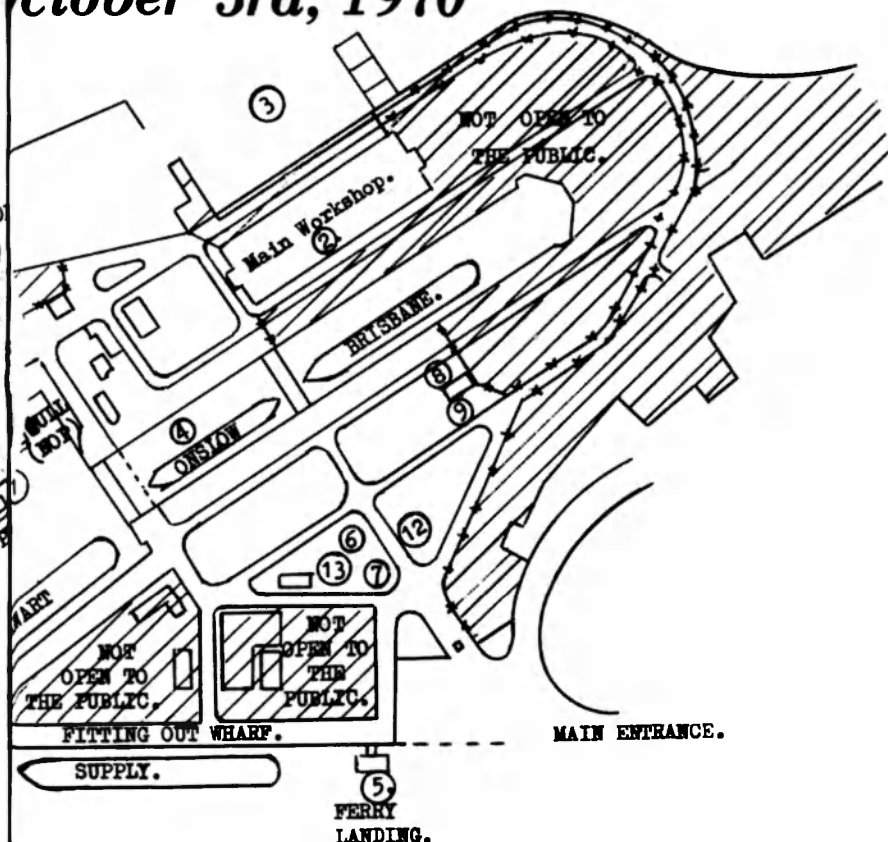
The Dockyard and certain ships alongside will be open for Inspection by the Public, between 1.30 and 5.00 p.m. As various events are scheduled they will be announced over the Public Address System.

The ships only, will also be open for Inspection by the Public between 1.30 and 5.00 p.m. on Sunday, 4th October.

Events will include:-

- a. Inspection of H.M.A. Ships
- b. Engineering Workshops, Sail Loft and Chapel
- c. Band Concert and Display
- d. Clearance Diving Demonstration
- e. Helicopter Winching (Rescue) Display
- f. Submarine Display
- g. Boat trips on the Harbour in the vicinity of Garden Island

October 3rd, 1970



KEY TO GARDEN ISLAND DISPLAY

- | | |
|--------------------------------|----------------------|
| 1. FLOATING DOCK | 7. FIRST AID |
| 2. MAIN WORKSHOP | 8. LADIES' REST ROOM |
| 3. HELICOPTER & DIVING DISPLAY | 9. LADIES' TOILETS |
| 4. SUBMARINE DISPLAY | 10. DOCKYARD CHAPEL |
| 5. FERRY LANDING WHARF | 11. SAIL LOFT |
| 6. LOST CHILDREN | 12. BAND |
| | 13. DIVING DISPLAY |

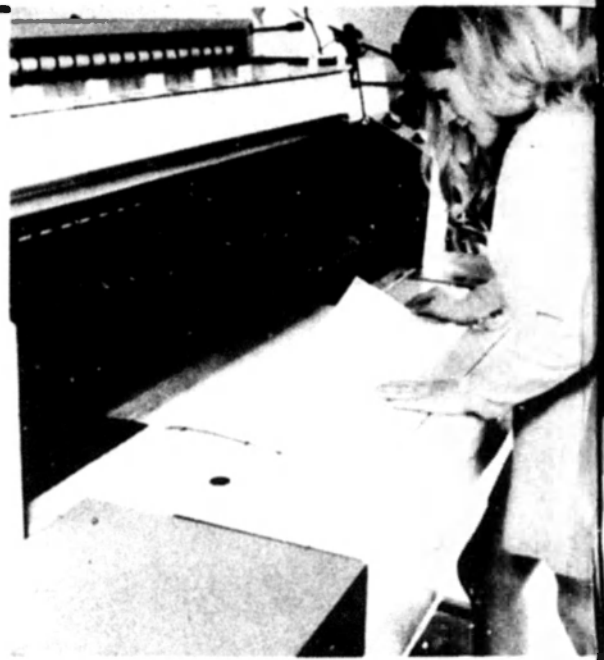
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NEW SOUTH WALES

Friday, 2 October	12.30 p.m.	Fly Past of R.A.N. Aircraft — GPO Sydney.
	12.30 p.m. — 1.30 p.m.	Navy Band Recital Hyde Park North.
	1.30 p.m.	Navy Band leads Waratah Princess Procession from Hyde Park to Town Hall.
Saturday, 3 October	1.30 p.m. — 5.00 p.m.	Garden Island Navy Dockyard and H.M.A. Ships open for Public Inspection (refer map, near centre of this magazine).
Sunday, 4 October (NAVY DAY)	a.m.	Church Services Naval Establishment Chapels. Members of public welcome.
	1.30 p.m. — 5.00 p.m.	H.M.A. Ships open for Public Inspection at Garden Island Navy Dockyard, junction of Cowper Wharf Road and Wylde Street, Potts Point.

WARATAH WEEK

Monday 5, to Saturday 10 October.	—	Naval Apprenticeship, Diving and Submarine Displays, Hyde Park.
Tuesday, 6 October	12.30 p.m. — 1.30 p.m.	Navy Band Recital Hyde Park
Wednesday, 7 October	12.00 p.m. — 1.00 p.m.	Navy Band Recital Wynyard Park
Thursday, 8 October	12.00 p.m. 2.00 p.m.	Navy Band Recital Wynyard Park
Saturday, 10 October	12.30 p.m. — approx. 2.15 p.m.	Naval Historical and Contemporary section of Waratah Pageant Procession led by NIRIMBA Apprentice Volunteer Band.

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CANBERRA — A.C.T.

Wednesday 7 October	Naval Board Reception	Canberra-Rex P.M.
Friday 9 October	Naval officers to address students at High Schools	—
Saturday 10 October	R.A.N. Band Recital, Queanbeyan	— A.M.
Sunday 11 October	References to Navy Week in churches Carillon Recital: Nautical Airs Naval Band Recital Naval Historical Exhibition (open all week)	— A.M. — 3 P.M. Vicinity National Library, 2 P.M. National Library.
Monday 12 October	Naval display National Photograph Exhibition Naval Photographs Band lunchtime recital Press, TV, radio cocktail party	Monaro Mall (all week) Garema Place 12.30-1.30 P.M. H.M.A.S. HARMAN 6.30-8.00 P.M.
Tuesday 13 October	Band to visit various charity etc. homes Band television programme Naval Association Dinner	Koomari House/Goodwin homes CTC Channel 7 Department of Supply Restaurant
Wednesday 14 October	Midday concert by Band Sport competitions: golf, tennis, bowls Classical concert by Band	Garema Place 12.30-1.30 P.M. Queanbeyan Golf Club; Yowani Country Club (bowls) tennis Canberra Theatre 8 P.M.
Thursday 15 October	Further charity visits by band Band recital	Marymead/War Veterans Parliament House 1.15 P.M.
Friday 16 October	Navy League and Sea Cadet Council meetings Band to beat retreat Navy Ball Naval Association/Sea Cadets meeting	Navy Office Petrie/Alinga Streets 7.30 P.M. Canberra Rex —
Saturday 17 October	Racing events Naval aircraft on display	Canberra Racing Club Fairbairn airport.

