NAVY WEEK ISSUE

Finding Details of Special Events Throughout Australia
Like Leonardo, we care intensely about it.

Five hundred years ago a man called Leonardo da Vinci turned his bountiful genius to the task of achieving man-made flight. To Leonardo, the flight of a bird was an inspiration, a marvel, a riddle he was never to solve. The science of aerodynamics defied even Leonardo’s ingenuity. It was left to men of other generations to unlock the secrets of the bird’s wings, to discover the aerofoil section, to separate the functions of lift and thrust between wings and engines, to fly higher and faster than the bird. And having created the marvel for ourselves, still some of us stand in awe of it, as Leonardo did.

We want to share it with you the first time or the next time you fly.
Navy Week is a very important event. It provides the opportunity for the people of Australia to meet the Navy, and during this week in ships and establishments throughout Australia the public will be shown how we work.

For the rest of the year the public's contact with the Navy is a little remote and as we go about our business we cannot always give our first thoughts to how we are seen by others or whether the people of Australia are alive to the part seapower plays in the country’s national strategy.

It is reassuring therefore to know that there is an organisation such as the Navy League dedicated to the best interests of Australia and active in making the people of Australia aware of the importance of seapower in upholding and protecting these interests.

Events since the Second World War have shown that it has seldom been possible to perceive the nature and timing of situations that have led to the commitment of our forces. In the absence of specific threats and in recognition of the time that it takes to develop maritime forces we need to ensure that we maintain a general capability. There is daily evidence of the forces of instability in the world and the absence of a direct threat can be no justification for diluting our preparedness.

I want you to know how much people in the Royal Australian Navy appreciate your enthusiastic and much needed support on our behalf.

Thank you and I wish you every success in your very worthwhile work.
Annual Message from the Federal President of the Navy League of Australia

As I write this 1974 "message" to members of the Navy League the attention of most Australians is directed towards the economic problems which trouble our country, and which affect us all personally in one way or another.

It is never easy in peacetime to maintain public interest in national defence, and even more difficult at a time like this: And yet seldom before has the subject of defence required closer attention by the community than it does now.

A major re-structuring of our defence organisation; the future shape of the Navy, Army and Air Force, and the equipment they are to have; policies adopted and decisions made (or not made) in these two areas alone will inevitably affect our defence capability a decade and more hence: But how rare it is for either subject to be debated in the Parliament or reported in the news media.

No matter how difficult it may be, we in the Navy League must continue in our traditional role as a "watchkeeper" of the nation's maritime security. At a time of preoccupation with economic affairs and social objectives, I believe our proper course is to stress the importance of keeping a sense of proportion and of getting our priorities right.

I am sure we will overcome our present economic difficulties, but it is unlikely we will survive as a free country if we ignore defence issues now, and pretend that we can re-create an effective defence capability at will at some future date.
Apprentice entered the Navy for a ship. The last apprentices entered the Fleet gaining experience at sea. NIRIMBA followed by 18 months with and one-half years were spent at period of twelve years. The first three NIRIMBA in December of this year.

Under this scheme pass out from Commission. Complete the practical section of by the NSW Apprenticeship apprenticeship which is recognised their trade. This completes their and then go to sea for two years to basic skills applicable to their trade. Introduced Apprentices now spend two years at NIRIMBA learning the two years at NIRIMBA.

In addition to the training of RAN apprentices, NIRIMBA also undertakes the training of RAN sailors as mechanics, direct-entry naval shipwrights, Papua New Guinea naval apprentices, Royal Malaysian Navy apprentices and mechanics and conducts advanced welding, precision soldering and other short courses.

Mechanics achieve craft status during adult Naval service by selection and a two-year course at NIRIMBA, at the successful completion of which they are regarded as equal of the artisans produced by apprentice training.

Vacation training of university undergraduates, both uniformed and civilian is becoming an increasing commitment of NIRIMBA.

Outside normal working hours, a large number of activities are available to apprentices. Theatre parties enable apprentices to visit most of the live theatres in Sydney for a small charge and film theatres for about $1. Very recent films are also shown at NIRIMBA in the Assembly Hall three nights a week. A library, games room and TV rooms are provided, as well as a canteen in.

A master plan to replace the existing wartime structures by brick buildings has been drawn up and is being implemented. These include new accommodation buildings and dining rooms for both ship's company and apprentices, and a sporting complex with swimming pool.

HMAS NIRIMBA offers young men of today a chance to learn a trade under the best possible conditions.
and with modern equipment. The opportunities for further studies — at the Royal Melbourne Institute of Technology or the University of New South Wales — are available.

They are also offered the facilities to pursue any of a large number of activities and sports in free time. These are prospects that few other employers could offer.

**HMAS NIRIMBA**

**NAVY WEEK — OPEN DAY**

**SUNDAY, 13 OCTOBER, 1974**

**PROGRAMME**

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<td>AMTP Kevin Benson, 19, of Port Augusta, takes the measurements of a taper with a micrometer in the workshops at the Royal Australian Navy apprentice training establishment, HMAS NIRIMBA, at Quakers Hill, near Sydney. Kevin, who enlisted in the Navy two years ago, is a former student at Port Augusta High School and a member of the Port Augusta Men’s Hockey Association.</td>
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Come to HMAS NiRIMBA and see Navy Apprentices at work on lathes, grinding and milling machines in the workshops. Electronic equipment, TV, radar trainers, digital computers and transistor equipment will also be worked on by the apprentices. Static displays will include Venom Jet, Firefly and Tracker Aircraft, aircraft engines, ejector seat and Craft Test Jobs.

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Lessons from Naval Warfare, 1971

By A. W. GRAZEBROOK
Federal Vice-President, the Navy League of Australia

Since World War II, submarines have fired torpedoes in anger in only one war. In 1971, both India and Pakistan used submarines on active service against warships and merchant shipping.

With the nuclear balance making submarine warfare much more likely, and with a major world resurgence in the construction rates of diesel electrically powered submarines, the Indo-Pakistan conflict is well worth studying to learn lessons both from the way in which the two nations used and countered the submarine weapon, and from the way in which they have translated their practical experience into new construction for, or modernisation of, their navies.

Indian Naval Forces
Available in 1971

At the start of the war, India had four new F type diesel electric submarines of Russian construction. These are large “long legged” ocean going boats of 2000 tons surface displacement and a maximum submerged speed of 15 knots. These submarines are normally based at Vishakapatnam, on the Bay of Bengal, but time in operational areas in the Arabian Sea can be increased by stationing the large submarine depot ship INS AMBA in the Western Naval Command. The core of Indian naval surface forces is its aircraft carrier INS VIKRAMADITYA, given extended range by the fleet replenishment ship INS DEEPAK, and escorted by a number of modern escorts. After providing escorts for the carrier group, India had a number of escorts available for escorting their merchant vessels and “search and destroy” operations. In addition, there were eight fast patrol craft armed with surface to surface guided weapons, landing craft, mine clearance craft, and two elderly cruisers. A second fleet replenishment tanker was requisitioned from trade for the duration of hostilities.

The effective way in which the Indian High Command and Naval Staff used their naval forces demonstrated an impressive ability to apply their sound knowledge of maritime strategy, supported by a well trained fleet (of widely varying age) and a sound command structure.

Pakistan's Position

The Pakistan Navy started the war at so serious a material and strategic disadvantage that it had no hope of more than hindering the Indian Navy. Apart from a squadron of minesweepers, all Pakistan's sizable surface units were over twenty years old and hopelessly outclassed by the Indians. A number of patrol craft, based upon what was then known as East Bengal, had little chance of survival.

Pakistan had four submarines - three new Daphne type boats of French construction (700 tons, 15-18 knots underwater speed), and the much larger elderly ex-American Tench Class submarine PNS GHAZI (1570 tons, 10 knots underwater speed). The published range of PNS GHAZI was 1400 nautical miles at 10 knots, but that of the Daphnes was much lower. No figures were published for the Pakistani Daphnes, but the French gave the figure for their own boats of this type as 2700 nautical miles at 12 knots. Apparently the Indians based a number of assumptions on this figure, particularly that the only Pakistani submarine that could reach the Bay of Bengal would be PNS GHAZI. Events were to prove that one Daphne also operated in the Bay of Bengal — PNS MANDRO.

India's Dispositions

The Indian Navy was divided into two area commands, each under a Vice Admiral Commanding in Chief - Western Naval Command (Bombay) and Eastern Naval Command (Vishakapatnam), with a Rear Admiral afloat in each command. In accordance with India's strategic objective of resolving the East Bengal problem by a land invasion, the carrier task group was assigned to support the land forces in the Eastern Command area. Two PETYA Class and two Type 41 frigates, the three R Class destroyers, one submarine, the two POLINCVY Class LSTs and a troop transport were also assigned to Eastern Command. Of these vessels, two Type 41 frigates and one PETYA were assigned as escorts to the carrier group.

To Western Naval Command were assigned the elderly cruiser INS MYODORE, six frigates, three submarines, and the eight OSA class fast patrol boats armed with surface to surface guided weapons. Western Naval Command was charged with the neutralisation of Pakistan surface forces, the protection of Indian trade (including safeguarding the vital oil imports), and the destruction of Pakistani trade including the prevention of the importing of arms by sea.

India's Eastern Command operated the carrier group constantly against Chittagong and minor ports, military targets ashore, and in the neutralisation of potential means of maritime escape for the retreating Pakistani Army. Other Eastern Command units blockaded East Bengal, capturing six merchantmen and a number of smaller craft. A small amphibious force tried unsuccessfully to land over the beach near Cox's Bazaar. The failure is attributed to lack of planning and amphibious "know how."

To achieve his objectives, Vice-Admiral Kohli of Western Command struck quickly and hard. He dispatched three OSA Class guided missile armed fast patrol boats, supported by two of the fast PETYA Class frigates, to attack Karachi.
Harbour. Two Pakistani Battle Class destroyers were encountered at sea. One was sunk and the other damaged severely by guided missiles. Five merchantmen were also sunk. After this setback, the Pakistani surface forces did not again leave harbour.

The balance of Admiral Kohli's fleet, ordering his three submarines, was employed in anti-submarine and blockade action. There was a series of anti-submarine actions culminating in the destruction by three torpedoes of the Indian Type 14 frigate INS KHUKHR, that ship having apparently failed to take normal anti-submarine tactical precautions. All Pakistani trade ceased, the ship having apparently failed to take normal anti-submarine tactical precautions. All Pakistani trade ceased, neutral cargo vessels being withdrawn from the area or ceased trading in the area.

On the outbreak of war, India instituted full Naval control of shipping Supplies of oil flowed uninterruptedly to India. So far as is known, the Indians prevented the loss of any of their merchantmen.

**Pakistani Activities**

The Pakistanis despatched their elderly submarine PNS GHAZI and the Daphne Class PNS MANGRO to the Bay of Bengal to seek and destroy the aircraft carrier VIKRANT. PNS GHAZI was destroyed during a mine-laying expedition off Vishakhapatnam. Some reports state that she was destroyed by depth charges from the World War II destroyer INS RAJPUT whilst other reports say that GHAZI was destroyed by an internal explosion possibly a mine.

PNS MANGRO located the Indian carrier group, but was driven off by the Indian escorts. There are conflicting reports as to why the Pakistani submarine did not press home her attack.

**Lessons of the Naval War**

During the war, the Indian Navy adopted the sound strategy of neutralising the Pakistan's surface forces early and thus eliminating any significant surface threat. The Indian surface to surface missiles proved as destructive as had been expected, but they were only used against elderly warships and merchantmen.

The Pakistan surface craft had no modern effectively controlled rapid fire weapons, nor were Pakistan air craft on hand to counter the Indian patrol craft. Furthermore, the Indian patrol boats were supported by Indian surface craft which alone were superior to the Pakistani destroyers at sea off Karachi.

