

THE NAVY

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THE NAVY

The magazine of the Navy League of Australia

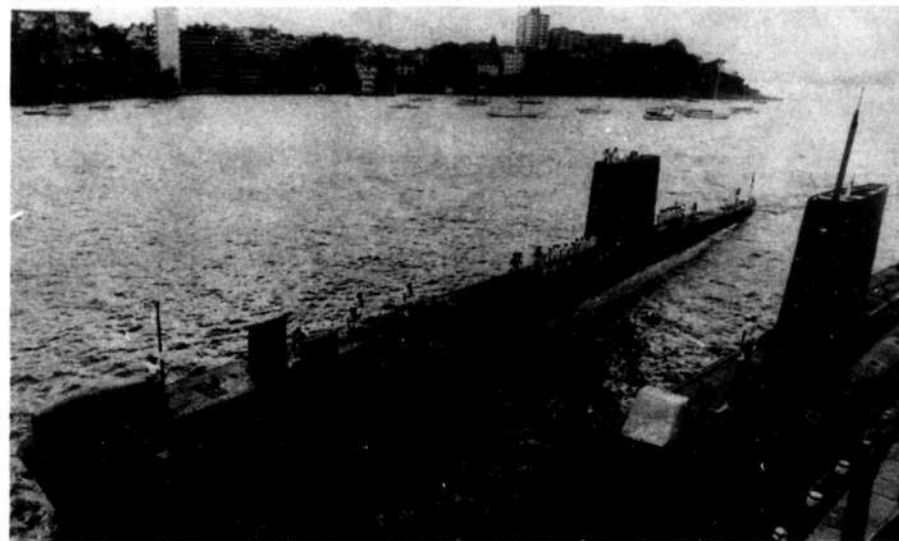
EDITOR
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PO BOX 653
DEE WHY, NSW, 2099

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No. 1



Australia's newest fighting ship, HMAS OTAMA, arrives at her base after the delivery voyage from Scotland, 15th December, 1978.
(Photo — Navy Public Relations)

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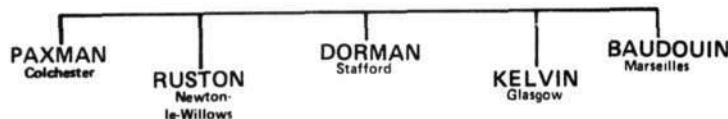
— The USS HEWITT, a Spruance class destroyer. With a displacement of 7810 tons HEWITT and her twenty-nine sister ships are the largest destroyers yet built for the United States Navy.

(Photo — John Mortimer)

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Dear Readers,

Following thirteen years in the editorial chair it is a sad time for me to advise you that I have resigned and my place taken by Ross Gillett, who, in my opinion, is a most worthy successor and an editor who should serve you well.

Ross has a keen interest in the world's fighting navies and a considerable knowledge of affairs nautical, demonstrated by his recently published book "Warships Of Australia", which has been highly praised for its accuracy, high standard of illustration of photographs and written excellence.

I sincerely trust that all contributors, particularly the RAN and ship building, aircraft and missile constructors, operating throughout the world, will continue to assist Ross in the manner which I appreciated and became accustomed to.

DENNIS P. TRICKETT

Editor's Comment

Beginning with this edition, "The Navy" will be presented in a different format from previous issues. The size of the magazine and type style have been changed and several new features will be included each quarter. It is anticipated that the size of "The Navy" will be maintained to the present number of pages, but to be successful the magazine requires the support of both its readers and members of The Navy League.

Articles, long and short, are needed to include in forthcoming issues. Contributions should be addressed to: The Editor, The Navy, PO Box 653, Dee Why, NSW, 2099.

Divisional Secretaries should be advised that any changes of address, new members or new subscribers to the magazine should send such information to the NSW Secretary, Lieut. Cmdr. B. Rowland, RD, RANR, 39 Waratah Road, Turramurra, NSW, 2074.

Many persons have assisted me in the preparation of this issue of "The Navy". These include, Defence Public Relations, Canberra; John Mackenzie, Naval Historian; Barrie Smart and

Tom Jackson, Navy Public Relations, Sydney; Harry Adlam; Kevin Brown; Harold Cliff; Tony Grazebrook; John Mortimer; Mike Phelps; and Westland Helicopters. To these people I offer my thanks and look forward to their future co-operation.

Features planned for inclusion in the May/June/July edition include: — The Admiralty "S" class Destroyers of the RAN; Fleet Air Arm Pictorial; Fact File No. 3 — HMAS DOOMBA; an article on the Royal Navy Sheffield class destroyers; and T. S. Condamine — Past, Present and Future.

ROSS GILLETT

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The Westland Lynx, now a truly international helicopter is a multi-role aircraft of 10,500lbs all-up weight, and is powered by two Rolls-Royce Gem engines. Pictured in descending orders are Lynx for the navies of France, Brazil, the Netherlands and the United Kingdom. (Photo — Westland)



Lynx in service on HMS BIRMINGHAM demonstrates its ability to survive a high degree of roll in rough weather. (Photo — Westland)



Lynx in Service

The Westland Lynx naval helicopter has now been ordered by six nations and is in service with four. The aircraft first flew on 21st March, 1971, and was delivered to the Royal Navy beginning in May, 1976. It is a multi-purpose helicopter, designed by Westland, but built in 70/30 partnership with Aerospatiale of France. The Lynx can carry ten men and is armed to suit the particular role; anti-submarine, verticle replenishment, air-surface search, strike, fire-support or search and rescue. Maximum speed is 207 mph with a range of 418 miles (naval version).



Westland Lynx of the Brazilian Navy. (Photo — Westland)

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ADELAIDE REBORN

By: Harold Cliff

HMAS ADELAIDE was built by Cockatoo Island Dockyard between 1915 and 1922. She operated with the Australian Squadron until paid off to reserve on 27th June, 1928.

After a ten year lay-up, ADELAIDE was taken in hand for a major refit and modernisation, again at Cockatoo. The work involved her conversion from coal to oil burning and the removal of two six inch and three three inch guns. In their place, three four inch HA guns, 20mm Oerlikons and depth charge throwers and chutes were substituted. The cost of modernisation totalled more than £60,000. In October, 1938, in charge of a tug, ADELAIDE was moved from Cockatoo to Garden Island.

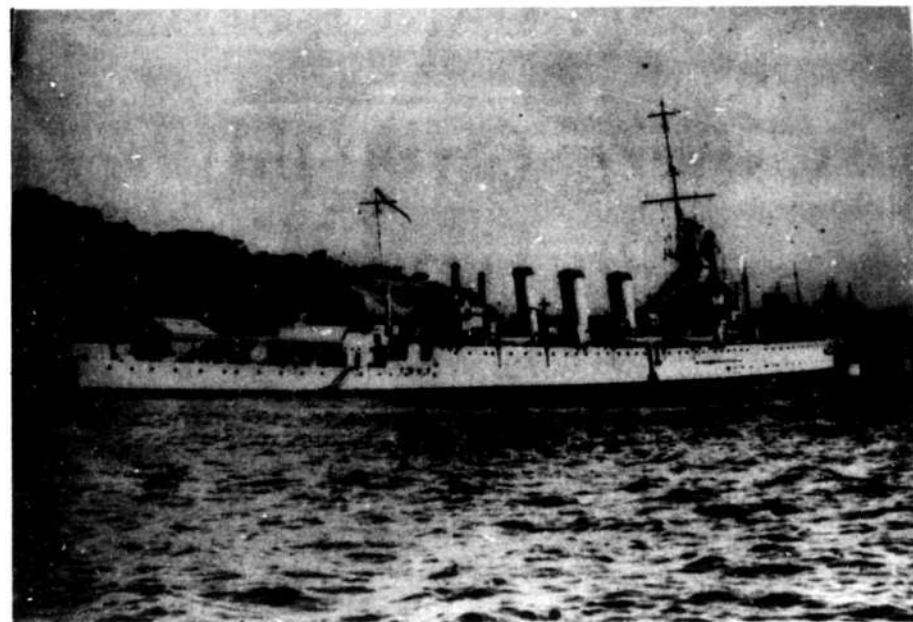
Thereafter followed her working-up trials off Sydney. The rejuvenated cruiser was tested thoroughly, but not without complications. The main six inch guns were tested, shattering bridge fittings. This, it seems, resulted from the blasts

caused by the displacement of air when the shells were fired. The cruiser's second salvo, fired at the extreme bearing from her starboard gun, created further havoc. The starboard searchlight was shattered, iron railings twisted and buckled, the canvas screens attached to the bridge railings were torn to shreds and the bearing indicator covering dome was blown overboard. The same mount was then tested to its extreme forward bearing, almost parallel with the ship's side. Salvoes fired from the forward gun at its extreme bearing inflicted damage to the port flag locker, bridge windows were also broken and even one of the ship's boats damaged. Officers reported that ADELAIDE's guns would probably never be fired from these extreme angles again.

The gun trials of the reborn cruiser were reported "satisfactory"!

ADELAIDE also carried out trials on her engines and paravane equipment in conjunction with these firings. The cruiser steamed at full speed in a heavy swell with a reported 70% of ratings and dockyard "mates" suffering from seasickness. Altogether forty-six shells were fired, including sixteen from the six inch mounts and ten rounds from each of the new three inch HA guns. The paravane equipment was then successfully tested in the afternoon, deflecting floating mines away from the ship.

All damage was repaired before ADELAIDE proceeded to Jervis Bay for further exercises. Captain H. L. Howden recommissioned the cruiser on 13th March, 1939, but on 17th May, she again paid off in Sydney, her complement transferring to the SS AUTOLCUS for passage to the United Kingdom, where they were to man the new cruiser HMAS PERTH.



HMAS ADELAIDE, 1939, following her extensive rebuild and modernisation. (Photo — M. Hinchliffe)



The USS KINKAID, November, 1978. (Photo — John Mortimer)

THE SPRUANCE CLASS

By: Ross Gillett
Photos By: John Mortimer

The Spruance class are the largest destroyers yet constructed for the United States Navy. They will number 30 units, with the last ship due for commissioning in 1980.

The principle characteristics of the destroyers are:—

Displacement: 7810 tons full load.

Dimensions: Length 563.3 feet oa, Beam 55 feet, Draught 29 feet.

Speed: 33 knots.

Range: 6000 miles at 20 knots.

Crew: 24 officers and 272 enlisted men.

When first completed, the Spruance class were criticised as being poorly armed ships, especially when compared to their Soviet contemporaries. Subsequent alterations have now allowed the ships to accept three new weapons systems recently developed for the United States Fleet.

The final armament now planned for each ship includes:

1. One eight inch Major calibre Light-weight Gun, Mk71, to replace the forward five inch mount (from 1980). The MCLWG has a rate of fire of between 10 to 12 rounds per minute with an elevation between -50° to +65°. The eight inch projectile weighs 118Kg.
2. One five inch, 54 calibre Mk45 gun housed in a Mk52 single mount is to be retained aft. The weapon has a rate of fire of 20 rpm and can be elevated to 65°. The weight of the shell is 32Kg. Approximately 600 rounds are carried for the five inch gun.

3. Two 20mm Vulcan Phalanx Mk15 Close In Weapons System (CIWS) are to be installed as a last ditch defence against missiles.
4. Two lightweight four tube cannister launchers for the Harpoon surface to surface missile are carried amidships. Each Harpoon is 15 feet long and at launch weighs 1470lbs. The missile can travel at Mach 0.9 for 50 miles. No reloads are provided.



A detailed view of USS HEWITT showing three separate weapon systems. The aft 5 inch 54 calibre Mk45 mount is sited below the octuple launcher for Sea Sparrow, while the Sea Sprite anti-submarine helicopter is lashed to the flight deck immediately above.

(Photo — John Mortimer)

5. One NATO Seasparrow anti-aircraft missile launcher is fitted aft between the helicopter deck and five inch gun. The missiles are fired from an eight tube launcher and have a maximum range of 12 miles. Launch weight is 500Kg, the missile being 12 feet long. Spare missiles are carried and reloaded by hand.
6. One octuple Asroc eight cell launcher is placed immediately before the bridge superstructure. The magazine is located below the launcher, with the twin cells depressing to a vertical position for reloading. A total of twenty-four missiles are stored. The Asroc missile is 15 feet four inches long and has a range of one to six miles.
7. Two banks of triple torpedo tubes Mk32 are carried inside the ships superstructure, to facilitate loading as well as maintenance. Torpedoes are fired through side ports. Fourteen torpedoes are carried for the Mk32 tubes.
8. One SH-3 Sea King or two SH-2D LAMPs helicopters are also carried.

The Spruances are powered by four General Electric gas turbines, driving two shafts. Maximum shaft horsepower is 80,000. An anti-submarine variant of the basic Spruance design was approved for construction in 1978. Designated DDH 997, this "one of a kind" destroyer will carry up to four LAMPs helicopters, two five inch 54 calibre Mk45 single mounts, two Phalanx CIWS, two quad harpoon cannisters and two triple torpedo tubes Mk32.

Electronically speaking, each Spruance super destroyer

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The amidships section of the USS HEWITT is shown more clearly in this photo. The hangar for the Sea Sprite is to the left and the quad cannister launchers for Harpoon are immediately behind the funnel. The cannisters are angled in this position to allow the exhaust at launch to fall free of the ship's sides. The various radars mentioned in the text are also visible.

(Photo — John Mortimer)

carries four principle radars. The primary surface search radar, AN SPS-55 is backed-up by a surface track radar ANS-PQ9A, while the primary air surveillance radar ANS-SPS40B is supplemented by the air track radar, ANS-PG60.

Two members of the Spruance class USS KINKAID and USS HEWITT visited Sydney in late 1978. Only HEWITT had been fitted with Harpoon (see photo) and both still retain the forward five inch mount. Only one helicopter was being carried onboard each destroyer.



The USS KINKAID. Only one Sea Sprite helicopter can be stored in the hangar with the second aircraft needing to be carried on the flight deck area. (Photo — John Mortimer)

RAN Motor Launches of World War Two

By: Harry Adlam

A. The Fairmile "B" Type

During the Great War, the Admiralty saw great use for patrol motor launches, and laid contracts in the United States for over five hundred of these useful craft. The ML's did an extremely good job, and it was only natural that the type would find use in the Second World War. The WW II type was a great advancement over the original boat. It began its career as a private venture, but the Admiralty soon saw that the new craft was the one that was really needed.

The Fairmile Marine Company was formed to manufacture the new ML's. The "A" Type Fairmile was reasonably successful, but it had a few shortcomings, so a second type, known as the "B" Type Fairmile, was designed. The "B" design was planned for mass production: different sections of the factory turning out hull components and fittings. It would appear that quite a few Fairmile "B's" built in Australia during the war were in actual fact built from kits supplied from the Fairmile Marine Company in England.

Basically, the Fairmile "B" was a wooden ship of 80 tons displacement, a length of 112 feet, a beam of 18 feet six inches, and a draught of four feet four inches. Speeds of from 18 to 20 knots were obtained from twin screws driven by

the well-known Hall-Scott Defender petrol engine. This was the same engine that was installed in the ASR's, but in the ML's the engines were geared, as against the direct drive arrangement in the rescue boats.

Armament varied due to the availability of suitable weapons. Some of the earlier ML's were armed with old 3 pdr. saluting guns (of 1387 vintage), some received the two pounder Rolls-Royce gun. The Rolls-Royce was not a very popular weapon at all, as it was a single shot weapon firing a Pom Pom shell. As they became available, the 40mm Bofors became the main armament, and this was a well received addition. As far as secondary armament was concerned, it appears that most ML's carried at least two 20mm Oerlikons mounted aft of the funnel, and a pair of twin stripped Vickers .303 inch MG's mounted on either side of the bridge screen. Several 0.5 inch Browning machine guns were also mounted on the main deck. Depth chargers were carried, and the boats were fitted with ASDIC sets. They could be classified as "small major warships". The Fairmile "B's" were quite comfortable, and in true naval style the officers had a wardroom aft and the crew lived forward. There was even a small petty officers mess, which was usually occupied by the motor mechanic and cox'n.

Thirty-five of the "B" type were built in Australia and were constructed by three different yards. In Sydney the Green Point Boatyard launched twenty ML's and Halvorsen's launched eleven. Norman Wright in Brisbane built the other four, the Wright boat being regarded as the aristocrat. The ML's carried numbers in the same list as the Royal Navy 424 to ML 431, and from ML 801 to ML 827. Of these ML's 430 and 827 were war losses, both being lost in New Guinea in 1944. The thirty-five ML's were all commissioned within the period of 12 months. It didn't take long to get them into the war zones, as is illustrated by the fact that ML 815 commissioned on 1st January, 1943, and arrived in Darwin on 8th April, 1943.

The ML's did a very worthwhile job during their three years of war, but with the cessation of hostilities they became redundant, there being no place for them in the peace-time navy. They were soon all sold out of the service, and many were to see years of active operations as pleasure craft, and many can still be seen today engaged on the tourist trade. It is pleasing to note that in most cases the original lines of these pretty little ships have been retained. Naturally enough the armour plating has been removed from the wheel house, but most retain the distinctive destroyer-type funnel that was one of their main recognition points.

For those interested the following is a list of the ML's from the three building yards:

Green Point Boatyard, Sydney: ML's 424 to 431 and 801 to 812.

Halvorsen, Sydney: ML's 813, 814, 817 to 825.

Norman Wright, Brisbane: ML's 815, 816, 826 and 827.

B. The Harbour Defence Type

During World War II the RAN commissioned 30 small patrol craft that carried the designation Harbour Defence Motor Launches. These HDML's were a smaller edition of the famous Fairmile "B" type. The overall length was 72 feet, the beam was 15 feet 10 inches and fully loaded drew about five feet. The displacement was 54 tons. Unlike the Fairmiles, the HDML's were not fitted with a funnel, the exhausts being led out

the stern as in normal small boat practice. They were much slower than the ML's, the screws in this case being driven by twin Buda diesel engines. Speed was designed to be 12 knots. Armament varied as much as it did in the ML but those units retained after the end of WW II were fitted with the 40mm Bofors.

Numbers for these boats were drawn from the Admiralty lists, and the first three HDML's commissioned were in fact ex-Royal Navy craft. The first unit commissioned was HDML 1161, which commissioned on 9th January, 1942. The last boat was HDML 1346, which ship hoisted her ensign on 6th January, 1945. Three of the class were built in the United Kingdom, nine in Australia, whilst the remainder were all built in various boatyards in the United States.

The prime purpose of this type was to provide patrols for enclosed anchorages and harbours, and to this end, depth charge equipment was carried. They were good sea boats, and some made their way as far as the Philippine Islands, where they were put to work with the survey group. The careers of some of these boats lasted for years, and in 1978 at least two were still in service with the RAN.