VICTORIA

Victorian sailors are to be offered the traditional freedom of entry to the City of Melbourne.

No date has been announced for the ceremonial presentation, but it is likely to be during Victorian Navy Week which this year falls between 27 September and 4 October.

One of the main features of the week will be the open day at the R.A.N. training establishment at Crib Point, H.M.A.S. *CERBERUS*.

1970 also marks the 50th anniversary of *CERBERUS* and day-long displays and ceremonies will be offered to the public on Saturday, 3 October.

The Victorian Railways are running trains to Crib Point on that day, and two of these will be "steam" specials.

Special church services are planned to mark Navy Week. The Naval Association is organising a service at Christ Church, South Yarra, for 27 September.

Services are also planned at St. Paul's and St. Patrick's cathedrals in Melbourne on 4 October.

The Governor of Victoria, His Excellency Sir Rohan Delacombe, will attend a march and Shrine of Remembrance ceremony on 4 October. Ex-servicemen and sailors are expected to join the service.

A feature will be the full *BEAT RETREAT* ceremony.

Other features of Victorian Navy Week this year include a golf day at Waverley golf course on 29 September, Navy Week ball at H.M.A.S. *LONSDALE* on 2 October, and Naval Association Re-union at South Melbourne Town Hall on 25 September.

Work is also going into planning of a Navy League dinner dance, a reception at H.M.A.S. *LONSDALE*, a PT display in Melbourne by sailors, a cookery display by Navy chefs and special television and radio programmes.

Melbourne trams will fly Navy pennants during Navy Week.

WESTERN AUSTRALIA

Saturday, November 7 — a special race meeting at Belmont Park and trotting meeting at Richmond Raceway.

Sunday, November 8 — Church Parades at St. John's Fremantle and St. Mary's Cathedral Perth.

Sunday, November 15 — Open day at H.M.A.S. *LEEUEWIN*.

QUEENSLAND

Friday 2 October

7.00 p.m.

Naval Re-Union Dinner at R.S.L. Club, CAIRNS. Bookings: Telephone 51 2131

8.00 p.m.

Naval Association Ball at Showgrounds Hall, IPSWICH. Bookings, 81540 (after hours 82 1629).

7.00 p.m.

T/S *PALUMA* open to Public at Gibson Park, STAFFORD.

Saturday 3 October.

9.00 a.m. — 11.00 a.m.

T/S *BUNDABERG* open to Public in BUNDABERG.

2.00 p.m. to 4.30 p.m.

T/S *TYALGUM* open to Public at SOUTHPORT.

7.45 p.m.

'Old Ships' Re-union at H.M.A.S. *MORETON*, NEW FARM. Bookings, 27618.

7.45 p.m.

Navy Re-union at R.S.L. Club Room, GLADSTONE.

Sunday, 4 October (NAVY DAY)

9.00 a.m.

Wreath laying Ceremony by ex-navalmen at the War Memorial, GLADSTONE.

9.45 a.m.

Wreath laying Ceremony at the Naval Memorial Cairn at IPSWICH.

10.30 a.m.

Naval Services of Remembrance at Sea Cadet Head Quarters at Yacht Basin, SOUTHPORT.

11.00 a.m.

Seafarers' Service at St. John's Cathedral, Ann Street, BRISBANE.

3.00 p.m.

Naval Service of Remembrance and Wreath laying ceremony at the Shrine, Anzac Square, BRISBANE.

6.30 p.m.

Poolside barbecue, Manly Pool.

Monday, 5 October

7.45 p.m.

Cabaret at Naval Memorial Club, Charlotte Street, BRISBANE. Bookings 27618.

Tuesday, 6 October

12.30 p.m.

Luncheon at Naval Memorial Club, Charlotte Street, BRISBANE. Bookings 27618.

7.00 p.m.

H.M.A.S. *MORETON* and T/S *GAYUNDAH* open for public inspection at Naval Depot, NEW FARM.

Wednesday, 7 October

a.m.

H.M.A.S. *BRISBANE* arrives in Brisbane.

12.30 p.m.

Navy Golf Day at Nudgee Golf Club. Nominations Mr N. Laugher 31 0361, Ext. 210.

Thursday 8 October

2.00 p.m. to 4.30 p.m.

H.M.A.S. *BRISBANE* open for public inspection in BRISBANE.

7.00 p.m.

'At Home' in Wardroom, H.M.A.S. *MORETON*. (invitation only).

Friday 9 October

a.m./p.m.

School talks throughout Queensland

2.00 p.m. to 4.30 p.m.

H.M.A.S. *BRISBANE* open for public inspection in BRISBANE.

7.45 p.m.

Navy Re-union at R.S.L. Club Rooms, TOOWOOMBA.

8.00 p.m.

Maritime Ball at Cloudland, BOWEN HILL. Bookings at Naval Memorial Club, Charlotte Street, BRISBANE. Phone 27618.

8.00 p.m.

Navy Week dinner at Boomerang Hotel/Motel, MACKAY.

Saturday, 10 October

2.00 p.m. to 4.30 p.m.

H.M.A.S. *BRISBANE* open for public inspection in BRISBANE.

2.00 p.m. to 5.00 p.m.

T/S *PIONEER* open to Public outer Harbour, MACKAY.

2.30 p.m.

Navy Week Trotting Cup at REDCLIFFE.

p.m.

Navy Week Flying Handicap at Eagle Farm, BRISBANE.

7.30 p.m.

Dinner to celebrate Navy Day at Wardroom Mess H.M.A.S. *MORETON*, NEW FARM (invitation only).

7.00 p.m.

Dinner to celebrate the 165th Anniversary of Trafalgar Day at Anzac House, BRISBANE. Bookings Box 2100 G.P.Q. BRISBANE, 2001.

Sunday, 11 October

9.00 a.m.

Naval Service of Remembrance and Wreath Laying Ceremony at TOOWOOMBA.

12.30 p.m.

Navy Bowls Day at WAVELENGTHS Bowling Club. Nominations Mr L. Miles 59 2142.

2.00 p.m. to 4.30 p.m.

H.M.A.S. *BRISBANE* open for public inspection in BRISBANE.

2.45 p.m.

Ceremonial parade of Sea Cadets at Brisbane Grammar School Grounds, Gregory Terrace, BRISBANE.

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Periscope on Australia

by Grommel

NAVY TO NAME SHIP AFTER CAPTAIN COOK

The Royal Australian Navy will name one of its newest oceanographic ships *H.M.A.S. Cook* to commemorate the bi-centenary of the discovery and exploration of Australia's East Coast by James Cook.

H.M.A.S. Cook is expected to displace about 2,500 tons and the total project cost including spares, shore support and initial maintenance cost is expected to be between \$16 million and \$17 million. She will be equipped with a bow thruster unit and activated rudder to assist slow speed manoeuvring and she will carry the latest oceanographic sonar. Propulsion will be by diesel engines with a variable pitch propeller.

HUNTER . . . AND THE HUNTED

As part of the *Bersatu Padu* exercise off East Malaysia, a Royal Australian Navy Tracker is seen passing above the Australian submarine *H.M.A.S. Oxley* during the exercise. Ten R.A.N. ships and Fleet Air Arm Trackers, Skyhawk jet fighter bombers and Wessex helicopters are filling the R.A.N.'s role in the five-nation exercise which ended last June.



BIG MARITIME EXERCISE OFF WESTERN AUSTRALIA

Australian, British and New Zealand ships and aircraft will take part in a major maritime exercise off Western Australia during November.

The exercise nicknamed *Swan Lake* will be under the operational command of the Flag Officer Commanding the Australian Fleet, Rear Admiral H. D. Stevenson, who will be embarked in the R.A.N. flagship the aircraft carrier *H.M.A.S. Melbourne*.

Units of the Royal Australian Navy, Royal Navy, Royal New Zealand Navy, Royal Australian Air Force and the Royal New Zealand Air Force will take part.