The effectiveness of seaborne surface-to-surface missiles against virtually defenceless targets, has again been proven. The world has yet to see this type of missile used in fully opened naval circumstances.

The world saw Pakistani use conventionally powered submarines as an inexpensive offensive weapons system that can force the defender to devote very substantial resources to the defensive (protection of his trade). The four Pakistani submarines forced the Indians to allot the greater part of their Navy to the protection of trade against submarine attack. In this war, nuclear powered submarines did not participate in these circumstances. Diesel electric submarines were very effective.

The importance of accurate technical intelligence of an enemy's capabilities was demonstrated. The Indians, understandably, underestimated the range of the Daphne class submarines, with the result that one of them appeared unexpectedly in the Bay of Bengal.

The Indians demonstrated the feasibility of converting merchantmen to tanker handlers as a means of replenishing their warships at sea. The fallacy of assuming that because a Navy has no RAS capability in peacetime it cannot do so in very quick time, was demonstrated by the Indians.

**Pakistan Applies the Lessons of War**

After their successful surface craft losses in the War, and after the obsolescence of her remaining craft had been demonstrated, the Pakistani Navy was faced with the need to replace these losses, and to acquire a weapons system, or systems that would give Pakistan some sort of naval deterrent credibility against India. Whilst something must be done to acquire new surface vessels, to increase her surface strength to the point where it would be anything approaching a match for the well established Indians, it would place an unacceptable burden upon Pakistan's limited resources, and that resources should be devoted to a larger number of smaller escorts, for the vital trade.

The effectiveness of her carrier air group in support of land forces, and in the strike role against enemy port installations etc, has apparently been demonstrated. It is reported that India is considering how to replace the aging VIKRANT, and has commenced laboratory talks to acquire VTOL/STOL aircraft to operate from either a through deck cruiser or a destroyer as the strike ship.

The effectiveness of modern diesel electric submarines has been noted by India as an adequate Class submarines, to give her a total strength of eight boats. There are reports that these are to be built in Pakistan, and that being assembled at Vishakhapatnam.

The other side of the submarine lesson of the war — that the need to defend herself against submarine attack — presents India with very real problems. She depends upon imported oil and other raw materials, and must ensure the safe passage of these against submarine attack. As the recent war demonstrated, a small number of hostile submarines compels the disposition of forces in defence. India plans to acquire five more PETYA class frigates. Five LEANDER Class frigates are under construction, or planned, at Bombay. Drawings and technical assistance are being purchased, from the French, for the construction in Bombay of an unspecified number of C69 series small frigates. It is not clear whether the construction of these vessels involves the cancellation of the last three LEANDERS.

The LEANDERS are a slightly modified version of the LEANDER of the Royal Navy. They carry conventional armament, and are capable of serving as escorts for seaborne forces and providing local protection for the carrier group. They are armed with Exocet surface-to-surface guided missiles, anti-submarine torpedoes, one 100mm automatic gun, and two 20mm guns. The diesel power gives a range that is satisfactory to India (4500 miles at 15 knots), but a low top speed (233 knots). This speed may be adequate to-day, but the guided-missile system is less promising against the 20 knots of the AGOSTA type, planned by Pakistan. Furthermore, the speed of the C69 type is less than that of many modern merchantmen.

The Pakistan Navy have, for the past, developed lessons have lessons for Australia, particularly, so far as trade is concerned. The Australian Government recognises the vulnerability of vital seaborne trade to submarine attack. It is to be hoped that the Australian Government will be pragmatic enough to accord our own position the same recognition.

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A LEANDER class general purpose frigate. Six vessels of this British type are being built by Mazagon Dock Ltd, Bombay, for the Indian Navy.
In this article Lieutenant J. M. Parkinson, RAN, of the submarine HMAS ONSLOW, records his impressions of three days at sea in the new flagship of the Royal Thai Navy, RTS MAKUTRAJAKUMARN. The visit took place during the combined Thai, British and Australian exercise "Thalay Thai" (Freedom of the Sea) in the Gulf of Thailand last July. Two other Australian officers and one sailor served in Thai ships, and three Thai officers came to Australian ships.

A fresh water shower after 31 days at sea in the submarine ONSLOW was too good a chance to miss. I volunteered.

At dawn of 3 July we surfaced. The Gulf of Thailand had been whipped up by force 5 winds so that the sea was choppy with occasional waves breaking over the casing.

On our port side was the Royal Thai Navy's flagship MAKUTRAJAKUMARN (named after the Crown Prince who is at present studying at the Royal Military College, Duntroon). Her seaboat was soon alongside. Two Thai officers leapt onto our tanks and hauled themselves up the lifeline to the casing. A quick PR photograph and I was on my way down to the whaler. Fifteen minutes later, thoroughly soaked, I was on board the MAKUT.

The exchange of Thai officers and RAN officers for the duration of "Thalay Thai" was now complete. The exercise, involving three Royal Navy and three Royal Thai Navy frigates, a Royal Fleet Auxiliary tanker, HMAS STUART and HMAS ONSLOW, was to include weapons firing and simple anti-submarine exercises.

Having met the commander of the Thai Fleet, Rear Admiral Kamnuan Punsri, and the captain of MAKUT, Commander Kamol Suksingha, on the bridge, I was taken below to the wardroom for a fine "western" breakfast. From the minute I stepped aboard until the MAKUT's seaboat took me ashore in Bangkok three days later, I had nothing but praise for this Yarrow class frigate commissioned in 1973. Her main role is as a gunnery ship with two Vickers single barreled 4.5 inch automatic guns with M22 fire control and a quadruple Seacat close range anti-aircraft missile launcher with M44 fire control. That same afternoon we fired against a pilotless target aircraft. Two out of three for both guns were right on target, but the Thais were disappointed because this was below their average of 80%. Their gunnery system is obviously well nigh perfect.

Anti-submarine warfare was perhaps the Thai's only weak spot.
This they recognise. They have no submarine themselves so the whole exercise was planned to get maximum value out of HMAS ONSLOW. Indeed their next exercise is planned around a US Navy Submarine. Consequently a submariner on the MAKUT was held in some esteem.

MAKUT's machinery spaces were spotless. She has one 12 cylinder Crossley diesel engine and one Rolls Royce Olympus gas turbine driving through a gearbox to two shafts. Both engines are controlled either from a remote control room or from the bridge.

The internal organisation is based on the Royal Navy and works well. The operations room was particularly impressive for the quiet and seemingly efficient atmosphere.

The Thais, a most hospitable and friendly race, invited me to lunch with the Admiral, dinner with the Captain and tea on the bridge. Afternoon tea consisted of ice-cold coffee, a Thai favourite, and toasted sugar sandwiches! All meals were from the Thai menu — rice and so many delicious styles of cooking pork.

One question I have been asked several times is: “Does the RAN get value out of exercising with a navy which is so much different from our own?” It is true that the RTN and RAN are in many ways chalk and cheese. We concentrate heavily on anti-submarine warfare, while this is a field in which the Thais lack experience, and our sophisticated equipment.

But this is surely why these exercises are worthwhile. I, and the whole of the RAN, know a lot more about the RTN. We know better what they are capable of and how they operate. The Thais in turn have had the chance to exercise their ASW weapons against a submarine. This is particularly important to the Thai sailors who operate their sonarsets, for some of them have never heard what a real submarine sounds like.

I think the exercise “wash up” showed that we still have a great deal to learn about each other, particularly in the fields of operating procedures and communications. It is amusing and a little disconcerting that the Thais say they can understand an American voice on the radio quite easily, but cannot fathom the “deep south” accent of the Australians.

As one of the technologically advanced naval powers in South-east Asia, we should be able to offer sound advice to our Thai colleagues, and because we have considerable expertise in ASW and a growing fleet of submarines we could be of considerable assistance in this field. However, after seeing MAKUT at work I doubt whether we could teach the Thais much about gunnery!

Rear Admiral Kamnuan Punsri sincerely hopes that the MAKUT will visit Australia in the not too distant future. I hope so too. She’ll attract much attention. That shower was well worth volunteering for.

Australian and Thai ships exchanged officers and sailors during Exercise Thalay Thai in the Gulf of Thailand. Picture shows the captain of the Australian submarine HMAS ONSLOW, Lieutenant Commander R. H. Fayle, welcoming two Thai officers. One officer from ONSLOW, Lieutenant Michael Parkinson, spent three days in the Royal Thai Navy’s flagship MAKUTRAJAKUMARN, and another, Sub-Lieutenant Bob Carter, exchanged with PRASAE.

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Happy to be Associated With the Navy
 Churches in Sydney have agreed to share in this Service and bring the Country, and pray that we may be together we shall thank God for those who have given so much in securing essential unity as Christmas. To-
The pulpit, shaped in the form of a ship's bow, is one of the prominent furnishings in the Garden Island Dockyard Church.

The President of the New South Wales Methodist Conference will preach the occasional sermon. Participating clergy will include His Eminence Cardinal James Freeman and the Moderator of the New South Wales General Assembly of the Presbyterian Church of Australia, also a representative of the Anglican Church. The Flag Officer Commanding East Australia Area, Rear Admiral J. A. Allom, will also be present.

For many years the Church has been used for all Church Services held in Garden Island. Protestants and Roman Catholics have come to feel that it is their Church.

An ecumenical spirit has always existed in the working relationships between serving Chaplains. But this has grown in the new atmosphere of unity and trust which we believe is God's will for His Church. It is appropriate therefore that we should together thank God for his grace and pray for his guidance in the future.

There are a number of groups which hold their Annual Church Services here - amongst them are Sydney Legacy, the Naval Association of Australia, the Naval Reserve Cadets, Sea Scouts and Sea Rangers. We hope that some from these organisations, as well as interested members of the public will join with us in this Service.

The Ecumenical Service for Navy Day, 1974, will be held at 10.30 am, Sunday, 13 October, in the Garden Island Dockyard Church.

We will meet to worship together as an outward demonstration of our essential unity as Christians. Together we shall thank God for those who have given so much in securing the protection and safety of our Country, and pray that we may be responsive to His will and guidance in the years to come.

We are grateful that leaders in the Church in Sydney have agreed to share in this Service and bring the Country, and pray that we may together thank God for those who have given so much in securing essential unity as Christmas. To-

The pulpit, shaped in the form of a ship's bow, is one of the prominent furnishings in the Garden Island Dockyard Church.

The first stained glass windows were installed in 1904. Since then the Church has been beautified by many Memorials, all of which tell their own poignant story. For many years the Church has been used for all Church Services held in Garden Island. Protestants and Roman Catholics have come to feel that it is their Church.

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Navy Week is one week in each year when Australians from coast to coast are urged to pay grateful tribute to those who have served and those now serving Australia at sea.

During this week it is fit and proper that a nation of free men and women give well-deserved honour and recognition to the patriotic and victorious achievements of its men of the sea. It is the week for Australians to re-dedicate themselves to those principles of freedom and self-govern-ment 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 fulfil its contribution to our national security.

