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THE NAVY

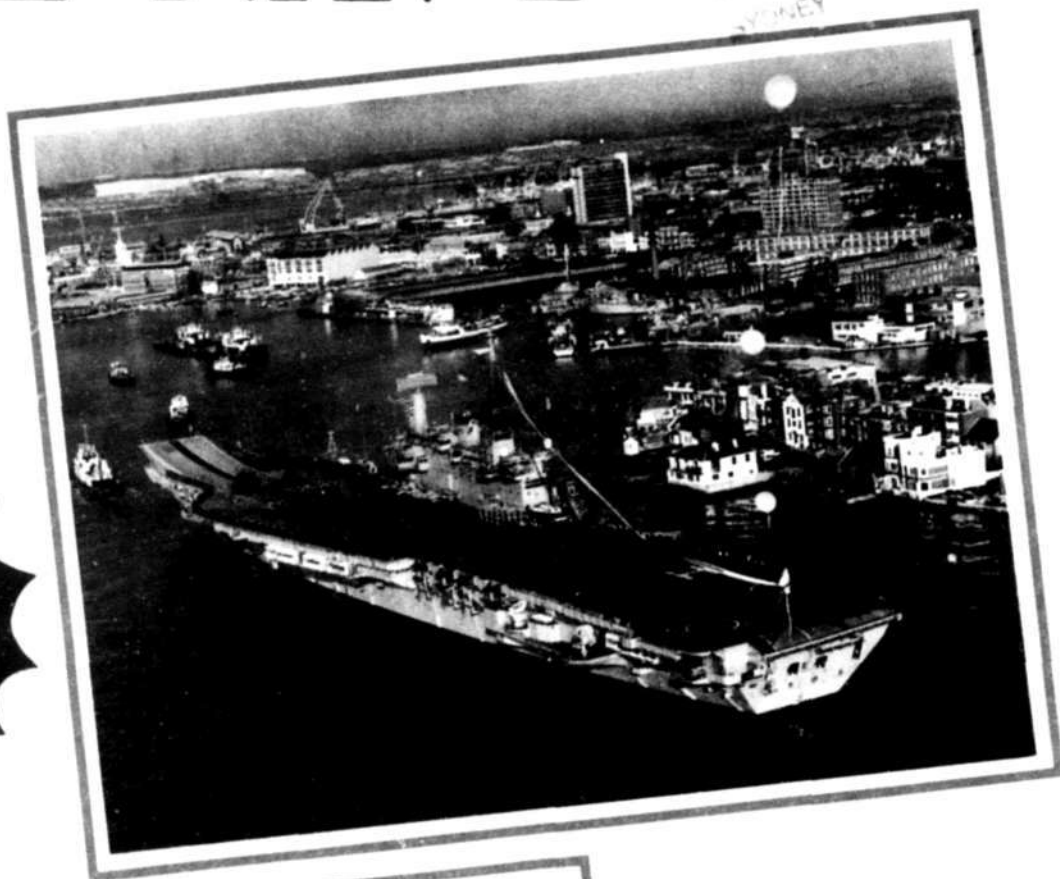
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The Magazine of
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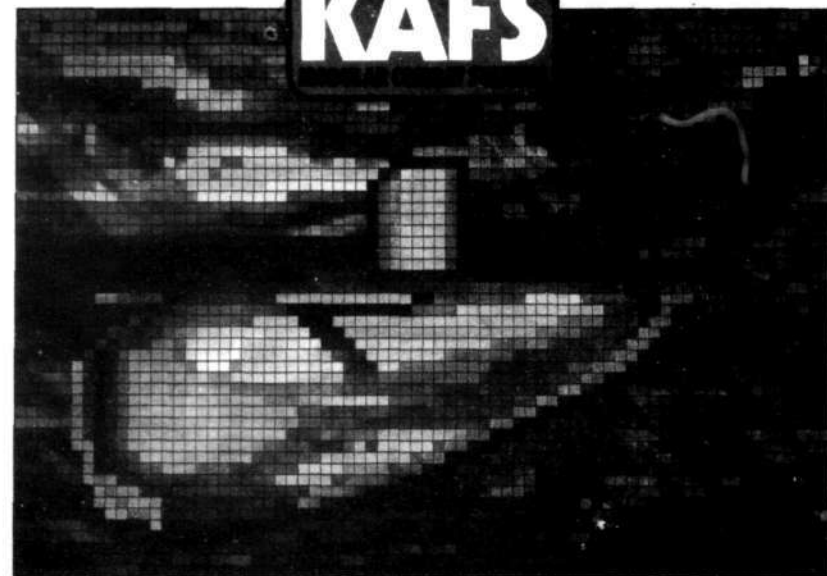
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THE NAVY



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The HMAS Stirling-based destroyer escort HMAS STUART pictured at speed during manoeuvres on 8th March, 1984. She is flanked by the patrol boats HMAS ADROIT (leading) and HMAS ASSAIL. ADROIT is manned by the Fremantle Port Division of the RANR. (Photo - LSPH Steve Given)

COVER PHOTOS

22nd November, 1983, and HMS HERMES steams into Portsmouth at the end of 10 weeks on exercises in the Mediterranean, effectively marking the end of her sea-going Royal Navy service. Later she underwent a period of dockyard maintenance in Devonport in early 1984. She is now employed in training tasks alongside in Portsmouth Naval Base. The ship is flying her paying off pendant, which is normal practice on return from service at sea prior to going into dockyard. (Photo - Royal Navy)

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THE EDITOR'S COMMENTS

ONE of the most important facets of an effective fleet at sea is the support it receives both afloat and ashore. In the former category the Royal Australian Navy relies on such ships as STALWART, SUPPLY, JERVIS BAY and TOBRUK, plus dozens of smaller vessels, to provide an extensive range of services.

Ashore, the need to support is just as important. In the Garden Island region one of the most important establishments is HMAS KUTTABUL, presently commanded by CMDR Peter Hugonnet. This issue of "The Navy" features a comprehensive pictorial description of HMAS KUTTABUL, both past and present. In subsequent issues we hope to present the stories of HMAS CERBERUS and HMAS STIRLING.

On the foreign affairs front, we are given an insight into the new Soviet missile cruiser SLAVA and 'from the west' a series of dramatic photographs of the West Australian Navy, recently revitalised by the

viewpoint

Fishing For What?

MUCH has been written over the past few years, in both government and non-government circles, for and against proposals for establishing a joint venture in the Australian Fishing Zone, between Australia and the Soviet Union.

As recently as October 1983, the Australian participants in the Mixed Commission on Trade and Economic Co-operation between Australia and the USSR held in Moscow, confirmed that our government "was prepared to consider the applications for access to the Australian Fishing Zone".

A proposal for such a venture was made to the Tasmanian government in 1979 with a view to establishing extensive facilities in Hobart to support a Soviet fishing fleet operating in the waters to the south of Australia. The facilities were to include the provision of a dry dock for repairs, the provision of food, fuel and other supplies, accommodation for exchange crews and landing arrangements for Soviet aircraft.

The negotiations were at an advanced level in October 1980, when the Tasmanian Premier in Moscow negotiating the purchase of the dry dock.

Strong opposition to the Federal Government by the Navy League and others fearful of the serious defence implications of such a proposal, succeeded in achieving that government's intervention and bringing about an end to the negotiations.

In the intervening years the Soviets have achieved some small measure of success in negotiating with the New Zealand government and are presently endeavouring to set up shop in Portland, Victoria.