Phases of the exercise will involve the initial deployment of maritime forces from the East Coast of Australia to the Indian Ocean. Then will follow mine counter measure, submarine, weapon training and aircraft exercises. *Swan Lake* will be the third major maritime exercise in which Australia, Britain and New Zealand has taken part this year.

700th for TRACKERS

Commander M. F. Matthews, Commander Air in the Royal Australian Navy's flagship *H.M.A.S. Melbourne*, congratulates the Commander of the Air Group on the Aircraft carrier, Commander T. A. Dadsell, on achieving his 700th deck landing. Commander Dadsell, who



made the landing whilst *Melbourne* was off the East Coast of Malaysia is now only six landings short of the record set by Lieutenant-Commander Fred Lane, Lieutenant-Commander (Flying in the *Melbourne*. Commander Dadsell, who has flown Fireflies, Sea Furies, Gannets and Sycamore helicopters, made his 700th landing in the Grumman Tracker of *Melbourne*'s 816 Squadron.

NEW NAVAL AIRCRAFT

New South Wales skies will soon echo to the sound of the Navy's newest training aircraft.

The Macchi jet trainer will soon replace the existing Vampire Trainers and Sea Venoms which have been in service since 1954 and 1956 respectively. The Italian-designed Macchi, built in Australia under licence by the Commonwealth Aircraft Corporation of Fisherman's Bend, Melbourne, is a twin seater trainer capable of cruising speeds of around 500 M.P.H. A total of ten aircraft and their necessary support equipment will be bought for \$7.6 million.

The aircraft will fly as part of the shore-based 724 Squadron, and are not intended for operational carrier flying on the aircraft carrier, *H.M.A.S. Melbourne*.

Maintenance personnel are currently being instructed on the Macchis.

NAVAL APPRENTICES PASSING OUT PARADE

For the first time four sailors of the Papua/New Guinea Division of the R.A.N. passed out as qualified engine room artificers at a parade of 95 Naval Apprentices and 10 Mechanics at *H.M.A.S. Nirimba*, last June. Rear Admiral R. I. Peek, Second Naval Member, reviewed the parade and later talked with the four New Guinea

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Division sailors. L to R: E. R. A. John Guli Aiede, Ambrose Linga. Rear Admiral Peek, Mark Gande Kuri and Rea Heni (see photo).

DESTROYER CONTRACTS

The new destroyer for the R.A.N. represents the first major warship designed specifically for Australia's needs.

The ship which is expected to be about 3,000 tons displacement will have high speed and long endurance and will be propelled with gas turbines.

Gas turbines offer significant personnel and weight savings, and the use of well-proven aero gas-turbines modified for marine use offers the advantage of modern technology developed at little expense to the shipowner.

The design of the ship will take into account the Australian environment which will be reflected by the standard of accommodation for ship personnel.



Approval has been given for the preliminary design to be developed further with a detailed design as the next stage.

Construction of the destroyers has not yet been authorised, and the

number required is still under consideration.

The fact that the major part of the design is taking place in Australia provides an opportunity to increase the Australian content of the ship.

British Boat industry Trade Mission To Australia

29 October to 10 November 1970

New British marine equipment will be promoted in all States of Australia when nine firms producing boating equipment, hardware and accessories commence their sales drive — their first in Australia.

Products to be promoted by the mission include hardware, inflatables, clothing, electronics, fittings, paint and underwater equipment, and representatives hope to meet ship-builders, yacht clubs, firms and organisations operating in the boating field.

British boating exports had risen

from £4,900,000 (\$10,500,000) in 1968 to £7,500,000 (\$16,071,450) last year and it has been predicted that the figure for 1970 would show a similar improvement.

The mission will be led by Mr. H. S. Lawrence, managing director of Simpson-Lawrence Ltd., who will be promoting hardware.

Other members of the mission will be:

Noel Bibby, of Peter Storm Waterproofs Ltd. (clothing);

J. D. Burton of Lewmar Marine Ltd. (fittings);

K. F. Russell, of Avon Rubber Co. Ltd. (inflatables);

G. F. Brown, of Armshire Reinforced Plastics Ltd. (cold injection moulding of fibre glass);

N. O. Gugen, of Typhoon (Aqua Products) Ltd. (underwater equipment);

E. W. Whiting, of International Yacht Paints;

E. J. Mendham, of Jack Holt Ltd. (dinghy fittings); and

R. K. N. Nott, of E.M.I. Marine Ltd. (electronics and clothing).

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Naval Cadet Force News

NEW SOUTH WALES

QUARTERLY REPORT OF PROCEEDINGS

This report covers training and other activities carried out by the Naval Reserve Cadets in New South Wales for the period 1 April to 30 June 1970.

Weekend training postings were to the following warships:—

Ship	Dates	No. of Personnel
H.M.A.S. <i>Stalwart</i>	3 April- 5 April	34
H.M.A.S. <i>Perth</i>	10 April-12 April	21
H.M.A.S. <i>Parramatta</i>	17 April-19 April	23
H.M.A.S. <i>Curlew</i>	17 April-19 April	14
H.M.A.S. <i>Stalwart</i>	1 May- 3 May	34
H.M.A.S. <i>Perth</i>	1 May- 3 May	21
H.M.A.S. <i>Stuart</i>	8 May-10 May	22
H.M.A.S. <i>Moresby</i>	15 May-17 May	24
H.M.A.S. <i>Perth</i>	12 May-14 May	21
H.M.A.S. <i>Perth</i>	26 May-28 May	21
		235

Six Units carried out their annual .22 Efficiency Shoot in H.M.A.S. *Watson*—

T.S. <i>Parramatta</i>	2 May
T.S. <i>Hawkesbury</i>	9 May
T.S. <i>Sirius</i>	30 May
T.S. <i>Warrego</i>	6 June
T.S. <i>Shropshire</i>	20 June
T.S. <i>Condamine</i>	27 June

In addition, a Range Day at Anzac Rifle Range was arranged for the Sydney Grammar School Naval Reserve Cadet Unit.

The Representative of the Flag Officer Commanding East Australia Area, Commander J. St. B. More carried out the annual inspection of the following Units:—

April 4	T.S. <i>Condamine</i> (Manly)
April 11	T.S. <i>Shropshire</i> (Canterbury)
April 18	T.S. <i>Warrego</i> (Hunters Hill)
May 9	T.S. <i>Sydney</i> (Snapper Island)
May 16	T.S. <i>Sirius</i> (Arncliffe)
May 23	T.S. <i>Parramatta</i> (Rydalmere)
June 1	Sydney Grammar School Naval Reserve Cadet Unit
June 6	T.S. <i>Albatross</i> (Wollongong)
June 10	St. Ives High School Naval Reserve Cadet Unit
June 19	The Scots College Naval Reserve Cadet Unit.

No periods of the continuous training were carried out during the period under review.

Three Selection Boards were convened in H.M.A.S. *Watson* to examine adult personnel eligible for promotion to higher rank and to determine the suitability of applicants for appointment to the Cadet Force.

The Senior Officer of the Naval Reserve Cadets N.S.W. attended the ceremony at Victoria Barracks on Saturday 2 May when the Duke of Edinburgh presented his Personal Banner to the Australian Army Cadet Corps. On Sunday 3 May the Senior Officer was present at the Annual Remembrance Parade of the Scots College Naval, Army and Air Force Cadets.

Calls were made by the Senior Officer on the Headmasters of eight High Schools in various suburbs to discuss their formal application or tentative enquiry to form a School Naval Reserve Cadet Unit.

(Sgd) L. Mackay-Cruise, Commander,
R.A.N.R., Senior Officer.

SOUTH AUSTRALIA

**South Australian Division
Sea Cadet Corps Launch
And Name Two Safety Boats.**

On Sunday 22 March in the presence of the Naval Officer-in-Charge, South Australia (Commander J. LANCASTER R.A.N.) and Mrs. LANCASTER, Members of Navy League and the parents of Sea Cadets from T.S. *Adelaide*, Mr. Tom Francis-Matters, the South Australian President of Navy League handed over to the Senior Officer of the South Australian Division (Commander E. B. HOPKINS, M.B.E., V.R.D., R.A.N.R.) two Safety Boats for use in Sea Cadet units in South Australia.