In the Royal Australian Navy, the month of October has always held special significance. The 21st century commemorates the 160th anniversary of 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 unselfed 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 instru-

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THE NAVY

Aug/Sept/Oct, 1974

THE NAVY

Aug/Sept/Oct, 1974
SOUTH AUSTRALIA

SUNDAY, 29 SEPTEMBER
MONDAY, 30 SEPTEMBER
WEDNESDAY, 2 OCTOBER
THURSDAY, 3 OCTOBER
FRIDAY, 4 OCTOBER

NEW SOUTH WALES

SATURDAY, 12 OCTOBER
1.00 pm-5.00 pm

SUNDAY, 13 OCTOBER
10.30 am
11.30 am-5.30 pm

VICTORIA

SUNDAY, 29 SEPTEMBER
10.00 am-5.00 pm
11.00 am

MONDAY, 30 SEPTEMBER

QUEENSLAND

WEDNESDAY, 2 OCTOBER
7.00 pm
FRIDAY, 27 SEPTEMBER

SUNDAY, 29 SEPTEMBER
WEDNESDAY, 2 OCTOBER
THURSDAY, 3 OCTOBER
FRIDAY, 4 OCTOBER
SUNDAY, 6 OCTOBER
11.30 am

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Royal Australian Navy Band Recital and Navy PT Display at National Mutual Plaza, Collins Street, Melbourne.
RAN Cooking Demonstration at State Electricity Commission building, Flinders Street, Melbourne.
Royal Australian Navy Band Recital and Navy PT Display at National Mutual Plaza, Collins Street, Melbourne.
RAN Band Ensemble will play at Allans and Suttons.
RAN Cooking Demonstration at State Electricity Commission building, Flinders Street, Melbourne.
Navy Week Golf Tournament at Fitzroy Bowling Club.
RAN Band will “Beat the Retreat” at HMAS LONSDALE.
Royal Australian Navy Band Recital and Navy PT Display at National Mutual Plaza, Collins Street, Melbourne.
RAN Band Ensemble will play at Allans and Suttons.
RAN Cooking Demonstration at State Electricity Commission building, Flinders Street, Melbourne.
Navy Week Ball at HMAS LONSDALE.
Navy Week Race Day at Flemington Racecourse — RAN Band will play.
Naval Reserve Cadet Units “Open Day” — Training Ship BENIDIO at Bendigo
Training Ship BARNWORTH at Geelong
Training Ship MILDURA at Mildura
Training Ship HENTY at Portland
Training Ship LATROBE at Yallourn.
Training Ship VOYAGER at Williamstown
Seafarers’ Service at St Patrick’s Cathedral.
Seafarers’ Service at St Paul’s Cathedral — service will be attended by His Excellency the Governor of Victoria and Lady Spinneke. A Colour Party from HMAS CERBERUS will parade the Australian White Ensign; House and Shipping Flags will be borne by Naval Reserve Cadets from Training Ships LATROBE, MELBOURNE and VOYAGER
Navy Memorial Service at Shrine of Remembrance following a short march to the Shrine by Ships’ Associations. RAN and RANR Bands will participate.
Re-assembly at HMAS LONSDALE of persons attending Shrine Service.
Navy Day Dinner at United Service Club.
Cocktail/Dinner Dance at North Star Hotel, Brisbane Street, Ipswich (arranged by the Ipswich and West Moreton Sub-sections of the Naval Association).
Navy Bowl’s Day at Wavell Heights Bowling Club (RANR Band will participate).
Navy Golf Day at Nudgee Golf Club.
Lady’s Luncheon (venue to be set) — organised by Navy Wives.
Maritime Supper Dance (venue to be set)
Navy Remembrance Service (Non-denominational) — Anzac Square.
Annual Seafarers’ Service (Non-denominational) at St John’s Cathedral.

Cathedral Service at St Francis Xavier’s and St Peter’s.
Navy League Reception.
Naval Officers Club Dinner.
Commemoration Service and Wreath Laying at War Memorial.
Reception to be given by the Naval Officer in Charge.

A Guided Missile Destroyer will be open for public inspection at Garden Island but the Dockyard area will be closed.
An updated DARLING class destroyer will be open for public inspection at the Overseas Terminal, Circular Quay.
HMAS WATSON (Watsons Bay) and HM AS PLATYPUS (Neutral Bay) will be open to the public.
Ecumenical Church Service at Garden Island Dockyard Church (refer separate article).
HMAS NIRIMBA. Quakers Hill (near Blacktown) will open to the general public (refer separate article).

Ecumenical Church Service at Garden Island Dockyard Church (refer separate article).
HMAS CERBERUS. Western Port — Open Day.
Naval Association of Victoria Church Service at Christ Church, South Yarra (The Australian White Ensign will be paraded by RAN Cadets from TS MELBOURNE. The Cadets from that establishment will form the Guard of Honour).
Navy Week Golf Match at Waverley Golf Club.
RAN Cooking Demonstration at State Electricity Commission building, Flinders Street, Melbourne.
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“THE CIVILIAN ARM OF THE NAVY”

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 supports the Naval Reserve Cadets who are administered by the Royal Australian Navy, which Service provides 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 to 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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Application for Membership

To: The Secretary,
The Navy League of Australia, (Division).

Sir,
I am desirous of becoming a Member of the Navy League of Australia with whose objects I am in sympathy.
(Mr)
Name (Mrs)
(Miss)
(Rank)

Please Print Clearly.

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Suburb
State
Postcode
Signature
Date

Enclosed is a remittance for $4.20 being my first annual subscription.

AFTER COMPLETION, THIS FORM SHOULD BE DISPATCHED TO YOUR DIVISIONAL SECRETARY — NOTE LIST OF ADDRESSES ABOVE

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Victoria — Box 227, Post Office, Hawthorn, 3122.
Queensland — 39 Pinecroft Street, Camp Hill, Queensland, 4152.
Tasmania — 3 Wimmerleigh Street, Taranna, 7006.
South Australia — Box 1529M, GPO, Adelaide, 5001.
Western Australia — Box 578, PO, Fremantle, 6160.
Australian Capital Territory — 12 Darmody Street, Westerla, ACT, 2614.

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THE NAVY
Page Twenty-nine
Over the past two decades Britain's armed services have undergone a complete metamorphosis.

From having global commitments and relying on largely conscript manpower, the Army, the Royal Navy and the Royal Air Force have changed to a NATO (North Atlantic Treaty Organisation) role with all regular forces.

This means that the men themselves have to be trained to a very high standard and the equipment they use has to be designed and built for maximum efficiency. Like the rest of the world Britain has been hit by inflation and for this reason every ship, aircraft, weapon and vehicle requirement must be subjected to the closest scrutiny and control. Budgets have become too tight for ad hoc experimentation. What is ordered and put into production has to work and work well.

**Very Adaptable**

Of the army's total of 177,000 men, some 55,000 are in the British Army of the Rhine (BAOR). Formed as one corps, this consists of five armoured brigades, one mechanised brigade and two artillery brigades and two armoured reconnaissance regiments. Full regular and volunteer reserves in the British Isles are organised for rapid reinforcement of BAOR in an emergency, together with mobile reinforcement of the NATO tank area.

Equipment for the modern British Army reflects these commitments and although extremely adaptable is mainly designed for use under European conditions. Britain has the longest continuous record of fighting-vehicle production of any nation and the experience is embodied in her armoured fighting vehicles (AFVs).

**Main Battle Tank**

One of the standard weapons in the armoury is the Chieftain Main Battle Tank (MBT). Since World War II Britain has concentrated on tank development based first and foremost on firepower, followed by armour protection and then mobility.

Following the highly successful Centurion tank with its 105mm gun—the latter in use in many countries— the MBT evolved as the Chieftain with a 120mm gun. This combination gives firepower superior to any other tank currently in use. The 120mm gun with Armour Piercing Discarding Sabot (APDS) ammunition is capable of killing opposing armour at ranges up to 4,000 metres. With High Explosive 80mm Head (HE) ammunition, tank, armoured personnel carriers and soft-skinned vehicles can also be successfully dealt with.

Rate of fire is 10 rounds/minute for the first minute and 6 rounds/minute thereafter. The 0.5 inch (12.7mm) ranging machine system is being supplemented by a Very Adaptable

SOME HIGHLY VIM

The Chieftain has good all-round sloped armour but it is particularly heavy in the vital frontal area which gives it a high degree of immunity at the closer battle ranges. With a weight of 53.805 tons and a 730 shaft horsepower (shp) (544kW) Leyland L60 engine, the Chieftain can achieve 48km/h road speed and 30km/h in average across country. As the lightweight air-portable complement to Chieftain, the Alvis-British Leyland Scorpion light tank has been built with a hull fabricated in welded aluminium. Powered by a militarised de-rated Jaguar automobile engine of 4200cc, Scorpion is capable of a maximum road speed of 80.5km/h and it is very agile over all types of terrain.

Armament consists of a lightweight version of the well-proven British 76mm gun in a 360-degree traverse turret with a coaxial 7.62mm machine gun. HESH, high explosive, canister, illuminating and smoke ammunition are available, and 40 rounds can be carried.

**Variants**

Scorpion forms part of a family of vehicles based on the same basic chassis. Other variants include Striker with five (a five seater) Swingfire anti-tank missiles; Spartan, the seven-man armoured personnel carrier; Sultan command vehicle; Samaritan ambulance; Samson recovery vehicle, and Scimitar anti-APC and anti-aircraft version.

The last mentioned is equipped with the new 30mm Rarden gun which can fire a highly lethal APDS round. This weapon is also fitted to the four-wheeled Fox light armoured reconnaissance vehicle which is a development of the Ferret and, like Scorpion, has a welded aluminium hull.

As a replacement for the famous 25-pounder (11.3kg) gun howitzer which spanned 30 years, the British Army now uses the Albion self-propelled 105mm gun with 360-degree traverse. Half a ton of shells can be fired per minute with high accuracy over ranges from 2500m to 19,000m by day or night.

**Latest Gun**

The latest artillery piece to go into service with the British Army this year is the 17.400m range 105mm light gun which fires the same variety of ammunition as the 25-pounder: high explosive, white phosphorus, base ejection smoke, HESH, target marker and illuminating. Total gun weight is 1768kg and sustained rate of fire is three rounds a minute. A self-propelled towing vehicle is the four-wheeled Land Rover while the gun can be carried on an Andover aircraft or suspended beneath Sea King and Puma helicopters.

Now in large-scale service as the standard anti-tank missile is the British Aircraft Corporation's (BAC) wire-guided, vehicle-mounted Swingfire. Advantages of this system are its short (140m) and long (full 4000m) range capabilities, the lethality of its hollow charge warhead and the fact that the launcher can remain hidden while the operator is positioned up to 100m away.

**Anti-Aircraft Missiles**

For defence against low-flying, high speed aircraft both the Army and the RAF are equipping with the BAC Rapier missile system. Highly mobile, Rapier can be operated and fired by one man, while only five men are needed for continuous running. For all-weather operation, blind-fire Rapier is available which can be incorporated into battery operation.

A new range of combat net radio equipment is coming into service. Known as the Clansman range, this comprises very high frequency (VHF) and high frequency (HF) radios which are fully synthesised and include one manpack and two vehicular HF sets. The radios can be used as a total system, in the British Army, or individually to meet specific requirements.

**Detection By Radar**

Special attention has been paid by the army to battlefield detection, night vision and ground surveillance. In the last mentioned category Britain's Army Radar (G5.14 M.1 (8298)) has been adopted as standard. This set can detect, recognise and provide accurate position on moving targets and their direction from 50m to 10,000m.

The complete equipment can be carried by two men and in addition is mounted on a wide range of military vehicles.
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BOOK REVIEW...

THE COLLAPSE OF POWER:
MUTINY IN THE HIGH SEAS
FLEET
By David Woodward
Review copy supplied by HICKS & SMITH & SONS PTY LTD.
Review by the late LIEUTENANT COMMANDER B. R. NIELD, RANR (Retd).

Mr Woodward, after a long and varied career in journalism all over the
world, has made his mark as a
writer of books about less obvious
aspects of naval history. In this book, which is free from footnotes but
based on much research, he tells
the story of the German naval
mutiny of 1917, which occurred shortly before the armistice.