So much for the historical background. Some have argued that any step toward mutual co-operation with the USSR is a good thing in establishing links between east and west and there is much to be said for such a point of view. It was with the aim of the strengthening of those

modernised destroyer escort HMAS STUART, new patrol boats and support craft. HMAS HUON, the first torpedo boat destroyer to be totally constructed in Australia is described by John Mortimer.

As this issue of "The Navy" makes its appearance, one of the Royal Australian Navy's most valuable fleet units celebrates 25 years in commission. The ship is of course HMAS VAMPIRE, now serving as a training ship in support of the larger JERVIS BAY. The October issue will include a brief tribute to the destroyer in her silver jubilee year.

ACKNOWLEDGEMENTS

Thanks are due to John Bird, Michael Burgess, PO Steve Dent, Peter Farr, CMDR Peter Hugonnet, Vic Jeffery, Michael Melliar-Phelps, John Mortimer, Leut Joe Straczek, the various Naval Reserve Cadet units and the photographers of the Royal Australian Navy.

DEADLINE

The deadline for the October issue is 1st August, 1984.

SHIPBUILDING IN AUSTRALIA

New South Wales fellows are invited to Tattersalls Club, Elizabeth Street, Sydney on Wednesday, October 3 at 6.30 pm.

The programme arranged includes three qualified speakers who will present 'Shipbuilding in Australia', naval/merchant vessels, now and in the future, followed by an open forum and supper at the close of the evening.

Cost will be \$10.00 per head.

Additional details will be mailed to fellows in the near future.

links that the Navy League entertained the Russian Ambassador and members of his staff in Melbourne in 1983, but it is essential that we are selective in choosing those areas of mutual co-operation and imperative that such moves, made perhaps for short term commercial gain do not lead in the longer term to problems particularly of defence and also in the case in point to potential environmental problems.

The defence implications have been well documented. The fact that all Soviet ships including merchant and fishing craft, come under the direction of the Soviet Navy, the fact that the captains of these vessels hold commissions in the Soviet Navy and that many of the vessels carry sophisticated surveillance equipment, leads to the proposed venture being one that virtually offers home porting facilities to a part of the Soviet Navy.

In his book "A Crime Against the World", Vladimir Lysenko, a former merchant service officer and a former Senior Captain in the USSR fishing fleet, a man highly respected and decorated by his own people, describes some of the activities of the Russian fleets. Passages which refer to the warlike uses of the merchant fleets and of over fishing and destruction of marine species, give much cause for alarm.

No matter how liberal one's views may be in terms of consorting with one's political opposites, it must be accepted that there is an element of risk in the current proposal and it is in my view a risk that we cannot afford and must not take.

Rather let us encourage and require some government initiatives that seeks to develop our own fishing industry, so that the natural resources in and adjacent to our own waters may be exploited in a controlled and environmentally acceptable fashion and enjoyed to the fullest extent by our own people.

John Bird

B. J. BIRD,
Federal Vice-President.



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SLAVA

New Soviet Missile Cruiser

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SLAVA, in company with a Soviet support ship and submarine (rear) and HMS ACHILLES in the foreground. (Photo — Royal Navy)

ON 15th September, 1983, the new cruiser SLAVA emerged from the Bosphorus and headed for the North Atlantic Ocean. The first of only two ships of this class to be delivered so far from the 61 Kammuna yard at Nikolayev, she took an unusually long time of six years to construct, being followed by more than a year of sea trials; this whole period beginning with her launching in 1976.

The teething troubles usually encountered with a new type or class of ship were compounded with greater combat suite complexity, allied to equipment delivery delays from the supplies, a situation with which western naval customers are of times depressingly familiar.

Although the SLAVA's highly unusual appearance gives the initial impression that the ship represents a new generation of Soviet cruisers, closer scrutiny reveals that this is not the case. Only weapon systems already fitted on the Kiev, Kirov and Sovremennii classes have been used, albeit in different installations in some cases. The SLAVA appears to have been designed as a less expensive version of the KIROV: more of

an escort vessel than a command ship, but, like the KIROV, with the emphasis in the armament on anti-surface warfare.

The hull of the SLAVA is clearly based on the latest of the KARA class cruisers, varying only slightly in the three major dimensions. The hull has been lengthened by 14 metres to accommodate a new surface-to-air weapon system, with a consequent one metre increase in beam. The hull is now one deck deeper than that of the KARA, with a consequent increase in freeboard of 1.7 metres and there is increased flare at both bow and stern. Quite distinct from the KARA's is the unusually high bridge and the pyramid-shaped pile of the enclosed foremast. The superstructure in general is configured with regard to the positioning of the eight pairs of cylindrical container-launchers for the SS-N-12 "Sandbox" surface-to-surface missiles.

These launchers are mounted one behind the other, four pairs per side of the forward superstructure, all facing forward over one another and at a fixed elevation of 16°. The estimated dimensions of these containers plus the presence of the "Trap Door" missile-control radar (also fitted to KIEV), indicates the presence of the SS-N-12 which has a range of 300 nautical miles. There is no provision for reloads.

Two rows of four vertical launch tubes for the SA-N-6 long range surface-to-air missile are located abaft the funnels near the large crane. This missile has a range of 30 nautical miles and 64 reloads are carried. In addition, an SA-N-4 "Gecko" short-range SAM silo with its twin launcher is fitted on each side of the aft end of the helicopter hanger, just at the beginning of the quarterdeck. The twin launcher normally retracts into the silo when not in use. Twenty of these eight nautical mile range missiles are normally carried in each silo.

A fully-automatic twin 130mm multi-purpose L-70 gun turret is installed right forward, ahead of the breakwater. Each water-cooled barrel is capable of 65 rounds per minute, with a maximum range of 28,000 metres. Both close-fitted barrels elevate together through an arc of -5° to +80° and the mounting is unusual insofar as 300° traverse is possible at elevations greater than 30°. Optical as well as radar fire control is fitted.



Port bow view of SLAVA. The anti-submarine rocket launcher is located to the right of the rapid-fire anti-aircraft guns. (Photo — Royal Navy)

Operating nine factories for the manufacture of munitions and other defence materiel, three aerospace facilities and two dockyards, the Department of Defence Support designs, develops and manufactures a range of products for the Australian defence force.

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Detailed view of the bridge and midship sections of SLAVA. (Photo — USN)

Close-in is catered for by the provision of six 6-barrelled Gattling-type 30mm rotary cannons. These are installed in radar-controlled pairs viz: one forward, high up on a deck-house in front of the bridge and one on each of a smaller pyramid mast amidships on a special platform. Rate of fire is 3000 rounds per minute with an absolute maximum range of 5000 metres.

Like the KIROV, the parrot, four (or five)-tube anti-ship/ASW 533mm torpedo armament is located under retractable covers at main deck level aft, below the "Top Dome" SAM fire-control radar. Since SLAVA has only a subsidiary role for ASW, the only weapons catering to this role are the two RBU 6000 rocket launchers located side-by-side on the forward deck-house, just aft of the two Gattling-type weapons. These rockets have an effective range of 6000 metres.

Helicopter facilities are such that only one Helix or Hormone can be stored or operated. The helicopter control cabin is located slightly forward and to starboard of the pad and there is no "Fly Screen" landing approach radar.

SLAVA is fitted at the stern for Variable Depth Sonar, which is streamed through an upward-opening door. A lack of the characteristic wave pattern at the bows suggest the absence of a bow-mounted sonar bulb, but there is almost certainly a small low-frequency, hull-mounted sonar under the forward section of the ship. As is usual with Soviet naval vessels, an extremely comprehensive and elaborate system of general and EW radar suites is fitted to SLAVA.