After the end of the Second World War, there was a reclassification of ship types, and the HDML's picked the grand title of SDML, short for Seaward Defence Motor Launches. From 1950 to 1958 SDML's 1323, 1326, 1328 and 1329 were

loaned to the Royal Navy, which employed them on the Far East Station. After their return, most were scrapped but one boat gained a new lease of life when she was sold to the Philippines Navy in 1959. SDML 1325 still retains her old number, but 1324 is now known as NEPEAN, in keeping with her duties as a training vessel in Port Melbourne. 1324 was built by McFarlane of Port Adelaide and 1325 was launched by E. Jack of Launceston.

The Royal New Zealand Navy built a

smaller number of these valuable craft and still have a few left in service. The KIWI boats are very distinctive by their colour schemes. The RAN adopted the standard Australian Fleet grey with black water line, but the New Zealanders chose all white for their SDML's used for surveying duties, and the boats used on the training service have black hulls with grey upper works. Like the ML's, the HDML's (or SDML's) did a grand job in time of war and an equal job in time of peace.



Harbour Defence Motor Launch No. 1129 pictured here leaving Sydney for the open sea, was constructed in England and commissioned on 7th November, 1942. During the war she was employed primarily on survey operations before reducing to reserve in October, 1945. An armament of one 20mm Oerlikon gun is carried forward, four depth charges to port and starboard and one gun aft.

(Photo — Naval Historian)

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Fairmile B No. 823 was built by Lars Halvorsen Sons Pty Ltd, Sydney, and commissioned on 30th September, 1943. All Fairmile B's were deleted by 1948.

(Photo — Naval Historian)

THE ROLE OF THE HEAVY LANDING SHIP

In November, 1977, the Prime Minister (The Right Honourable J. M. Fraser) announced that the RAN's new Heavy Landing Ship TOBRUK would be built by Carringtons, in New South Wales, with Y-ARD Ltd participating in the design and management of the project.

Much prefabrication work is already in hand, and long lead items have been ordered. The keel is expected to be laid about the end of 1978. Mirabile dictu, some aspects of the programme are actually running ahead of schedule. Carringtons have contracted to deliver TOBRUK to the RAN by June, 1980. All the signs are that they are going to meet that date.

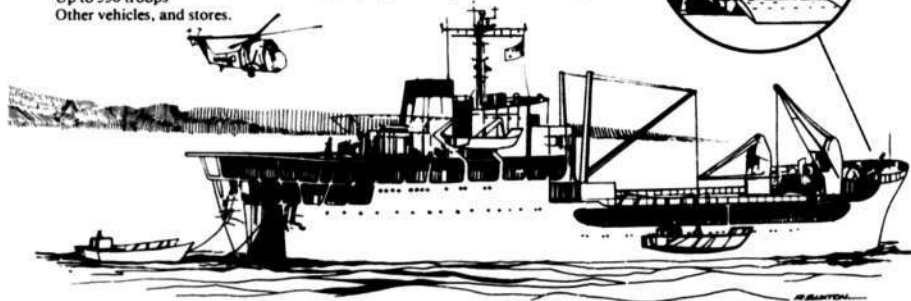
Navy is now addressing itself to the provision of the necessary base facilities, personnel and training. For reasons which need no elaboration, this requires close collaboration with the Army, as does the evolution of ways to use the tactical capabilities of the new ship in the Australian strategic environment.

TACTICAL CAPABILITIES

The design of HMAS TOBRUK is an extremely interesting and innovative development of the British SIR BEDIVERE Class of Logistic Landing Ship.

The proven British design provided for a high carrying capacity relatively small ship with the ability to land troops and stores over the beach in the support phase of an amphibious operation. The RAN design adds LCM8s (to be carried on deck and launched by crane) and two LCVPs at davits, a small hospital, the command and communication facilities necessary to enable the control of an assault, and three helicopters.

A typical force would be:
18 LEOPARD tanks
Up to 550 troops
Other vehicles, and stores.



An artists impression of HMAS TOBRUK. (Photo — Defence Public Relations).

By: A. W. Grazebrook

ship to a landing area and ferry the troops, vehicles and stores to an over the beach landing.

However, none of the LCHs have been fully exercised in this role since EXERCISE KANGAROO II some two years ago. Usually very reliable sources, associated with the day to day operations of the LCHs, are specific in their statements that only loading exercises have been carried out. For the past two years, there have been no full exercises of LOTS — the loading from a larger ship, and transport to the beach and unloading of the whole of the larger ship's cargo of troops, vehicles and stores.

A transport, lying at anchor in an assault area, is at risk as long as she stays there. Therefore, the quicker that transport can discharge her cargo the shorter is the time she is at risk. World War II, and countless amphibious exercises since, demonstrated the crucial importance of practice, by the personnel involved, at getting cargoes fully discharged in the shortest possible time. Officers of the Indian Navy have stated publicly that their landing at Cox's Bazar, involving two brigades, transports and Russian built POLNOCHNY LCTs in the LOTS role, got into serious trouble because of lack of exercise.

On top of this, the Army units required to utilise TOBRUK have not yet been designated. It is likely they would come from either the Brisbane or Holdsworth areas. The tanks, however, would have to

come from Puckapunyal in Victoria. Unless all units involved in the LSH are to be concentrated in one area, TOBRUK will have at least two ports of call to embark her assault force.

All the signs are that the Army has not really addressed itself to the utilisation of TOBRUK — a much more capable and sophisticated amphibious operations vessel than anything ever before available to the Australian Defence Forces.

Reports have it that TOBRUK is being built at the insistence of Defence Central and not at the Army's wish. As it is the policy of both present and previous Governments to discuss Australian strategy only in the most general terms, authoritative commentators must gather their own intelligence and utilise this in assessing strategic and tactical roles of the units of the Australian Defence Forces.

It is widely accepted as fundamental to Australian strategy that we do not have, and never can have, enough troops to defend in sufficient strength every possible landing place near a worthwhile target — even against the small units of which Regional powers are capable of landing. Almost by definition, these small units will land where Australia has not pre-positioned military forces.

Therefore, we are left with the options of detecting and destroying the attacking forces before they land, or of moving troops and equipment to eject or destroy the force after it has landed.

From what we can conclude from public statements and equipment acquisition programmes, Government has adopted a combination of these two options. We plan to destroy an enemy before they land (and therefore before they can do any damage) and have a "backstop" capability to destroy and/or eject them after they have landed.

To fill the latter role, Army must be able to move forces to the scene of the action. Australia's primary ability to do this, outside the southern half of the Continent, is provided by the RAAF's HERCULES C130 transport aircraft. The first of twelve new C130H HERCULES aircraft have recently joined the RAAF. These will replace twelve C130A HERCULES, maintaining our strength of 24 HERCULES (twelve each C130E and C130H). Whilst published figures must always be treated with care, HERCULES are listed as having a range of 4700 nm (at 50% payload and using external fuel tanks). When loaded they weigh over seventy tons. Therefore, they can reach any airfield capable of taking them in Australia provided there is fuel there for their return journey. Typical loads are 92 equipped troops, or 64 paratroops, or payload of cargo to about 20 tons. They can accommodate armoured personnel carriers but not the Army's LEOPARD tanks.

Whilst the HERCULES have proven

themselves invaluable assets for Australia, they have two disadvantages:

- They can land only on friendly airfields capable of taking aircraft of over 70 tons — we do not have enough such airfields in the right places.
- They cannot carry the Army's new LEOPARD tanks.

Therefore, any military force needing tanks (and as the Army has only just bought 101 new LEOPARD tanks it presumably sees the tanks as being frequently needed in the defence of Australia) must move by sea if it is to reach northern, north eastern or north western Australia. This is likely to be one strategic role for the LSH envisaged by Defence Central if it was indeed they who pressed the acquisition of TOBRUK.

There are differences of opinion about this amongst professionals. Some argue that it would take too long to get to the point under attack, and that an enemy raiding force would have landed, done the damage and got away by the time the LSH got there.

Against this argument, there are those who contend that the Australian Defence Forces would take advantage of warning time to predeploy the LSH with her assault force, ready to land at a point under attack — just as the US pre-deploys (on a more permanent basis) her landing forces in the 6th and 7th Fleets.

A possible second strategic role is in the use of Australian forces overseas — either in a "repressal" raid or in support of an ally. In this context, it is appropriate to review again the fundamental strengths and weaknesses of Australia in our region.

As a country, and as reflected in our armed forces, we are by nature relatively sophisticated technically and highly professional. We lack numbers. The strategy of becoming committed to large scale land warfare, in an environment unnatural to ourselves, has been disastrous in the past. Australian and British in Malaya (1941-42), the US, Australia and others in Viet Nam (and, conceptually in the same way, the British in the US in 1776 et seq) are examples from history.

It can be argued that we should seek to utilise just those weapons, tactics and equipment which we can be good at using and with which our potential enemies are unfamiliar or inept.

In this context, an opportunity to use TOBRUK could arise. An unexpected landing to achieve tactical surprise and the destruction of an enemy unit or installation may well be a very effective way of helping an ally without the disadvantages of a major ground commitment.

Whilst it is not in itself a justification for building the ship, TOBRUK would be an invaluable unit in a natural disaster, be it at home or overseas.

Fundamentally, the LSH will provide strategic mobility for the Army's tank forces, and strategic mobility for less heavily equipped forces to those areas which cannot receive HERCULES C130 transports. She will also provide another form of strategic mobility should the HERCULES be committed to other duties.

ARMY'S ROLE IN DEFENCE

We have identified two major, and one supplementary, roles for the LSH. Presumably, and if reports are correct that the ship is being built at the insistence of Defence Central, that body would not have carried their case to build the ship unless they had one or more clearly defined roles in the context of probable Australian strategic scenarios.

Reports are too firm and too authoritative for there not to be at least significant substance in statements that the Army has not addressed itself to, much less resolved, certain vital aspects:

- Training personnel and LCHs in LOTS — the role for which the LCHs were designed. The argument that, since the departure of JOHN MONASH, there is no suitable ship may be invalid. One could be chartered.
- Identification of forces and roles for the LSH.
- Deployment of forces for embarkation in the LSH — for optimum embarkation time, the tanks must be available from same base as the other troops.

As is to be expected, because building the ship and her support facilities necessarily comes before using her, Navy is making more progress. Although it has not yet been announced, a base port has been selected. For convenience to the Army's training areas, and for work with the LCHs which are already based in Brisbane, the objective observer would conclude that the LSH will be based in Brisbane.

Approval has been obtained for refurbishing and modifying the Wessex 31B helicopters for their work with TOBRUK.

Unhappily, Army's indecision (some say reluctance) over the role of TOBRUK lends weight to the criticism, heard in some circles, that the Army has not yet come to grips with its role in Australia's independent defence strategy.

HMAS TOBRUK — HEAVY LANDING SHIP

Displacement	5800 tons
Dimensions	425 x 60 x 7 feet
Main engines	2 diesels
Speed	17 knots
Complement (naval)	130

(Particulars taken from JAMES FIGHTING SHIPS 1978/79)

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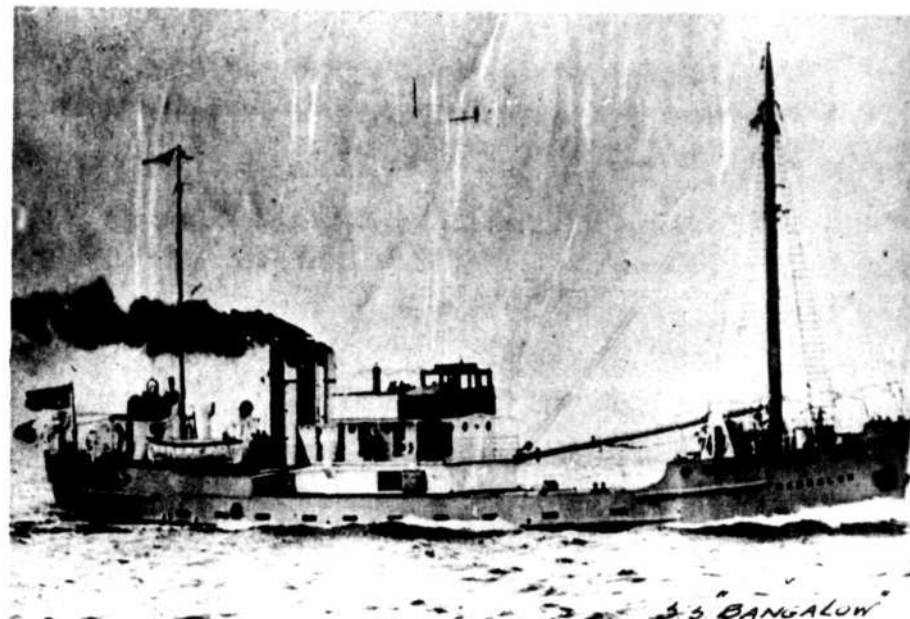
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BANGALOW as she appeared before requisitioning by the RAN. (Photo — Naval Historian)

FACT FILE NO. 2

Ship:
Type:
Tonnage:
Dimensions:

HMAS BANGALOW
Cable Layer — Survey Vessel
648 gross
Length 160 feet bp, Beam 36 feet,
Draught 9 feet (mean), 11 feet
(maximum)
Armament:
One 12 pdr, 12 cwt Mk5 High/low angle
(60 rounds carried)
Two 20mm Oerlikons (3200 rounds per
gun carried)

Engines:

Triple Expansion Reciprocating.
Manufactured by G. Plenty and Sons,
England.

Speed:

8½ knots (economical), 10 knots
(maximum)

Range:

1800 miles at 10 knots
2000 miles at 8½ knots

Endurance:

7½ days at 10 knots
10½ days at 8½ knots

Bunkers:

120 tons of coal

Coal Consumption:

11 tons per hour at 8½ knots. 16 tons
per hour at 10 knots

Provisions:

Fresh water capacity — 249 tons. Fresh
provisions — 10 days. All provisions —
3 months.

Ships Boats:

One 30 foot Clinker built, 30 hp
One 20 foot Lifeboat
One 16 foot Surfboat
One 12 foot Dinghy

Troop Capacity:

300 in emergency
200 ship to shore

Complement:

100 fine weather passage for four days
5 officers and 39 ratings

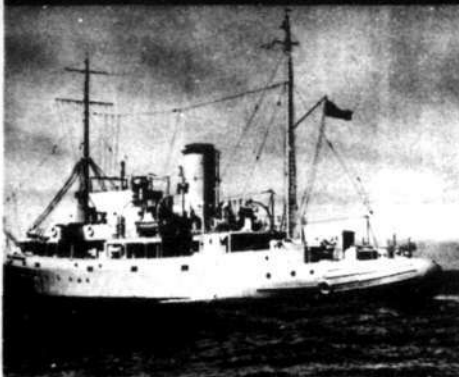
SHIP'S HISTORY

The steel steamship BANGALOW was built in Glasgow, Scotland for the North Coast Steam Navigation Company, and was completed in 1939. The vessel was requisitioned by the Royal Australian Navy and serving with the Survey Group was used as a lighthouse tender. She also acted as a cable repair ship from at least early 1943 before returning to the North Coast Steam Navigation Co after the end of hostilities.

In September, 1955, the NCSN sold BANGALOW to John Manners & Company. Renamed CAMBAY BREEZE, the steamer operated with her new owners, until in 1957 she was again sold, becoming the LUCKY CHEN. Two years later BANGALOW was resold and renamed LIAN MIN. Subsequently taken over by Singapore interests, the former naval ship was renamed EROPAGNUS.

WARSHIP PICTORIAL

— Boom Defence Vessels of the RAN



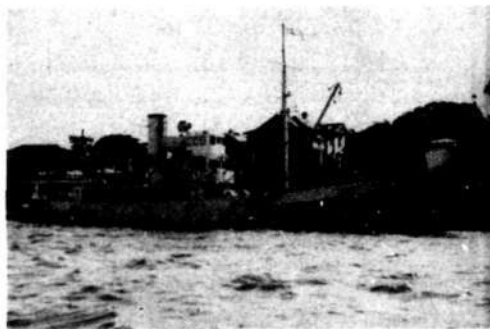
The Bar class boom defence vessel HMAS KANGAROO as completed, September, 1940.
(Photo — Naval Historian)



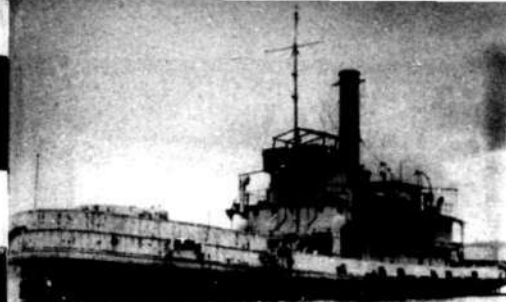
HMAS KARA KARA, shown here laid up at Athol Bight, was originally constructed as a vehicular ferry. The vessel ended her long career on 31st January, 1973, when she was sunk off Jervis Bay for target practice.
(Photo — Alan Zammit)



The remains of KANGAROO as she now lies, in the mud of Homebush Bay, on the Parramatta River. All superstructure has been removed.
(Photo — Ross Gillett)



HMAS KOOKABURRA, the navy's first boom defence vessel, was completed in February, 1939, served throughout World War II, and was not sold until 1965.
(Photo — Naval Historian)



HMAS KOOMPARTOO, shown here laid up in reserve, began her career as a ferry. She was commissioned into the RAN during December, 1942. In 1966 she was disposed of and her hull towed to Tasmania for lightering duties.
(Photo — Ron Hart)



The last of KOOKABURRA, Rozelle Bay, 25th February, 1970. She was later raised and scuttled off the Sydney coast. KANGAROO being broken up is on right.
(Photo — Alan Zammit)



HMAS KIMBLA, last boom defence vessel in the RAN has operated as a trial, research and oceanographic ship for the major part of her career.
(Photo — Navy Public Relations)

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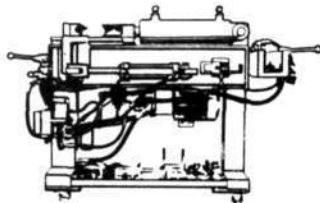
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THE LEANDERS

— Two Decades Onward

INTRODUCTION

The 10th April, 1979 marks the 20th anniversary of the beginning of construction of HMS LEANDER, lead ship and nameship of the class of general purpose frigates built for the Royal Navy. LEANDER was followed by 25 sisters, the last of which, ARIADNE, commissioned on 10th February, 1973, and which embraced two main variants. The first group included the original ten ships and a second six from the so called "middle period". Each carried a slightly

By: Ross Gillett

platform for their helicopter operations and gunnery and sonar systems. Crew accommodation is provided for 251 officers and men and 260 in the broadbeam Leanders.