The mutiny was provoked, accord-
ing to the mutineers, by orders of the
German naval command to go to sea
to engage the Grand Fleet, against
which it apparently had no chance of
survival years later, the mutineers
claimed that the admirals had
mutinied by ordering the operation,
probably to destroy the fleet,
without even telling the German
government. Mr Woodward dis-
counts their claim, but the evidence
available in paperback.

His book can serve, then, as an
introduction to these subjects. The
best short history of naval opera-
tions of the First World War is prob-
ably Geoffrey Bennett's book Naval
Battles of the First World War, now
available in paperback.

During the Second World War, the
navy had a very high morale. There
was no mutiny, and it fought to the
end.

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The previous longest continuous time at sea for an Australian "O"-boat is about three weeks on a delivery voyage from the UK. According to ONSLOW's captain, Lieutenant Commander Rod Fayle, the record-breaking voyage was largely uneventful — in fact nobody seemed to realise ONSLOW was even in record until some time after the submarine had arrived in Bangkok.

Despite the submariners' non-military duties, Lieutenant Commander Fayle recalls that ONSLOW was getting along with its regular routine. The submarine had sailed from the Melbourne base HMAS PLAYFUIS in Neutral Bay for Exercise Kangaroo I on 2 June and commenced our initial patrol in the vicinity of Cape Byron two days later. Here we attacked a surface action group of British ships including the frigates and the destroyer HMS FIFE and the frigate group of British ships including the vicinities of HMAS ONSLOW and ARGONAUT. Here we attacked a surface action group of British ships including the vicinity of Cape Byron two days later.

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JOIN THE NAVAL RESERVE CADETS

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

The Naval Reserve Cadets are administered by the Australian Naval Board.

The Naval Reserve Cadets 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 afternoon 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 various subjects.

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

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

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

TO: The Senior Officer.
Naval Reserve Cadets.
I am interested in joining the Naval Reserve Cadets and would be pleased to receive further information.

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STREET

STATE OR TERRITORY

PHONE No

AGE

(Please Print Clearly)

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

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

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The Westland Sea King anti-submarine helicopter was the first of 10 on order for the Royal Australian Navy to fly in Yeovil, U.K., recently where the helicopters are being built. The Sea Kings will replace the Wessex helicopter which entered service with the RAN in the anti-submarine role in 1962. The Sea King is a large sophisticated machine with an advanced automatic flight control system and is fitted with sonar, radar and tactical displays. It has a crew of four—two pilots, an observer and an arresterman.

SEA KING:
Sub-Hunter Supreme

For most of 1971, I served as an instructor at the Royal Naval Anti-Submarine School. This is at RNNS PORTLAND, on the south coast of England, where I underwent part of two years' exchange service with the Royal Navy.

The primary role of the school and the associated 737 Naval Air Squadron was to train Royal Naval aircrews in the tactical use of anti-submarine helicopters. 737 Squadrons operated Wessex HAS Mark 1, primarily for use from the County Class destroyers although some were still in service in the Blake Class cruisers, and the Sea King HAS Mark 1, then coming into general use throughout the Royal Navy. The arrival of the Sea King in embarked service in the Royal Navy caused a drastic re-think of the people's appreciation of the value of helicopters. A similar reaction is bound to occur to the introduction of the Sea King into service in HMAS MELBOURNE. The Westland Sea King is so far ahead of any other anti-submarine helicopter that comparison is difficult, and the Australian version promises to be even more versatile than the Royal Navy's Mark 3.

FLEXIBILITY
The major eye-opener, at least initially, will be the speed and endurance. Instead of arriving in the middle of an anti-submarine exercise, staying for an hour or so, and then leaving again before the exercise is completed, a Sea King can arrive first, dive the submarine, exercise with the ships (when they arrive) and then stay around to surface the submarine after the ships have gone on to their next exercise three and a half or four hours later. A higher speed while in transit to datum and screening stations also makes for more effective use of the aircraft.

Operations at ranges far in excess of the present limit to anti-submarine helicopters from NAS Nowra will also be feasible. In one Joint Unit Course in the Moray Firth in Scotland, 737 Squadron embarked aircraft in RFA TIDESPRING and had an additional aircraft operating from RNNS LOSSIEMOUTH just over one hundred miles away. A Sea King from LOSSIEMOUTH was flying out directly to the submarine operating area, exercising for two or three hours, then still with sufficient fuel to return to shore, landing on TIDESPRING for fuel before returning to the anti-submarine exercise for a further couple of hours, then returning directly to LOSSIEMOUTH.

CAPABILITIES
More effective use of the aircraft is also ensured by a more reliable flight control system, the "black boxes" which allow an anti-submarine helicopter to remain in a steady hover over a dunking submarine for hours on end if necessary.

The flight control system Mark 3 installed in the Sea King is the end product of a series of such systems stretching back to the Whirlwind and Wessex One. It will allow the aircraft to descend to a 40-foot high hover, remain there as long as required, then climb back up to the transit height of 200 feet in any weather, day or night.

While the aircraft vibrates to a certain extent, especially while letting down to the hover, there are none of the sudden jumps and bumps which can occur so frighteningly with earlier flight control systems. The heart of the Sea King, as an anti-submarine unit, and the reason for its outstanding success, is the navigation system. Unlike his Wessex contemporary who is still oriented and requires a thorough plotting of the course before takeoff, the Sea King operator is a tactician, not a navigator, is the ship's course with the radar and sonar contact information being supplied to one man without intermediate operate.
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New Workhorse for The Moresby

The Fleet Air Arm has brought into service the Bell Kiowa helicopter which will have a very specific task — support of the RAN’s hydrographic survey ship HMAS Moresby.

For 10 years Moresby has charted the coasts and nearby waters of Australia with the help of Westland Scout helicopters. Two Scouts were acquired in 1963 for Moresby which herself came into service in the following year.

One of the two Scouts was withdrawn from service several years ago but the other has gone to sea with Moresby on each of her voyages. Now, the Scout has reached the end of its economical life. Its place is being taken by two Bell 206B-1 light observation helicopters.

The main role of the helicopter on HMAS Moresby is to ferry personnel ashore to set up trig positions for the support package.

The first aircraft started flying on November 21 at the N.S.W. Air Station, Nowra, N.S.W. The second arrived in June.

The machines — painted in the Navy colours blue and white — are part of HT 723 Squadron, to which the Scouts had been assigned. The squadron’s functions are helicopter pilot training, search and rescue operations, and Fleet support duties. It is also equipped with Bell Iroquois aircraft.

The Navy versions of the new helicopters are slightly different to the Army aircraft.

They are equipped with rotor brakes — necessary on board ship because a rotor must be stopped quickly to avoid danger to personnel. In an open field the crew and passengers can get out and walk away. But on a small helicopter landing pad on board ship this is not easy to do, and the strong, variable winds which blow around a ship can make helicopter blades behave in unexpected ways.

The Navy aircraft also have main rotor brake “flap restraints” which limit the amount of blade flapping during rotor shutdown — another danger on board ship.

The Bell 206B-I Kiowa light observation helicopter now in service with the RAN.

The Bell 206B-I Kiowa light observation helicopter now in service with the RAN.

The Navy's Scout helicopter, which has been replaced by the Bell Kiowa.

The Bell 206B-I will also have a limited search and rescue role. It is fitted with a rescue winch capable of lifting 300 lbs.

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The Navy aircraft also have main rotor brake “flap restraints” which limit the amount of blade flapping during rotor shutdown — another danger on board ship.

The Bell 206B-I will also have a limited search and rescue role. It is fitted with a rescue winch capable of lifting 300 lbs.

The Bell 206B-I is the same machine as those being acquired for the Australian Army. A contract for 75 of the helicopters, which are similar to but not exactly the same as the Bell Kiowa (used by the U.S. Army), was awarded to Bell Helicopter Australia Pty Ltd. of Bris-
On 29 August, the Minister for Defence, the Honourable Lance Barnard, signed an agreement in Washington with Mr William Clements, United States Deputy Secretary for Defence, which is the first stage of the planned purchase of two patrol frigates for the Royal Australian Navy (see photograph).

The Australian Government had announced in April this year its intention to buy the patrol frigates subject to the negotiation of satisfactory financial and contractual conditions. The ships are expected to be delivered in 1981 and early 1982.

The patrol frigate agreement broadly covers important commercial aspects of the patrol frigate buy. The agreement will put the Australian Government into the same position as the United States in assessing the technical and financial progress of the USN patrol frigate programme. The agreement includes earlier understandings that Australian industry would be given every opportunity to win offset contracts.

The agreement provided safeguards for the Australian Government if there was any technical shortfall in the performance of the frigates or if there were cost escalation factors of a scale which could be unacceptable to Australia. The agreement gives Australia adequate options for cancellation.

The United States Defence Systems Acquisition Review Council would be reviewing all technical data, as well as projected costs before a firm decision was made by the United States Government to go ahead with the construction of the US Navy patrol frigates.

The Australian Government will have access to all the pertinent material and data which the Council will use in reaching its decision. The Australian Government will then make its own independent assessment of the technical and financial viability of the patrol frigate programme.

Members of the Royal Australian Navy and other technical experts from Australia will be sent to the US to participate in the US Navy patrol frigate project and will work closely with the USN development of the programme.
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One tree doesn't make an orchard

But it's a good start. The Kingfish oilfield in Bass Strait is a major producer, even by world standards. With its neighbours Halibut and Barlaeota, it produces over 60% of Australia's current oil needs. But what about next year? And the year after? Bass Strait will still be producing — but Australia's thirst for oil energy is growing fast. At about 6% a year, a higher rate than the world average. And no oil well lasts forever.

To maintain our present degree of self-sufficiency in oil, Australia needs to discover the equivalent of a Kingfish field every two years. To do that means an exploration expenditure of $200 million every year. Oil search is very costly and very risky — and very important for Australia.

Blood donors love life!

PLEASE GIVE SOON

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Vice Admiral Sir Richard Peek, KBE, CB, DSC, author of the special article commencing on page 2 — Australia’s Maritime Defence Forces — What We Have, What We Should Order Now, And What We Should Be Planning To Order Soon.
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THE MARITIME DEFENCE FORCES
What we have, What we should order now, and What we should be planning to order soon

By: Vice-Admiral Sir Richard Peek, KBE, CB, DSC

Maritime defence forces are ships, submarines and aircraft which operate and, if necessary, fight, on, under and over the oceans.

In Australia in peacetime they are the visible evidence that we are prepared to defend our territories and our resources and have the capability to do so. They must have weapon systems which will be appropriate to defend Australia against any hostile forces which may attack us and they must have the long range necessary to patrol our very long sea frontier.

It is beyond argument that the primary defence forces of a nation surrounded by hundreds or thousands of miles of ocean should be maritime, because it is only from or over the ocean that such a nation can be threatened. Australia is one of the very few nations which has no land frontier with any other nation and has a very wide ocean frontier. It has been argued that being surrounded by the sea no longer ensures our security now that we have to provide for our own defence instead of relying on allies. But surely it must be to our advantage to defend Australia at sea rather than on Australian soil, where we would suffer the double disabilities of a small population and an enormous stretch of coastline to defend. I firmly believe that being an island continent adds very much to our security — provided that we maintain adequate maritime forces.

Such forces need people and equipment. Over many years we have shown that we can recruit and train the dedicated people to operate this equipment efficiently. Until the

THE NAVY is pleased to publish in this issue a paper on Australian Maritime Defence Forces prepared by one of Australia's most forward-looking Admirals, Sir Richard Peek.

The crux of Admiral Peek's argument is that given Australia's exposed position in a highly volatile world, we must demonstrate an ability to look after ourselves, and that the logical place to do this is at sea rather than on the land.

A credible maritime defence capability is however dependent upon modern equipment in the form of ships and aircraft. In this regard the decreasing proportion of the defence vote allocated to equipment, and the large manpower costs, seem at variance with the real requirements of Australian defence.