The gap between the twin funnels is used to rest the jib of the large rotating crane which is used to place the two ship's boats in the water and also to bring aboard ammunition and supplies. To port of the crane is a kingpost used for transferring solid goods onboard during a RAS. Railway tracks on the weather deck facilitate the handling of ammunition pallets to the ship's strike-down hatches and magazines. A



SLAVA, October, 1983. Note the twin funnel exhausts, vertical anti-aircraft missile launchers and, right aft, the landing spot for one embarked helicopter. (Photo — RNN)



SLAVA, captured by the photographers aboard HMS INVINCIBLE (prior to her Australian visit). The Soviet ship features a railway track (like the battlecruiser KIROV) around her main deck. (Photo — Royal Navy)



derrick is fitted to each side of the hanger for gangway handling and reloading the SA-N-4 magazines.

The addition to the Soviet Fleet of Kirov class strike/battle cruisers and the advanced Sovremennii and Udaloy class destroyers has required a considerable industrial and financial effort and has absorbed so much skilled labour that yard output of new construction has markedly decreased. Equipment delivery delays have meant that none of the Udaloy class ships have yet been fitted with their full air defense armament. Thus the ships of the Slava type have themselves been held back from completion and time-expired hulls are being retired faster than their replacements can be built.

Fleet replenishment vessels such as the Berezina class are also in short supply to the extent that the combat value of ships like the SLAVA in world-wide operations remains in doubt. Submarine operations outside home-waters are similarly effected.

These and other significant reasons suggest that each new and in itself highly impressive Soviet warship type should be viewed and assessed within the overall strategic, tactical and industrial context in order to avoid over-rating such ships.



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HMAS HUON

Australia's First Locally Constructed Destroyer

by JOHN MORTIMER

On 1 March, 1901, the Australian State Governments transferred control of their respective naval forces to the Commonwealth Government. As there was no appropriate Federal legislation, the forces remained under the administration of State Acts and Regulations until 1 March, 1904 when the Commonwealth Defence Act (1903) came into force. The ships transferred to Commonwealth control, with the exception of the cruiser PROTECTOR, were essentially coastal craft designed specifically for coastal and port defence. Some details of these ships are shown in Table 1.

State/Ship	Type	Displacement	Completed
New South Wales AVERNUS	Second class torpedo boat	16 tons	1879
ACHERON	Second class torpedo boat (these two ships were disposed of in 1902)	16 tons	1879
Victoria CERBERUS	Armoured turret ship	3340 tons	1870
COUNTRESS OF HOPETOUN	First class torpedo boat	75 tons	1891
CHILDERS	First class torpedo boat	47 tons	1884
NEPEAN	Second class torpedo boat	12 tons	1884
LONSDALE	Second class torpedo boat	12 tons	1884
GORDON	Torpedo launch	12 tons	1885
Queensland GAYUNDAH	Gunboat	360 tons	1884
PALUMA	Gunboat	360 tons	1884
MOSQUITO	Second class torpedo boat	12 tons	1884
MIDGE	Torpedo launch	12 tons	1887
South Australia PROTECTOR	Cruiser	960 tons	1884
Tasmania TB 191	Second class torpedo boat	12 tons	1884

The limited capabilities of these vessels and their general obsolescence were recognised and several schemes were developed between 1902 and 1909 for the provision of a naval defence force more kin to the needs of a newly independent nation. Most schemes included destroyer type vessels which ranged in displacement from coastal destroyers of 550 tons, through vessels of 800 and 1300 tons to a cruiser destroyer of 3000 tons. Earlier local schemes tended to concentrate on coastal naval forces with occasional emphasis on increased endurance and seakeeping capabilities necessary for operations at more extended distances from bases than had been generally the practice in the past. The main schemes are shown in Table 2.

It was not until the Imperial Conference of 1909 that any serious consideration was given to establishment of a truly ocean going Australian Navy. At this conference the British Admiralty tabled a paper on 20 July, 1909 which detailed their views on the form in which the various Dominion Governments could best participate in Imperial Defence. This paper suggested that any Dominion Government wishing to create a navy should aim at forming a distinct fleet until consisting of at least the following:

- 1 Armoured cruiser (Indomitable class), 17,250 tons.
- 3 Second class protected cruisers (Bristol class), 4800 tons.
- 6 Destroyers (Improved River class), 700 tons.
- 3 Submarines (C class), 313 tons; and necessary auxiliaries such as depot and store ships.

In relation to coastal defence forces the Admiralty stated that: "Under certain conditions the establishment of local defence flotillas, consisting of torpedo craft and submarines, might be of assistance in time of war to the operations of the fleet, but such flotillas cannot co-operate on the high seas in the wider duties of protection of trade and preventing attacks from hostile cruisers and squadrons. The operations of destroyers and torpedo boats are necessarily limited to the waters near the coast or to a radius of action not far distant from a base... A scheme limited to torpedo craft would not in itself, moreover, be a good means of gradually developing a self-contained fleet capable of both offence and defence. Unless a naval force — whatever its size — complies with this condition, it can never take its proper place in the organisation of an Imperial Navy distributed strategically over the whole area of British interests."

Proponent	Type	Displacement
Captain Creswell, 1902	4 Cruisers	3,000 tons
Captain Creswell, 1905	3 Cruiser destroyers	3,000 tons
	16 Torpedo boat destroyers	550 tons
	5 First class torpedo boats	205 tons
	8 Second class torpedo boats	7 tons
Captain Creswell, 1906	3 Ocean destroyers	800 tons
	16 Destroyers (River class)	550 tons
	5 First class torpedo boats	200 tons
Commonwealth Naval Officers Committee, 1906	3 Ocean going destroyers	1,300 tons
	1 Ocean going destroyer	800 tons
	16 Coastal destroyers	550 tons
	4 First class torpedo boats	157 tons
	8 coastal destroyers (Teviot class)	550 tons
Mr Deakin, 1906	4 First class torpedo boats	157 tons
(with further phases foreshadowed but not defined)		
Mr Deakin, 1907	6 Destroyers (River class)	550 tons
	9 Submarines (C class)	313 tons
	2 Depot ships	—
Mr Fisher, March 1909	4 Ocean destroyers	1,300 tons
	19 destroyers (Improved River class — this included the 3 ships already approved in HMA Ships PARRAMATTA, WARREGO and YARRA)	700 tons
	1 Vessel armed for police duties	2 to 3,000 tons

This concept of the "Fleet Unit" formulated by the British Admiralty in the context of Imperial Defence provided the basis for development of the Royal Australian Navy and has survived virtually unchanged from 1909 to the present. Its rationale resided in the premise that such a force could provide a capability both in relation to coastal defence and defence of sea lines of communication. It fails, however, to recognise that such a force is not necessarily optimised for both tasks and consequently may not represent the most efficient utilisation of naval resources.

In July, 1907 the Australian Government commenced investigations into the acquisition of torpedo boat destroyers. A document was circulated to a number of British shipbuilders specifying "Requirements to be fulfilled in each of the vessels". The destroyer foreshadowed by the Australian Government was a development of the British River design modified to suit Australian conditions. It was envisaged as having a



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displacement of about 700 tons, and a radius of action of 3500 nautical miles at 10 knots. The vessels were also planned to have better seakeeping, speed and hull strength than their British counterparts and their boilers were to be oil rather than coal fired as was the case with the British River Class ships.

Shipbuilders' proposals were received in August, 1907, however, no substantive action was taken until February 5, 1909 when the Fisher Government approved the acquisition of three torpedo boat destroyers. Subsequent to the Cabinet meeting the Minister for Defence, Senator Pearce announced.