Decision was reached that the class would be progressively updated beginning with LEANDER herself. The resultant modernisations have produced three basic Leander types, all differently armed. These are:

1. The Exocet Leanders — fitted to launch surface to surface missiles.
2. The Ikara variants — primarily anti-submarine ships.
3. The original general purpose frigates — yet to receive any transformation.

THE THREE VARIANTS

1. The Exocet Leanders now number at least eight units from group one, or the "middle period". The first such vessel to receive the French designed surface to surface missile was CLEOPATRA, which completed her conversion on 28th November, 1975. The major visual changes made to the ship included:
 - (a) Removal of the twin 4.5 inch gun and in its place four launchers (two twin) for Exocet substituted. The launchers fire only one missile a piece and no allowance for reloads has been made.
 - (b) To compensate for the loss of the 4.5 inch mount, two single 40mm bofors guns replaced the two single 20mm mounts abreast the foremast, just abaft the bridge.



Nameship and leadship of the class, HMS LEANDER. (Photo — Royal Navy)

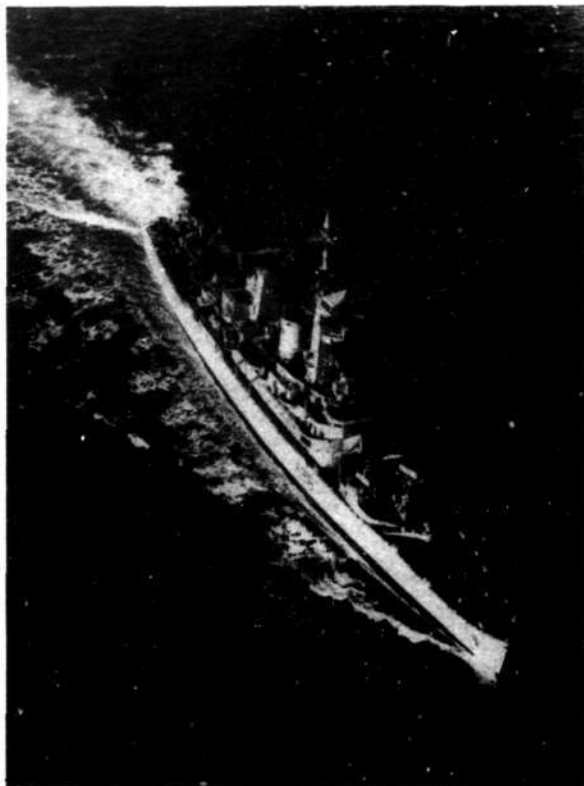
different type of boiler. The second group, numbering ten vessels, also carried a variation in the boiler arrangement, but were mainly distinguished from the earlier units by their broader beams (43 feet in lieu of 41 feet) and were known as the broadbeam Leanders.

The 2450 ton standard Leander class frigates were designed to mount an armament comprising one twin 4.5 inch gun forward, one quadruple Seacat anti-aircraft missile launcher aft, one Limbo three barrelled anti-submarine depth-bomb mortar and one Westland Wasp anti-submarine helicopter. A subsequent addition saw two 20mm Oerlikons added for "police duties".

Propulsion is via two double reduction geared turbines producing 30,000 shaft horsepower or a maximum speed of 30 knots. About 460 tons of oil fuel is carried. The Leander frigates are manoeuvred by twin rudders and are fitted with stabilisers to provide a good



HMS ARETHUSA, shows off her new teeth. The Ikara missile is visible protruding from its shield. (Photo — Royal Navy)



HMS CLEOPATRA, the first Royal Navy frigate to be fitted with a surface to surface guided missile system, steams off the south coast of England during a short work-up period following her modernisation. The two twin Exocet mountings are positioned immediately forward of the bridge.

(Photo — Royal Navy)

- (c) The Seacat armament has been increased to three quadruple launchers, two abaft the mainmast and atop the helicopter hangar, and one forward of the Exocet launchers.
- (d) The helicopter platform has been lengthened with the removal of the anti-submarine mortar, thus allowing the ships to accept the Westland Lynx, the replacement helicopter for the Wasp.
- (e) As compensation for the removal of the mortar, two banks of triple torpedo tubes have been fitted onto an enlarged shelter deck.



HMS APOLLO as completed by Yarrow & Co Ltd. APOLLO is scheduled to undergo an extensive conversion and will be re-armed with Exocet, Seawolf and the Lynx helicopter.

(Photo — Yarrow & Co)

Thus the armament now carried includes two twin Exocet and three quadruple Seacat missile launchers, two single 40mm Bofors, one embarked anti-submarine helicopter and two triple torpedo tubes. This weapons outfit equips eight units with HM ships CLEOPATRA, PHOEBE, SIRIUS, DIDO, ARGONAUT, MINERVA, JUNO and DANAE having completed their Exocet conversion.

2. The Ikara equipped version first went to sea with LEANDER in December, 1972. Altogether seven ships of the first group received the Australian designed anti-submarine weapon. The eighth, PENELOPE, has been employed as a trials ship for the new Seawolf anti-aircraft missile system and will not receive Ikara until the completion of her present duties. The primary alterations made to the ships included:

- (a) The twin 4.5 inch mount was replaced by Ikara. The launcher is enclosed within a circular shield and connected to the forward superstructure by an enclosed missile handling room resembling a long box.
- (b) The two 20mm Oerlikons abreast the foremast were removed and replaced by two single 40mm Mk9 mounts.
- (c) One additional Seacat launcher was sited above the hangar.

The Ikara Leander's armament now comprises one single Ikara



HMS AJAX, an Ikara version of the Leander class frigate. The two single 40mm mounts and two Seacat missile launchers are sited behind the bridge and above the helicopter hangar respectively.

(Photo — Chris Gee)

and two Quadruple Seacat missile launchers, two single 40mm guns, one helicopter and one triple anti-submarine mortar Mark 10. LEANDER's conversion was followed by her sisterships AJAX September 1973, GALATEA September 1974, NAIAD July 1975, EURYALUS March 1976, AURORA March 1976 and ARETHUSA November, 1976.

3. The remaining general purpose frigates include the broadbeamed ships. They are armed with the original weapons outfit including the two single 20mm Oerlikons which were a later addition. These ships are scheduled to receive the Exocet capability, the new Seawolf anti-aircraft missile system and improved sonar and modern electronic warfare equipment. Conversions began in late 1977 with ANDROMEDA, the first frigate selected.

CONCLUSION

A comparison of the two conversions shows without doubt that the Exocet frigates carry a more balanced armament and thus are much more closer to the originally designed general purpose frigate. The facility to operate the larger and more modern Lynx helicopter also enhances its combat abilities. Lynx has been designed as both a platform for anti-submarine torpedoes and Sea Skua, the Royal Navy's new air to surface missile.

The loss of the twin 4.5 inch is more than compensated for by Exocet, two additional Seacat launchers and two 40mm Bofors. In comparison, the Ikara Leanders are now mainly anti-submarine ships and must rely on escorting vessels to provide an effective anti-surface, and to a lesser degree anti-aircraft, defence.

The ability to locate and attack submarines via the helicopter Ikara

missile system, as well as mortar, must surely rate these frigates amongst the best equipped A/S escorts available to the Royal Navy today.

The two missile conversions are in effect half life modernisations and should ensure the presence of the Leander class frigate in service until the year 2000, when the youngest, ARIADNE, will have seen twenty-seven years service. The replacement of the Seacat launchers by Seawolf is to be performed initially on the

ten broadbeamed ships. The new launcher is a box-like structure containing six missiles apiece, each able to intercept oncoming enemy aircraft as well as air to surface and surface to surface missiles. As with Seacat, no automatic reloading is provided.

The Leander frigates currently comprise the largest single class of large surface combatants in the Royal Navy and should maintain this position for many years to come.

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Out Of The Past — HMS ANSON



The King George V class battleship HMS ANSON in Sydney Harbour, 1946 (Photo — Ron Wright Collection)

As a new feature in "The Navy", famous warships from the past will be highlighted in each issue. The first one selected, HMS ANSON, visited Sydney in 1946, when the accompanying photograph was taken.

With a design dating back to the NELSON and RODNEY of 1927, the King George V class battleship ANSON was authorised under the 1937 programme. A large number of designs were produced between these years, each slightly modified from the previous one.

The displacement was limited by the Washington Treaty, and construction postponed by five years also under the terms of the Treaty. With a final design settled upon in September, 1936, ANSON was laid down by Swan Hunter on 20th July, 1937. The launching was performed on 24th February, 1940, and she was completed on 22nd June, 1942. ANSON was the fourth of five King George V class Dreadnoughts. She displaced 45,360 tons deep, and was powered by Parsons single reduction geared turbines driving four shafts, producing 110,000 shp.

ANSON's main armament comprised ten 14 inch, 45 calibre, guns, housed in two quadruple and one twin mounts. Backing up these weapons were sixteen 5.25 inch, 50 calibre, quick firing guns in eight twin mounts. Anti-aircraft protection was provided by eighty-eight 2 pounder pom-poms (arranged 8 x 8 and 6 x 4), two quadruple 40mm bofors and sixty-five 20mm Oerlikon guns, (arranged 53 x 1 and 6 x 2). As designed ANSON carried 80 rounds of ammunition for each 14 inch gun, 400 rounds for each

5.25 inch and 1800 rounds per barrel per pom-pom. Her radius of action at 27 knots was 2360 nautical miles, rising to 6000 miles at 14 knots. Protection was provided by a 16 inch waterline belt with an advanced system of underwater defence. Deck and side armour was well distributed. The total weight of armour was more than 12,000 tons.

The ship's career in the Royal navy began on 14th April, 1942, when first commissioned. ANSON joined the Home Fleet and performed long-range escort duties with the Murmansk convoys. Thereafter followed sorties against northern Norway, in which she participated with carrier-borne aircraft in an attack on enemy shipping.

ANSON then refitted at the Devonport Dockyard. In March, 1945, she proceeded to join the British Pacific Fleet. Later, flying the flag of Rear-Admiral C. S. Daniel, ANSON was used to augment the allied forces in the re-occupation of Hong Kong.

The battleship arrived in Australia in January, 1946, returning to Portsmouth in July. For a time after, ANSON served as a training ship, becoming flagship of the Training Squadron. In June, 1949, she transported the future Queen Elizabeth II during a visit to the Channel Islands.

In November, 1949, VANGUARD replaced ANSON as flagship and in 1950 she was reduced to reserve in the Gareloch. ANSON was deleted in 1957 and scrapped at Faslane from 17th September, 1957.

HMAS OTAMA

The Oberon class submarine, HMAS OTAMA, the Royal Australian Navy's newest "fighting ship", arrived in Sydney on Friday, 15th December, for the first time at the end of its maiden voyage from the United Kingdom.

OTAMA, commanded by Lieutenant Commander F. V. R. Wolfe, is the sixth and last Oberon class submarine to join the Navy's First Australian Submarine Squadron based at HMAS PLATYPUS at Neutral Bay in Sydney. It arrived just over five months after its sister O-boat, HMAS ORION, which sailed into Sydney Harbour on 3rd July, 1978, to join the Squadron and the Australian Fleet.

Laid down at Scott-Lithgow's Shipyard at Greenock in Scotland on 25th May, 1973, by Rear Admiral D. W. Leach (then Commodore), OTAMA was launched on 3rd December, 1975, by Princess Anne and commissioned into the RAN by the Princess on 27th April, 1978. After working up off the Scottish coast, OTAMA left Scotland, for Australia, on 11th August, 1978, ending an Australian Navy submarine connection that has existed since 1964, when HMAS OXLEY, the first of the RAN's Oberon class submarines, was laid down.

As well as being the sixth and last of the Australian Navy Oberon class submarines, the conventionally powered

OTAMA is also the last of 35 Oberon and Porpoise class submarines that have been built at Scott's for the Navies of the United Kingdom, Canada, Brazil, Chile and Australia. It also incorporates many of the improvements made to the class over the years, including the RAN's unique passive range finding sonar, known as "Micropuffs", and a larger capacity battery.

OTAMA's maiden voyage took the Australian White Ensign to a number of places for the first time. Visits to Copenhagen and Den Helder were followed by a week in London. A rough Atlantic crossing preceded visits to Halifax and Port Everglades in Florida. After transiting the Panama Canal, OTAMA visited Mazatlan in Mexico and spent five weeks in San Diego, California, conducting trials with units of the United States Navy.

The final stopover, before beginning the final leg of the run home to Sydney, was three days in Pearl Harbour, where exercises were conducted with other units of the US Navy.

OTAMA is the North Queensland aboriginal word meaning "dolphin", the world-wide submariners' emblem, and is the first Australian submarine to bear the name. The submarine has been adopted by the North Tasmanian town of Beaconsfield.

COMMANDING OFFICER'S HISTORY BRIEF



Lieutenant Commander F. V. R. Wolfe, RAN. (Photo — Navy Public Relations)

Lieutenant Commander Wolfe was born in Bellingen, NSW, Australia, in 1938. He joined the Royal Australian Naval College in 1957, and attended the Britannia Royal Naval College from 1958 to 1959. He served in HMA Ships TOBRUK, MELBOURNE and GASCOYNE, until joining the submarine arm in 1963. After 4 years with the Royal Navy, he returned to Australia in HMAS OXLEY. After serving as Executive Officer of HMAS OTWAY, he qualified as Commanding Officer in 1970, and returned to Australia to command HMAS OVENS from 1971 to 1972. He then served with the Royal Navy from 1972 to 1975. After a short period in the Department of Defence, Canberra, he joined HMAS OTAMA in March, 1977.



HMAS OTAMA. (Photo — Navy Public Relations)

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ROUNDUP



Defence Report 1978

The 1978 Defence Report, published in December, gave details of the progress on the major equipment projects affecting the three armed services. As far as the RAN is concerned the most important new equipment acquisition is undoubtedly Harpoon, the American designed anti-shiping missile. Approval has been given for stage 1 of a proposal for the multi-stage procurement of Harpoon for elements of the Australian Defence Force.

Other weapons provided for included further standard surface to air practice missiles and additional Mk48 torpedoes for the RAN's Oberon class submarines. Investigations are also continuing into various options for capabilities which might be introduced into the Defence Force following the decommissioning of HMAS MELBOURNE, planned for 1985. The question of a follow-on destroyer to replace the River class from the late 1980's onwards is being undertaken within the Department of Defence.

A decision is expected in 1979 on the type of helicopter to be borne by the three Patrol Frigates building in the USA. The main contenders seem to be the British Westland Lynx or the American LAMPS.

Major equipment deliveries in 1978/79 will include HMAS FREMANTLE, the first of fifteen PCF 420 patrol craft, eight 12 metre work boats and two self-propelled lighters. The Fleet Air Arm's two HS 748 aircraft are to be fitted with electronic equipment. The contract for the installation was signed in December, 1977, and the first aircraft, fully modified to perform the ECCM training role is expected to commence operations in late 1979.

A decision as to where the underway replenishment ship, to replace HMAS SUPPLY, will be built will be delayed until a tender is received from Vickers Cockatoo Dockyard.

The estimated defence outlay on the Navy's combat force for the period 1978/79 is \$285 million, while manpower costs will amount to \$207.24 million. Naval construction continues to increase, with \$19.93 million outlay in 1975/76, \$59.06 million 1976/77, \$56.35 million 1977/78, and \$122.89 million for the period 1978/79. Permanent manpower levels have dropped 92 persons to 16,298 and the naval reserve numbered 917 all ranks during 1978.

New Zealand's Navy Chief at College

Rear Admiral N. D. Anderson, CBE, New Zealand's Chief of Naval Staff, attended the Passing Out Parade at HMAS CRESWELL during late 1978. Forty-eight men from the degree stream who have been studying at the University of NSW and the Supplementary List, who have been undergoing the 12 months CRESWELL course, paraded at the College for the final time. Rear Admiral Anderson inspected the parade, took the salute and presented the prizes. He then addressed the gathering, stressing the need for unity of the strategic interests of Australia and New Zealand, and the need for an effective maritime defence capability. On the more humorous side, Rear Admiral Anderson showed his interest in the college's band, (see photo).



"Bend an Ear" — What's that note again?? Rear Admiral Anderson paused when inspecting the band on the Passing Out Parade at HMAS CRESWELL and the camera caught an unusual angle with the Admiral seemingly poised to "catch that note again".

(Photo — Navy Public Relations)

Ship's Refits

HMAS OTWAY, second of the RAN Oberon class submarines to join the fleet, paid off on 21 November, 1978, and is now undergoing a major overhaul and half-life modernisation at Vickers Cockatoo Dockyard. The work is expected to keep the vessel out of service to late 1980 and will include the update of all weapons systems.

The destroyer escort STUART has also been taken in hand for her half-life refit and will be decommissioned at Williamstown Dockyard midway this year. STUART follows her sistership PARRAMATTA which will complete her refit late in 1979.

The aircraft carrier HMAS MELBOURNE is expected to rejoin the fleet in March, 1979. Her refit, the latest of many, began on 17th July, 1978. The ship was moved into the Captain Cook Dock on 16th October.



The destroyer escort HMAS STUART "goes surfing" during the recent ANZUS exercise "Sandgroper". (Photo — Navy Public Relations)



The Fleet oiler HMAS SUPPLY lifts its bow out of the water as it travels in company with other ships partaking in exercise "Sandgroper" off the West Australian coast. (Photo — Navy Public Relations)

Surfing Ships

The two accompanying photographs depict HMAS SUPPLY, the largest ship in the RAN, and the destroyer escort HMAS STUART, riding the waves during the recent ANZUS exercise "Sandgroper". Ships from Australia, New Zealand and the United States participated.

Promotions

Vice Admiral A. M. Synnot, presently Chief of Naval Staff, will become the new Chief of Defence Force Staff on 21st April, and Rear Admiral G. J. Willis, currently Flag Officer Commanding the Australian Fleet will be the next Chief of Naval Staff.

Vice Admiral Synnot, who succeeds the retiring General Sir

A. MacDonald, will be promoted to Admiral upon his appointment.

Advanced Training Vessel

The English company Watercraft Ltd of Shoreham-by-Sea have constructed and commissioned the first of a new class of maritime training vessels, specially equipped to provide advanced instructor and practical sea experience. The new vessel, (see photo), is built of GRP and displaces 20 tons. Her normal speed is 12 knots, with an endurance of about 300 miles. The living spaces are situated forward and a large classroom for 12 students amidships.

Electrical power is provided by a 13.5kw diesel generator. The vessel is designed to provide an intermediate training stage, under live sea conditions between basic instruction ashore and appointment to an operational ship.



The new training vessel. (Photo — Etris)

Service Co-operation in Caribou Salvage

The RAN and RAAF joined forces last December to salvage the fuselage of a Caribou transport which crashed in Papua New Guinea two months ago.

The Navy training ship Jervis Bay brought the fuselage back to Australia where a Garden Island crane was used to lift the body of the aircraft on to a Navy lighter.