Admiral Peek's attachment and reputation for plain speaking ensures that his paper will be studied carefully by all those who have the long-term interests of our country at heart. We hope it will prompt some realistic decisions in the matter of defence equipment.

Guided missile destroyer HMAS PERTH — one of the three destroyers built in the United States for the Australian Navy. PERTH was commissioned into the RAN on 17 July, 1965; sister ships HOBART, 18 December, 1965, and BRISBANE, 16 December, 1967. The modernisation of all three ships is currently being undertaken.

One of six frigates of the River class, HMAS YARRA was built at Williamstown Naval Dockyard, Victoria, launched on 30 September, 1958, and commissioned on 27 July, 1961. She is to be downgraded from a fleet escort to a training ship at a time when there is no replacement for her in the operational role.
The aircraft carrier HMAS MELBOURNE, flagship of the Royal Australian Navy since 14 May, 1956. MELBOURNE was laid down as HMS MAJESTIC on 15 April, 1943, launched on 28 February, 1945 and commissioned into the RAN on 28 October, 1955. She carries Skyhawk fighter-bombers; Grumman Tracker anti-submarine warfare aircraft.

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last six or seven years, approval for new equipment was given fairly regularly and, although the situation was not as urgent, we had built up a small, modern, efficient maritime force. Approval for two major equipment proposals given in the late 1960s, and confirmed in the early 1970s, was unfortunately cancelled by Cabinet on Mr Barnard’s recommendation in 1973.

Before listing what we have now, and suggesting what we should be ordering, it may be of value to list some of the more important characteristics of maritime equipments:

(a) The force is capital intensive. Individual equipments are expensive. Even in a period of very high inflation which makes monetary comparison with the past difficult, the complexity of the systems with which ships and aircrafts must be fitted, means that they will be very costly in absolute terms. But surely no one would suggest that we again ask our pilots to fight Zeros with Wirraways, or that we should ask our sailors to go to war in ships as old and decrepit as the Scrap Iron Flotilla was in 1940.

(b) They are long lasting, if properly maintained and regularly refitted. They do need to be brought up to date periodically so as to be able to offer defence against new weapons. It has been the aim for many years to carry out these modernisations at “half life” and to ensure that there is ten years useful operational life remaining in a ship on completion of modernisation. The “life of type” is variable because of many factors but broadly speaking the bigger the ship or aircraft the longer the life. One can expect a large naval ship to have a life of about 30 years from the time it is first launched. A destroyer type might last 25 years, a submarine 25 years and landing craft and patrol boats 12 to 15 years. One would hope to get a useful life of about 15 years from an aircraft or helicopter. However, the older a ship or aircraft is, the more expensive it is to maintain and it is not sensible to spend large sums of money trying to keep worn out units in operational service.

(c) Naval ships are built to a different standard from merchant ships. This is not because the Navy wants only the best. It is because the functions and operating patterns of naval and merchant ships are very different. For example, naval ships have a much smaller proportion of their displacement in hull and engines, as the “cargo” they carry is weapons systems and ammunition. Naval ships have to be designed and built to take battle damage and to go on fighting.

(d) Naval ships and aircraft take a long time to design and build. The United States Navy with its vast resources is taking seven years to produce the first patrol frigate. With a large shipbuilding industry, the United States can build more ships of the same design fairly quickly, but no matter what short cuts are taken the first of a new type of ship takes from seven to ten years to build. There is not time to design and build new types of ships and aircraft when a threatening situation arises. The best that Australia could do would be to build to an existing design and we could only do that if we have the work force with the necessary skills, both managerial and technical, to build ships and aircraft for our defence and the infrastructure of workshops, dockyards and private industry to employ that work force.

The following table shows Australia’s present maritime forces with an estimate of the end of the operational life of each unit. It is followed by presently approved additions or replacements to those forces:

An artist’s impression of the US Navy’s Patrol Frigate. Two frigates are to be built for the RAN and delivered during 1981-82 (USN official photograph).
HMAS OVENS, one of four Oberon class submarines forming the Australian First Submarine Squadron. Two additional submarines of this class are under construction at Scott-Lithgow Ltd, Greenock, Scotland and scheduled for delivery during 1975-76.

(e) A new generation of patrol boats to undertake, with the aid of afloat support, the Coastguard role;
(f) A new generation of minesweepers/hunters with afloat support.

Are such programmes financially possible? I believe that the necessary money could be found in one of two ways, or a combination of them:
(a) Increase the defence vote to the percentage of the gross national product which was promised by both political parties before the 1972 elections; or
(b) Increase the percentage of the present defence vote which is spent on capital equipment from the present minute six or seven percent to about 20 percent.

The first alternative is very largely a political matter and will only come about if sufficient people are aware of and concerned about the defence of our country.

The second alternative is only partly political. If it is to happen it will require a change of attitude by the Defence Department. Since the build up of the civilian hierarchy in this department in the late 1960's, the percentage of the vote spent on "capital material requirements, machinery and plant" has fallen from 25% in 1968/69 (when we were engaged in Vietnam and had over 44,000 men in the Army) to 8.3% in 1973/74, and to an even lower figure this financial year. I believe that this dramatic fall in capital expenditure has been largely caused by the continued questioning and resultant lack of decisions by civil officers in the defence Department.

The savings required for increased capital spending must come from reductions in manpower. It is out of balance for Australia to be spending 14% of the total defence vote this financial year on "civilian manpower costs" and over 18% on "Army manpower costs". Reductions in these two areas would provide the extra money to raise our capital expenditure to a more realistic figure of about 20% of the defence vote.
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BOOK REVIEWS...

STORIES OF FAMOUS SEA RAIDERS
By Lan Ortzan
Published by Arthur Barker Ltd, London.
160 pages including 2 pages of illustrations
PRICE: $5.50

Our copy supplied by Hicks Smith & Sons Pty Ltd, Sydney.

Reviewed by "STANDARD" When I first read the first part of this book, I was amazed by its size and scope. The author has done an excellent job of researching and writing about the various sea raids that occurred during World War II.

The author has divided the book into five parts, each covering a different type of sea raid. The first part covers the raids by the United States Navy, the second part by the British Royal Navy, the third part by the Japanese Navy, the fourth part by the German Navy, and the fifth part by the Italian Navy.

The author has used a lot of primary sources, such as diaries, letters, and official documents, to create a detailed and accurate account of each raid. The author has also used secondary sources, such as books and articles, to provide additional information and context.

The author has written in a clear and concise style, making it easy to understand and follow. The author has also used many illustrations, maps, and photographs to help the reader visualize the events described.

In conclusion, this book is a must-read for anyone interested in the history of sea raids during World War II. It is well-researched, well-written, and well-illustrated. I would highly recommend it to anyone interested in this topic.
Extension of the practice of including drawings in individual ship class sections is welcome. This is more useful, particularly in the case of incomplete or projected ships, than the conventional "artist's impression". There would seem to be a need for a greater proportion of two of the articles of this type that have been included in earlier years. For example, the 1974 edition included an article on the naval lessons of the Russo-Japanese War. An article, in this year's edition, on the naval lessons of the October Middle East War would have been both informative and a contribution to the study of naval affairs.

Turning to the nations in the Indian Ocean and Western Pacific Region, the mention of the Indonesian Navy Development Programme is of particular interest. A navy of 25,000 seamen, and 5000 marines, plus a number of national service men, is envisaged in the longer term. Ships will include submarines, fast SSGW armed attack craft, and a number of new destroyers and frigates. Enquiries for construction of the latter have already been made in Europe. This would seem to offer scope for Australian builders to quote on a competitive basis — a far more satisfactory activity than giving them our own craft when we need them ourselves. Indeed, the Indonesian Section of Jane's does raise questions as to the advantage of giving them two of our own patrol craft when the Indonesian Navy already has over ninety such craft of their own.

Japan continues to develop and expand the Japanese Navy, with four large ocean-going submarines under construction to join the 13 already operational, five large destroyers, five frigates and four tank landing ships are also under construction.

Apart from being well-written, this book is very well-presented. Printed on good quality paper, it is lavishly illustrated with contemporary paintings and cartoons. "Nelson" is attractive as a good coffee-table read, it should be regarded as only that. The fact makes it well worth reading, and the book would be in my opinion, the best in its field.
Pace Fourteen
THE NAVY
Nov/Dec/Jan, 1974-5

"The Civilian Arm of the Navy"

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 supports the Naval Reserve Cadets who are administered by the Royal Australian Navy, which Service provides 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”.

THE NAVY LEAGUE OF AUSTRALIA
Application for Membership

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The Navy League of Australia,
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I am desirous of becoming a Member of the Navy League of Australia with whose objects I am in sympathy.

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PATROL BOATS

By A W GRAZEBROOK
Federal Vice President, The Navy League

Vosper Thornycroft private venture fast patrol boat TENACITY. This 142 foot, 40 knot, gas turbine-diesel fast patrol boat before purchase by the Royal Navy, was fitted with Contraves Sea Killer surface-to-surface missiles and Sea Hunter fire control equipment.

Active amongst commentators advocating the increased role of the patrol craft have been the marketing personnel of companies seeking sales for their products — patrol craft.

These commentators have found willing allies amongst politically-orientated commentators who see patrol craft as a way of getting defence on the cheap.

Whilst this writer does not doubt the sincerity of such commentators, the potential of patrol craft does have to be considered objectively.

Undoubtedly, patrol craft have an important and vital role to play in Australia's defence. The Navy already recognises this, in that it runs three squadrons of such craft — one each from Cairns, Darwin and Sydney.

Patrol craft can perform a number of roles but, to Australia, there is a most important exception. They cannot cope with submarines. It is submarines that pose the major existing maritime threat to Australia. It is modern submarines that are now in the hands of our northern and Indian Ocean neighbours. It is their submarine forces that our neighbours are expanding.

The Navy is considering the possibility of ordering new patrol craft because:

- The Government is giving away seven of the Navy's patrol craft (to Indonesia and New Guinea). There is a need to replace these craft.
- There is a need to counter increasing trespassing in Australian waters.
- Submarine attack upon our coastal or international trade.
- An attack by mines upon our trade.
- A small scale attack by light or irregular craft upon our off-shore resources.
- Guerrilla, or commando-type incursions against coastal installations.
- Patrol craft, of an appropriate type, could be capable of dealing with the third and fourth threats.
- They are of minimal combat value, their range and armament are wholly successful design. Whilst the ATTACK Class has not been a practical experience has shown that they are of minimal combat value in Warm or Hot War circumstances.

The purpose of patrol craft overseas have been fitted for minesweeping duties, practical experience has shown that such vessels have the disadvantage of the 'Jack of All Trades' — they are master of none. Therefore, it must be accepted that patrol craft are far from a solution to all naval threats potential or existing.

OUR ATTACK CLASS PATROL CRAFT

After the Government have indulged their generosity, the Navy will have thirteen patrol craft left. These are all ATTACK Class boats, of 146 tons full load, and an armament of one 40mm gun. Their diesel engines give them a speed of 24 knots.

It is generally acknowledged that the ATTACK Class has not been a wholly successful design. Whilst their range and armament are acceptable in time of total peace, they are of minimal combat value in Warm or Hot War circumstances. Practical experience has shown that their sea keeping qualities are insufficient for Australian waters. There are doubts as to the suitability of their propulsion systems.

All these factors, coupled with the practical experience gained from operating the ATTACK Class, and the observation of combat experience gained by other navies in the use of patrol craft, will be taken into account in designing the next generation of patrol craft for the Navy.

Patrol craft are too small to carry modern submarines, and too noisy to keep up with and escorting their propulsion systems. There are doubts as to the suitability of their propulsion systems.