"The Government has decided to at once order two Torpedo Boat Destroyers of the River Class of the latest approved type, which were considered the best adapted for service on the Australian Coast by naval authorities. These boats — the first of their kind to be obtained by Australia — will serve as models for the future construction of other vessels of the same type which the Government intends shall be built in Australia.

To that end a sum has been allotted to establish a Government building yard in Australia, where the first work undertaken will be the completion of another Destroyer — the prepared material for which is to be included in the contract.

It is the intention of the Government to send to England skilled operatives to be employed by the successful tenderer on the work of the construction of these vessels in order that they may gain experience in this highly specialised class of ship construction.

These men will be engaged on the understanding that, on the completion of the contract, they will return to Australia and be engaged in building the further vessels required.

This expenditure will be carried out with the monies provided and appropriated by Parliament in the Coast Defence Appropriation Act, 1908, which it is estimated will be sufficient for the purpose.

It is not anticipated that the maintenance or manning of these vessels will cause any increase in the annual naval vote as the men now engaged on obsolete and out-of-date vessels will be transferred to the new boats. It is expected that the boats will take about 12 months to construct. Being efficient sea vessels they will be brought out under their own steam and will have no difficulty in making the passage."

The following description of the vessels was also made public by the Minister for Defence:

Torpedo Boat Destroyer — River Class.

Displacement: 650-700 tons.

Length overall: 230 feet.

Breadth: 23 feet 6 inches.

Draught: Maximum 8 feet 9 inches.

Speed: 26 knots.

Indicated Horsepower: 9210.

Fuel: Oil — 150 tons.

Steaming Radius: 2500 miles at 14 knots, over 3000 miles at 10 knots.

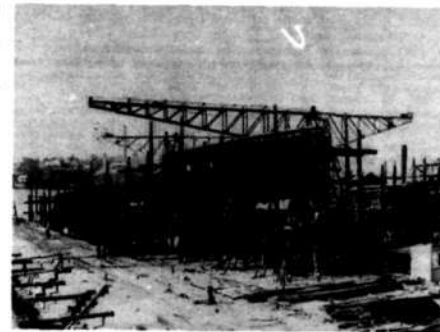
Armament: 1 4 inch quick firing gun, 3 12 pounder quick firing guns,

3 torpedo tubes discharging 18 inch torpedoes.

Complement: 50 officers and men.

On the same day as the Cabinet decision, a telegram was sent by the Acting Secretary, Department of Defence, to the Officer in Charge, Commonwealth Offices, London advising him of the decision and requesting that he obtain from firms who previously tendered, quotations for the time required for delivery of two boats, together with a separate quotation for the destroyer to be assembled in Australia. To take account of developments which had occurred since their original tender, the tenderers were invited to review their earlier proposals. One particular concern in this regard was the endurance of 2500 miles at 14 knots and the top speed requirement of 26 knots. The endurance requirement had been based on the possible need for ships to transit from Sydney to Fremantle. During the official trials of the British Tribal Class in 1907-08 it was shown that under certain circumstances a much greater speed could be obtained by running these vessels over a measured mile in shallow water, than could be reached in actual service in deep water. It was subsequently decided that destroyers should undertake their trials on a deep water measured mile. Under these conditions it was found that either the power required to drive them at a specific speed must be increased, or the load to be carried upon the trials must be reduced. The increase in power for full speed entailed larger dimensions to carry it, while a reduction of load entailed a curtailment of the radius of action.

When tenders were invited in 1907, the minimum radius of action at economical speed was stated as 2500 miles and to obtain this radius it was calculated that 150 tons of oil fuel would have to be carried. From data collected on a shallow measured mile (Maplin) it was calculated that a vessel of 230 feet in length, 23 feet 6 inches beam and 14 feet deep would carry power for 26 knots with a fuel load of 150 tons in addition to the specified armament. In the light of later experience it was clear that this



HUON, 22nd April, 1913



HUON, 11th December, 1913.

estimate would not be sufficient to provide the required speed on the Australian coast and as the radius of action could not be lowered it was evident that the dimensions of the vessel would have to be increased.

To assist in the evaluation of tenders and to oversee construction in England, a naval architect, Professor J. H. Biles was employed to act as a consultant to the Commonwealth Government.

Tenders were received, together with plans from Palmers Shipbuilding Co; Cammell Laird & Co; Hawthorn Leslie & Co; J. S. White & Co; Thames Ironworks Co; and a consortium of Denny Bros and Fairfield Shipbuilding Co. The tenders are summarised in Table 3.

Evaluation of tenders was undertaken in March, 1909. It was noted in comparison with earlier proposals that tenderers had either suggested larger vessels, or a reduction in the trial load. Another interesting feature noted in evaluation was that the extra beam and length did not appear to make any difference in cost. In fact the longest and strongest vessel was proposed by the lowest tenderer.

The evaluation concluded that the Denny/Fairfield proposal was superior to all others. The price quoted for the three vessels, together with armament was the lowest and their gun arrangement was considered the best, with the two midships guns having a broadside fire of nearly 40 degrees on both broadsides and the bow gun offered a depression of 5 degrees. This proposal also suggested a measure of certainty that the speed and endurance requirements would be achieved. Structurally this ship was the strongest and in particular the midship section showed a heavier scantling than those submitted by any other tenderer. In addition the proposed delivery schedule was less than any of the other tenders.

On March 13, 1909 the Minister for Defence authorised the acceptance of the Denny/Fairfield tender for two Torpedo Boat Destroyers at a cost of £81,500 each to be built in Britain and one further vessel at a cost of £72,500 to be erected in Britain, taken to pieces and

TABLE 3

	Total price for armament (L)	Delivery (months)			Tonnage of carried	Radius of action at 14 knots	Dimensions			
		1st half	2nd half	3rd half			Length	Breadth	Depth	Draught
Tenders										
Denny & Fairfield	215,581	14	15	15	150	2,500 nm	245 ft	24 ft 3 in	14 ft 9 in	
Cannell & Laird A	231,610	16	17	13	80	200 ft	23 ft 9 in	14 ft	7 ft 9 in	
B	231,610	16	17	13	180	200 ft	23 ft 9 in	14 ft	8 ft 6 in	
Thornycroft	236,500	15	16	14	190	2,500 nm	243 ft	24 ft 6 in	15 ft 9 in	
Palmer	242,100	15	17	17	150	2,500 nm	240 ft	24 ft	14 ft 8 in	
White	248,840	20	24	20	190	2,500 nm	235 ft	23 ft 6 in	14 ft 10 in	
Hawthorn Leslie	252,300	15	16	12	80	1,700 nm	230 ft	23 ft 6 in	14 ft	
Chance Ironworks	265,425	21	22	16	190	2,500 nm	235 ft	23 ft 6 in	15 ft	
Armstrong										
Whitworth	321,220 (1)	21	23	15	190	2,500 nm	240 ft	23 ft 6 in	14 ft	

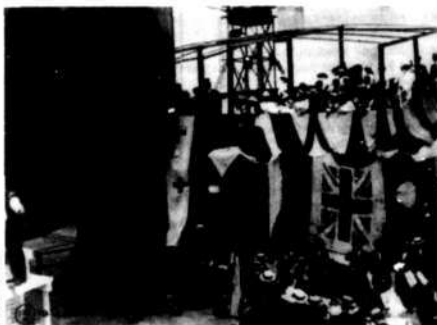
NOTE: (1) Does not include freight to Australia on third vessel

shipped to Australia where it would be assembled. Conditions of the contract were authorised by the Commonwealth solicitor in London on April 20, 1909. The contract stipulated that the first boat be delivered by June 14, 1910, second by July 14, 1910 and that the boat to be assembled in Australia be ready for shipment on July 1, 1910. Progress payments commenced with the laying of keels and provision was included for the employment of Australian tradesmen in the shipyards to enable them to acquire the skills necessary for local construction. The contract also stipulated that plans and detailed drawings necessary for construction in Australia would be provided by the contractors. It also imposed damage claims for any deficiency in speed, or fuel capacity and any delay in delivery. These claims were substantial and implied compliance with the specifications sought. In relation to fuel capacity a sum of £70 could be claimed for each ton of the deficiency of the capacity of the oil fuel tanks. A sum of £20 for a part or whole of the first quarter of a knot which the speed of the completed vessel is below 26 knots was also payable. This sum increased by a further £10 for each subsequent quarter knot until 25 knots, when a fee of £60 was payable for each additional quarter knot. Delay in delivery involved a payment of £1 for each day late.