The boats (see photo) are identical Swiftcraft of the *Kingfisher* class. Constructed of fibre glass, the boats are 14 foot 8 inches long and have a beam of 5 foot 6 inches and have a mini-cabin. When powered by a 35 H.P. outboard motor they have a top speed of about 30 KNOTS and a splendid sea-keeper capability.

A Naval Board instruction directs that a safety boat must be in attendance whenever Sea Cadets carry out sailing in their 27 foot whalers or 14 foot skiffs and the South Australian Division of the Navy League took up the challenge to raise funds and provide a safety boat to each Sea Cadet unit. B.P. (AUSTRALIA) LTD., Sir Norman & Lady Jude and many other Navy League supporters made donations to the fund. Outboard motors for the boats were purchased by

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two safety boats - F.M. Dunn
R. Francis Matters were presented
units of the South Australian Sea
Cadets Corps. A 27 foot whaler named



Lieutenant Commander Ray Applebee is pictured receiving
congratulations from Commander G. J. Harle, M.B.E.,
R.A.N., after presentation of the Long Service Medal.

the Sea Cadet units from funds raised by their Parents and
Friends Committees.

The boats were named by Sir R. Frances Matters and Mr.
F. M. Dunn, two former Presidents of the South Australian
Division of the Navy League who gave great support to the
Sea Cadet Corps. The boats carry the names of these
gentlemen. The boats were handed over on loan to the
Commanding Officers, of T.S. *Adelaide* and T.S. *Flinders* by
the Senior Officer.

A fund for the purchase of a third boat has been started
and this boat will be allocated to T.S. *Gambier*, the third
South Australian Sea Cadet unit.

VICTORIA

Congratulations to Lieutenant Commander Ray
Applebee on receiving his long service medal. Lieutenant
Commander Applebee - of T.S. *Voyager*, Williamstown, is a
member of the Victorian Police Force. The medal was (see
photo) presented at the Annual Inspection of the Unit, by
Commander G. J. Harle M.B.E., R.A.N. T.S. *Voyager* has very
close associations with the police force and many Officers
and Instructors are policemen.

Twenty Cadets and four Officers and Instructors from
T.S. *Voyager* made a very successful visit to Tasmania in the
Princess of Tasmania on 29 July. A visit to three northern
Tasmanian Units, and an organised tour by bus of the coast
and rural areas was of great interest to the Cadets. On the

return journey the Strait lived up to its reputation as one of
the roughest passages in the world, and the greenhorns were
soon discovered.

T.S. *Barwon* has been named the best Unit in Victoria for
1970. This very active Unit, situated on Corio Bay, Geelong,
was inspected on 27 September by The Director of Naval
Reserves - Captain B. L. Cleary R.A.N., who arrived at the
Unit aboard H.M.A.S. *Arrow*.

During Navy Week - T.S. *Melbourne*, *Voyager* and
Barwon will hold open days on 3 October. This is the first
time that Victorian Units of the Corps have been asked by the
R.A.N. to participate in this way during Navy Week. The
response has been most enthusiastic. It is hoped that
members of the League and general public will take this
opportunity to see the Cadets in action.

The following promotions have been approved in the
Victorian Division:-

- | | |
|-------------------------|--|
| T.S. <i>Barwon</i> ... | S.C. Lieutenant J. Baker to
Lieutenant Commander. |
| T.S. <i>Melbourne</i> : | S.C. Lieutenant D. McGillvray to
Lieutenant Commander. |
| T.S. <i>Bendigo</i> : | Sea Cadet Sub-Lieutenant L. G.
Schilling to Sea Cadet Lieutenant. |
| T.S. <i>Voyager</i> : | Sea Cadet Sub-Lieutenant J. H. Dows to
Sea Cadet Lieutenant. |
| T.S. <i>Voyager</i> : | Petty Officer Instructor A. C. Grubb to
Chief Petty Officer Instructor. |

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Anniversary Of First Submerged Firing Marks Decade Of Polaris



FIRST OF THE F.B.M.'s — A Polaris A-1, first of the Navy's fleet ballistic missiles, surges from the sea after being launched by the submarine U.S.S. *George Washington*, ignites and then roars on to its target. The U.S. Navy observed the 10th anniversary of the first submerged launch of the Polaris A-1 on 20 July, 1970.

"Polaris . . From out of the deep to Target . . Perfect"

This brief message from the commanding officer of the nuclear submarine U.S.S. *George Washington* to the President and the nation announced that Polaris, a revolutionary concept in seaborne weaponry, was a reality.

The first firing of the Navy's Polaris A-1 missile from the *George Washington*, cruising submerged off the Atlantic coast near Cape Kennedy, took place at 1.39 p.m. (EDT) on 20 July, 1960.

Less than three hours later, a second missile surged from the calm surface of the sea, ignited and then raced to its intended target more than 1,000 miles away.

Success of these two launches — where, for the first time, the stealth and

endurance of the nuclear submarine were mated with the defensive capability of the ballistic missile — provided the cornerstone on which America built its global strategy to prevent nuclear war.

It was a policy of deterrence. The United States let it be known that it would never initiate nuclear war. But it also gave warning that a nuclear attack on this nation would trigger instant and devastating retaliation.

Polaris, together with other weapons systems in existence or on the drawing boards, put teeth into the U.S. policy of deterrence.

A decade after the first submerged firing of Polaris, this policy remains a basic tenet of our defense structure. The

capability and reliability of the *Fleet Ballistic Missile* weapons system has gone unchallenged.

What were the events which lead to the decision to develop Polaris? Who were the people behind the technological breakthroughs which made the F.B.M. possible?

Polaris had its beginning in September 1955 when the National Security Council recommended to President Dwight Eisenhower that the U.S. develop a seaborne nuclear deterrent. The President agreed.

On 15 November, 1955 the *Strategic Systems Project Office*, originally known as Special Projects Office, was established by the Secretary of the Navy and charged with the development of a seaborne nuclear deterrent.

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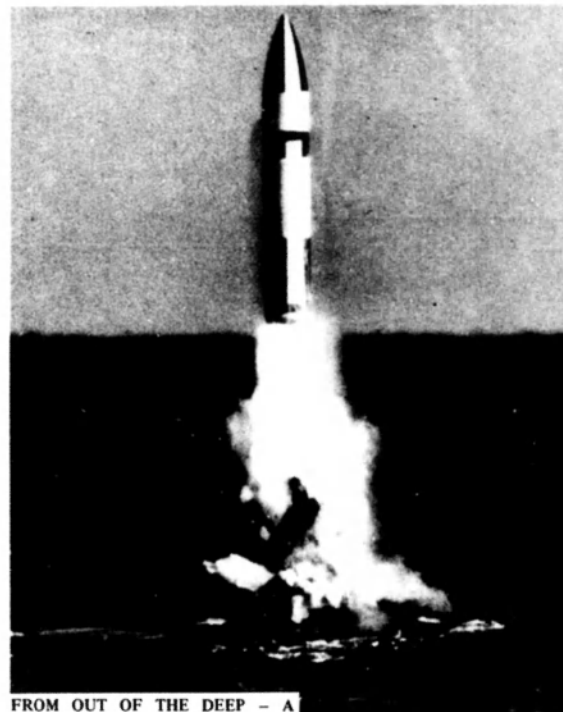
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FROM OUT OF THE DEEP — A 2,880-mile range Polaris A-3 missile, currently carried by 28 of the Navy's fleet ballistic missile submarines, is fired in a demonstration and shake-down operation off the coast of Cape Kennedy.

The mission of S.S.P.O. was one of project management, to co-ordinate development and production efforts of industrial contractors, research labs and government agencies involved in the program.

Rear Admiral William F. "Red" Raborn was named S.S.P.O.'s first director. He set up shop in the old Navy Munitions building in Washington, D.C., and began assembling the team which would develop and produce the F.B.M. weapons system.