Thus far, the patrol craft are too small to carry modern submarines, and too noisy to keep up with and escorting their propulsion systems. There are doubts as to the suitability of their propulsion systems.

The design of our new patrol craft must recognise:

- There is a need to counter increasing trespassing in Australian waters.
- The role of patrol craft in our maritime environment.
- At this time, there are four Warm War naval threats to Australia:
  - Submarine attack upon our coastal or international trade.
  - An attack by mines upon our trade.
  - A small scale attack by light or irregular craft upon our off-shore resources.
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THE ROLE OF PATROL CRAFT IN OUR MARITIME ENVIRONMENT

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THE NAVY
Nov/Dec/Jan, 1974-5
The design of the Israeli craft is of some interest, particularly when compared with their antagonists. The Soviet-built craft used by the Egyptians and Syrians. The Soviet craft carry only two or four launchers, with no reloads, and fire a relatively large (half ton) warhead. The largest Arab craft displace only 165 tons. They carry minimal armament apart from their SSGW. Once they had fired their SSGW, the Soviet-built craft were at the mercy of the heavy gun and multi-missile armament of the heavier Israeli craft.

The earlier Israeli craft were built in France, and were markedly heavier (220 tons) than their opponents. They utilised the alternative weapon fit concept, some being armed with rapid fire 76mm guns with modern fire control, and others with the Israeli developed Gabriel missile. This is a markedly smaller weapon (150lb warhead) but is carried in much larger numbers. The Israelis have developed further the French design, and constructed in Hafa larger improved SAAR craft. The new type displaces 415 tons, and carries seven SSGW launchers and two rapid fire 76mm guns. In going larger, the Israelis have sacrificed speed (32 knots compared with over 40 knots) for a heavier armament and improved range. The Israeli decision to construct more of the improved SAA5 type craft is of particular interest, because the decision was taken in the light of their experience in the October, 1973, war. In the recent Cyprus conflict, the fast craft appear to have taken no part, although the Greeks committed a number of major naval units. As there was an obvious opportunity to use the Greek modern fast craft against the elderly Turkish destroyers, it is reasonable to conclude that Cyprus is outside the effective operating range of the French-built Greek flag fast attack craft. Using published figures regarding the range of the Greek craft, this is a reasonable conclusion. Combat experience with fast patrol craft, that these craft are armed with SSGW and are attacking unarmed merchant-men or obsolete warships. The SSGW armed fast attack craft are very effective. However, when attacking targets that have either their own SSGW or air cover, the SSGW armed fast attack craft are by no means invincible.

Modern rapid fire guns, with the type of control systems fitted in many newer destroyers, have made the surface launched torpedo an unattractive offensive weapon. As such the torpedo-armed craft gets within launching range, it will be subject to much more accurate and rapid fire gun fire than was ever experienced in World War II.

**The Decision**

As with the selection of escorts, the Navy will have to balance the advantages of a more expensive, purpose built patrol-attack craft, ideal for local operating conditions, against a proven overseas design. Many overseas designs are manifestly unsuitable for local conditions. Exceptions to this include the Israeli improved SAA5 type, which could serve as a base design, perhaps with some payload, sacrificed for increased range. Certainly, in seaworthiness, range, and weapons fit, the Israeli design has much to offer — not least, they are combat proven.
HMS HECATE, one of two Royal Navy survey ships which have begun surveys to explore Britain's important undersea energy resources.

HMS HECATE and her sister ship HMS HECLA are carrying out a comprehensive geophysical survey of virtually the whole of the UK continental shelf. The survey is being carried out by Royal Navy surveyors and members of the Institute of Geological Sciences who are helping with the interpretation of seismic records from special instruments supplied by the Institute.

Among equipment which will be used is a side-scanning sonar which produces a traced picture of the sea-bed for several hundred yards on either side of the ship and shallow seismic reflection equipment which produces medium frequency shock waves that penetrate the sea-bed and are reflected in echoes on a trace. When scientifically interpreted, this shows the geological structure of the sea-bed layers to a depth of several hundred feet.

For 180 years the Royal Navy has been producing charts for the world's seafarers. In all that time it has seen and adopted many changes in hydrographic methods but its objective has remained the same — to make maps on which sailors can rely implicitly.

"You are to take charge of such plans and charts as are now or may hereafter be deposited in this office belonging to the public, and to be charged with the duty of selecting and compiling all such information as may appear to be requisite for the purposes of improving navigation, and for the guidance and direction of the Commanders of His Majesty's Ships."

With this Order in Council dated 12 August, 1795, the Hydrographic Department of the Royal Navy was born. The person appointed to carry out its instructions was Alexander Dalrymple. Hydrographer to the East India Company, who by this appointment became the first Hydrographer of the Navy.

Up till that time, a captain in the Royal Navy had to provide his own charts for a voyage, such charts being produced privately from original surveys of greatly varying reliability. Curiously enough, many of these surveys were commissioned by the British Admiralty, although it made little use of them.

Dalrymple's task was a difficult one and methodically applied himself to his task, gradually building up his staff to include a copperplate engraver and a printer. However, he was such a perfectionist that although he successfully selected, commissioned and catalogued the large amount of navigational information even then available, he produced no charts and so was dismissed in 1808. He died, broken hearted, within a few weeks.

Dalrymple's successor was Captain Thomas Hurd, a practical officer, whose name is commemorated by the Hurd Deep in the English Channel, north of the Channel Islands. Hurd vigorously set about the job of supplying the fleet with charts. He also formed the nucleus of a hydrographics surveying service, by searching out officers with the mathematical knowledge and appropriate temperamental qualities and persuading the Admiralty to grant them special extra pay.

Another important innovation of Hurd's was to place Admiralty charts on sale for merchant vessels. Hitherto, these had been regarded as "classified" documents because of the important military information they contained. While this was true up to a point, it was clearly important that merchant ships should be able to import raw materials and export manufactured goods with the minimum risk of stranding or shipwreck.

The end of the Napoleonic Wars, marked the beginning of a low point in the history of the Hydrographic Department. Massive cuts in military expenditure were aggravated by the personal antagonism towards hydrography of John Crocker, Secretary to the Board of Admiralty since 1809. At the time, too, the Hydrographer's office was not a separate department and, indeed, Captain Parry, who succeeded Hurd in 1823, felt himself to be "a director of a chart depot for the Admiralty, rather than a guide and originator of maritime surveys."

Nonetheless, during Parry's tenure of office — much of which was spent on Arctic expeditions — many fine surveying voyages took place. These were the expeditions of Parry himself, and of John Franklin, in search of the North West Passage, gravity observations in the North and South Atlantic, surveys in Latin America and, most important of all, Captain Owen's great survey of the coast of Africa from the Gulf of Aden, southwards by the Cape of Good Hope to Sierra Leone.

High Summer Begins

So, with Parry often away in the Arctic, and Crocker in office, the activities of the department expanded only slowly. But Crocker departed eventually, of course, and with the appointment of Francs...
Beaufort as Hydrographer in 1829, the high summer of hydrography began. Beaufort held the post for 26 years, during which time Royal Naval Surveyors charted the coastline and coastal waters of a large part of the globe, untramelled by diplomatic considerations of territorial waters. Probably the biggest technical development during Beaufort’s era was the introduction of steam propulsion, which enabled surveying vessels to work in the most suitable direction, regardless of wind or weather. That apart, the techniques used for depth-sounding and position-finding dated back to the previous century, a fact which makes the accuracy of the surveys carried out in the mid-19th century all the more remarkable.

After Beaufort, the worldwide work of the Royal Naval Surveying Service continued unabated under various Hydrographers up to the beginning of the 20th century. Work was carried out in the Black Sea and the Mediterranean, in the Far East and South Pacific. Under Rear Admiral Washington and Richard’s, soundings preparatory to the laying of the first transatlantic telegraph cable were carried out. During his time also, and with his support, the historic scientific cruise of Her Majesty’s Ship Challenger commenced. This three-and-a-half-year circumnavigation gathered an enormous quantity of scientific data on the world’s oceans, their inhabitants and sea beds and can truly be said to have laid the foundations of modern oceanography. Admiral Wharton, taking over in 1894 as the last hydrographer of the century, showed a new scientific approach to all forms of surveying observations in his manual “Hydrographic Surveying”, which was a standard work even into the 1930s.

Growing Pressures

With the coming of the 20th century, increased national sensibilities limited the Hydrographer’s freedom to carry out worldwide surveys. But the requirements for hydrographic work had always been greater than the department’s ability to meet it, and within the confines of the then British Empire there was still plenty of work to do. Even when World War II brought a halt to most normal surveying activities, pressures of hostilities required a considerably increased output of charts and associated publications. Charts at the time were still printed direct from the copperplate, a process which took about 15 minutes to produce one copy. During the 1920s, however, the direct printing method was superseded by lithography, speeding up the process tremendously so that output rose steadily. This was fortunate, because during World War II — in which amphibious operations played a very important part — the requirements for charts of beaches was quite unprecedented. For instance, for D-Day, in June 1944, a million charts were required in the British sector alone and these had to be dispatched to more than 6000 scattered units in some 3000 bales.

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THE NAVY
Nov/Dec/Jan, 1974-5

Page Twenty-five
THE NAVY
Nov/Dec/Jan, 1974-5
Nautical Notes from all Compass Points

By "Sonar"

BRAZIL
Sperry Gyroscope Systems

Sperry Gyrosopes have been awarded a contract to supply Mk 19 Gyro Compasses for six frigates under construction for the Brazilian Navy. Four of these frigates are being constructed by Vosper Thornycroft at their Woolston Yard and the two remaining frigates will be built in Brazil under Vosper Thornycroft guidance.

The Mk 19 Gyro Compass is extensively used by the Royal Navy and other Navies and has a reputation for accuracy and reliability.

The compass system as well as giving the ship's reference data for gunfire control also supplies the ship's reference data for navigation.

CANADA

Exercise Northern Merger

Canadian maritime forces participated in the major NATO exercise Northern Merger on 16-27 November.

The exercise was held in areas of the North and Norwegian Seas, the English Channel and the Icelandic/Faroes Gap and involved air, land and sea elements from 10 of the 15 NATO countries.

Canada's participation included the Halifax-based helicopter Destroyer Iroquois, the Skeena and Margaree as well as the support ship Protecteur. In addition, anti-submarine patrol vessels were stationed by east coast based Argus aircraft.

Exercise situations included anti-aircraft, anti-submarine warfare, mine-laying and mine countermeasures, control of merchant shipping, as well as land and carrier-based aircraft operations. Marines from the United Kingdom and the Netherlands practised amphibious landings on the coasts of Scotland and Jutland.

Greece's participation included the Greek frigates to built in Brazil under Vosper Thornycroft with two remaining frigates under construction for the Brazilian Navy. Four of these frigates are being constructed by Vosper Thornycroft at their Woolston Yard and the two remaining frigates will be built in Brazil under Vosper Thornycroft guidance.

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GERMANY (WESTERN)
British Minehunting Sonar Equipment

A contract for the supply of Piessley 193M sonar equipment to the Federal German Navy has been placed with Piessley Marine, Ilford.

The contract forms part of a larger deal due to the formation of the 193M system and which was the biggest ever export order to be won by the Marine Division of Piessley.

The 193M sonar is an advanced design, solid state equipment used for the detection, identification and eventual elimination of ground and moored mines which cannot be neutralized by normal sweeping devices. It is a development of the extremely successful Type 193 minehunting sonar service, with the waves of four European nations as well as with the Royal Navy with which it is fitted as standard equipment aboard mine-vessels. In addition to its primary role, it also provides additional facilities including a mine destruction equipment, a plotting function and a navigational system.