Acquisition of Australia's first batch of Torpedo Boat Destroyers represented a remarkable achievement for a country with little experience in the definition of naval requirements or warship acquisition procedures. In commenting on the Australian programme in 1910 Professor Biles observed:

"Since our vessels were designed the Admiralty has produced vessels of about the dimensions of ours ... one thing is certain we have produced a ship which is 20% less cost and we believe that in no respect speed, strength, radius of action or seaworthiness is inferior to the vessels produced by the Admiralty ... The cost is reduced by saving weight in the hull and power in the machinery due to this saving of weight. The time is reduced by settling details on the spot and by losing no time in sending detailed drawings to lie in London ... Perhaps one of the valuable lessons which the Australian Government are helping to give in Imperial matters may be this one of prompt decision and rapid completion."

These vessels were approved in February, 1909. Tenders were called and received by mid-March. The contract and specifications were agreed and signed by the middle of April, 1909. Keels were laid for all three vessels in the beginning of June and the lead vessel, PARRAMATTA, was launched without machinery on February 9, 1910. Fitting out and trials of PARRAMATTA had been completed by June, 1910 and the



HUON, 19th December, 1914.



HUON, 19th December, 1914.

vessel was finally accepted for service some 16 months after the initial approval to her purchase was made.

Shortly after the Australian Government announced its intention to acquire three torpedo boat destroyers, Mr Cutler, the Superintendent of the State Dockyard, Cockatoo Island, NSW called on the Minister for Defence, to inform him of the NSW Government's willingness to undertake construction of the ships. During these discussions, the Minister for Defence outlined the Australian Government's intention to undertake an extensive building programme and stated that it was intended that later units would be built in Australia. Local construction was not considered to be viable for the initial ships because of the urgent need for these vessels to enter service; plans for the destroyers were not then available in Australia; nor were the necessary skilled key personnel for local construction. Mr Cutler confirmed that it would be some 12 to 15 months before the State Dockyard would be in a position to commence construction. It was subsequently agreed that the original intentions for construction of the three initial torpedo boat destroyers would remain.

Work on WARREGO was completed by Fairfield's in mid-1910 and she was shipped to Australia in pieces. Reassembly was undertaken at Cockatoo Island where WARREGO was launched on April 4, 1911. She was commissioned for service on June 1, 1912. WARREGO's reconstruction in Australia was not entirely without incident and took some six months longer to reassemble than was agreed between the Commonwealth and State Governments. A number of deficiencies were discovered during reconstruction, the most important being the omission of rivets from an elbow which supported one of the propeller shafts. Had this not been discovered serious damage could have occurred.

The next major step towards local construction of the Australian fleet unit was taken on March 27, 1911, when the Prime Minister wrote to the Premier of NSW seeking his advice on whether his Government would be prepared to undertake construction of a second class cruiser and three torpedo boat destroyers, and, if so, on what terms. The Acting Premier responded on March 30, 1911 indicating his Government's willingness to construct these vessels.



HUON, 1st December, 1914.

Basic considerations relating to the provision of plans and working drawings, ordering of materials, costs and other contract and general conditions were largely resolved during 1911-12. Although a formal agreement was not signed by the Minister for Defence and NSW Minister for Public Works until June 18, 1912, the initial order for all hull materials was placed by NSW authorities on October 10, 1911. The contract specified that:

- the Commonwealth would provide the principal building plans and specifications;
- the NSW Government would provide buildings and workshops necessary for construction;
- the destroyers would be completed within 26 months from a date to be agreed upon when sufficient materials were available to enable construction to commence;
- damages of £300 per week were to be payable for each week's delay in delivery which were attributable to the NSW Government; and
- the Commonwealth would pay for all material, labour, general charges and dockyard running expenses related to construction, together with an 8% loading based on the actual cost of construction.

A commencement date of August 1, 1911 for construction of the three torpedo destroyers was subsequently agreed.

The keels of the torpedo boat destroyers DERWENT and TORRENS were laid down on January 25, 1913 in a ceremony by Senator Pearce, Minister for Defence, however, their sister ship SWAN was not laid down until January 25, 1915. Work on DERWENT and TORRENS continued at a leisurely pace until commencement of the First World War. In response to the worsening situation in Europe, the General Manager of the Commonwealth Naval Dockyard, Cockatoo Island on August 6, 1914 outlined the existing situation and proposals for expediting completion of DERWENT and TORRENS as follows:

- Hull and Electrical Fittings — everything was available for the hull and electrical fittings or sufficiently suitable substitutes could be obtained or made locally. The principal items not to hand were anchors and cables, compasses, searchlights, switchboards, sounding machine and wireless telegraphy.
- Machinery — all main and auxiliary machinery was available or on hand. The principal items not available were the propeller shafting and steam pipes. It was proposed that materials for the cruiser BRISBANE, which was also building at Cockatoo Island would be utilised as far as possible and the remainder to be made up by local supplies. In some cases, to shorten time it was suggested that gunmetal be substituted for cast steel.
- Boilers — it was proposed to fit BRISBANE's boilers which would need modification to take oil fuel. These boilers were not as large as the destroyer boilers and a loss of power of normally 2000 horsepower was anticipated.
- Armament — no guns had been received and it was proposed to utilise 4.7 inch guns held in reserve for fitting to troopships. It was envisaged that two of these guns be fitted to each destroyer.
- Torpedo Tubes — no torpedo tubes had been received and it was proposed to manufacture these locally at Cockatoo Island.

Discussion of this proposal was undertaken in September, 1914 between the General Manager Cockatoo Island and the Engineering Construction Branch, Navy Office. These discussions indicated that by adopting the proposal which included omission of cruising turbines, DERWENT could be commissioned by about March, 1915, however, the second vessel, TORRENS, would not be completed for at least a further two months. Installation of the ships' designed propulsion machinery, including cruising turbines, was estimated to involve a completion date of about September, 1915 for both DERWENT and TORRENS. It was estimated that the maximum service speed obtainable with the reduced boiler power would be about 24 knots, compared to the design speed of 26 knots and the radius of action at economical cruising speed would be about halved.

The General Manager estimated that forging of one set of shafting could be undertaken at Cockatoo Island and completed in about two weeks. This was viewed with some scepticism as the time taken in Great Britain for forging shafts ordered for these vessels was three months per set for each vessel. Work of this type was entirely new to Australian industry and Cockatoo Island did not have the necessary machinery and plant to bore the shafts. Consequently it was proposed that the shafts remain solid. This was of some concern to Navy Office as the boring of shafts in addition to reducing weight, was also a valuable means of discovering otherwise hidden defects. Doubts were also expressed about the capacity of local industry to manufacture all the necessary equipment and stores, and in particular it was assessed that searchlights could not be manufactured by local industry.