As originally set up by the Department of Defence, the Army and Navy were to jointly develop a F.B.M. system. The Army was to develop the missile while the Navy was to develop the launching system.

After studies during 1956, however, it was decided that complete responsibility for development of Polaris — from missiles to guidance to launchers — be turned over to the Navy.

When S.S.P.O. received the green light to proceed with Polaris, the only part of the system in existence was the nuclear submarine. Even this remarkable ship had to be redesigned. The rest of the system had to be developed from the ground up.

Several leading American companies, with Lockheed Missiles and Space Company as prime missile contractor, began work on various phases of Polaris. In all, the F.B.M. represents the efforts of over 20,000 private contractors, universities and government agencies.

It was estimated that it would take 10 years for Polaris to become a reality. Planners, however, failed to foresee the dedication with which both Navy and industry people applied themselves to the program.

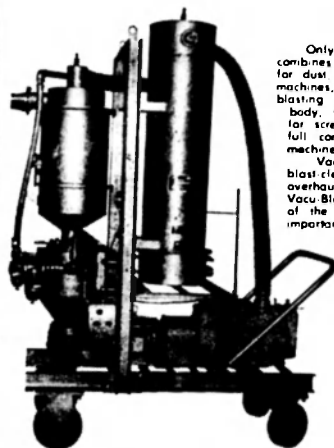
In just 48 months — five years earlier than the original target date of 1965 — the Polaris F.B.M. weapons system was operational and guarding the United States against nuclear attack.

The U.S.S. *George Washington* slipped quietly out of Charleston, and into the Atlantic on 15 November, 1960. It submerged into the protective depths of the ocean and began history's first deterrent patrol.

ONE OF FORTY-ONE — The U.S.S. *Kamehameha* (SSBN 642) cruises in the Pacific Ocean off the coast of California. The *Kamehameha* is one of 41 fleet ballistic missile submarines which comprise the U.S. seaborne deterrent force.



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S.S.P.O. had little time to reflect on its successes. During the next nine years, all 41 of the nuclear powered Polaris submarines would be constructed and commissioned. The Polaris A-1 missile would be replaced by the more advanced A-2 and A-3 missiles. And an entirely new fleet ballistic missile, the Poseidon C-3, will become operational in early 1971.

S.S.P.O.'s mission remains that of providing the F.B.M. force with the hardware necessary to continue effective operation. Actual command of the F.B.M. submarines fall under the commanders-in-chief, Atlantic and Pacific. Target selection is a function of the Joint Chiefs of Staff. But only the President of the United States can initiate the sequence of events necessary to actually fire a Polaris missile at an enemy.

NEW POSEIDON C-3 TO JOIN U.S. DETERRENT ARSENAL IN EARLY '71

Poseidon, newest in the Navy's line-up of fleet ballistic missiles, will join America's arsenal of deterrent weapons in early 1971.

Designated the C-3, Poseidon was developed by the Strategic Systems Project Office. S.S.P.O. is the project management team which co-ordinates efforts of private contractors involved in the nation's F.B.M. program.

A completely new design in missiles, the Poseidon offers a number of improvements and innovations over both the Polaris A-2 and A-3 missiles which are currently being carried aboard the Navy's fleet of 41 F.B.M. submarines during deterrent patrols.

Poseidon has about the same range as the 2,800-mile Polaris A-3, but is larger, heavier and capable of carrying a much greater payload. And like the A-3, it will be able to reach any spot on earth from its firing point beneath the sea.

The Poseidon weighs 65,000 pounds at launch, more than twice the weight of the Polaris it complements. It is 34 feet long, two feet longer than the A-3 and three feet longer than the A-2, and is 6 feet in diameter compared with Polaris 4½ feet.



Rear Admiral Levering Smith, current director of the Strategic Systems Project Office, has been a key figure in development of the Navy's fleet ballistic missile weapons system. He joined S.S.P.O. in 1956 and became the project management office's director in 1965.



NEWEST F.B.M. — Poseidon, newest of the Navy's fleet ballistic missiles, rests on a launch pad on the USS Kane Kennedy, prior to a test. The heavier and carrying several warheads, Poseidon will be carried by 31 of the Navy's 41 F.B.M. submarines by the mid-1970s.

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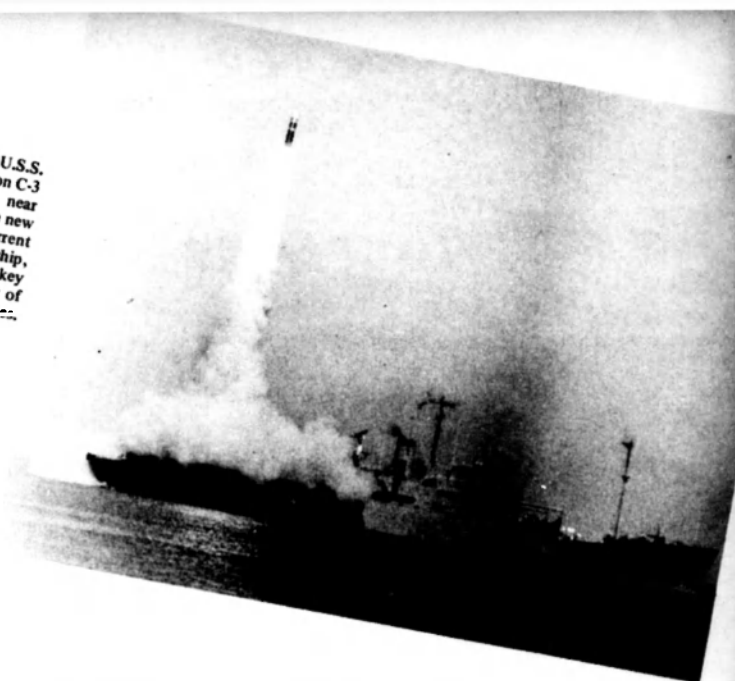
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TEST PLATFORM — The U.S.S. *Observation Island* fires a Poseidon C-3 missile off the coast of Florida near Cape Kennedy as a prelude to the new F.B.M. joining America's deterrent force in early 1971. Once a cargo ship, the *Observation Island* has played a key role in the development and testing of both the Polaris and Poseidon missiles.



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It carries M.I.R.V. (multiple independently-targeted reentry vehicle) warheads. More simply, Poseidon is equipped with a number of warheads which can be individually programmed to hit pre-selected targets along its sub-orbital route.

Besides adding punch to America's deterrent force without increasing the size of the nation's F.B.M. submarine fleet, the new Poseidon's multiple warhead feature greatly complicates a potential enemy's capability to defend against it.

Scheduled to be carried in 31 of the Navy's 41 F.B.M. subs by the mid-1970s, Poseidon is in its final test and evaluation phase at the Air Force Eastern Test Range, Cape Kennedy. Production of Poseidon was approved in December 1966. A contract for missile development and production was awarded to Lockheed Missiles and Space Company. The first land test pad launch of the new missile occurred on 16 August, 1968.

Since then, Poseidon has undergone a number of successful tests at Cape Kennedy, including three from the U.S.S. *Observation Island* (AG-154). The *Observation Island* is a unique surface ship which carries a complete F.B.M. weapons system, including launch tubes, navigational and fire control equipment and a missile check-out system.

The first submerged launch of Poseidon from a submarine is expected sometime this fall, about 10 years after the first undersea launch of the Polaris A-1. The A-1 was the Navy's first F.B.M. capable of being fired from a submerged submarine.

Tenth anniversary of the first A-1 launch, from the U.S.S. *George Washington* (SSBN 598) submerged off the coast of Cape Kennedy, was observed on 20 July, 1970.

The new Poseidon is designed for use in the Navy's existing F.B.M. submarines with a minimum of structural changes. F.B.M. subs are being converted to carry Poseidon as funds are authorized by Congress and during their regular overhaul periods.

Like Polaris, 16 Poseidon missiles can be carried by each F.B.M. submarine.

The first nuclear-powered F.B.M. sub to be converted to carry Poseidon was the U.S.S. *James Madison* (SSBN 627), which entered General Dynamics' Electric Boat Division shipyard at Groton, Connecticut, in February 1969.