A RAAF Chinook helicopter was then called in to execute the last stage of the recovery operation in Sydney Harbour. The big helicopter connected its winch to the fuselage in a delicate operation near Clark Island and then carried the wingless Caribou off to Hawker de Havilland's premises at Bankstown.



A navy workboat stands by as the wingless Caribou begins her flight to Bankstown. (Photo — Navy Public Relations)

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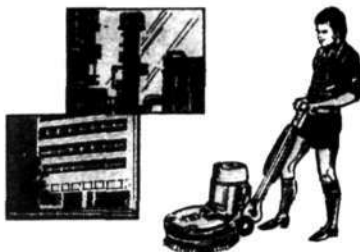
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PHILOMEL "flies" through the seas while on patrol, World War One. (Photo — Royal New Zealand navy)

HMNZS PHILOMEL

The Cradle of the Royal New Zealand Navy

By: Harry Adlam

HMNZS PHILOMEL is the name of the naval establishment at Devonport, in New Zealand. This story is not about the present naval base, but the ship that last carried that proud name. The growth of the RNZN has run along similar lines to that of the RAN, but has taken a while longer due to the smaller population, and correspondingly the smaller amount of money available.

With the formation of the RAN in 1911 and the arrival of the fleet unit in 1913, there needed to be some re-organisation of the Naval Forces in the Australasian area. The Australian station had been commanded from Sydney, but this of course had to be closed down. The New Zealand Government wanted to play a part in naval defence and requested the Admiralty for the allocation of a training ship to be stationed in New Zealand for the training of New Zealanders. The idea was favourably received, and in 1913 the Admiralty agreed to turn over HMS PHILOMEL to the New Zealand Government. PHILOMEL was by no means a new ship. She was laid down at Devonport Dockyard in May, 1889, and launched on 28th August, 1890. PHILOMEL was of the same class of 3rd

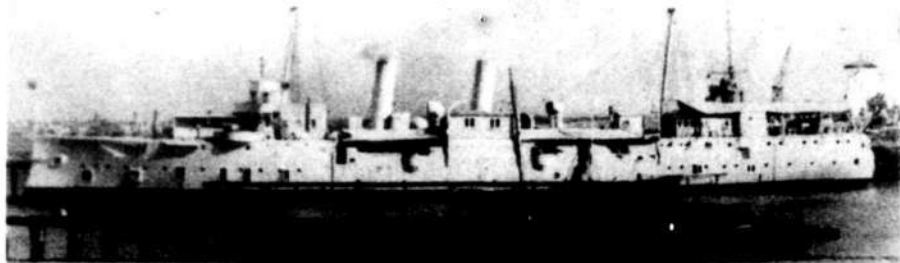
class cruisers that had formed the Australian Auxilliary Squadron and had been withdrawn from service in 1906. PHILOMEL commissioned on 10th November, 1891, and remained in commission until paid off on 22nd March, 1902. During this period she had seen quite a lot of service and in 1899 had landed some of her men to accompany the Naval Brigade to Ladysmith to fight the Boers. She also sent two of her 4.7 inch quick firers ashore on field carriages.

The cruiser was laid up in the Forth of Fifth for over five years, during which time her old Australian sister ships had been sold off for scrapping. On 1st February, 1908, PHILOMEL recommissioned and played a notable part in the Messina earthquake relief operations. After her service in the

Middle East area, she made her way to New Zealand to take over her duties as the sea-going training ship.

The next stage of her career began when she commissioned in her new role at Wellington, New Zealand, on 15th July, 1914. On her shake-down cruise, when the Great War broke out, she was recalled to Wellington where her crew were brought up to full strength with the addition of what naval reservists were at hand. PHILOMEL then became an active member of the Royal Navy again, escorting New Zealand troops to Samoa, and later escorting New Zealand troopships to Albany, WA. She left the troops at Albany and proceeded to the Persian Gulf, where she carried out patrol work until 1917. Her commanding officer during this commission was Captain P. H. Hill-Thompson, RN. This officer was to play quite an important part in the early days of the New Zealand Station.

In May, 1917, PHILOMEL paid off in Wellington with a C. & M. party aboard. There was a war still being fought, and the idea of her being a sea-going training



PHILOMEL as converted to an alongside base ship. In the background and to the right is the funnel of cruiser LEANDER.

(Photo — Royal New Zealand Navy)

ship had to be shelved. The New Zealand Government still wanted, a definite participation in naval defence, and by an Order in Council, dated 20th June, 1920, with "The New Zealand Division of the Royal Navy" was authorised. This was a move that was to bear fruit. The New Zealand Government undertook to maintain a sea-going force and a training centre under New Zealand control. The cruiser HMS CHATHAM was commissioned into the New Zealand Division, and the old PHILOMEL raised steam for her last sea-going voyage in 1921. She proceeded from Wellington to Auckland to become the training establishment. In this role she would be stationary.

Her old main armament of eight 4.7 inch guns was landed, and a couple of more modern guns were installed for drill purposes only. PHILOMEL was secured alongside the training jetty near the entrance to the dry dock at Calliope Point, Devonport, and from 1921 until 1946 was part of the landscape. Buildings were erected ashore near the jetty, but PHILOMEL was "home" to all the trainees and their instructors, plus the base staff. Her appearance slowly changed. Large windows were cut in her sides to give better light and ventilation. Extra deck houses were built on her upper deck, but she still retained her two stately funnels, perhaps having visions of getting back to sea at some later date. By the

outbreak of the Second World War it had become quite obvious that the old ship had become too small to accommodate the increasing numbers that were now appearing. Barracks were built on the shore, but the White Ensign was still worn by the old ship herself.

When the war ended PHILOMEL was a sorry sight. Gone were her funnels, her masts had been cut down until only one remained, and all sorts of huts had been built on her topsides. PHILOMEL no longer appeared the sleek old style cruiser. In January, 1946, the ship was declared redundant and paid off for disposal. She was sold for the grand sum of £750 to the Strongman Shipping Company for scrapping. Some of her materials were used in the construction of a small coaster, but the hull itself was not an economic proposition to completely dismantle. In August, 1949, the old hulk was towed out to sea and a hole blown in her bottom. As she sank, more than one Kiwi was noticed with clouded eyes.

The signal from the New Zealand Naval Board at the time of her paying off is well worth recording:

From NZNB to PHILOMEL 16-1-46

"The Naval Board record their regret at the passing from the service of the first of His Majesty's New Zealand Ships, a ship that has meant so much to all who served in her. She goes as many good ships have gone before her, but when

HMNZS PHILOMEL's colours are hauled down for the last time at sunset this evening, the tradition which she has established during her long career will live on in the depot to which she has given her name."

The old ship has gone now, but many relics of her have been retained in the shore establishment. At the entrance to the depot and dockyard complex proudly stands one of her old close stowing bower anchors, and her crest is mounted on the iron gates. She had a long and worthy career and many Kiwi naval men did their initial training and later courses in her. And to her belongs the credit for the traditions which the Royal New Zealand Navy has acquired. It was a seaman from HMS PHILOMEL that was the first casualty in the Great War, so we can safely say that in two world wars, and the peace in between, PHILOMEL did her share. She had still been serving when in September, 1941, His Majesty, The King, sanctioned the title of "The Royal New Zealand Navy". She had trained New Zealanders for thirty-two years. There was one notable incident that she was unable to enjoy. On 20th June, 1968, the RNZN hoisted for the first time its own distinctive White Ensign, but the old "PHILOMEL Ship" as she became known in her later years, was not there to see it. The Royal New Zealand Navy are proud of the name PHILOMEL, and they have every reason to be.

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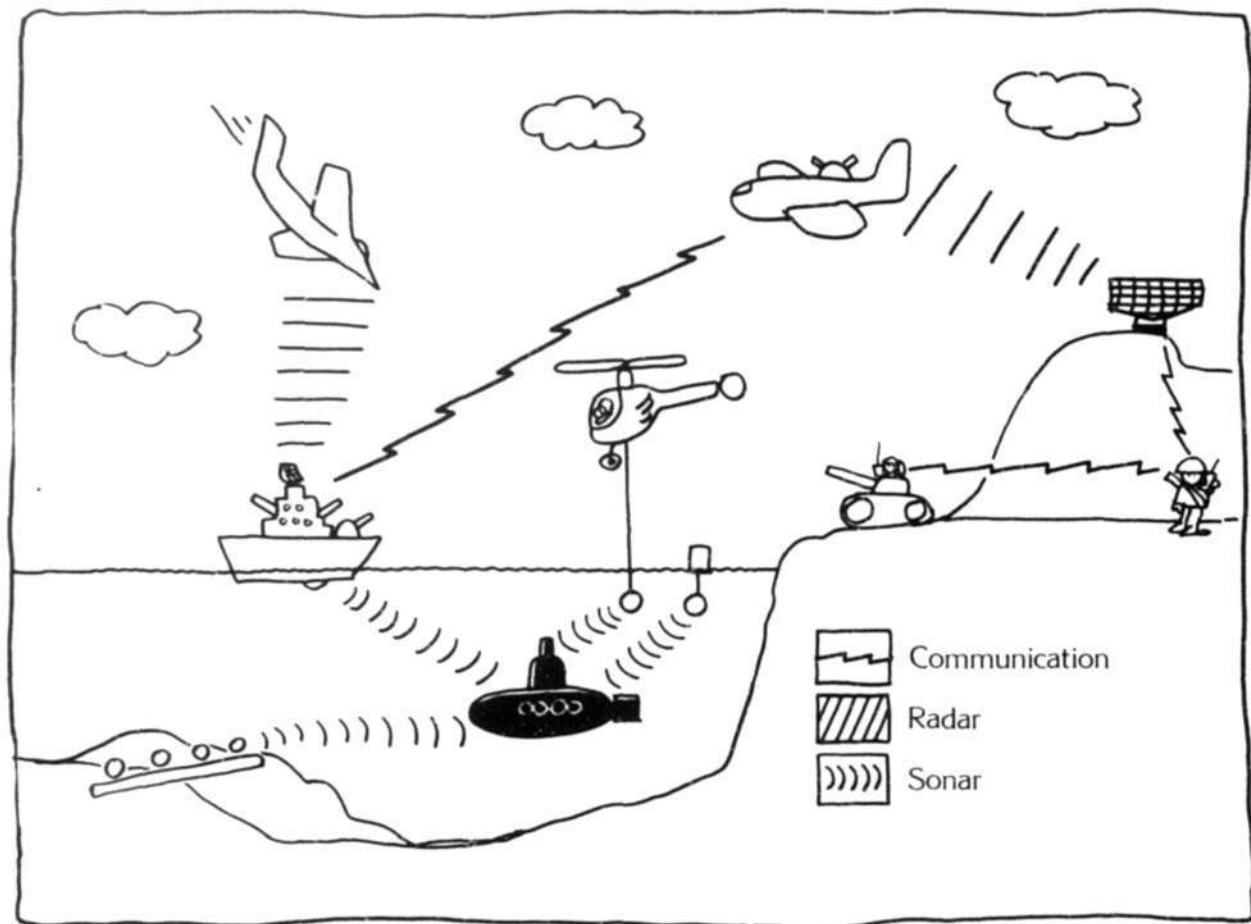
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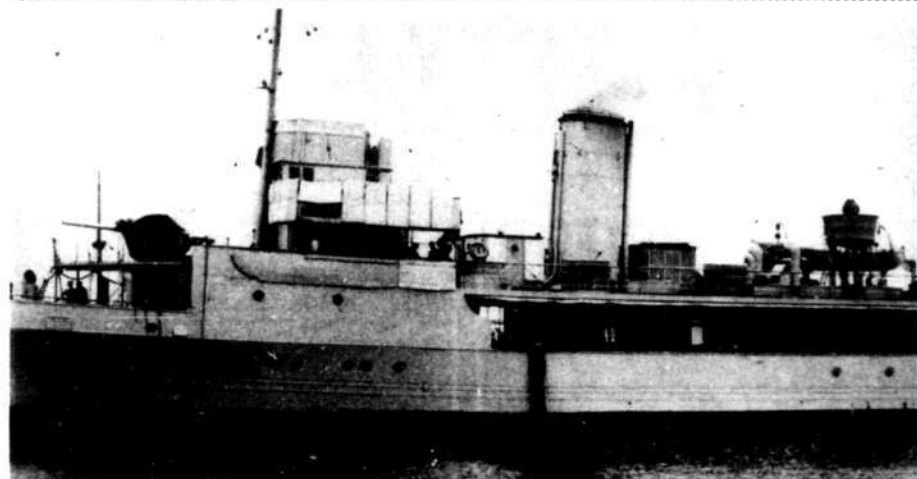
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HMAS DOOMBA as first commissioned, showing limited reconstruction. The 4 inch gun is still located immediately before the bridge and the ship's boats and searchlight platform are carried behind the funnel. (Photo — Ron Wright Collection)

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COVER PHOTOGRAPHS

(Top) An "S" boat in a seaway. (Photo — H. Adlam)

(R.H. Centre) HMAS SUCCESS working up to full power. (Photo — Naval Historical Society of Aust)

(L.H. Centre) HMAS SWORDSMAN laying a smoke screen. (Photo — M. MacDonald)

(L.H. Bottom) HMAS TASMANIA showing the almost perfect lines of an "S" boat. (Photo — Australian War Memorial)

(R.H. Bottom) HMAS TATTOO built by the same yard as TASMANIA. (Photo — K. G. Brown)

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Editor's Comment

The major articles of the May/June/July edition of "The Navy" are undoubtedly "Admiralty 'S' class Destroyers of the RAN" and "The Israeli Navy" prepared specially for the magazine by Harry Adlam and the Israeli Government respectively.

The majority of photographs used with the 'S' class are previously unpublished and illustrate the classic lines of these now vanished torpedo-boat destroyers. One of the most important points to arise from the article is the relatively short careers served by each of the five boats. This fact becomes increasingly important when all five were disposed of two years before the outbreak of a world war — "such is the short-sightedness of politicians", claims the author.

Israeli authorities have been most helpful in the preparation of the short history of their strategic and geographically important naval force. Few of the world's navies have experienced the type of sea warfare undertaken by the Israelis with their missile boats in the Mediterranean and Red Seas.

Tony Grazebrook's, "Defence Procurement — A Problem?", examines the delays affecting ship procurement in the RAN today. The time wasted is clearly apparent.

This issue of "The Navy" also includes what is hoped will become a regular feature on the Naval Reserve Cadet establishments throughout Australia. Commanders of individual units are invited to submit similar articles dealing with their particular establishment.

This issue was supported by Navy Public Relations, Sydney, The Royal New Zealand Navy, Harry Adlam, Brooke Marine, T. S. Condamine, Tony Grazebrook, the Israeli Consulate (Sydney), Malcolm MacDonald, John Mortimer and Ron Wright.

The August/September/October magazine will present as its main theme — European Navies and Warships, both past and present. In addition we also welcome to the ranks of contributors Captain John Moore, Editor of "Janes Fighting Ships". The principle articles will include A Pictorial Review of the Federal



FREMANTLE, 10th February, 1979. (Photo — Brooke Marine)

German Navy Today: Swedish Warships, Past and Present; The Italian Audace class Destroyers; The Progressive British Shipbuilder, Brooke Marine, will also be highlighted.

The editor is pleased to report, the overall response from readers to the new format of "The Navy" has been most favourable.

The above photograph (Courtesy Brooke Marine), shows the new patrol craft FREMANTLE, several days prior to launching. Another view can be found on page 16.

ROSS GILLET

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Admiralty "S" Class Destroyers Of The RAN

By Harry Adlam



HMAS STALWART, 27th March, 1919, showing original pendant number when first commissioned. Photo probably taken on acceptance trials. (Photo — RAN)

From 1920 until the arrival of STUART and four "V & W's" in 1933, the running flotilla of destroyers in the Royal Australian Navy were five "S" class destroyers. These 905 ton boats were presented to the Commonwealth in 1919 by the Imperial Government in appreciation for the splendid effort put out by the Australian services in the Great War.

The "S" class were designed to counter the fast German torpedo boats, and were given a good offensive armament to prove their point. They were fast little ships, having the same power plant as the heavier "V & W's".

The technical details of the Admiralty "S" class show a torpedo boat destroyer with an over-all length of 276' 0", a beam of 26' 8" and a maximum draught of 11 feet. Twin screws developing 27,000 shaft horse-power gave speeds of up to 36 knots. The armament was quite appropriate to a ship of such moderate dimensions. Three 4 inch QF Mark IV guns on Central Pivot mountings were the main offensive weapons. A 2 pounder Pom Pom was carried for close range AA

fire. Four 21 inch torpedo tubes in two twin revolving deck mountings were carried. As was standard practice in British destroyers there were no spare torpedoes carried, once the tubes were empty the ship had to go back to an armament depot and re-load.

The "S" class were a very handsome class of ships, and had an extremely "racy" appearance. The Foc'sle had considerable sheer, with the edges of the foc'sle deck rounded off in to a slightly "turtle backed" configuration. The bows were more flared than with the normal run of destroyers at that time, but the unfortunate fact remains that the "S's" could be very wet when running into a sea.

An "S" boat at full power was a remarkable sight. The ships tended to squat by the stern, with the stern wash rising above the line of the quarter-deck. At the same time the stem rose a couple of feet higher, and combined with the bow wave which curled about three feet above the foc'sle, the ships certainly gave an air of graceful power.

The five "S" boats were led by the flotilla leader ANZAC, and the six boats were a very well accepted addition to the RAN.

ANZAC had been completed during the Great War, and had seen quite a lot of war service. The "S" boats were all brand new, being handed over to the RAN immediately they were completed. They were never commissioned as HM Ships.

The five "S" class boats were named SUCCESS, SWORDSMAN, STALWART, TASMANIA and TATTOO.

TASMANIA and TATTOO were built by Beardmore of Dalmuir, which yard later turned out SHROPSHIRE. STALWART was built at the yard of Swan Hunter, well known for the

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construction of the second SYDNEY. SUCCESS was built by Doxford of Sunderland, while SWORDSMAN was built by Scotts, a yard well known at the present time for the construction of the RAN's "Oberon" class submarines.

As the "S" class were completed they were handed over to the RAN and placed in commission for a short period only. The main problem was how to get the ships out to Australia. The RAN had just completed five years of war, and numerically was a very small service. In hard facts, there was just not enough men in the RAN to man the new ships.

There were however, a group of sub-lieutenants in the United Kingdom, who had been serving with the Royal Navy. These were the first term entry to the RAN College, now seasoned officers with service in the Grand Fleet behind them. One subby was appointed to each "S" boat and of course one to the flotilla leader. From the Navy List of 1919 we find that S/Lt J. C. D. Esdaile went to SUCCESS, S/Lt J. A. Collins was appointed to STALWART, S/Lt E. A. Feldt to SWORDSMAN, S/Lt A. J. H.