A revision of the armament was undertaken following an assessment of the availability of guns. Although doubts were expressed about

whether the destroyers as designed could carry the 4.7 inch gun, it was suggested that the first vessel could be armed with one 4 inch gun forward, two 12 pounder guns and a 4.7 inch gun aft, while the second ship would have a gun armament of only two 4.7 inch mounts. Only one spare torpedo tube was held in store at Garden Island and it was suggested that this be copied to provide tubes for all destroyers.

A Naval Board meeting was convened on September 28, 1914 to consider expediting completion of the two torpedo boat destroyers then building at Cockatoo Island. The Naval Board consisted of Senator, the Hon G. F. Pearce, Minister for Defence, Rear Admiral Sir William Creswell, Captain A. Gordon Smith and Engineer Captain Clarkson. Also present at this meeting were Mr Jensen, Assistant Minister and Mr J. J. King Salter, General Manager Cockatoo Island Dockyard. The meeting decided to:

- proceed with the project of completing the two vessels urgently;
- send a cable to the High Commissioner in London asking him to invite Messrs Denny and the Fairfield Shipbuilding Company to quote a price for and the earliest date of shipment of boiler ends for the vessels;



HMAS HUON.

- send a cable from the Government through the Secretary of State for the Colonies hastening the armament ie guns, mountings, torpedoes and torpedo tubes.

The above cables were sent respectively on October 2 and 3, 1914. Tenders were received from Denny Bros and Fairfield on October 9 for the provision of boilers and some four days later the Third Naval Member recommended acceptance of the Denny tender. The first set of boilers was shipped from Tilbury Docks aboard the mail steamer MAILO on November 14 and a second set followed on December 4, 1914.

It was proposed by the Third Naval Member that the third set of boilers be produced locally at the Eveleigh Railway Workshops, Sydney. This was later established as being feasible and subsequently arranged through the New South Wales Government who controlled the workshops.

Tenders for the provision of the gunnery equipment were accepted on October 24, 1914 by the High Commissioner in London. The tenders were placed with Coventry Ordnance Works and provided for acquisition of 4 inch Mark VIII breech loading guns at a cost of £295 Sterling each and 12 pounder quick firing guns at a cost of £218 Sterling each. Contract time for the delivery of the guns was specified as nine months. This delivery schedule was viewed with some concern by the General Manager of Cockatoo Island who estimated that the vessels could be completed by May, 1915 if the armament was available. Based on the tender provision, however, he estimated that the first vessel could not be completed until October, 1915.

DERWENT was launched at Cockatoo Island on December 19, 1914 by Mrs J. A. Jensen, wife of the Assistant Minister for Defence. The launching ceremony passed off successfully, although it was not marked by much display considering that DERWENT was the first modern warship to be built completely in Australia. Prior to her completion DERWENT's name was changed. This change of name was announced by the Minister for Defence on October 16, 1915 who explained that representations had been received from the Admiralty expressing concern that confusion would arise between the destroyer DERWENT already in commission in the Royal Navy and the Australian ship. As the name TAMAR was also in Royal Naval use, it was decided that the ship be named HUON after the Tasmanian River.

At launch the steelwork was almost complete and the bridge

structure had been erected, however, the seats for armament and weather deck fittings had not been included. No masts, rigging or armament were fitted. About 14 tons of machinery had been placed on board but no shafting or propellers were fitted. The displacement at launch consisted of:

Item	Tons
Weight of hull at launch	196
Machinery	14
Ballast, men, plant	22
Temporary chain and anchor	1
Internal shoring	1
Temporary fittings, staging etc.	1
Buoynancy of bilge ways	2
Total	240 tons

Construction continued throughout 1915 and contractors' full power trials were carried out on December 9, 1915 off Maroubra Bay, Sydney. The main propulsion machinery consisted of Parsons Reaction Turbines, with five ahead and two astern turbines. Three Yarrow Small Tube Water boilers were fitted. Details of the full power trial which was of eight hours' duration are as follows:

	Beginning of trial	End of trial
• Draught of water forward	7ft 7in	7ft 6½in
• Draught of water aft	7ft 6½in	7ft 1½in
• Temperature of sea water 66.8°F		
• Mean revolutions on all shafts 807.7		
• Average horsepower — starboard shaft 3482		
— centre shaft 3883		
— port shaft 3440		

- Total horsepower 10,805
- Average speed 25.775 knots
- Total consumption of oil fuel 44.83 tons
- Distance run per ton of fuel 4.6 nautical miles
- State of sea — calm slight swell
- State of ship's bottom — clean
- Last undocked 23rd November, 1915.

HMAS HUON commissioned at Sydney on December 14, 1915 but did not complete until February 2, 1916.

Armament consisted of 4 inch Mark VIII gun on a PV Mark F mounting situated on the forecastle deck. Three 12 pounder 12 cwt quick firing guns on P Mark V mountings and one .303 Maxim gun were situated on the upper deck. Three single 18 inch torpedo tubes were also fitted on the upper deck. The ship's normal outfit of ammunition consisted of:

- 4 inch ammunition — 95 Lyddite, 65 Common, 14 Practice;
- 12 pounder ammunition — 195 Common, 105 Armour Piercing, 30 Practice;
- .303 Maxim — 4 boxes of belts; and
- Torpedoes — 4 18 inch.

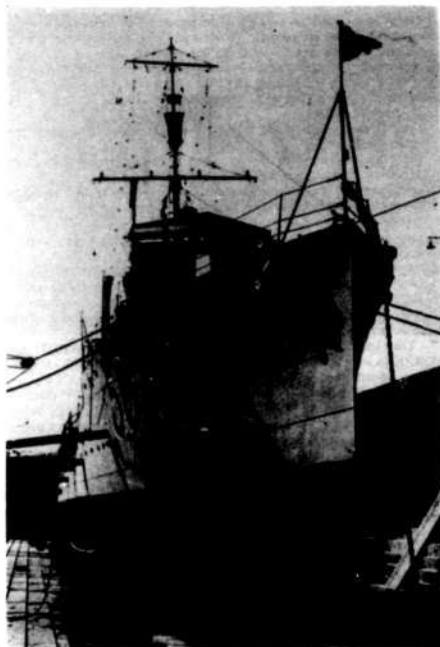
Gunnery trials were carried out off Sydney on Monday, December 13, 1915 and were recorded as being satisfactory. The fourth round of 4 inch was fired on extreme after training starboard to ascertain the effect of blast on ship's fittings. This resulted in a glass port and door of the chartroom being broken. The problem was rectified by closing the glass port and opening the door when firing at this extreme bearing. The trials report also recorded that guard stanchions and rails were required on the outside gun platforms of the midships 12 pounder guns for safety of gun crews when firing across deck. As the position of midship 12 pounder guns did not allow the loading crew to stand on the deck level with the gun, it was recommended that these guns be shifted closer to the ship's side. It was believed this could be accomplished without affecting the structure strength of the ship and would be an advantage in loading operations.

Training arcs of the guns were:

- 4 inch — 146° starboard to 146° port;
- 12 pounder starboard gun — 9° starboard to 156° starboard and 70° port to 110° port;
- 12 pounder port gun — 10° port to 155° port and 65° starboard to 104° starboard; and
- 12 pounder after gun — 38° starboard to 30° port.