PAD LAUNCH — A Poseidon C-3 is fired from a land pad at Cape Kennedy, for a test flight down the Air Force Eastern Test Range. Poseidon is the newest of the Navy's fleet ballistic missiles.

Following sea trials in the Atlantic, the 425-foot *Madison* will fire the first Poseidon, from a submerged vessel, later this year.

Congress has authorized and funded conversion of seven other F.B.M. submarines through fiscal year 1970. Scheduled for conversion during regular

overhaul periods are the *Daniel Boone* (SSBN 629), *Von Steuben* (SSBN 632), *John C. Calhoun* (SSBN 630), *U.S. Grant* (SSBN 631), *Tecumseh* (SSBN 628), *Sam Rayburn* (SSBN 635) and the *Pulaski* (SSBN 633).

Poseidon was named for the god of the sea in Greek mythology.

F.B.M. COMPARISONS

Following are comparative figures for the Navy's fleet ballistic missiles, all of which were operational in various F.B.M. submarines shortly after the first of this year:

	Polaris A-2	Polaris A-3	Poseidon
Length	31 feet	32 feet	34 feet
Diameter	54 inches	54 inches	74 inches
Weight	20,000 lb.	30,000 lb.	65,000 lb.
Propellant	Solid Fuel	Solid Fuel	Solid Fuel
Number Stages	2	2	2
Guidance	Inertial	Inertial	Inertial
Range	1,725 Mi.	2,880 mi.	2,880 mi.
Warhead	Nuclear	Nuclear	Nuclear

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A DIVISION ON THE MOVE . . .

Recent events in Victoria:—

The Executive Committee continues to grow and become more representative. The Company of Master Mariners recently accepted an invitation to nominate a representative, and the Deputy Master, Captain Allan Pearson is our latest member. Mr. Bill Flintoft has also rejoined after 5 years in the U.S. and U.K.

The closer ties gained with the Navy and other maritime groups is most encouraging. The introduction of Special guests to Executive meetings have been met with great interest. The latest of these being The Minister for the Navy — The Hon. J. Killen, who made the trip from Brisbane especially for the occasion.

April turned-on with a most successful pool-side party at the Toorak home of Mr. & Mrs. Ken Syme for the visiting Officers of the Royal Yacht Britannia and H.M.A.S. Stuart. Too cool for the promised dip, but the sixty guests made the most of the Autumn sun. Guests were welcomed by the new Ladies Committee President — Mrs.

Trevor Hatfield — Amongst the guests were — N.O.I.C. (Commodore Ian Purvis) and Mrs. Purvis, Mr. Geoff. Evans, State President of the League. A number of Officers from H.M.A.S. Cerberus and a far too rare appearance of Miss Shorrocks (mink and all), the League Secretary. It was also an opportunity to say 'Good-Bye' to Mrs. Plunkett-Cole and Commodore Plunkett-Cole, who have left us for a view of the Pacific Ocean at Narooma: Pleased to see many young people present — part of the newly formed "Young Set", an idea of Mrs. Plunkett-Cole.

Speaking of Commodore & Mrs. Purvis — many thanks to them from the Ladies Committee and the Ninety guests who had a marvelous day on 30 April last at H.M.A.S. Cerberus. Guests arrived in time for lunch at Cerberus House, then moved on to see the film "The Prime of Miss Jean Brody", followed by a most enjoyable tour of the Depot.

A Navy League Younger Set has been formed to help foster the aims of the League amongst the young. The

group has the full support of the Executive, and a Committee has been formed.

On the eighth of August, "The Set" really got under full sail with a barbecue and dancing at the home of its Vice President. Aptly named "Launch-In", about 100 young people swung through the night and early morning. A great time was had by all. Anyone interested in joining the lively bunch should make contact with its Secretary, Miss Glenice Abbot, at (Melbourne) 51 3672.

Meanwhile the Ladies Committee is fully occupied with arrangements for the League's Dinner-Ball to be held on 1 October, at the Royale Ballroom, Melbourne. I can't say too much about this as yet, but I do know many busy fingers are making "Seahorses", for table decorations. Should be a grand evening. The Navy Band will be present, to play and give the wonderful display of marching, which has been a feature of the ball in the past. It's hoped also that a "Swinging Group" from the band will play music for the Young and Young at Heart . . .

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LETTERS TO THE EDITOR..

14 Ferres St.,
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13 April, 70.

The Editor.
The Navy.
SYDNEY, N.S.W.

Dear Sir,

I was pleased to read the Defence Report, 1969, by Mr. Fairhall, M.P. in the November - January, 1969-70, issue of the NAVY magazine.

It was a very compact report of the service and was well presented. After studying the Fleet list, I am surprised to find that there are only 22 H.M.A.S. ships, in the Fleet, fitted, specifically, in the defensive role.

Three of these are in the reserve Fleet list, and another two are used as training units. This leaves 17 operational units for defensive purposes. If Minesweepers and Mine-hunters are to be classified as defensive, then there are 23 operational ships in the defensive Service. This is 7 less than half the number of ships in the whole Service.

The Flagship *Melbourne* can be used in two or three roles. - (1) Provide air cover to coastal Convoys, (2) Provide air cover to several units on missions. (3) Using aircraft to strike at enemy convoys and warships and/or into enemy held territory. But the *Melbourne* is limited to the operational sphere of its aircraft at any given time, (i.e. - The *Melbourne* is capable of operating approximately 80 aircraft at a time. Most of these aircraft have an operational range of between 800-1000 miles. *Melbourne* herself can alter position 400-500 miles a day. In two weeks, she can travel from Brisbane, around the top of Australia, to Perth. But an enemy force can attack the lower Australia within a matter of days, while *Melbourne* is around the top. - Paratroopers, or a sea landing force, or a Destroyer force, etc.)

With the above in mind, I would like to describe a type of ship which could be deployed as "mini-carriers" to areas around the coast. Enclosed is a news photograph of the *Brisbane Trader*. Like



H.M.A.S. Melbourne.



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her sister ships *Sydney Trader*, and
Townsville Trader, she is a roll on, roll
off, container cargo vessel.

General Statistics

Length — 448'

Beam — 62'

Draught — (not known)

Tonnage — (1) Empty — 4000 tons.

(2) Loaded — 6500 tons.

Propulsion — 2 M.A.N. Diesels. Each
developing 5320 B.H.P. Speed — 17½
Knots. (Maximum.)

Two cargo decks (1) Crane deck,
(Open deck aft superstructure). (2)
Vehicular deck. (Below Crane deck,
extends almost ¾ length of ship, with
loading entrance, the stern ramp).

To convert the *Brisbane Trader* to a
Naval unit —

(1) Vehicular deck could be
shortened to ½ length of ship.

(2) Whole of superstructure could be
moved back approximately 20' — 30'.

(3) Stern Ramp could be replaced
with a cover section for the whole stern.

(4) Propulsion could be replaced by
Steam or Gas Turbines, (large enough to
increase Speed to approximately 30
knots — 35 knots).

(5) Suitable Defensive Weapons
could be — (a) Two multiple "Sea — cat"

systems. (One each side, abreast the
Funnels). Or Four multiple systems.
(Two each side, the Funnels).

(6) A twin 5 inch Turret could be
situated forward of the Bridge, (on the
Fore castle).

(7) A Radar Mainmast could be
situated a centre of the superstructure,
incorporating search and tracking radar.

(8) Aircraft — (a) 2 — 4 V/TOL
Aircraft, — and/or 2 — 4 Sea King or
Wessex Helicopters. (Combination —
2V/TOL Aircraft [reconnaissance
purposes] and 4 Helicopters [Anti —
sub role]. (b) 4 — V/TOL Aircraft
(Small strike force or Convoy cover) and
2 — Helicopters. (Anti — sub role.)

(9) Aerial Defensive/Strike Missiles
Systems — (a) Sparrow Systems. (b)
Sidewinder Systems. (c) Sneb 68 m.m.
Rockets.