HMAS SUCCESS on exercises. Photo taken in 1927 after pendant numbers were removed from ship's side. (Photo — M. MacDonald)



HMAS TATTOO making smoke from funnel and CSA smoke floats from stern. This formed a very effective smoke screen. (Photo — M. MacDonald)



HMA Ships TATTOO and SUCCESS laying smoke screen during fleet exercises. (Photo — K. G. Brown)

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This equipment is available on a contract basis and delivery priorities will be given to urgent maintenance needs.

Thompson to TASMANIA, S/Lt P. Hirst to TATTOO and S/Lt H. B. Farncomb to ANZAC.

When an agreement was reached with the Admiralty to provide delivery crews the ships were commissioned and steamed out to Australia. The flotilla commissioned at Portsmouth on 27th January 1920 and arrived in Sydney on the 29th April that year. They soon settled down to the routine of the peace-time navy, a routine that allowed for only a portion of the flotilla to be kept in full commission. Usually ANZAC and three "S" class formed the running flotilla, with the other two boats in reserve.

This happy arrangement carried on until the Depression era arrived. Fleet numbers were reduced, the "S" boats slowly dwindling in numbers until 20th May 1930, when the last "S" boat, SUCCESS, was paid off into reserve.

The fleet at this time consisted of four ships only — AUSTRALIA, CANBERRA, ALBATROSS and ANZAC as the sole destroyer.

A new lease of life was granted to TATTOO when on the 31st July 1931 the ship was recommissioned to replace ANZAC as the fleet destroyer. An odd fact emerges here. Whilst the big ships carried practically full crews, the destroyer was expected to operate with a reduced crew of about 35 men.

TATTOO carried on as the fleet destroyer, was engaged in the re-ranging of torpedoes. She then went to Flinders Naval Depot as the training ship, a duty that saw many young gunnery ratings doing their initial practice shoots from TATTOO's 4 inch guns.

In 1933 the replacement flotilla arrived, and the days of the "S" class were



HMAS SUCCESS's Gunner (T's) chest swells with pride as a "tin fish" leaves the tube "clean". (Photo — M. MacDonald)

drawing to a close. In 1936 VAMPIRE replaced TATTOO as the training ship, and the last "S" boat paid off.

After swinging at moorings for some time, the five "S's" were all sold to Penguins Ltd. of Sydney, for scrapping. On the 4th June 1937 the five ships were sold and their names vanished from the Navy List. One ship, STALWART made headlines when her empty hull was used to get rid of a cargo of Spanish onions that had gone rotten.

Filled up with her putrid cargo, STALWART was towed out to sea, and "the plug pulled out". Perhaps STALWART was thinking of her old

days as a smart fleet destroyer, and rebelled at this inglorious end. Perhaps she was the original protester. As she went down, the Spanish onions came up and washed ashore on one of Sydney's well known southern beaches. The people of Bondi were upset about the onions floating up on to their lovely beach, but STALWART was happy. She didn't like the onions either.

For many years TATTOO's boilers served Hudson's timber yard in Blackwattle Bay, but as this yard is now closed the fate of the boilers is unknown. The stern name plates of the "S" class have been retained by the Australian War Memorial in Canberra, but by and large the "S's" are largely forgotten.

It seems ironic that two years after the "S" class went under the hammer Australia found herself engaged in another war, and desperately short of ships. The "S's" would have been worth their weight in gold in 1939. Such is the short-sightedness of politicians. Australia was so short of ships that one old coastal steamer built in 1907 had to be requisitioned for naval duties, a duty that could have been well done by any of the "S" class.

The average "S" boat had only done eight years in commission, so they were in no way worn out. And to add insult to injury, when VENDETTA was towed away from Singapore in 1942, it was an "S" boat, HMS STRONGHOLD that provided the initial tow.

As a parting point, of the five sub-lieutenants originally appointed to the "S" class in 1919, only one ever commanded an "S" boat. We find that on 24th April 1924, Lt/Cdr P. Hirst was appointed to SUCCESS.



HMAS TATTOO, from stern showing lack of superstructure. (Photo — M. MacDonald)

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THE ISRAELI NAVY



DOLPHIN, Third "T" class submarine to join the Navy. (Photo — Israeli Navy)

The Navy is Born

Since its foundation in 1948, Israel has been involved in four major wars with the Arab states. Much of the glory in these conflicts has been credited to the Air Force and Army, with the Navy playing minor roles in all but the last conflict.

The main missions allotted to the navy have been, and still are:

1. To secure the sea lanes to and from Israel's ports on the Mediterranean and Red Sea.
2. To deny the enemy any possibility of turning Israel's coast into another battleground in the event of war.
3. To seal Israel's shores against terrorists and the smuggling of arms and explosives.

The Navy's story actually began on 17th March, 1948, when the establishment of "Naval Service" was approved. The first ships to join the new fleet were ex-immigrant transports previously employed in the carriage of refugees to Israel. These rusty hulks were soon joined by patrol launches, landing craft and other small vessels. One of these ex-refugee boats, the K18, was armed with machine guns and even a 65mm artillery piece, designed in the 19th century for mountain use. A second ship, EILAT, was constructed in 1927 to serve the US Coast Guard as an icebreaker and mounted four plywood "guns". During the 1948 conflict, the new navy saw little action, save the K16, which intercepted three Egyptian vessels off the Israeli coast. The later stages of the war in

December, 1948, saw several bombardments of beaches from Gaza to Port Said.

The 1956 Conflict — The Fleet Expands

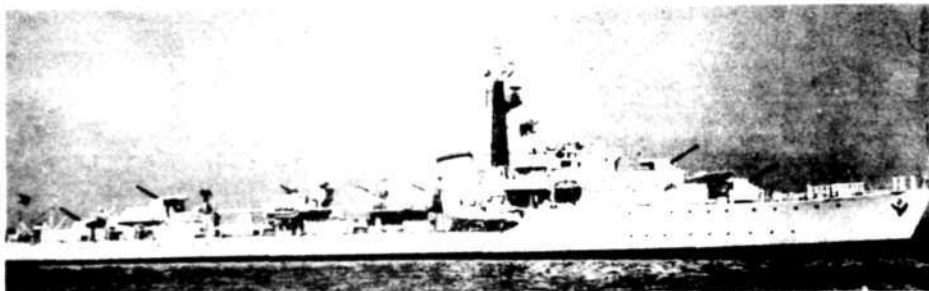
The period between the War of Independence and 1955 was one of laying the foundations for the organisation of the Navy on a regular basis. The first major combatant vessel, a former Canadian River class frigate, was acquired in 1950. Named MISGAV, the six year old vessel was joined by two sister ships, the MIVTAKH and MISNAKE, over the next two years. Two former Flower class corvettes were also obtained.

In 1955 it was decided to purchase two "Z" class destroyers from the Royal Navy. Both were transferred to Israel on 15th July, and renamed ELATH and YAFFO. Prior to their arrival two coast guard cutters had been obtained from the United States, and from Britain were acquired three HDML's and three Vosper torpedo boats built in 1942. A flotilla of landing craft, (1 LCT, 1 LCI and 1 LCM), were purchased and two small minesweepers, DROM A1 and DROM A2, acquired from South Africa.

On 31st October, 1956, the navy captured the Egyptian Hunt class destroyer IBRAHIM EL AWAL after an unsuccessful scuttling by the Arab crew. The ship was taken into Haifa, refitted and commissioned as the Israel Naval Ship (INS) HAIFA. The same year the former US coastguard cutter EILAT was renamed MATZPEN and then served as a depot ship till its disposal in 1962. Two



Dabur type patrol craft. (Photo — Israeli Navy)



YAFFO (Photo — Israeli Navy)

additional cutters were built in Germany in 1956 and a World War Two vintage submarine chaser was obtained from surplus stocks of the United States Navy. MISNAKE and MITTAKH were sold to Ceylon in 1959, when the sole survivor of the trio, MISGAV was rearmed to serve as a general purpose escort vessel until its disposal in 1961.

The navy's first submarines arrived in 1958, these being two former British "S" class. This pair were followed in 1964 by two "T" class, also built in Great Britain in World War Two. Both the latter, LEVIATHAN and DAKAR, had been reconstructed in the late fifties. Tragically the DAKAR was lost without trace on her delivery voyage from England. A third "T" class, DOLPHIN, was purchased several weeks before the loss of her sister ship.

The Six Day War and Embargo

At the outbreak of the 1967 Six Day War, the Israeli Navy was in the process

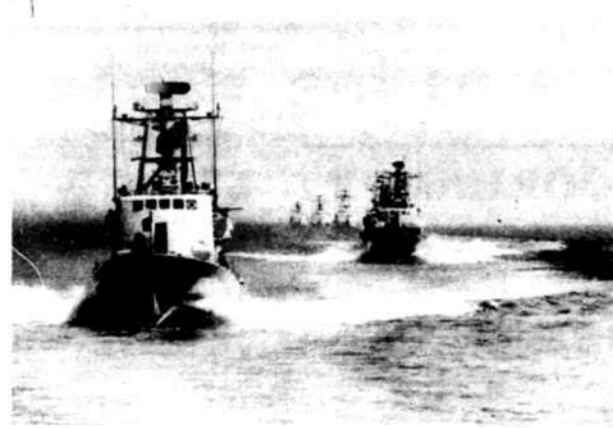


Vosper Torpedo Boat, 1956. (Photo — Israeli Navy)

of organisation and preparation for the arrival of a fleet of twelve missile gunboats, constructed in France. However, due to the war, President De Gaulle embargoed five of the dozen Saar class craft yet to be delivered, as well as fifty Mirage V fighter bombers for the Israeli Air Force. The Navy's major loss in the Six Day War was undoubtedly the

destroyer EILAT, sunk by Egyptian missile boats on 21st October, 1967, with heavy loss of life.

Despite problems connected with the French embargo, the Navy succeeded in taking delivery of its remaining five missile-armed craft within the next two years. The boats, delivered unarmed, created quite a victory for Israeli authorities. Briefly, the amazing feat began when Israel relinquished their claim to the vessels. The French, seeking new purchasers for the craft, were approached by the Panama-based, Norwegian shipping concern, Starboat & Weill. Assuming nothing unusual about the deal, French authorities sold the boats to the new buyer, not realising that Starboat & Weill, a phantom company, had in reality been set up by Israel. This done, Israeli sailors made ready for sea. Quietly cleared through customs, the flotilla headed into the English Channel — destination Israel, 3000 miles away. The Government carefully played the whole affair down, anxious to avoid confronting a French Government already embarrassed by the incident and by obvious indications that high-ranking French officials had aided the Israelis around the embargo. And still after the boats had arrived in Haifa, Israel blandly insisted that these craft would be used only in assisting oil drilling operations off the coast. Time of course told the true story.



Reshef class missile boats on manoeuvres. (Photo — Israeli Navy)



MISNAK, the former Canadian River class frigate. (Photo — Israeli Navy)

As a result of the embargo, local shipyards began the construction of a second generation Saar design, known as the Reshef class. To date some twelve of this type have been completed, or are still being built. Designated Fast Attack Craft — Missile, the Reshefs carry six Gabriel surface to surface missiles, two 76mm OTO Melara and two 20mm Oerlikon guns. They have an endurance of 3000 miles at 34 knots.

The missile has a range of 12.5 miles in the first configuration and 22 miles in subsequent versions. All Reshefs were built by the Haifa shipyard, the first and name ship commissioning in April, 1973.

Yom Kippur and After

After the outbreak of hostilities in the Yom Kippur War of 1973, the Israeli Navy began sorties against Egyptian coastal ports and anchorages. During the conflict, missile boats sank one Egyptian destroyer. Both YAFFO and HAIFA were disposed of in 1973 as had the two obsolete "S" class submarines LEVIATHAN, paid off in 1975, leaving only DOLPHIN active. The first of a new generation of submarines was laid down by Vickers Ltd, Barrow, on 2nd February, 1975. Named GAL and commissioned in January, 1977, she has since been joined by two sisters.

Supporting the missile flotillas in the Mediterranean and Red Seas are thirty Dabur class coastal patrol craft. Twelve of these 35 ton craft were built in the

USA, the remainder by the Israel Aircraft Industry. A basic armament of 20mm and 50 calibre guns are mounted. In May, 1977, the design of a modified vessel with almost twice the fire power was released. Known as the Dvora patrol craft, it differs from its predecessors by the addition of two Gabriel missiles, as well as the original gun armament. With a length of 71 feet and speed of 36 knots, the Dvora class can sail 700 nautical miles. This new mini-missile boat rates high in export potential, as have the Reshef's, six of which are currently building for South Africa. Gabriel has also been sold to several navies, including those of Taiwan and Singapore.

Today the Israeli Navy is a modern well-balanced force, basing its operations on the missile boats and submarines, and supported by the landing craft and other patrol vessels.

Current Fleet List

Type	Class	Number	Commissioned	Armament
Missile Craft	Reshef	12	1973-	6 Gabriel, 2 x 76mm, 2 x 20mm
	Saar	12	1968-1969	6 Gabriel, 1 x 76mm, 4 x TT
Submarines	Type 206	3	1977-1978	8 x 21 inch torpedo tubes, SLAM
	Ex British "T" class	1	1968	6 x 21 inch torpedo tubes
Patrol Forces	Dabur	30	1972-	2 x 20mm, 2 x 50 calibre MG's
	Ex PBR Firefish Model III	3	1975	Light weapons
Amphibious Forces	Kedma	4	1968	2 x 20mm
	Yar	1	1958	2 x 20mm
	Ex US "LSM 1"	3	1972	2 x 40mm, 4 x 20mm
	Ash	3	1966-1967	2 x 20mm
Training Ship Transports	"LC"	3	1965	2 x 20mm
	Ex US "LCM"	3	—	—
	Nogah	1	—	—
	Bat Sheva	1	1967	4 x 20mm
	Bat Yam	1	1969	—



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HMAS DOOMBA at Williamstown, 1942. (Photo — Ron Wright Collection)

FACT FILE NO. 3

By Ross Gillett

Ship:	HMAS DOOMBA
Type:	Auxiliary Minesweeper
Construction:	Steel
Displacement:	264 net tons, 750 gross tons
Dimensions:	Length 231 feet o.a., Beam 28 feet 6 inches, Draught 9 feet
Armament:	One 4 inch, one 6 pdr (original Royal Navy)
Engines:	Two sets triple expansion reciprocating by W. H. Allen & Sons, Bedford, England.
Boilers:	Two watertube by Babcock and Wilcox
Speed:	17.2 knots
Bunkers:	200 tons of coal
Complement:	90
Miles Steamed:	82,000 (war service)
Hours Underway:	9,000 (war service)
Original Cost:	£25,000
Conversion Cost:	£13,340

Launched on 10th October, 1919, by William Simons & Co Ltd, Renfrew, Scotland, as the Hunt class minesweeper HMS WEXFORD, DOOMBA first arrived in Australian waters on 22nd July, 1923. Following the Great War, DOOMBA, like hundreds of other surplus warships, had been laid up to await the scrapyard or the odd buyer. The Brisbane Tug and Steamship Co Ltd, were anxious to obtain a second steamer for their service, and after inspecting the ship at Montrose, where she lay, decided to purchase the vessel on 1st December, 1921, for conversion to an excursion steamer.

The Coaster Construction Company of Montrose converted DOOMBA, and she left for Brisbane on 5th May, 1923. After reaching Thursday Island the company's new purchase arrived in the capital on 4th August. For the next sixteen years DOOMBA was a familiar sight on the Brisbane River and Moreton Bay. She was able to carry over 1600 passengers, including 280 on the promenade deck, 1173 on the main deck and 150 on the lower deck. After 1928 DOOMBA was used mainly at peak periods such as holidays and the warmer months. In 1936 she served for half the year before ending her days as an excursion steamer.

DOOMBA was taken over by the Royal Australian Navy on 3rd September, 1939. A single four inch Mk IV gun was mounted during a minor conversion at Kangaroo Point, as were two 20mm Oerlikons, four machine guns, two depth charge throwers and



DOOMBA as modified to an anti-submarine vessel. Depth charges are now carried aft and the 4 inch weapon has been resited. The foremast has also been moved behind the bridge structure and she now carries No J01. (Photo — Ron Wright Collection)

two depth charge chutes. This conversion was to cost £13,340. DOOMBA was commissioned as an HMA Ship on 25th September, 1939. The ship subsequently left for Sydney and there underwent a second conversion to an auxiliary minesweeper. On 24th November, 1939, she underwent trials off the New South Wales coast. DOOMBA reached 13 miles per hour. She expended 13 tons of fuel on all purposes and ran 6.74 miles per ton of fuel. The corresponding figures for October, 1919, when first commissioned into the Royal Navy were: 17.88 miles per hour, 1.87 tons and 9.56 miles per ton of fuel.

In early 1940 DOOMBA left for Victorian waters and patrolled around Wilson's Promontory. She then returned to Garden Island. During 1940 she was purchased by the RAN for £12,000. Up to June, 1942, DOOMBA served around the south-eastern Australian coast and included visits to Eden, Twofold Bay, Melbourne, Bass Strait, Adelaide, Hobart, Williamstown, Port Welshpool and Waterloo Bay. Throughout this period she operated with numerous other RAN units, the main ships being SWAN, ORARA, DURRAWEE, KOROWA, WARREGO, GOULBURN and BERYLL II.

DOOMBA paid off to "F" class reserve on 13th March, 1946. Purchased by Penguins Ltd for £1174 in February, 1947, she was later resold to Meggit Ltd, also of Sydney, in 1951. The old minesweeper was taken in hand for conversion to a dumb lighter and was fitted with a series of bulkheads to carry linseed oil on Sydney Harbour. During 1969 DOOMBA (renamed MEGGOL in 1953) was sold and her remains taken to Homebush Bay in the upper reaches of Sydney's Parramatta River. There she lay as a hulk until December, 1976, when it was decided to sink her off Long Reef to form part of an artificial reef. Refloated, the DOOMBA was towed out by the Maritime Services Board tug A. R. FORD and was sent to the bottom at 1.12pm on the same day. She now rests on her keel in 120 feet of water, a short distance from the Manly ferry DEE WHY, which was scuttled on 25th May, 1976.

DOOMBA was the second largest auxiliary minesweeper to be used by the Navy in World War II and was one of the first trio of vessels to be requisitioned for war service. As originally completed she bore the pendant No NA7 and Later NO1 and JO1 in the RAN. DOOMBA belonged to the Later Hunt class minesweepers, of which 131 were projected and 95 actually built, including two launched and sold incomplete.