The sonars ordered by Germany are destined for installation on the "Lindau" class minesweepers of the Federal Navy's Mine Warfare Force, part of West Germany's contribution to NATO's maritime defence capability. The 370 ton displacement craft are of laminated wooden construction and are powered by three engines manufactured from non-magnetic materials. Addition of the 193M sonar equipment, as part of its major re-equipment programme, will provide the West German Navy and NATO with one of the most effective mine counter measure forces in Europe.

Exercise situations included anti-aircraft, anti-submarine warfare, mine-laying and mine countermeasures, control of merchant shipping, as well as land and carrier-based aircraft operations. Marines from the United Kingdom and the Netherlands practised amphibious landings on the coasts of Scotland and Jutland.

A twin cp propeller CODOG propulsion plant has been selected to fully equip the new 13000 tonne destroyers with the requirement of high flexibility, rapid response, reliability and simplicity. The installation is to consist of two General Electric-FIAT LM2500 aero-derived gas turbines each developing 25,000shp and two FIAT 20 V-Form A230 diesel engines each developing 3000hp at 1400rpm. The plant is installed in two two adjacent compartments below the g.t. room, gearbox room and diesel rooms and as the reduction gears themselves are water-lubricated, propulsion will be available even with two adjoining compartments flooded.

The machine room is located in the diesel engine room.

Electrical requirements are met by two separate generating plants each consisting of two 780kW alternators driven by 6-cylinder versions of the diesel propulsion units. One generator per plant is adequate to meet all electrical demands. The ships are fitted with two propulsion plants, one forward of the g.t. room and the other in the diesel room so that in the event of one plant being flooded the other can be used, and if necessary, both plants can be used with an additional 50% power during any accident.

NATO protection is provided by a pre-wetting plant, asphalt air filters, and the ar-condiционing plant.

The primary design operational capabilities of the vessels are:

1. surface-to-surface role: the destruction or neutralisation of surface vessels of all sizes at long range.
2. anti-submarine role: the ability to co-operate in ASW actions with a short-range self-defence capability.
3. anti-aircraft role: short-range self-defence and the ability to co-operate in ASW actions with a short-range self-defence capability.

The weapon fit is to be installed in a comprehensive one and comprises:

- an eight twin-launcher surface-to-surface missile system by OTO Melara and associated firms.
- a single Compact rapid-fire 127/54 OTO Melara gun with AMO computer control system for use in both AA and anti-ship roles.
- a point defence missile system based on a multiple launcher.
- two close-range anti-missile systems.
- two 105mm Breda ELSAG multiple-20 barrel rocket launchers.
- two triple torpedo tubes.
- search equipment to be fitted with an SMA (Siegfrieda Maritima ed Aereo) surface search radar, a

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14 Breguet Atlantic ASW patrol aircraft (but those of the French Air Force will be operated by the Navy). Despite this re-equipment, it is estimated that retirement of older ships and reduction in personnel will mean the reduction of the total tonnage of the Italian fleet by more than half.
was entrusted to Ferranti as a result of the considerable practical experience acquired by the Digital Systems Division in designing, installing, and maintaining CAIAS systems for larger warships such as Amazon Type 21 Frigates for the Royal Navy, as well as HMS Hermes, and also the M410 Inverses now being built for the Brazilian Navy.

The new class of MCMVs have reinforced plastic hulls and one of the engineering tasks undertaken by Ferranti has been to reduce the magnetic signature of the computer equipment. At the heart of the system will be an FM1600 computer driving two Decassan displays equipped with Ferranti manual input devices which enable operators to communicate with the computer by means of alpha-numeric keyboards and trackball controls.

The CAIAS system for MCMVs fultils a triple role. It compiles and displays information with the speed and precision required for successful MCM operations. It makes the detailed calculations necessary for the accurate navigation and control of the ship, and, as in all CAIAS systems, it provides a comprehensive display of the information such as would be required when the ship is on patrol duties. To this end, the ability of the CAIAS system to automatically accept and process sensor information presents the Command with the ability to reduce errors and action-time operator fatigue and generally to increase the MCMV's ability to meet its designated task.

**CLEARING SUEZ**
A cloud of spray heralds the destruction of an unexploded bomb in the Suez Canal by men of the Royal Navy's fleet clearance team. Already the three Royal Navy minesweepers, including HMS BOSSING- TON (background), have cleared Port Said of mines and explosives and the harbour is slowly returning to life once more.

The joint British, American and Egyptian operation involving clearing the entire 90 mile canal of the dangerous debris resulting from the recent conflict. This comprises crashed aircraft, sunken ships, rockets, unexploded bombs and mines.

The Royal Navy's task is to pinpoint each hazard, using the minesweepers' sophisticated underwater detection equipment, followed up by the 18-man clearance team who lay the explosives. Britain's participation in the operation is a result of a request from the Egyptian Government for the Royal Navy to clear the canal. Though the Royal Navy force will remain under Egyptian control, full liaison will be maintained throughout with the Egyptian authorities.

**PORT OF LONDON**
**CLIPPER REGATTA, 1975**
The Port of London Authority has undertaken the organisation of a race following the programme for the regatta on the Thames in London being organised with the active participation of the Port of London Authority, 1975, to coincide with the start of the Financial Times Clipper Race. The Regatta, under the patronage of the Port of London Clipper Regatta, 1975, will feature events afloat and ashore which will provide the weekend attraction in the London area at the Royal Albert Dock.

The Regatta's most spectacular sight will be provided by the rally of sail training vessels, including a number of the "square-rigged" naval Ships, which will be moored in the lower and upper pools. By Tower Bridge, many of the smaller schooners and other vessels being in St Katharine Yacht Haven where Taylor Woodrow and the World Trade Centre are providing moorings for them. This "London Festival of Sail" is being sponsored by the Association of Sea Training Organisations.

Also at the World Trade Centre's St Katharine Yacht Haven will be the contestants in the Financial Times Clipper Race, from August 23rd to 30th, making final preparations for the non-stop race to Sydney and non-stop back to London. The Grand ADRAGS of the world's most exciting modern ocean-racing yachts devised. The races are called the "Clipper" races because they will only be sailing over the route of the old Clipper ships but also trying to beat the record of the oldest clipper ships for the round trip of 15,000 miles. The races are called the "Clipper" races because they will only be sailing over the route of the old Clipper ships but also trying to beat the record of the oldest clipper ships for the round trip of 15,000 miles.

Grumman will also be a centre of attraction during the Regatta. There will be a couple of events in the Clipper Race. The last of the Woolwich-built ships, and Sir Francis Chichester's "Gipsy Moth IV" clearly demonstrates the difference between the "Coffin" and the "clipper" ships, the size of which will confer in the Financial Times Clipper Race, for which both the "Coffin" and the "clipper" ships are competing. There is a plan by the Clipper Race authorities to attract the principal Greenwhich, which has played in the history of England and of the world of seafaring since the Middle Ages.

At Greenwich also, in the Painted Hall of the Royal Naval College, by kind permission of the Admiral President of the College, on 29th August, there will be a dinner in aid of the Association of Sea Training Organisations and the Outward Bound Trust.

The following morning, on Saturday, 30th August, the contestants in the Clipper Race will come out of St Katharine Yacht Haven and will head down river, leading a procession of the sail training vessels and all the other craft coming to London for the Regatta creating a spectacle which promises to draw people from all over the world.

**UNITED STATES OF AMERICA**

McDonnell Douglas, Northrop Team on US Navy Air Combat Fighter McDonnell Douglas Corporation and Northrop Corporation have announced that the two aerospace firms have entered into an agreement under which they will jointly develop and propose an Air Combat Fighter (ACF) for the US Navy, which is based on the Northrop YF-17 Demonstration Aircraft and which was designated by the US Air Force in the ACF competition.

The agreement, reached by McDonnell Douglas and Northrop, will result in the formation of a joint venture, an Air Combat Fighter (ACF) for the US Navy Air Combat Fighter (ACF) for the US Navy, which is based on the Northrop YF-17 Demonstration Aircraft and which was designated by the US Air Force in the ACF competition.

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Survey ship HMAS FLINDERS is based at Cairns, Queensland, with her primary responsibility for oceanographic ships engaged on their survey programs. The Royal Australian Navy hydrographic and oceanographic ships have been fully equipped and highly trained maritime forces for timely and sustained assistance in coastal surveillance duties in northern Australia, New Guinea, and the contiguous fishing grounds. A number of RAN ships also visited the region for exercises.

L 129 – HMAS TARAKAN was the base for navy divers when conducting a population census of the Crown of Thorns Starfish on the Great Barrier Reef.

For these purposes the RAN maintains and exercises a modern, well equipped and highly trained maritime force. The structure of this force is based primarily on the provision, at sea, of a balanced naval task group, comprising the aircraft carrier HMAS MELBOURNE, supporting destroyers and destroyer-escorts, and logistic units. Additionally, the RAN's submarine force provides a significant contribution to the capabilities of the Fleet. The RAN's hydrographic and oceanographic ships have been fully engaged on their survey programs. The whole question of Service assistance in coastal surveillance has been under close consideration in conjunction with the civil authorities. The RAN's patrol boats have been actively employed on patrol and surveillance duties in northern Australian waters directed towards the protection of Australian territorial waters and the contiguous fishing and resource zones. A fourth patrol boat has recently been assigned to Darwin, making a total of seven on permanent station in the Northern area.

Overseas exercises have been placed on joint training and exercising during the past year, and the tempo of joint exercising can be expected to increase as the Services practise and refine procedures and appropriate tactics for operating together in the defence of Australia and its interests.

Exercises and Training

Exercise KANGAROO ONE was the principal combined exercise of the year. It involved 38 ships, 121 aircraft, and 1500 personnel from Australia, New Zealand, Britain, and the United States, operating in the Tasman and Coral Seas and Queensland in June this year. The exercise was designed to incorporate the maximum number of tactical situations at sea, on land, and in the air that the time scale allowed. These included an opposed transit of a maritime force, an amphibious landing in the Shoalwater Bay area and a land battle all of which involved offensive and defensive air operations.

In the maritime phase, which opened the exercise, a naval task force was sent into the Coral Sea to locate and strike an American amphibious group which was entering the area from an unknown direction.
ATTACHED TO THE TASK FORCE FOR THE EXERCISE WERE TWO COMPANIES OF NEW ZEALAND AND US ARMY TROOPS. LONG-RANGE ORION AND NEPTUNE MARITIME RECONNAISSANCE AIRCRAFT WERE EMPLOYED BY THE RAAF IN SEARCH AND ANTI-SUBMARINE ROLES AND F111C STRIKE AIRCRAFT FROM AMBERLEY WERE USED IN BOTH THEIR PRIMARY ROLE AND AS PATROL AIRCRAFT. AIR OPERATIONS ALSO INCLUDED RAN, ARMY, RNZAF, RN AND UNITED STATES MARINE CORPS AIRCRAFT INCLUDING HELICOPTERS, LONG-RANGE PATROL AIRCRAFT, TRANSPORT, ANTI-SUBMARINE AND GROUND-ATTACK FIGHTER TYPES.

NAVAL PRACTICE:

DURING THE PAST YEAR, THE RAN PARTICIPATED IN THE FOLLOWING EXERCISES:

- LONGEX 73: An anti-submarine convoy protection exercise between Auckland and Sydney from 21st September to 5th October. HMA ships STUART, VAMPIRE, WAPUTI AND ONSLawe participated in the exercises as well as ships from Britain, the United States, New Zealand and the Netherlands.

- RIMPAC 73: A multi-threat naval exercise in the Hawaii area. HMA ships MELBOURNE, BRISBANE AND STUART DEPARTED SYDNEY ON 24th August to take part in the exercise with naval and military forces of the United States, Canada and New Zealand.