Others — Fixed Armament — 20
m.m. Cannons — 2. (1) Wings. (2)
Fuselage, or (3) In a Gun Pod mounted
under the Fuselage.

(10) Hangar and Engineering shops
— the converted Vehicular deck.

(11) Flight Deck — The aft end of
the Crane deck is used for mooring
Bollards Cable Capstan Engines and
Stern Ramp control cables etc. This
section should be replaced with a flat,

slightly overhanging section thus
converting the Crane deck into a Flight
Deck approximately 200' in length. (A
Steam Catapult for launching the
aircraft, would be used to advantage on
this deck — approximately 100' long, to
give the aircraft faster launching times).

(12) Sonar equipment could also be
installed for anti — submarine
surveillance purposes.

With several of these type of ships
deployed around the coast of Australia
in company with Destroyer — Escorts or
Frigates, Convoys would be a lot safer.
With V/TOL aircraft fitted for
surveillance purposes. Coastal
Surveillance or Reconnaissance areas
could be increased to the operational
range of the V/TOL aircraft (i.e. —
V/TOL aircraft have a range of
approximately 800–1000 miles,
therefore, if a ship alters position
400–600 miles a day, add the
operational range of an V/TOL aircraft
Sortie — 1000 miles per sortie, the area
covered is economically greater than
for a single UNIT like the *Melbourne*).

The dual role of these types of ship is
a strategic importance, (i.e. — While
the unit is patrolling a convoy, its

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Yours Gratefully,
(Sgd) R. JOSEY.

*(I feel that some of Mr. Josey's facts
and figures need checking and would
invite further comment and ideas from
readers — Editor.)*

23 May, 1970.

The Editor,
THE NAVY,
Sydney, N.S.W.

Dear Sir,

In the photograph on page 44 of the
Feb — Mch — April issue of "The Navy"
at least four of the officers are wearing
their medals incorrectly. The correct
position is: the top edge of the row of
medals should be worn "an inch below
the point of the shoulder" — not on the
top of the breast pocket.

One has also noticed a tendency
lately of some Naval Officers saluting in
the *American fashion* with the wrist
bent and the hand held horizontal in
front of the forehead, as though shading
the eyes from the sun.

The correct salute is: Elbow as high
as the shoulder and braced back; fingers,
hand and forearm forming a straight line
from the elbow; finger tips touching the
right edge of the peak of the cap. Thus,
the forearm, hand and fingers form the
hypotenuse of a triangle, the upper arm
being the base.

Yours faithfully,
(Sgd) SINBAD.

(Author's name was supplied — Editor.)

18 June, 1970

The Editor,
"The Navy"
SYDNEY, 2000

Dear Sir,

It would be appreciated if readers
could be informed of the recent
formation of our Society through your
publication.

The Garden Island Naval Historical
Society was approved by the
Department of the Navy early in May of
this year and was officially formed at a
meeting of the 25th May. It is the only
Naval Historical Society in the
Commonwealth and has been charged
with the researching and recording of
the history of navies in general but more
particularly that of the Royal Australian
Navy. The Society is affiliated with the
Royal Australian Historical Society and
a number of Naval Associations.

Proposals are currently before the
Naval Board to rename the Society "The
Naval Historical Society of Australia" to
emphasise its national character.

The Patron of the Society is Vice
Admiral Sir John Collins, K.B.E., C.B.,
Four Vice Patrons have also been
elected to the Society. They are Vice
Admiral Sir Victor Smith, K.B.E., C.B.,
D.S.C., Rear Admiral H. D. Stevenson,
Rear Admiral G. J. B. Crabb, C.B.E.,
D.S.C. and Commodore B. W. Müssared.

The Society will produce a
Bi-Monthly Summary of Proceedings
and an Annual Journal which will be
issued free of charge to Members.

All serving members of the Royal
Australian Navy and employees of the
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All enquiries regarding membership
should be directed to The Secretary (Mr.

Alan Payne A.M.R.I.N.A.), Garden
Island Naval Historical Society, H.M.A.
Naval Dockyard, Garden Island, N.S.W.
2000.

Yours faithfully,

(Sgd) ALAN PAYNE,
HONORARY SECRETARY,
GARDEN ISLAND NAVAL
HISTORICAL SOCIETY, SYDNEY.

7 Joyce St.,
Elwood,
Victoria 3184

23 May, 1970

The Editor,
"THE NAVY"
Sydney, N.S.W.

Dear Sir,

The book, THE PRICE OF
ADMIRALTY, reviewed by Lieut.
-Comdr. B. R. Neild one of two
excellent books about the R.A.N.,
written by Frances Margaret and Paul
McGuire, circa 1945 or 1946.

As propos E. Bryden-Brown's letter in
Nov — Jan 1969-70 issue, your readers
may be intrested to know that in the
early 1900s certain ships of the R.N.
Squadron on the Australian Station
bore the typically Australian names of
Karrakatta, Katoomba, Kangaroo and
Ringarooma.

Incidentally, the name of the naval
depot at Port Melbourne perpetuates
the name of the first naval vessel in
which I served afloat in 1909; viz: the
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Yours faithfully,
(Sgd) R. S. VFALE
Commander R.A.N.V.R. Retd.

3 August, 1970

The Editor,
"The Navy"
SYDNEY, 2001, N.S.W.

Dear Sir,

An Article appeared in the
Melbourne "HERALD" on the 10 July
to the effect that, following a reported
New Zealand Government decision to
drop support for the School Cadet
System, Auckland parents had formed a
committee to save New Zealand's Sea
Cadets and Air Training Corps.

If the report is correct, and the Sea
Cadets and Air Training Corps feel
threatened with loss of support, this
would appear to contrast with the
situation in Australia where, at least as
far as Sea Cadets are concerned, the

Government proposes increased
support.

I do not think any Service expects a
large proportion of Cadets to enter the
permanent forces — medical standards
and educational requirements alone
debar quite a number from becoming
full-time sailors, soldiers or airmen even
if they want to. The cadet who does join
however, at least knows what he is in
for, and the early training must be of
value to both the boy and the Service.

Quite apart from the direct effect on
the Services which can be measured are
the indirect results which are
incalculable. Thousands of 14 to 18 year
old youngsters pass through the Cadet
organisations; most gain some idea and
an appreciation of the defence forces,
and at the same time acquire a sense of
self-discipline, self-reliance, and an
ability to work with others, which must
benefit the whole community. Also, the
effect on the boy's family and his
friends cannot be disregarded.

If the school cadet system is not
working satisfactorily in New Zealand it
is surely up to the Services concerned to
make efforts to ensure that it *does*
work: I do not believe that any

Government in this day and age can
afford *not* to support organisations
which encourage self-discipline,
self-respect, and the realisation that one
does not live alone in what is after all, a
rather hostile, turbulent world.

Yours faithfully,
(Sgd) F. G. Evans

President,
The Navy League of Australia
(Victoria Division)

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"The order went out —run amok generally"

BY JACK MILLAR

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Dardanelles and reach the Sea of
Marmora created havoc among Turkish
defences — daring exploits of A.E.2.

Australia today possesses four
submarines — H.M.A.S. Oxley,
Otway, Ovens and Onslow.

Their presence is a reminder that
the R.A.N. previously had a fleet of
submarines, the first two dating back
to a few months prior to World War I.

These were the A.E.1 and A.E.2,
whose crews were half Australian and
half English. Early September, 1914,
saw them attached to the Australian
fleet for the capture of German New
Guinea.

It was while on patrol off Cape
Gazelle on the 14th that A.E.1 failed
to return. Despite an intensive search
no trace of her was ever found. All
sorts of rumours, blaming "German
treachery," began to circulate, but the
official view ascribed her loss to
striking a coral reef, which ripped open
her thin steel plates. Later A.E.2
returned to Sydney, from where she
was ordered to the Mediterranean.
Travelling in convoy from Albany, she
was towed behind the transport
Berrima.

On arrival in the Mediterranean
A.E.2 was attached to the British
squadron engaged in the Gallipoli
operations. She did not have long to
wait for action, her gallant captain
receiving orders to attempt the narrow
35 mile passage of the Dardanelles, to
the Sea of Marmora and there block
Turkish shipping coming from the
Bosphorus.