Another view of the former excursion boat, ex minesweeper, DOOMBA at Melbourne pre-1942 refit. (Photo — Ron Wright Collection)

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Helicopter Carrier for Italy

The recent decision of the Italian Navy to construct an anti-submarine helicopter-carrier again highlights a possible replacement for the RAN flagship HMAS MELBOURNE. To be named GIUSEPPE GARIBALDI, the 13,250 ton ship is designed for the continuous operation of embarked helicopters and performance of control and command roles of task forces.

In line with the new HMS INVINCIBLE, The Italian ship has been given a through deck with the island superstructure sited starboard. A complement of 18 helicopters (SH-3D) will be embarked. For self-defence, two triple anti-submarine Mk32 torpedo tubes and four Otomat surface to surface missile launchers have been provided. An air defence system of six 40mm, 70 calibre Breda twin Dardo systems and two Albatross SAM multiple missile launchers will also protect the ship.

Main power will be provided by two pairs of Fiat/GE LM2500 gas turbines. Designed for a maximum speed of 29.5 knots, GIUSEPPE GARIBALDI will be able to steam 7000 miles at 20 knots.

Norway Orders More Westland Lynx

Two more Westland Lynx helicopters have been ordered by Norway for coastguard duties. The contract, which includes spares, takes Norway's Lynx order book to six.

In placing the order, the Norwegian Air Materiel Command of the Royal Norwegian Air Force has taken up an option which was included in the first order for four Lynx in July, 1978. All six Lynx are due for delivery in 1981.

The Lynx are to be the up-rated version, at an all-up-weight of 10,500, and are planned to operate from the new Norwegian Coastguard vessels, on coastguard duties, including surveillance and rescue.

Lynx total order book, including the army version, now stands at 287, with orders for the navy version from Great Britain, France, the Netherlands, Denmark, Norway, Brazil and Argentina.

A further 200 Lynx are to be produced in Egypt for the Governments of Saudi Arabia, the United Arab Emirates, Egypt and Qatar.

HMAS FREMANTLE

The first of fifteen PCF 420 patrol craft on order for the RAN was launched by Brooke Marine on 15th February, 1979. The accompanying photograph shows the lead and nameship of the class a few days before the ceremony. The second vessel, WARRNAMBOOL, is now under construction in Australia by North Queensland Engineers & Agents Pty Ltd. She was laid down during September, 1978.

Third Invincible Ordered

A third Invincible class anti-submarine cruiser has been ordered from the British shipbuilders, Swan Hunter. To be named ARK ROYAL, she will incorporate the ski-ramp and certain improvements over the two earlier ships of the class. Original plans were to name the vessel after a World War One capital ship,

Compiled by "Gayundah"

in line with INVINCIBLE and ILLUSTRIOUS, but the recent decommissioning of the famous ARK ROYAL, star of the TV series "Sailor", prompted officials to continue this famous name in the Royal Navy.

Canadian Naval Exercises

Canadian Forces ships and aircraft recently participated in maritime exercises off Puerto Rico between mid January and mid March. Called CARIBOPS '79, the exercises were designed to provide combat readiness training in stable weather conditions for surface, submarine and air force in all aspects of maritime warfare.

Sailing from Halifax were the destroyers ATHABASKAN, ALGONQUIN, MARGAREE, OTTAWA, SKEENA, NIPIGON, FRASER and SAGUENAY, the fleet diving support ship CORMORANT, the operational support ship PRESERVER, the submarine ONONDAGA and the auxiliary vessels ST CHARLES and BLUETHROAT.

Maritime Air Group units participating included 443, 423, and VU 32 Squadrons from Shearwater.

The Canadian units operated primarily from the US Naval Base at Roosevelt Roads, Puerto Rico. Prior to returning to Halifax the ships visited a number of Caribbean ports in support of Department of External Affairs programmes.



FREMANTLE. (Photo — Brooke Marine)



USCGC GLACIER. (Photo — Navy Public Relations)

Visit of USCGC GLACIER

The United States Coast Guard injected a splash of colour into the Sydney Harbour scene on Friday, 9th March, when the icebreaker USCGC GLACIER began a short visit. Commanded by Captain Bruce S. Little, the 8½-thousand tonne vessel is painted red to improve visibility in polar regions. The American cutter (a term which is used for all US Coast Guard ships) also bears a handsome blue stripe across her hull near the bows. USCGC GLACIER remained in Sydney until Tuesday, 13th March. The Sydney visit had been eagerly anticipated by the ship's company, some of whom had arranged for wives to welcome the icebreaker on arrival at Number One Berth, Walsh Bay at about 9.30am. An extensive programme of tours and recreational arrangements were made for the 240 strong ship's company who recently concluded a tour of duty in the Antarctic. USCGC GLACIER is one of seven icebreakers operated by the US Coast Guard. The service was established in 1915 by an Act of Congress which consolidated the Revenue Cutter Service, dating from 1790, and the Life Saving Service founded in 1848. The original decree establishing the Coast Guard stipulated that it be a military service and a branch of the armed forces of the United States at all times. Further legislation fixed that the Coast Guard operate as a part of the United States Navy in times of national emergency or when the President so directs.

Tobruk Laid Down

A crowd of more than 600 watched the official ceremony which marked the start of construction of the Navy's newest ship, the 6000 tonne Amphibious Heavy Lift Ship, HMAS TOBRUK.

A giant 120 tonne section, a key part of the new ship was lifted into position by two huge gantry cranes at Carrington Slipways Pty Ltd, at Tomago on the Hunter River. It was the first time the big cranes had been used to move such a large section.

After pressing a button on the official dais which lowered the section into place on the building blocks, the Deputy Chief of Naval Staff, Rear Admiral N. E. McDonald, AO, and Carrington's General Manager, Mr Don Laverick, boarded the section where a special plaque was unveiled. HMAS TOBRUK is the largest ship to be built at Carrington's and is due for delivery to the Navy on 21st June, 1980.

May/June/July, 1979

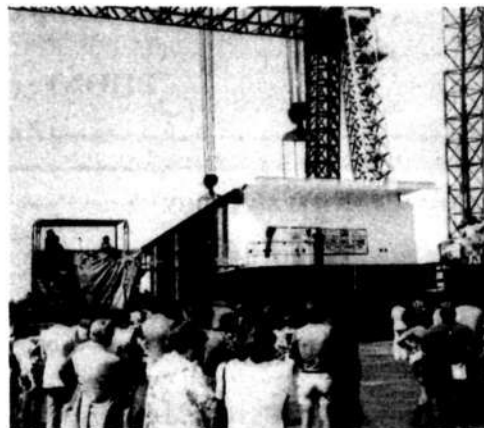
Victorian Divisional News

Annual General Meeting

In a departure from the normal approach to this occasion Commodore K. Shands, NOIC, Victoria, was invited to address members on the subject of "The Use of Naval Manpower". The evening consisted of the formalities of the Annual General Meeting, the address, followed by wine and cheese in a pleasant social atmosphere, and the results were gratifying in producing a significantly larger number of members attending.

Visit by Chief of Naval Staff

The Chief of Naval Staff was recently invited to address the League and friends at a meeting held in BP House in Melbourne. The subject was "Maritime Defence in the Years Ahead", and was attended by a gathering of almost 100 members and friends, despite the problems associated with a petrol strike at that time. Refreshments were taken afterwards and Admiral Synnot was later entertained by members of the Federal and Victorian Executive.



The keel laying ceremony of TOBRUK, 7th February, 1979. (Photo — Navy Public Relations)

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THE NAVY

Page Seventeen

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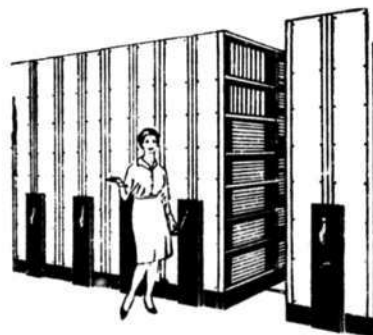
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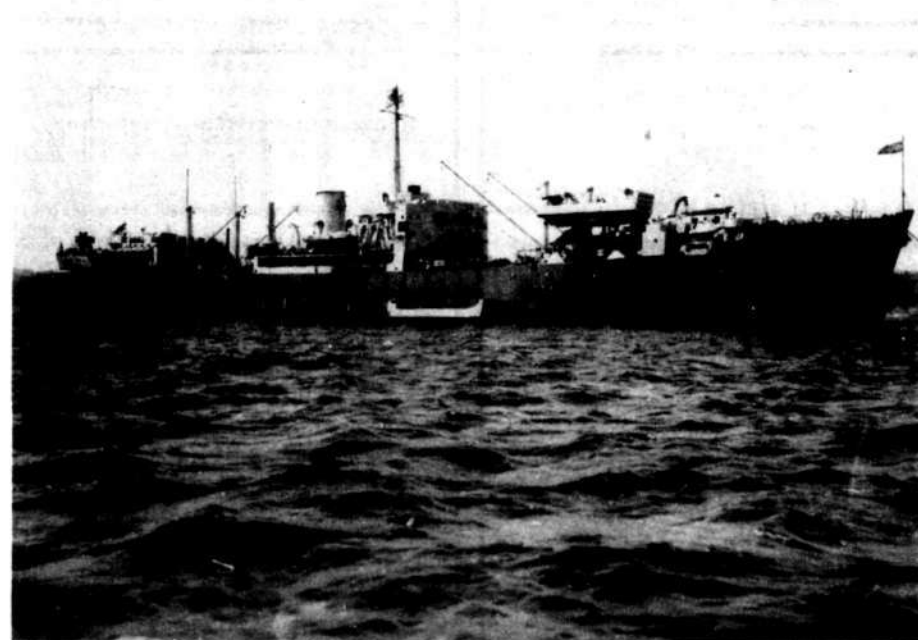
Out of the Past HMS DEER SOUND

Constructed as the PORT QUEBEC during
1939, HMS DEER SOUND was requisitioned
for service in the Royal Navy as an auxiliary
minelayer in 1940. She was capable of carrying
550 mines and formed part of the first
Minelaying Squadron between 1940 and 1943.

PORT QUEBEC displaced 8490 gross tons and was based on
port ZA (Scotland). She operated with the home fleet, including
the minelayers - AGAMEMNON, MENETHEUS, PORT
NAPIER and SOUTHERN PRINCE. These mercantile
conversions laid their mines in relatively safe seas, leaving the
more hazardous enemy waters to specially-built naval minelayers.

PORT QUEBEC was one of ten auxiliary minelayers
requisitioned by the Royal Navy in World War II. She carried an
armament comprising two 4 inch and four 20mm guns. On 1st
January, 1945, she was purchased, renamed DEER SOUND, and
became a repair ship. Prior to her sale the following year the ship
visited Sydney.

Note the 20mm gun above the stern and the landing craft
alongside and on the ship's davits.



HMS DEER SOUND, 1945. (Photo — Ron Wright Collection)

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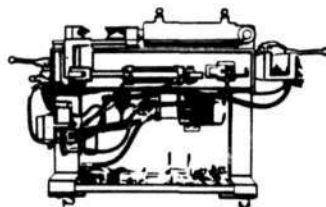
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A Worthwhile Visit

The President of the Navy League of Australia, Geoffrey Evans, comments on the recent visit of Admiral Elmo R. Zumwalt.

Nearly five months have passed since Admiral Elmo R. Zumwalt, United States Chief of Naval Operations 1970-74, visited Australia and in ten days became better known to Australians than any military visitor in recent times. It is appropriate to look back on the visit and try to assess its significance.

Until he came to this country few Australians had heard of Admiral Zumwalt, but as not many know our own military leaders, this is not surprising. An exception was the defence-minded part of the community, especially those involved or interested in naval affairs, who well knew the Admiral's reputation as an innovator who had made significant changes in the United States Navy during four turbulent years as its professional head. Certainly none of his friends expected the Zumwalt visit would pass unnoticed!

Admiral Zumwalt's message was clear — no matter the traditional ties and goodwill between America and Australia, his country had reached a stage where it lacked the military resources, particularly naval strength, to assist Australia in the event of a major world upheaval, which would almost certainly result in America's attention being directed to Europe.

Close observers of the naval scene, including our own Navy League members and writers, have been aware of this developing situation for some time and have warned against over-dependence on American military aid in an emergency. Admiral Zumwalt however, spoke with an authority which simply could not be denied, and succeeded in driving his message home as few other people could do. If his words needed any reinforcement it came almost immediately with the debacle in Iran and events in Indo-China.

If notice is to be taken of contemporary newspaper articles and editorials, correspondence from citizens over a period of weeks, and latter references in talks and addresses, the Zumwalt visit allied with the events of February, 1979 marks the time Australians really started to face up to their vulnerability in a very uncertain world.

We in the Navy League now have a responsible part to play in making sure that having started, we tackle our national problems with all the resourcefulness with which Australians in the past have been credited.

Admiral Zumwalt



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THE SHEFFIELD CLASS

1. Design History 2. Weapons

3. Hull & Machinery 4. Conclusion

By: Ross Gillett

1. Design History

The Type 42 or Sheffield class destroyer was originally designed as a medium sized escort, primarily responsible for defence against air attack, but with anti-submarine, patrol, gunfire support and surveillance capabilities.

Vickers, the builders of the lead ship, described their creation as, "The warship with more quality-assurance than any yet built for the Royal Navy". As envisaged, SHEFFIELD was to cost £20 million at 1966-67 prices, but the final price had reached £23 million when finally commissioned on 16th February, 1975. To effectively perform her assigned roles the destroyer carried a balanced armament and was given an operational radius of over 4500 miles at 18 knots.

SHEFFIELD was ordered from Vickers Ltd, Barrow in Furness, in November, 1968. She was laid down on 15th January, 1970, launched on 10th June, 1971, and completed in February, 1975, a building time of over five years. Since the ordering of the lead ship, construction of a further 10 sisters has been approved. Four of these have entered service. Three other well-known British shipbuilders, Cammell Laird & Co Ltd, Swan Hunter Ltd, and Vosper Thornycroft Ltd, have shared construction of the Sheffield class destroyers with Vickers.

2. Weapons

The Sheffield class carry an armament comprising one Seadart surface to air missile system, one 4.5 inch and two 20mm guns, two sets of 12.75 inch torpedo tubes, plus one embarked Westland Lynx helicopter.

The Seadart launcher is fitted on the forecastle between the bridge and 4.5 inch gun. Vertical loading is provided from the missile magazine directly below. The actual missile measures 14 feet 3 1/2 inches in length, with a 1 foot 4 1/2 inch diameter. Semi-active radar homing guides Seadart at a maximum cruise speed of Mach 3.5 for over 50 nautical miles. Twenty-four reload missiles are stored in the magazine.

The single Mk8 gun mounted in the Sheffield class is a medium-calibre naval gun developed by Vickers to meet the Royal Navy's needs for gunfire support. The rate of fire of 25 rounds per minute is not high by modern standards. The design

of the feed ring enables the gun to fire special starshell and radar reflecting chaff rounds at will and then immediately return to firing stock-piled H.E. rounds. The gun has a small crew and can operate unmanned.

Two 20mm Oerlikon guns, one sited on either side of the signal deck, provide a small calibre weapon for police duties. Two smaller saluting guns are also carried.

The two banks of 12.75 inch tubes firing Mk46 torpedoes were installed on the earlier ships of the class during their first refit and whilst building in the remainder. The Mk46 torpedo is launched via either the tubes on deck or from the helicopter.

Last but not least in Sheffield's inventory of weapons systems is the Westland Lynx helicopter. The aircraft, when not in use, is housed in a spacious hangar at the after end of the superstructure. Lynx carries both anti-submarine torpedoes and the Sea Skua (CK834) air to surface anti-ship missile. This new weapon is 9 feet 3 1/2 inches long and 8 inches in diameter. Unofficially, Sea Skua's range is said to be 5 nautical miles.

3. Hull & Machinery

The principle hull dimensions of the Sheffield class are: Length overall 410 feet; Beam 46 feet; and Draught 14 feet. Full load displacement is 4100 tons. Oil fuel for the ships is stored in the double bottom. The steel used in construction was notch-ductile Admiralty "A" and "B" with yield stresses of 16 and 20 tons per square inch. Throughout the ship a between deck height of 8 feet is provided.

Main power for propulsion is provided by a COGOG arrangement of Rolls Royce Olympus gas turbines, producing 50,000 shp. For cruising a pair of Rolls Royce Tyne gas turbines generate 8000 shp. Maximum speed is 30 knots. Obvious advantages of the gas turbines are almost instant acceleration and availability at a few minutes notice. Considerable automation in the machinery spaces allowed a cut in engine room staff with, in fact, a number of machinery spaces operating unmanned.

Lubrication, power supplies and machinery control systems are designed to minimise interdependence. The two, five-bladed propellers of the Model XX twin

double-acting controllable-pitch type were manufactured by Stone Manganese Marine. The propellers, designed for high speeds are controlled by an electronic system devised by Hawker Siddeley Dynamics. Four sets of non-retractable stabilisers, two anchors and twin rudders are also fitted to the Sheffield class.

4. Conclusion

Up to early 1979, four Sheffield class ships, SHEFFIELD, BIRMINGHAM, NEWCASTLE and COVENTRY had joined the British fleet. Another three had been launched, a further trio begun construction and one has been ordered.

The Sheffield Class

	Pendant No.	Builders	Laid Down	Building Time	Commissioned
SHEFFIELD	D80	Vickers	15.1.70	61 months	16.12.75
BIRMINGHAM	D86	Cammell Laird	28.3.72	56 months	3.12.76
COVENTRY	D118	Cammell Laird	22.3.73	68 months	10.11.78
CARDIFF	D108	Vickers	3.11.72	—	1978
NEWCASTLE	D87	Swan Hunter	21.2.73	61 months	23.3.78
GLASGOW	D88	Swan Hunter	7.3.74	—	1978
EXETER	—	Swan Hunter	1976	—	—
SOUTHAMPTON	—	Vosper Thornycroft	2.10.76	—	—
NOTTINGHAM	—	Vosper Thornycroft	—	—	—
LIVERPOOL	—	Cammell Laird	6.6.78	—	—
—	—	Vickers	1979	—	—



Lead ship and nameship of the class, HMS SHEFFIELD. In this photo the torpedo tubes have yet to be mounted. (Photo — Royal Navy)

The latter, to be built by Vickers, will be fitted with similar weapons to the previous ships, but the hull will be longer and wider to accept new weapons and equipment in future years.

GLASGOW was damaged whilst fitting out on 23rd September, 1976. The class have undoubtedly proved their worth. Two similar ships were ordered by Argentina in May, 1970. The first ship, HERCULES, commissioned on 10th June, 1976, with the second SANTISSIMA TRINIDAD in 1978.

Accommodation is provided for 312 men, although the normal complement comprises only 299 men, including 26 officers, 80 senior ratings and 193 junior ratings.



HMS BIRMINGHAM, June, 1977. (Photo — John Mortimer)

THE NAVY

May/June/July, 1979

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Defence Procurement — A Problem?