Inclining experiments were carried out on HUON on February 2, 1916 to establish metacentric heights and stability. The following metacentric heights were recorded:

- Condition A — The ship when fully equipped with reserve feed tanks empty, no oil in peace tanks, and 79 tons of oil in war tanks (each tank about half full) has a draught of 7 feet 1 inch and a metacentric height of 1.43 feet;
- Condition B — The ship when fully equipped with fresh water, reserve feed and all oil tanks full, ie, with 174 tons of oil on board has a mean draught of 7 feet 11 inches and a metacentric height of feet; and



In dry dock at Williamstown. (Photo — P. Williams)

- Condition C — The ship with all oil reserve feed water, fresh water, and provisions and half the warrant officers' stores consumed, the draught becomes 6 feet 4 inches and the metacentric height is 1.66 feet.
- The angles at which the ship reached maximum stability was 45° in condition A, 48° in condition B and 47° in condition C. The angles at which the stability entirely vanishes was 73° in condition A, 78° in condition B and 69° in condition C.

As completed HUON carried one motor pinnace with a length of 21 feet 9 inches and a breadth of 6 feet 3 inches, a whaler with a length of 25 feet 2 inches, and a 13 foot 8 inch dinghy.

HUON cost £148,315 (\$296,630) and her principle characteristics as completed were:

Displacement:

- Seagoing displacement
- with oil tanks full, deep load draught 750 tons;
- including oil fuel at load draught 700 tons. Numbers of tons necessary to increase draught by 1 inch at load draught 10.6.

Dimensions:

- Length between perpendiculars 245 feet.
- Length overall 250 feet 10 inches.
- Breadth extreme 24 feet 3½ inches.
- Draught:
- Deep load forward 7 feet 11 inches.
- Deep load aft 7 feet 11 inches.
- Load forward 7 feet 6 inches.
- Load aft 7 feet 6 inches.
- Draught moulded 14 feet 9¼ inches.
- Total length of engine rooms 43 feet 9½ inches.
- Total length of boiler rooms 57 feet 8¼ inches.

HUON continued working up off the New South Wales coast until June 19, 1916 when she sailed from Sydney to Borneo to enter service as a unit of the British Far East Patrol. Based initially on Sandakan and later Singapore, HUON patrolled the Philippines, Dutch East Indies and Malayan areas until May, 1917. This activity consisted of seemingly

endless patrolling, intermingled with exercises and the visit and search of vessels plying Far Eastern waters.

The six Australian torpedo boat destroyers were divided into two divisions. In mid-1917 the first division of PARRAMATTA, WARREGO and YARRA were patrolling in South East Australian waters, while the second division consisting of HUON, SWAN and TORRENS were in the Singapore area.

On May 9, 1917 the British Government sought Australian agreement to deploy the first division to the Mediterranean to meet the growing submarine threat. In response the Australian Government agreed to this request and indicated its willingness for the second division also to be deployed to the Mediterranean. The second division sailed from Singapore to Cocos Island arriving on July 7, 1917 and rendezvoused with the first division. Commander Warren of HMAS PARRAMATTA took command of the flotilla. After fuelling the flotilla departed for Diego Garcia to search for survivors of the British merchant ships JUMNA and WORDSWORTH which had been lost earlier in the year. No trace of survivors was found and the flotilla sailed for the Mediterranean via the Seychelles and Port Said. Admiralty orders were received in Port Said that HUON, PARRAMATTA, TORRENS and YARRA were to escort a convoy from Port Said to Malta. This task provided the escorts with the first of many submarine engagements they were to have whilst in the Mediterranean.

HUON refitted at Malta between August 20 and September 20, 1917. During this refit she was fitted with four depth charge chutes, pipes and connections for emitting smoke screens and percussion firing gear to the 12 pounder gun mountings.

From September 24 to 27 HUON, PARRAMATTA and TORRENS participated in gunnery and torpedo exercises off Corfu. On October 6 to 9, 1917 the flotilla carried out combined exercises mainly to trial a new torpedo which had just been received.

From October, 1917 the destroyers were based at Brindisi, Italy to patrol at the mouth of the Adriatic Sea. This patrol was aimed at preventing Austrian submarines based at Pola from reaching the Mediterranean. Patrols were undertaken on the basis of each division operating four days on the patrol and four in port. Of the three destroyers in harbour two were always at half an hour's notice for sea. Daylight patrol was usually undertaken with the three destroyers steaming in line abreast and about a mile apart. At night ships steamed in line ahead usually two or three cables apart.

During the initial stages of the deployment, submarine activity was intense and engagements were frequent. Later the Austrian submarine campaign declined and the patrols became more routine. HUON continued on these patrols until April, 1918 when she sailed for Malta to undergo a refit. This refit commenced on April 17 and completed on May 16, 1918. A number of modifications were undertaken during this refit to enhance HUON's capabilities. These included the fitting of:

- two depth charge throwers;
- hydrophone suspension gear and a directional hydrophone;
- a spray shield to the 4 inch gun;
- percussion firing gear to the 4 inch mounting;
- training index racers to 4 inch and 12 pounder mountings; and
- an observation balloon.

In addition the after torpedo tube was removed and the main mast was moved forward to accommodate the observation balloon.

PARRAMATTA and YARRA were also fitted with observation balloons. These balloons were flown from ships and carried an observer

who was intended to detect submarines and direct the accompanying ships into a position for a successful attack on the submarine.

After her refit HUON returned to Brindisi. On August 9, 1918 HMA ships HUON and YARRA collided in the Straits of Otranto. Both ships received structural damage. HUON's stem was knocked over to starboard and the stem piece was fractured below the waterline. HUON proceeded to Jena dockyard for repairs where she remained until November 10, 1918.

The following month HUON rendezvoused with PARRAMATTA, SWAN and YARRA in the Sea of Marmara. They then proceeded to Plymouth with TORRENS joining at Malta and WARREGO at Gibraltar. En route the flotilla encountered a severe storm off Cape Finisterre during which HUON and PARRAMATTA were damaged and sought refuge at Ferrol, Spain.

HUON arrived at Plymouth on January 14, 1918 and two days later commenced a refit at Devonport Dockyard. During this refit which completed on February 28, 1919, the two foremost depth charge chutes were removed and an additional plate was fitted to the forward funnel.

The destroyer flotilla reassembled at Malta and on March 17, 1919 sailed for Australia in company with the cruiser HMAS MELBOURNE. The ships reached Sydney on May 21, 1919.

In October to November, 1919, HUON took part in the annual fleet spring cruise to Queensland waters. The following January she sailed with other units of the fleet for a Tasmanian cruise. On May 26, 1920 HUON, with some 25 other ships and six submarines of the RAN assembled in Port Phillip Bay for the arrival of HRH the Prince of Wales in the battle cruiser HMS RENOWN. In July, HUON was one of the escorts of RENOWN for the Prince's visit to South Australia.

On July 25, 1920, HUON returned to Sydney where she paid off into Reserve on August 9, 1920. HUON recommissioned on April 22, 1921 for further service on the Australia station. While lying off Yellow Bluff on February 9, 1922, with engines stopped, HUON was struck by HMA submarine J4 on the starboard side at No 1 bulkhead. The submarine's port planeguard penetrated HUON's hull about two feet below the waterline. The hole was immediately plugged with waste and a collision mat inserted to stop the flow of water. HUON later returned to Sydney where she paid off into Reserve on June 2, 1922.

From September 22, 1924 to May 26, 1928 HUON was based at Hobart for reserve training. On May 28, 1928 she returned to Sydney and paid off into Reserve there on June 7, 1928.