Commodore (later Lord) Keyes,
Chief-of-Staff to Admiral de Robeck,
put it more fittingly when he said
"Run amok generally."

And A.E.2 did just that. Her
captain — Lieut. Cmdr. Hew Dacre
Stoker — and his crew knew the odds
were stacked against them, but nothing
daunted, in they went.

Two submarines had already tried
and failed. Later, two French boats



The Australian submarine A.E.1, with
H.M.A. Ship AUSTRALIA and
YARRA in the background — in New
Guinea waters during early September,
1914. On the 14th A.E.1 disappeared
without trace.



A.E.2 with the French cruiser
MONTCALM, lying off Rabaul at the
occupation of New Britain, September,
1914.

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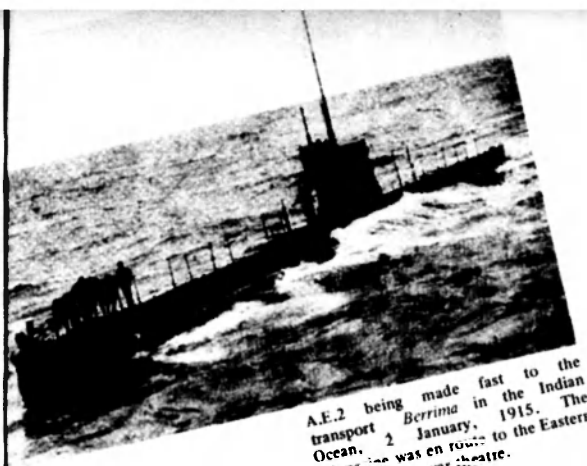
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A.E.2 being made fast to the transport *Berrima* in the Indian Ocean, 2 January, 1915. The submarine was en route to the Eastern Mediterranean war theatre.

also met with no success. One, the *Joule*, struck a mine and was lost with all hands.

For the narrow straits were heavily mined. Each shoreline bristled with Turkish forts and guns. During the dark hours searchlights turned night into day. And to make things tougher, a three to five knot current continually swept down from the Sea of Marmora, added to which A.E.2 could travel no more than 50 miles submerged. Would this be enough to see her through?

Stoker was determined to try. Appropriately, in the wee hours of Sunday morning, April 25th, 1915 — Anzac Day — he entered the Strait.

Despite the searchlights, Stoker decided to run as far as he could on the surface to preserve batteries.

At 4.30 a.m. the submarine was sighted, shellfire forcing A.E.2 to submerge.

The crew was then into the minefield. For the next half hour the almost continuous scraping of wires along the submarine's side told of the danger without. Twice Stoker surfaced to check bearings.

On the third occasion the periscope was spotted, the Turkish gunfire being most accurate.

At the narrows off Chanak — only half a mile wide — Stoker observed a small Turkish cruiser of the Peik e Shetrek type laying mines across his bows. He was in a good position to attack and fired the bow torpedo. Then, to avoid a destroyer attempting to ram on the port side, he took her down to 70 feet. As he did so, the torpedo was heard to hit. A cheer echoed throughout the sub.

Stoker then ordered 20 feet, but as A.E.2 rose she hit bottom and slid up to a depth of 10 feet, exposing much of the conning tower above water. Here A.E.2 remained for four minutes with shells whizzing around until the engines succeeded in backing her off.

A short time later exactly the same thing happened on the other shore. By now the waters were full of Turkish craft of every description.

Stoker observed many of these picking up survivors from the sunken cruiser.

As A.E.2 slid off the bank she bumped several times on the descent, the last heavy one causing considerable damage. She began to leak, slightly. But despite this, Stoker decided to push on.

He successfully negotiated Nagara Point, and although under constant attack, reached the Sea of Marmora, and took the sub to the bottom.

For the next four days a cat and mouse game developed — only the stakes were high. First Stoker attacked, then A.E.2 was herself attacked.

Targets included a battleship, destroyers, gunboats and troop transports. Only sheer bad luck prevented a hit on one occasion the torpedo missing by the narrow margin of one foot — later confirmed by the Turkish authorities.

A.E.2 had certainly run amok, striking fear into the Turkish sea defenses.

Early submarines carried no guns. If A.E.2 had been so equipped then undoubtedly Stoker would have claimed more victims by gunfire.

On April 29th Stoker rendezvoused with the British submarine E14, which had successfully followed him through the Dardanelles. Arrangements were made to meet again at 10 a.m. the following day.

With torpedoes expended, A.E.2 spent the night on the bottom off Marmora Island.

Early next day Stoker re-charged batteries and proceeded to the rendezvous. No sooner had he arrived than two torpedo gunboats were observed closing at full speed.

A.E.2 dived, but inexplicably broke surface again, whereupon the gunboats opened fire at close range. In desperation a forward tank was flooded and A.E.2 dived rapidly by the bows — so fast that her downward plunge could not be arrested.

Fitted with only 100-foot depth gauges, this was quickly reached and passed.

By going full-speed astern and blowing main ballast, the sub., after a long interval, began to rise rapidly. So much so, that all efforts to check her failed, and A.E.2 once more broke surface — stern first.

The inclination prevented Stoker from observing through the periscope.

Within seconds the engine-room was hit and holed in three places. Unable to dive or see, Stoker ordered all hands on deck, himself following after opening the tanks to flood.

A.E.2 sank within minutes, the crew — all of whom had behaved magnificently throughout the entire patrol — being picked up by the gunboat and transferred to a Turkish prisoner-of-war camp. No lives were lost. Stoker's sinking of the Turkish cruiser had important repercussions ashore. Shortly after the event he managed to get a wireless signal off to Admiral de Robeck with the good news.

It so happened that all was not well with the Anzac landing near Gaba Tepe. General Birdwood's troops had taken a terrific mauling, and he expressed doubts as to their ability to hold on under similar conditions as on the day of landing. Evacuation was mooted.

General Sir Ian Hamilton replied that the troops would have to dip in and stick it out, then went on to quote A.E.2's success in sinking a cruiser off Chanak. The Anzac's did stay, and were in fact far from demoralised. As they battled up the cliffs of Gallipoli

all cheered the notices displayed as they advanced "Australian sub A.E.2 first through the Dardanelles. Sinks enemy cruiser. Advance Australia."

The deeds of A.E.2 and the Anzacs ashore are now part of Australia's proud history.

After a 21-day patrol E.14, with many successes to her credit, once more negotiated the straits and returned to base. She was followed in by E.11, which included a sortie into Constantinople harbour itself. In a highly successful 20-day patrol E.11 sank a gunboat, two ammunition ships, two troop transports, as well as causing a third to beach. She then returned to base.

With the disappearance of A.E.1 and the loss of A.E.2 Australia was left without any submarines.

This was rectified in 1919, when the Admiralty, in recognition of the deeds of the R.A.N. during the war, gave the Commonwealth Government six destroyers and a flotilla of six submarines - J1, 2, 3, 4, 5 and 7.

These 1,820 ton craft built in 1916 carried one 4-inch gun, six 18-inch torpedo tubes and could cruise at 19 knots on the surface and 9½

submerged. Five were disposed of in 1924 for £16,671 while the sixth, J7 was sold at the end of 1929.

In 1926 Australia had two submarines, the Oxley and Otway, built in England. With the coming of the depression they proved too costly to operate, and in 1931 were presented to the Royal Navy.

Otway survived World War II, winning battle honours in the Atlantic, to be broken up in 1945.

Oxley was not so fortunate, surviving only a bare week, to become one of the Royal Navy's first losses. By one of those tragic mischances which

sometimes occur in wartime, she was torpedoed by another British submarine, the TRITON while on patrol in the North Sea on September, 10th, 1939.

At the time of this regrettable accident both submarines were out of their scheduled positions.

The present Oxley, built at Greenock in 1966, and joined over the following few years by her sisters Otway, Owens and Onslow, have once more given Australia a formidable flotilla of the latest conventional undersea craft - proud additions to the R.A.N.'s fighting strength.

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