By: A. W. Grazebrook

The last half of 1978 saw the Parliamentary Joint Committee on Foreign Affairs and Defence Sub-Committee on Defence Matters devoting quite some attention to the system of procurement of equipment (big and small) for the Australian Defence Force.

At least in part as a result, the subject received extensive media coverage. If the media are to be believed, the procurement system was subjected to very substantial criticism from industrial organisations supplying the Defence Force and from a number of informed organisations and individuals outside the Government, Public Service and Defence Forces. There was also some criticism of detailed aspects from a professional organisation representing some of the professional engineers employed in the Department of Defence.

This attack was followed by a spirited defence by the Department of Defence.

There was nothing significantly wrong with the system, the Committee was told.

Many interested members of the public may well have felt justified in claiming they could not judge which side was correct. As in any other debate, the great majority of those who gave evidence have some sort of vested interest in the subject under investigation.

Government Ministers have their political positions to consider. Public Servants have their jobs to defend. Professional Associations exist to promote the best interests of their members. Australian Industry wants a larger share of defence contracts.

The organisations which are nearest to genuine impartiality are those without a money involvement of any type. The Navy League is a good example.

Many hundreds of thousands of words of evidence were submitted to the Committee. Out of all this, who is right? Is the procurement system instituted since 1973, producing the right equipment in the right place at the right time?

For that is the ultimate test. The system must be judged by results.

JUDGEMENT BY RESULTS

The institution of the new system came at a particularly difficult time — a time of a fundamental change in Australia's strategy with the implicit change in types and sources of equipment.

A number of major decisions should have been made. The equipment required as a result of those decisions should have been acquired, or at least be well on the way to entering service by now.



Due to remain in service until 1985, HMAS MELBOURNE will then need to be replaced by a suitable air capable ship, but still no decision has been made. (Photo — John Mortimer)

There have been a number of decisions that have been implemented. These include:

- The acquisition of 100 LEOPARD Tanks for the Army — most of these are now in service.
- The purchase of ten ORION P3C long range maritime patrol aircraft for the RAAF. These were required to replace the worn out NEPTUNES.
- Purchase of C130H HERCULES transport aircraft for the RAAF.
- Purchase of second-hand S2G TRACKER anti-submarine aircraft for the RAN.
- Acquisition of the second-hand training ship JERVIS BAY for the RAN.

These are the major decisions taken and implemented since the new system was instituted. With the exception of the purchase of the LEOPARD tanks (which many authorities question as being the best way to use scarce defence funds), most would accept that these programmes were justified. All were implemented reasonably promptly. The political decision to go ahead with the proposal was made reasonably promptly. Apart from claims that Australian Industry Participation (AIP) was not implemented to the full, all of these procurement decisions could reasonably be said to be sound and have been implemented promptly.

However, there are two important features. One of these is common to all of them — the equipment was purchased in toto, the first four from overseas. The fifth item — JERVIS BAY — was purchased locally from Australian National Line when she became available unexpectedly to fill a need which had already been identified by the RAN.

None of the five successful major projects involved a Government Department purchasing major components locally. However, the strategic needs were identified and the best equipment purchased and commissioned reasonably promptly.

Unhappily, the same cannot be said of

a number (a considerable number) of other major projects. Some of these are strategic decisions — the basic decision to go ahead with the acquisition has not been made. In other cases, the political decision has been made but has not been implemented.

Major political decisions that have not been made include:

- A replacement for HMAS MELBOURNE. The need for the continued provision of air cover for the fleet has been recognised for years. A Maritime Air Study Group began full time consideration of the best means of provision of air cover in July, 1971, if not before. Today, seven and a half years later, no decision has been made.
- The need for more destroyers, to enter service after the ADELAIDE Class guided missile armed frigates (FFGs) are completed in the United States, was recognised officially by the then Minister for Defence (HON L. H. BARNARD) in the House of Representatives in April 1974. Today, five years later, permission to proceed with design work has been withheld on the grounds that the ship cannot be designed until her role is decided and that is contingent upon the aircraft carrier decision. This reason sounds more like an excuse to do nothing — any knowledgeable observer would recognise that these ships will replace the RIVER Class destroyer escorts and that there is no way a destroyer can provide cover against aircraft equipped with stand-off missiles.
- The need for a new underway replenishment ship was recognised before 1969. Today, ten years later, no ship has been ordered (this subject was reviewed in THE NAVY, May 1978, page 3).
- The need for new mine counter-measure vessels was recognised many years ago. Writing in THE NAVY (November 1974), the immediate past CNS judged that the new vessels were required by 1977. Today, no ships

have been ordered. The new vessels are not expected to be ready for operational service until the mid 1980s.

Turning to those projects for which major political decisions have been made, but which are still in various stages of implementation, these examples are interesting:

- In August, 1972, the need for new patrol boats was recognised. In September, 1977, the choice of design was announced. In November, 1977, the choice of builder was announced. On 15th February, 1979, the first boat — HMAS FREMANTLE — was launched. The type and size of gun to be fitted has not been chosen. The boat will have to undertake sea trials — trials designed to identify any design faults: that need rectification in later boats of the same class — without her main armament.
- In August, 1972, it was announced that four destroyer escorts (the RIVER Class) would receive half-life modernisations. Five years later, in June 1977, the first ship (HMAS PARRAMATTA) started her modernisation. By the time she is finished, in 1980, PARRAMATTA will be nineteen years old. The modernisation of one ship has been cancelled, whilst that of the other two has not yet started.
- In April, 1974, the decision to acquire two guided missile armed frigates was announced. Implicit in that decision was acceptance of the need to acquire helicopters for the ships. No decision has been made on the type of helicopter to be acquired. The first ship commissions in August, 1980. It is highly unlikely that the helicopters will have been delivered in time to join the ship when needed.

These examples suggest that some procurement plans are not proceeding to schedule once the main decision has been made. The helicopters for the guided missile armed frigates are an outstanding

example. These extracts from successive Defence Reports (the Minister for Defence's formal report to the Parliament) speak for themselves:

Defence Report 1976 (page 25):

"The selection of a suitable type of helicopter to operate from these ships is planned to be made in 1977."

Defence Report 1977 (page 18):

"An evaluation of helicopters suitable for the RAN FFGs will start later this year. It is currently envisaged that a decision on the type to be acquired will be made in 1978."

Defence Report 1978 (page 18):

"An examination of armed helicopters suitable for the RAN patrol frigates is underway and a decision on the type to be acquired is expected in 1979."

However, some programmes already underway are proceeding on schedule. Examples include:

- The first two FFGs building in the United States were laid down and launched exactly on schedule. Their fitting out programme is running on schedule.
- The heavy landing ship TOBRUK, building in Australia, is running exactly on schedule. She is expected to be delivered structurally complete by the contract date of 21st June, 1980.

- The patrol boat programme, as distinct from the project to acquire a gun, is running nearly on schedule, with the lead boat now expected to complete in the United Kingdom late in July or early August, 1979.

The Australian Government involvement in these two programmes is limited to arrangements for Australian Industry Participation in the first case, and mainly to the provision of the gun, helicopters, and assault craft in the LSH. The builders procure all the rest of the components.

In this context, it is interesting to study the case of the oceanographic ship HMAS COOK, now fitting out at Williamstown Dockyard. All components are being procured by the Australian Government:

1969: Construction approved in principle, for completion 1974.
October, 1974: Keel laid; target launch date, November, 1976.
27th August, 1977: launched.
Completion now expected early 1980, eleven years from approval, in principle, of construction.

The time taken to construct HMAS COOK is now expected to exceed five years and three months. In contrast, the time taken by Newcastle State Dockyard to build a very similar ship, HMAS MORESBY (1961-64) was three years two months.

The facts outlined in this article suggest that:

- There are major delays in many projects at the political decision making stage — the decision whether or not to acquire a new destroyer, aircraft carrier, etc.
- There are further delays in choosing which type of ship to buy to fill an approved requirement — which type of aircraft carrier, destroyer, etc.
- Once the order has been placed, there are good prospects that the project will run to schedule. The less is the involvement of the Australian Government in the procurement of individual components, the greater is the prospect of the project running to schedule.

Although some projects run well — very well — it is impossible to avoid the conclusion that something is wrong, very wrong, with the procurement system for defence equipment.

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BOOK REVIEWS

CAMERA AT SEA 1939-1945

Price: \$22.45
Publisher: Conway Maritime Press
Reviewed by: "Gayundah"

My first impression of "Camera at Sea 1939-45", was a welcome and fresh addition to the range of naval books available on the current market. After a more detailed examination of its 192 pages, I was not to be disappointed.

The book contains within its covers over 250 black and white photographs together with 16 pages of colour. It is subdivided into eight chapters covering such aspects as: Warship Types; Weapons & Equipment; Navies in Exile; Naval Air Power; Operations; Victory; and of course, the colour section.

Most photographs are previously unpublished with such sources as The Conway Picture Library, Commander Aldo Fraccaroli, and The United States Navy official archives, providing the bulk for the book. Writers contributing their information and services reads like a "Who's Who" of maritime journalism with Alan Raven, John Roberts, Antony Preston, Jacques Mordal, Lawrence Sowinski, David Brown and Anthony Watts, joining forces to produce the very readable text.

Each photograph is individually captioned, providing a goldmine of facts and figures. "Camera at Sea 1939-45" was originally published in 1978 by Conway Maritime Press, one of several naval books released, or planned, by this progressive English publishing group. The book retails for \$22.45 per copy, however, the price should not deter the interested buyer as most worthwhile publications boast a similar price-tag.

It is available from most major retail bookshops, but if for some reason it is not, may be obtained from the Australian distributors, Bay Books, at 157 Baywater Road, Rushcutters Bay, NSW, 2011.

"Camera at Sea 1939-45" is strongly recommended to all shiplovers and naval men. It is a well produced book, printed on quality paper and will provide many hours of enjoyable reading to those interested in ships and the sea.

THE LAST OF THE TALL SHIPS

— by Georg Kahre
Price: \$14.95
Publisher: Bay Books
Reviewed by: "Gayundah"

Another publication recently released by Bay Books is entitled, "The Last of the Tall Ships". The book deals with the last commercial deep-water sailing ship fleet operated by Gustaf Erikson between the years 1913 and 1951. Against all odds, this one man was singularly responsible for prolonging the life of the commercial trading sailing ship. Operating from the Finnish Aland Islands, Erikson employed some 46 various sized sailing craft.

"The Last of the Tall Ships" is introduced by His Royal Highness, The Duke of Edinburgh. The book is 208 pages in length and is profusely illustrated. A table lists all 46 ships owned and includes such data as builder, dimensions and ultimate fate.

For readers still enthralled with the adventure of sail, "The Last of the Tall Ships", undoubtedly deserves a place on the bookshelf.

SUPER DESTROYERS

Price: \$6.95
Publisher: Conway Maritime Press
Reviewed by: "The Dustman"

Published by Conway Maritime Press, well-known to ship-lovers for the "Warship" series, "Super Destroyers", is a very interesting record of the conception, design, construction and performance of large destroyers built between the two world wars.

The book comprises six chapters, each devoted to the subject type of destroyer built by a particular nation. Each section is well illustrated by line drawings and photographs, the selection of which is excellent.

The Japanese "Special Type" destroyers are covered by Anthony Watts, the Italian "Navigatori" class are described by Elio Ando, the French "Fantasque" class are covered by Jacques

Mordal, the "US 1850 Tonners" by Norman Friedman, "The British Tribals" by David Lyon, and the German "Narvik" class are described by Antony Preston, who is also the editor of the whole work.

Many interesting aspects of the design and conception are brought to light, and it seems rather odd that each type was actually a failure. Even the British "Tribal" class, of which I myself am a confirmed admirer, was a costly experiment. All ships described seem to suffer in one main fault: they were all designed to provide heavy gun power, but at the expense of at least one other desirable feature.

In the case of the "Tribals" it was the suppression of 50% of normal torpedo armament, and like all the ships described, inadequate AA capacity. The methods of rectifying these short-comings are well covered, but it seems strange that whilst the US Navy had an excellent dual-purpose 5 inch, 38 calibre gun, the 1850 tonners were armed with low angle mountings. War experience showed that every nation had 'missed the boat' in this area.

With the Japanese "Specials" we see just how far that nation was prepared to go to build up to (and a bit beyond), the limits of the Washington Naval Treaty of 1922, resulting in some very unstable ships. As the writer points out in "The British Tribals", each type was designed to combat the super destroyers of another nation. In the case of the "Tribal" class the Japanese "Fubuki" was the target, but as David Lyon says, "certainly a Tribal never fought a Fubuki".

The old adage that "what is good in one war is not always so good in the next one", is certainly borne out by the case of the super destroyers.

One fault I did note was that some of the dimensions are given in feet and some are given in metres. I would have preferred all dimensions in feet and inches.

Summing up, I found "Super Destroyers" a very enjoyable book, full of technical information, well written and well illustrated. Full marks must be given to the publishers on their choice of subjects and writers, each of whom

thoroughly understood his ships. "Super Destroyers" is a must for all ship lovers, and for the destroyer buff it is an absolute essential.

FAST FIGHTING BOATS 1870-1945

by Harald Fock

Price: \$57.75
Reviewed by: "The Dustman"

Review copy supplied by Australasian Publishing Company Pty Ltd, Australia.

This book must go down as one of the best reference books in recent times, with the only thing likely to affect its circulation is the rather high price of \$57.75. Into 304 pages, illustrated by 212 photographs and 167 drawings, Harald Fock has been able to present a very comprehensive coverage of the development of the motor torpedo type or fast attack craft. He has covered the various efforts of many nations in the development of this extremely well known type of vessel. He shows no signs of favouritism, or forcing his own personal views, but describes each type in a very straight-forward manner. After reading all 304 pages of the book, I do not know which is Harald Fock's pet boat. If he has one, he certainly keeps it to himself, a quality much to be admired.

Originally published in the German language in 1973, this English language edition was brought out by the Nautical people in England during 1978, and their good presentation deserves high praise.

Fast Fighting Boats, covers just about all aspects that one could imagine and covers them well, indeed it would be only fair to say that Mr Fock has given the motor torpedo boat the same attention as did the late Dr Oscar Parkes with his great masterpiece, British Battleships. I am

quite certain that this book can be classed as an accurate reference book, and will be of very great assistance to the serious student of naval science. It is not the type of book that can be read in an afternoon as it is far too deep for casual reading, but once you pick this book up, you just cannot put it down.

It is very interesting to note that the hydrofoil was used by the German Navy in the Second World War, and also interesting to note that by 1919 a hydrofoil had attained the remarkable speed of 60 knots. One wonders why this type was not given the attention which it deserved in the dark days of the Second World War.

The various hull forms are dealt with and each nation seems to have a great preference for a distinct type. The early British Coastal Motor Boats used the stepped hull type, developed through the pre-World War I racing motor boats, whilst the Germans preferred the round bilged shape, and carried on with this in the very successful "schnellboot" (known as the "E" boat in British circles) of World War II. The introduction of the CMB was a fairly hasty exercise, and in the original 40 foot type the light hull was driven by a single screw, and to save weight the normal reversing gear was omitted.

The Italian Navy operated some very successful types of fast fighting boats, one of the most interesting being the one that could cut up the boom protection that was considered the answer to enemy ships entering an enclosed port.

The advent of the second world war saw the old coastal motor boat being replaced by the hard chined boat in most navies, the US Navy building boats to a British design, a design that had been rejected by the Admiralty, but very successful in itself. The Vosper design preferred by the Admiralty was a good one, but one wonders just why the

Admiralty didn't go ahead with both types.

Engines for these fast craft are dealt with on their merits, and the truth comes home that the British were in no way equipped to provide engines for the vast numbers of fast boats required, and in fact needed to import their engines from Italy. Germany turned out some very efficient light weight diesel engines, and fitted them to the schnellboots with good results. Quite a few of the Royal Navy torpedo boats were lost through petrol fires.

The illustrations are first class in Fast Fighting Boats, many of the photographs being aired for the first time. The line drawings are very readable and are a great help in following the developments as they are described. The technical details are all metric, although the usual descriptions, ie, 55' CMB, are used in the text. I did however become amused at the mention of a 4.4mm Lewis gun. This I fear was purely a printing error, and not a mistake by the author, but it does help to illustrate the difficulties that arise when converting from metric to Imperial, or vice versa.

To sum up, I found Fast Fighting Boats a very well presented, well written and well illustrated book of reference, one that will be quite accepted as a reference authority. The writer has given a wealth of detail, and has left little to the imagination. Some of the photographs are real works of art, the selection of which reflects great credit to the editor and publisher. All photos are of course in black and white, colour photography not being used to any great extent in World War II, and not used at all, as far as I can ascertain, in World War I.

A good book for the student of naval science, and a must for the technical shelves of all public libraries, a book that will be referred to for many years to come.

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

SENIOR OFFICERS NAVAL RESERVE CADETS:

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

QUEENSLAND: Staff Office Cadets, HMAS Morton, Box 1416T, GPO Brisbane, 4001.

WESTERN AUSTRALIA: Staff Office Cadets, HMAS Leeuwin, PO Box 58, Fremantle, 6160.

SOUTH AUSTRALIA: Staff Office Cadets, HMAS Encounter, PO Box 117, Port Adelaide, 5015.

VICTORIA: Staff Office Cadets, HMAS Lonsdale, Rouse Street, Fort Melbourne, 3207.

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AUSTRALIAN CAPITAL TERRITORY: Staff Office Cadets, HMAS Watson, Watsons Bay, NSW, 2030.



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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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To: The Secretary,
The Navy League of Australia,

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Sir,

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

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(Mrs)

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AFTER COMPLETION, THIS FORM SHOULD BE DISPATCHED TO YOUR DIVISIONAL SECRETARY — NOTE LIST OF ADDRESSES ON PAGE 3.

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NAVAL HARDWARE

The state of South Australia was always proud of their old cruiser PROTECTOR and there were quite a few people who were down-hearted when the old fighting ship became a part of the property of the Commonwealth of Australia.