- EXERCISE LEADLINE: An exercise designed to test the capabilities of the five power defence arrangements and set in the China Sea approaches to Singapore area. Units from Malaysia, Singapore, Britain and Australia participated in the exercise. Australia’s contribution being HMA ships MELBOURNE, BRISBANE, PARMA, MELBOURNE AND STUART. MELBOURNE's Skyhawk fighter-bombers took part in certain phases of the exercise which involved the integrated air defence system for the area.

- EXERCISE SOUTHERN CROSS: (Republic of Indonesia) ships SORONG, JOS SUDARSO AND LUMBUNG MANGKURAT VISITED SYDNEY IN JANUARY AND EXERCISED WITH HMA ships STUART, WAMPIRE, SWAN AND OXLEY. THE JOINT EXERCISE INCLUDED SURFACE, TACTICAL MANOEUVRES, SURFACE AND AIR TARGET DRILLS, ANTI-SUBMARINE EXERCISES (INCLUDING MARITIME AIRCRAFT) AND TEAMSHIPS EXERCISES.
Naval combat forces

Destroyer Forces are being maintained at a high level of effectiveness. Three of the four River Class escorts, which provide the backbone of the Navy’s anti-submarine warfare capability, are to be extensively modernised and the fourth escort modernised to a lesser extent. The three modern guided missile destroyers are undergoing a modernisation program which will provide them with modern fire control and command systems.

In order to maintain the effective operational systems of the RAN during the early 1980s, the Government approved, in April 1974, the purchase of two United States patrol frigates, subject to the achievement of satisfactory financial and contractual terms, performance capability and industrial offset programs.

Submarine Forces. The delivery of two new Oberon-class submarines in 1975 and 1976 will raise the strength of the RAN’s submarine force to six, the purchases is part of the most modern conventional submarine designs.

Fleet Aviation. Operation of the aircraft carrier HMAS MELBOURNE is being complemented by the purchase of a large rotary wing naval air operations, which will contribute to our capability in fleet air defence, air strike, reconnaissance and anti-submarine warfare. These capabilities will be enhanced by the delivery of the Sea King ASW/cargo helicopters now on order. Investigations are currently being undertaken to determine the economical life of HMAS MELBOURNE in maintaining the Navy’s fleet aviation capability.

EQUIPMENT FOR THE SERVICES

During 1973-74 significant progress was made on major equipment projects for the Services. New equipment purchases approved by the Government during 1973-74. These included destroyers for the RAN, medium tanks and fire support vehicles for the Army, long-range maritime patrol aircraft for the RAAF and the further preproduction development of the Barra seaplane.

THE NAVY

Naval combat forces

Major equipments delivered in 1973-74

Navy

1 Hanwell Siddeley HS748 twin engine support and training aircraft.
2 heavy landing craft.
3 Naval combat data systems.
4 survey motor boat.
5 harbour personnel carriers.
6 concrete ammunition lighters.
7 sea and utility boats.
8 motor whale boats.

Progress on major equipment projects

Navy

OBERON CLASS SUBMARINES.

Construction of two additional submarines is proceeding. Due largely to industrial unrest and shortages of manpower in the UK, some delays have occurred and completion is now expected in late 1975 and mid-1976 respectively.

SLAVE ROCK AND ASSOCIATED WHARFAGE.

Construction of the slave rock to provide the capability for concurrent refitting of two submarines has been delayed slightly by a shortage of some key materials. Completion is now expected in the latter part of 1974. To enable the optimum utilisation of the slave rock, planning is now under way for the reconstruction of Fitzroy Wharf at Cockatoo Island, the wharf is expected to be completed by 1978.

Reef of Oberon Submarines.

Since the commencement of this program in 1971, major refits have been completed on HMAS OXLEY and OTWAY. HMAS OXNORTH is currently undergoing refit and it is planned that the refit of HMAS ONSLOW will commence in early 1975.

Action Information organisation tactical trainer and sub-marine command team trainer.

The building to house these trainers at HMAS WATSON, South Head, Sydney, have been completed. The facilities are expected to be operational by September 1974.

TURANA - PLATOONLESS TARGET AIRCRAFT.

Production and trials of the drones by Department of Manufacturing Industry are continuing. The first Navy production order is planned to be completed by early 1975.

Anti-submarine warfare-cargo helicopters (Westland Sea King).

Delivery of the majority of these aircraft to Australia is expected in the first half of 1975. A tender has been accepted for a flight simulator for the full flight training of the aircraft to be used by the Australian Navy.

NATIONAL COMBAT DATA SYSTEMS.

Planning for the installation of these systems in the Combat Data Systems Centre in Canberra has been completed. Planning for the remaining system is under way and installation will commence in late 1974 or early 1975.

Naval combat data systems. The installation of the first of these systems in the Combat Data Systems Centre in Canberra has been completed. Planning for the remaining system is under way and installation will commence in late 1974 or early 1975.

New destroyer project. The Government decided in April 1974 to acquire two United States Patrol Frigates. Following recent negotiations with United States authorities it has been decided that final commitment to purchase these vessels will only be made when satisfactory industrial offset programs and acceptable performance capabilities are achieved.

Oceanographic ship. In accordance with the Government approval to construct the oceanographic ship at Williamstown Dockyard, planning is now under way and the ship is expected to be completed by late 1975.

Modernisation of the River Class destroyers. Planning is in progress for the modernisation of these four ships to be carried out in Australian shipyards.

Defence Facilities Capital Works

Expenditure planned for 1974-75 is $54.9 million of which $43.5 million is for works in progress at 30 June 1974. These include major works at the Royal Australian Corps of Transport Centre at Puckapunyal (Vic), the Jungle Warfare Training Centre, Canungra (Qld), Williamstown (Vic) Naval Dockyard, Ambarley (Qld), RAAF Base and the Australian National Support Facility.
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**THE NAVY**
Nov/Dec 1974

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**DEFENCE ORGANISATION**
A comprehensive report on the re-organisation of the Defence Group of Departments, submitted in November 1973 by the Secretary, Department of Defence. Sir Arthur Tange, CBE, was adopted by the Australian Government. As a first step in the implementation of the recommendations made in this report the Government, on 30 November, 1973 abolished the separate Departments of Navy, Army and Air and established the integrated Department of Defence. Fundamental changes in the distribution of the powers and responsibilities of the separate Service Ministers and of their principal Service and civilian advisers through the Service Boards and three discrete groups of departmental officers must await Parliamentary discussion and the passage of legislation. As an interim measure the civilian members of the three Service Boards of Administration (previously the Permanent Heads of the respective Service Departments) have been replaced by Special Deputies to the Secretary, Department of Defence. The offices of Special Deputy (Navy Office) and Special Deputy (Air Office) are held currently on a temporary basis by a First Division Officer, Mr F. J. Green, formerly Secretary, Department of Air. The office of Special Deputy (Army Office) is held by Mr J. B. R. Livermore who, until the Service Departments were abolished, had been acting Secretary of the Department of the Army. It is proposed that appropriate legal status will be given to the Government's Chief Military Adviser, who, as Chief of Defence Force Staff, will command the Defence Force assisted by the Chief of Naval Staff, the Chief of the General Staff and the Chief of Air Staff who will command the individual arms of the Force.

The Strategic Policy and Force Development Organisation on which the Government depends for strategic advice and for analysis of options of defence capability is in the process of being established. The various elements, such as Strategic and International Policy, Force Development and Analysis, Defence Industry, Materiel, Strategic and International Policy, Force Development and Analysis, Defence Industry, Materiel, will be given to the Government's ChiefMilitary Adviser, who, as Chief of Defence Force Staff, will command the Defence Force assisted by the Chief of Naval Staff, the Chief of the General Staff and the Chief of Air Staff who will command the individual arms of the Force.

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**THE NAVY**
Nov/Dec 1974
Policy, in operation and only the addition of the Service Chiefs of Materiel is required to complete the organisational chart. The wider officers will be appointed when the Service Boards are abolished.

Progressive implementation of the central manpower organisation is proceeding and, in consultation with the Services, is developing policy for manpower requirements of the three Services. Except for some areas relating to very senior ranks the Services retain control over most promotions, postings and individual training of personnel, as well as a large number of other personnel matters which are special to each Service such as discipline, etc. The development of employment policy in respect of civilians as well as servicemen is now centred in the Department of Defence, as is the organisation dealing with the overall use of manpower resources which make up the total military and civilian employment.

Central control and co-ordination has been established in the Organisation and Management Services area, and much has been done to achieve co-ordination and standardisation of practice in the operating elements such as registers, libraries and statistical services. It is planned to have the Defence Regional Offices, which are to support Service commands and units located with the civil establishments in their vicinity, in operation early in 1975. Progress is also being made in setting up the Australian Defence Communications System which was the subject of a study by a special committee which from 1971 to 1973 considered the rationalisation of Defence communications.

Final implementation of the Defence Science and Technology Organisation is dependent on the passage of legislation necessary for the transfer of certain defence research and development functions which have been carried out by the Department of Manufacturing Industry. Significant partial implementation, however, is proceeding and under an interim arrangement Defence now has operational control of these elements in the Department of Manufacturing Industry. Additionally, elements from the three Services are being drawn together to form the Military Studies and Operational Analysis Division.

Following extensive discussion with the Public Service Board the central organisation to control resources and financial programs has agreed to be there are now three major elements of this organisation.

- Resources Policy and Planning
- Programmes and Budgets
- Financial Services and Internal Audit

This organisation will be responsible and accessible to all those headquarters officers with command responsibilities to ensure that their views are reflected at all appropriate levels and in the formative stages of the development of the Five Year Defence Programme and the annual Defence Estimates.

In the area of Supply and Support significant progress has had to await final decisions on the redistribution of the functions of the former Department of Supply, and on the decisions to be made on the recommendations on the Report of the Committee of Inquiry into Government Procurement (headed by Sir Walter Scott).

**Service Order of Battle**

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<th>Class</th>
<th>Name</th>
<th>Type</th>
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<tr>
<td>Guided Missiles</td>
<td>HMAS MADAGASCAR</td>
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<td>Anti-Submarine</td>
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A flying LCH, HMAS BALIKPAPAN, is to be transferred to the RAN in September 1973.

**Fleet Air Arm**

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<td>VS 816</td>
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<td>HS 817</td>
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<td>HT 723</td>
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<td>VC 724</td>
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<td>VC 821</td>
<td>S2E Trackers, and HS 748s</td>
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**Ships of the RAN**

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<td>Training Ships</td>
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**Survey and Research Ships**

- HMAS BUKI
- HMAS BALIKPAPAN
- HMAS TARAKAN
- HMAS LABUAN
- HMAS BRUNEI
- HMAS ONSLOW
- HMAS IBIS
- HMAS TEAL
- HMAS SNIP
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- HMAS MOBESBY
- HMAS FLOODERS
- HMAS ELMAD MARTINA
- HMAS KIMBRA
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The Naval Reserve Cadets are administered by the Australian Naval Board.

The Naval Reserve Cadets 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 afternoon 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 Cadets and they are also given opportunities, whenever possible to undertake training at sea in ships of the Royal Australian Navy.

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

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

SENIOR OFFICERS, NAVAL RESERVE CADETS:

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

QUEENSLAND: Box 6, Post Office, Stafford, 4093.

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

SOUTH AUSTRALIA: C/- Box 1529M, GPO, Adelaide, 5001.

VICTORIA: C/- Box 227, Post Office, Hawthorn, 3122.

TASMANIA: C/- 3 Wimmarleigh Street, Taroona, 7006.

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

TO: The Senior Officer,
Naval Reserve Cadets.
I am interested in joining the Naval Reserve Cadets and would be pleased to receive further information.

NAME
STREET
STATE OR TERRITORY
PHONE No
AGE
(Please Print Clearly)

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