Her memory has not been forgotten in her home state, and if we care to look around Adelaide we can find some relics of this old ship. On the beach front at Semaphore is one very interesting relic. One of the old six inch guns from PROTECTOR faces out to sea as a constant reminder of the part it was designed to play in the defence of the colony. Locally known as the PROTECTOR GUN, this weapon is virtually complete. It is mounted on a Vavasour short recoil central pivot carriage, and still retains its heavy shield. Not much can be detected on the gun or mounting so as to identify its maker or date of manufacture, as the Trust responsible for its upkeep have been very liberal with paint. Whilst the heavy coat of paint protects the steel surfaces, it would have been very easy to have used a thinner coat so that the stampings could have been deciphered. Be that as it may, this gun is a permanent monument to PROTECTOR, from the time she entered

service for the colony of South Australia until the advent of the Commonwealth Naval Force and then the formation of the Royal Australian Navy. A couple of years before the Great War PROTECTOR was rebuilt and re-armed. Her six inch guns were removed and a mixed armament of 4 inch and .12 pounders was mounted. One of these 4 inch guns is on display at the town centre of Elizabeth. In this case the gun is not painted and we can gain a lot of information from the piece. It appears that the barrel was made by the Elswick Ordnance Company in 1898. It is a 4 inch QF Mark I and bears the registered number No 145. The mounting is a Mark I pedestal registered number 5901. On various parts of the carriage the marking S2 appears. This could be a maker's identification, or it could be a ship's marking denoting that the mounting was Starboard No 2 mounting. As there is no way of finding out when the gun was mounted in PROTECTOR its history

before it came aboard the old South Australian ship is unknown. However, it is almost certain that the gun was second-hand, and could have come from PIONEER or PSYCHE as both these ships were armed with four inch QF guns on pedestal carriages. The date of manufacture would certainly coincide with the two "P" class cruisers, and both were disarmed during the Great War. These two guns trace PROTECTOR's life, and also follow the changing pattern in naval gunnery, from the old breech loading system of the 6 inch Vavasour through to the brass cartridge case in the 4 inch quick firing system as shown by the gun at Elizabeth. There is around Adelaide a larger gun, said to be from PROTECTOR, and this could be her old 8 inch BL 12 ton gun, but as yet this writer has not located it. When information is at hand it will certainly be passed. on. In South Australia PROTECTOR is not forgotten.

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TS CONDAMINE, Headquarters and accommodation block.
(Photo — TS CONDAMINE)



TS CONDAMINE, showing the picturesque setting of the unit on Manly Lagoon. (Photo — TS CONDAMINE)

T. S. CONDAMINE — Past, Present & Future

Known originally as the NLTD (Navy League Training Depot) VAMPIRE and subsequently NLTD PERTH, the present TS CONDAMINE is a thriving cadet establishment situated on Manly Creek in Addiscombe Road, Manly Vale, one of Sydney's northern beach suburbs.

The unit was originally located in a small shed overlooking the waters of North Harbour in Manly Cove, fronting East Esplanade. During the late 1950's a request was made for a Western Australian unit being set up to 'take over' the name Perth. Thereafter known as CONDAMINE, the unit continued to occupy their headquarters until May, 1967, when a very severe storm badly damaged the site. Structurally impossible to continue at these headquarters, all equipment and stores were removed for storage at various homes of the instructional staff until suitable alternative accommodation could be found. For the remainder of 1967 the unit paraded of a Saturday in the Manly Scout Hall.

During this period, Manly Council offered the group a piece of unclaimed land on Manly Creek in exchange for the lease of the old site. This having been agreed upon, the ship's company bid farewell to the scout hall and mustered on the new site during 1968.

For the ensuing eighteen months, the unit was housed in two small tents, erected and dismantled each week-end, whilst the new area was reclaimed from nature. All the overgrowth was finally removed and the site cleared to begin construction of the new headquarters. An initial grant of \$2500 from the Navy League of Australia allowed preparations for erection of the building to begin. Further, a \$2500 loan, later converted to a second grant, also from the Navy League, cleared the way to purchase materials for construction. With further assistance from business houses work proceeded.

Fortunately for TS CONDAMINE, the unit was successful in obtaining the services of Mr Ray Condon, a Structural Engineer and resident of nearby Forestville. Mr Condon prepared plans and specifications and under his guidance the building was erected, (except for the block laying), by the ship's company and their parents.

On 3rd May, 1969, the mainmast was stepped and foundations laid soon after. By December, 1969, it had grown to a building of 100 feet by 30 feet, but was still lacking glass in the windows, power and water. Despite this, the unit's first function, a bar-b-que, was held inside the building on a dirt floor, on a very wet evening. Work progressed during 1970 and by January, 1971, the building was at the lock-up stage and was able to be used for storage and training. On 21st October, 1972, the new headquarters were officially opened by the then Senior Officer (NSW Div), Cmdr L. Mackay-Cruise, RD, RANR, and dedicated by the Reverend A. E. Williams, the unit's honorary Chaplain.

Since 1972, continual work has been performed, especially as regards the building's interior. This and other financial commitments towards purchasing equipment required by the unit, has forced expenditure to \$80,000 over the last 12 years. The

training of cadets has continued with sailors from TS CONDAMINE being in the top 5% of all courses attended. Since November, 1978, cadets have partaken in annual continuous training with the RAN, including four posted to HMAS Nirimba for cooking courses, three to HMAS TORRENS for general training and three to HMAS VAMPIRE for LSMN and PO's examinations.

TS CONDAMINE presently holds the Naval Reserve Cadet Inter-Unit Cricket Trophy and although being one of the smaller units in numbers, was able to hold third place in the overall points score at the Athletic Carnival held during August, 1978. Other activities in which the unit has participated in recent times include the Annual Rocks Celebration, Anzac Day and Remembrance Day at Manly and making available detachments to assist at dinners for the Asthma Foundation at the Royal Sydney Yacht Squadron, as well as various RSL clubs.

The unit is fortunate to have the use of the Royal Volunteer Coastal Patrol Vessel KRAIT of "Z" Force fame, for practical training in ship handling under the instruction of unit staff.

At various times Cadets also have the opportunity to proceed to sea on ships of the RAN and work with the Ship's company for that period. Examples of the latter were Cadets posted onboard HMAS SYDNEY (prior to her being struck off), proceeding from Sydney to Adelaide and returning to Sydney by bus to enable Cadets from South Australia to do the return journey. Weekends are also spent in association with the Royal Australian Navy Reserve at sea on training exercises. Example, one Cadet Petty Officer recently joined the diving tender SEAL for a training weekend, from Sydney to Port Stephens and return, with Saturday night spent in Newcastle. During the first weekend in December, 1978, two cadets from the unit went to sea for a day's running with the RANR onboard the patrol boat HMAS BOMBARD.

The Unit has an active Parents and Friends Committee, whose job it is to raise the finance required for the general running of the Unit and to assist the Unit in purchasing equipment and fittings which are necessary for the training of the boys. It is stressed that the Navy, or more to the point, the Treasury, has a limited budget for Cadets' training and outside uniform issues and training aids and general stores requirements. The building of the Unit premises and their fitting out is the responsibility of the Unit and the Parents Committee.

In this regard this Unit has over the previous decade been lucky in having a purposeful Committee and Unit Staff, who have taken the "bit between the teeth" and worked very hard to make the Unit what it is today.

ARAKAN AND ARDENNES

Two Landing Craft Logistic are now in service with the British Ministry of Defence (Army). Both ARAKAN and ARDENNES were constructed by Brooke Marine Ltd, having been ordered in October, 1974.

The accompanying photographs show the general layout of the two ships. Each craft displaces 870 tons standard and 1413 tons full load. Length overall is 240 feet with a beam of 47 feet and draught of 5.8 feet.

ARAKAN and ARDENNES possess a top service speed of 10.2 knots and can carry 350 tons of mixed cargo or five Main Battle tanks. The main machinery comprises two Mirrless Blackstone diesel engines. A crew of 35 men is carried with a further 34 army personnel embarked for amphibious operations.



HMAV ARAKAN with bow doors open and ramp in position for loading. (Photo — Brooke Marine)



HMAV ARAKAN underway. (Photo — Brooke Marine)



HMAV ARDENNES, the 417th vessel built by Brooke Marine Ltd. (Photo — Brooke Marine)



HMAV ARAKAN, beaching trials, April, 1978. (Photo — Brooke Marine)

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AMOKURA

— By Harry Adlam

The New Zealand Government Training Ship

Almost forgotten in these modern times is the old AMOKURA, almost but not quite. Her name is still to be seen in New Zealand's capital, Wellington, where the Navy League training establishment bears the title of TS AMOKURA.

Originally built as HMS SPARROW, a first class gunboat, the ship was laid down by Scotts, well-known for their building of Australia's "Oberon" class submarines, and was launched on the 26th September, 1889.

She was one of a class of nine ships, the others bearing the names of GOLDFINCH, LAPWING, MAGPIE, REDBREAST, REDPOLE, RINGDOVE, THRUSH and WIDGEON. The length of these ships

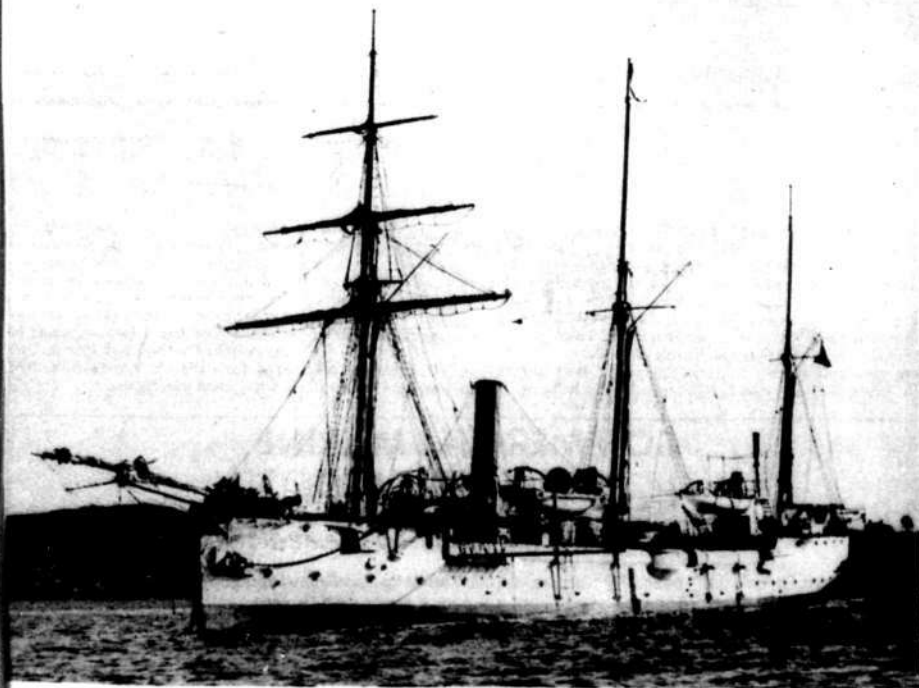
was 165 feet, with a beam of 30 feet and a normal draught of 11 feet 7 inches. The displacement of 805 tons ensured good stability for ships of these moderate dimensions.

The main armament comprised six 4 inch guns, backed up by two 3 pounders and two machine guns. The ships were single screw vessels with reciprocating engines of 1200 IHP to give them a speed of 13 knots. Coal capacity was normally 105 tons.

The ships were composite built, and

were rigged for sailing, the rig being square on the foremast, with fore and aft sails on the main and mizzen. This rig is usually referred to as the "gunboat" rig.

HMS SPARROW commissioned for service on the 13th May, 1890, under the command of Lieutenant P. Hoskyns, RN, and was ordered to the Cape of Good Hope. This was an interesting station for the navy in those days, as there was still some activity with the slave traders. On station SPARROW worked at times with a third class cruiser named PHILOMEL,



AMOKURA. (Photo — Auckland Library)

The ship which was later to be the main reason for the gunboat's sea-going career being curtailed.

After ten years in commission SPARROW returned to the United Kingdom and on the 19th January, 1900, she paid off into reserve.

Towards the end of the year SPARROW was re-commissioned again, this time for service on the Australian station, where there was a need for ships of her type. Life seems to have been quite peaceful for SPARROW during her time in Australian waters, and on the 31st March, 1904, HMS SPARROW was formally paid off alongside Garden Island in Sydney Harbour.

This could have been the end of the road, as the ship was not modern by any means, and was of a type that was of little use, but a new life awaited her. The New Zealand Government had been contemplating the introduction of a sea training school, where young New Zealanders could be fitted for a life at sea. The lack of a suitable training ship seemed to be the main obstruction to the scheme.

After some negotiations, HMS SPARROW was handed over to the New Zealand Government in Sydney on the 28th February, 1905. Captain F. C. Post was given the job of delivering the ship to New Zealand. The actual status of ownership took some time to clear up, but finally on the 10th of July, 1906, she was purchased from the Admiralty for the grand sum of 800 pounds (1600 dollars).

The control of SPARROW was vested in the Marine Department, as there was no actual local naval force that could operate a training ship of this type. Now that she belonged to New Zealand it was decided that a real "Kiwi" name would have to be found for her. The name selected was AMOKURA, a name that will be remembered with pride.

To fit the ship out as a boys' training ship took some time. However, few structural alterations were made. Four of the 4 inch guns were removed, leaving the two waist guns in their sponsons to give an impressive appearance. The two 3

pounders were retained, and the boys did gun drill on them. It is very doubtful as to whether the two 4 inch guns were ever fired during AMOKURA's training days, although it is quite possible that they were used as saluting guns at some time or other.

The ship was painted white, with a buff funnel, the same colour scheme as was adopted later for the survey service. The photograph accompanying this article shows AMOKURA as she appeared in August 1908 at the beginning of her training career, and one can see the dignified air she displayed.

Boys were taken aboard to learn the "tricks of the trade", which included learning to handle the ship under sail. The "gunboat rig" was a handy one for this job, but even though there were only a few square sails to handle, it was heavy work for boys of 14 years. The boys were dressed in the traditional rig of the British "blue-jacket" and it is cap ribbon bore the inscription NZS AMOKURA.

Training courses were held in New Zealand waters, and the boys learnt all aspects of a life at sea.

After leaving the old AMOKURA the boys either went into the merchant service, or joined the Royal Navy as a locally enlisted rating. Many New Zealanders joined the infant Royal Australian Navy when it was proclaimed in 1913, and quite a few of those original New Zealand volunteers had done their initial training in AMOKURA.

The Great War broke out in 1914, and many old AMOKURA boys saw service in many seas, their training in the old ship being put to full use. The New Zealand Government had commenced a naval defence programme in 1914 with the acquisition of HMS PHILOMEL, but this had to be shelved "for the duration" as PHILOMEL became a fully operational unit again, and was sent off to the Red Sea. Thus the little AMOKURA kept going with the old "business as usual" type application to duty.

With the coming of peace, the NZ Government got to work on its naval

programme once more, and in 1921 PHILOMEL became the training ship for the New Zealand Division of the Royal Navy. We now had two training ships operated by two different government departments, financial limitations decided that only one could be retained. One had to go, and reluctantly AMOKURA was given a notice to say that its services were no longer required.

In December, 1921, NZS AMOKURA hauled down her colours for the last time. She had done a wonderful job, and she had done it in a wonderful manner. She was getting on in years, and was of no use to the New Zealand Naval Division. The ship was now thirty three years old and completely obsolete.

Old as she was there was still work ahead for AMOKURA. The vessel was purchased by Mr E. A. Jory for the sum of £1435.0.0. This was good business for the NZ Government, as they made a profit of £635.0.0, on the deal. The old ship became a coal hulk, mainly based on Westport, and though no longer sea-going, she helped keep other ships at sea.

In 1940 AMOKURA was taken over by the Union Steamship Company, who seem to have operated her until about March, 1953, when she was sold to a Mr W. J. Orchard. The ship was towed to St Omer, in Pelorus Sound, where she was used as a storehouse and jetty combined. In this role AMOKURA only lasted a couple of years. Time had taken a toll on her hull, and she was no longer an economical proposition.

In 1955 the ex-jetty, ex-coal hulk, ex-NZS AMOKURA, ex-HMS SPARROW was broken up. She had done her job without any fuss for sixty-six years. A truly remarkable effort indeed.

Although she is no longer with us, her name is still remembered by the sea cadets in Wellington, but one wonders just how much of the old ship remains. Somewhere there must be preserved relics of the old ship. Where are the old 4 inch guns, where are the 3 pounders. I for one, would be very interested to know just what has been saved from the old AMOKURA, New Zealand's first training ship.



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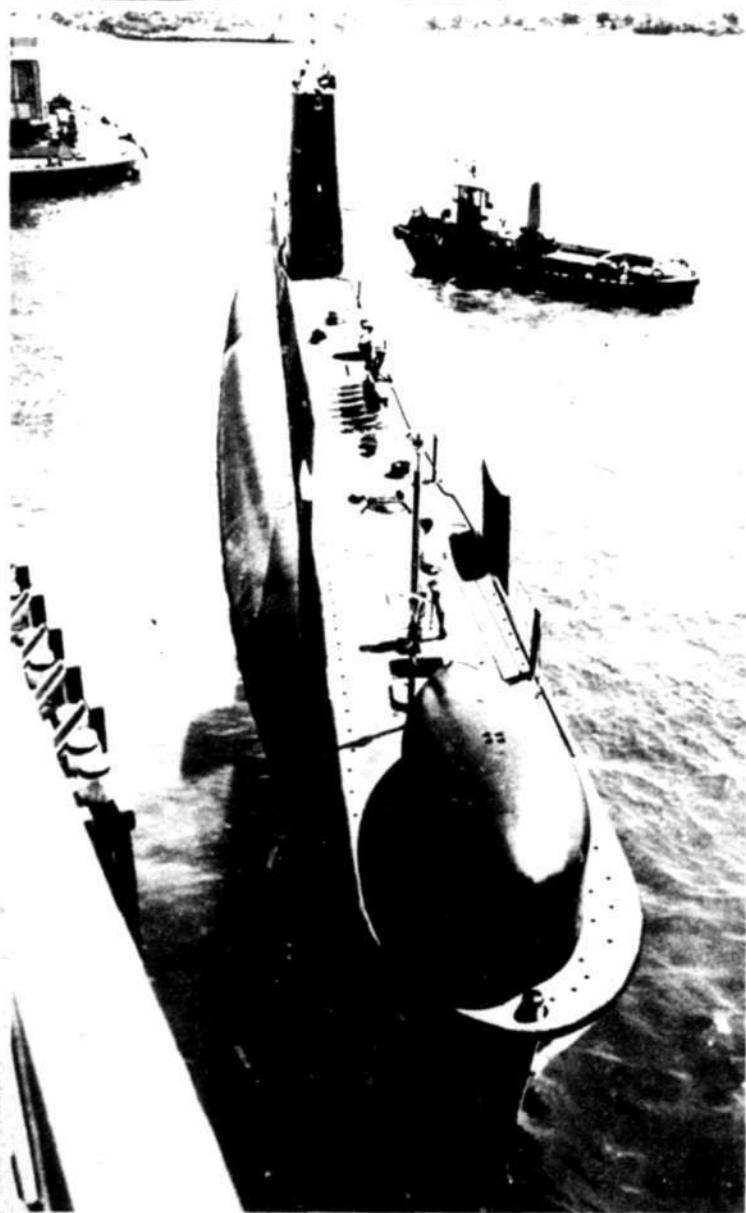
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