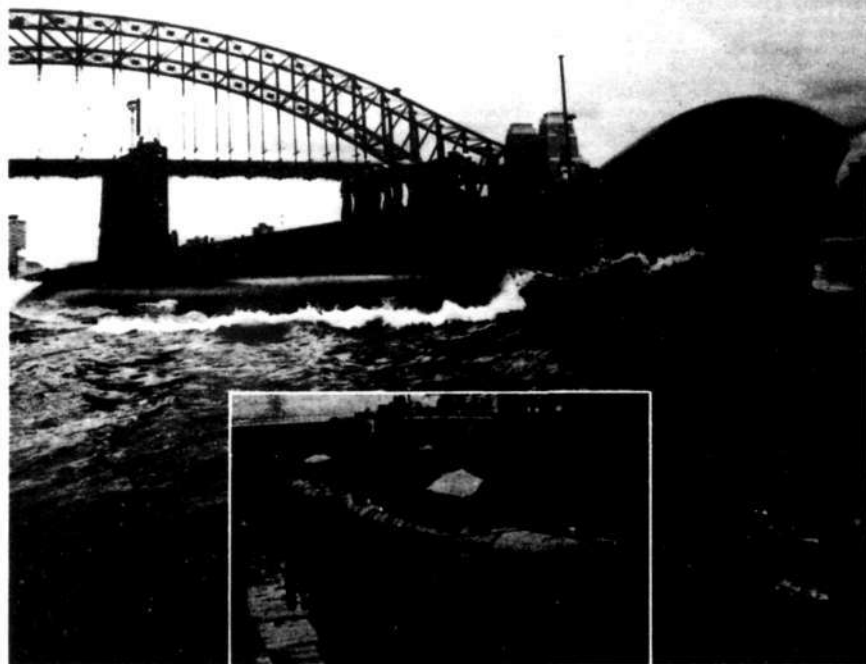
HUON was stripped of most of her armament and equipment at Cockatoo Island Dockyard and on April 10, 1931 she was towed out of Sydney Harbour by the tug HEROIC. Some 20 miles off Sydney Heads HUON was used as a target by the cruisers AUSTRALIA and CANBERRA, the destroyer leader ANZAC and the seaplane carrier ALBATROSS. Following target practice a demolition crew from AUSTRALIA laid charges in HUON. The ship was broken in two by these charges and sank.

Accommodation:	Number required for approved complement	Numbers provided for in the ship	Supernumeraries that can be berthed
Captain	1	1	
Wardroom officers	2	3	1
Warrant officers	1	1	
Chief petty officers	12	13	1
Sailors	55	60	5
Total	71	78	7



HUON being scuttled on 10th April, 1931.

Serving the navies of the world. Since 1857.



HMA Submarine J1 in the Sutherland Dock during her refit in November 1919

That's a long time, a lot of experience. Enough for us to grow with the navy's advancing technical needs and increasingly complex ships and submarines, whether in connection with new construction, refit or repair.

As part of our submarine refitting and modernisation task we continue to play a leading role in the RAN's Submarine Weapons Update Programme (SWUP). HMAS ORION, pictured above, is yet another fine product of our refitting team—completed on time and on cost.

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VIC0020

THE MISSILE—HOW DEADLY?

INTRODUCTION

Missile technology is as old as time. Ballistas, bows and arrows, javelins, spears, rock and slingers, and even catapults were forms of guided missiles. Muskets, cannon, and early rockets were among the "not so well guided" missiles—but they were missiles. Furthermore, in each age and in turn, everyone wondered, "How deadly are these projectiles?" Thus, it is quite ordinary to ask the same question in this, the age of electronic gadgetry.

MISSILE TAXONOMY

Before any answer to such a question can be attempted, a taxonomic exercise to determine the types involved is necessary. Therefore, the first place to search is **JANES ALL THE WORLD'S MISSILE SYSTEMS**.

This book conveniently classifies all missiles into surface/surface, surface/air and by the owner and/or user nations. A further breakdown into Naval and Land missiles follows so that no effort is required to segregate the type that is of interest. This paper concerns only the naval types but must also cover a small class of land type—short range missiles.

Additional inspection of the JANES book quickly shows that if the list of US, British, French, Italian and Israeli missiles is compared to the list of Russian missiles described in the appendical tables, there exists a nearly perfect one to one correspondence between the two sets. More comparison shows that only a limited number of different types actually exist.

THE ICBM

The first, and least important missile, is the long range or ICBM type. This type, designed to do damage if they hit within 25 miles of the aiming point, are more threat than danger.

by PETER FARR

While it is true this type can carry an atomic or nuclear warhead, no nation, to date, has found any means to store fissionable material for any period of time. Also important in this consideration is the fact that these projectiles can be tracked for great distances, attacked by normal counter-measure techniques and serve only as a subject for diplomats to talk about. Tactically they are virtually of no interest to either military or naval personnel.

THE SHORT RANGE MISSILE (SRM)

The short range missile, so useful to the army, is both portable and accurate. Regrettably, they require control units that are not easily concealed. Thus, the artillery is potentially able to deal with this type unit.

However, if such missiles form what used to be called the "secondary battery" of a naval vessel, then the matter takes on a different set of values. Missiles of this class are readily comparable to the radar-ranged, computer-aimed, medium calibre gun. They are equally as deadly as guns and compare directly to such weapons. Their advantage lies in the calibre of explosive they carry. Their disadvantage is size and cost. Most navies prefer the automated turret.

THE INTERMEDIATE RANGE MISSILE (IRM)

This type missile is divided into two classes:

- The surface/surface missile (S/SM).
 - The surface/air missile (S/AM).
- Additional examination of JANES shows that:
- S/SMs differ only in speed, physical size and class of guidance system present. These are:
 - Radar controlled types.

- Thermal-sensing types.
- Combination types.
- Mode of action:
 - High altitude.
 - Intermediate altitude.
 - Sea-skimmers (currently the most popular).
- Type of launching system:
 - Fixed, non-reloadable pod.
 - Reloadable small launcher.
 - Manual type.
 - Automatic or robot type.
- Some range variations exist but most S/SMs have a range between 30 and 70 (nautical) miles (50-125km). The nominal value is (usually) 50 (nautical) miles or 90km.

The IRM is (naturally) a highly classified data unit. Therefore one must examine:

- OTO-Melara sales data as published in such periodicals as "PACIFIC DEFENSE REPORTER" or "AVIATION & MARINE" etc.
- ABC Films of the several wars between the Syrians and Israelis; Egyptians and Israelis; and the latest invasion of Lebanon.

Thus one can readily obtain precision data on the accuracy of such weaponry. The BBC and the (US) NBC as shown on the 7-network (Channel 9) in Australia are the best sources for precision data on the missiles from the Falklands War.

- Also useful are the Vickers and the American aviation company advertisements.

ACCURACY OF IRMs

With all the data listed above, only a small amount of curve fitting technique is needed to permit the development of a simple mathematical formula that can provide the probability that a given missile, fired at a stated range will strike a target moving at a given speed. In this problem, S/SMs, S/AMs and guns will be considered separately.

THE S/SM

In the Israeli/Syrian YOM KIPPUR War, the Israelis fired "Gabriel" missiles at the attacking Syrian fleet (mostly MGB Types). Effectivity ranged between 45% and 75% ($60 \pm 15\%$) at mid-range of the missile. The Syrians had no counter missile defence and were annihilated.

This data plus the knowledge that the ballistic accuracy curve for any projectile is a form of the degenerate hyperbola, yielded the formula shown in Figure 1. Figure 1 also shows the results of various combinations of missile and target speeds and range variations.

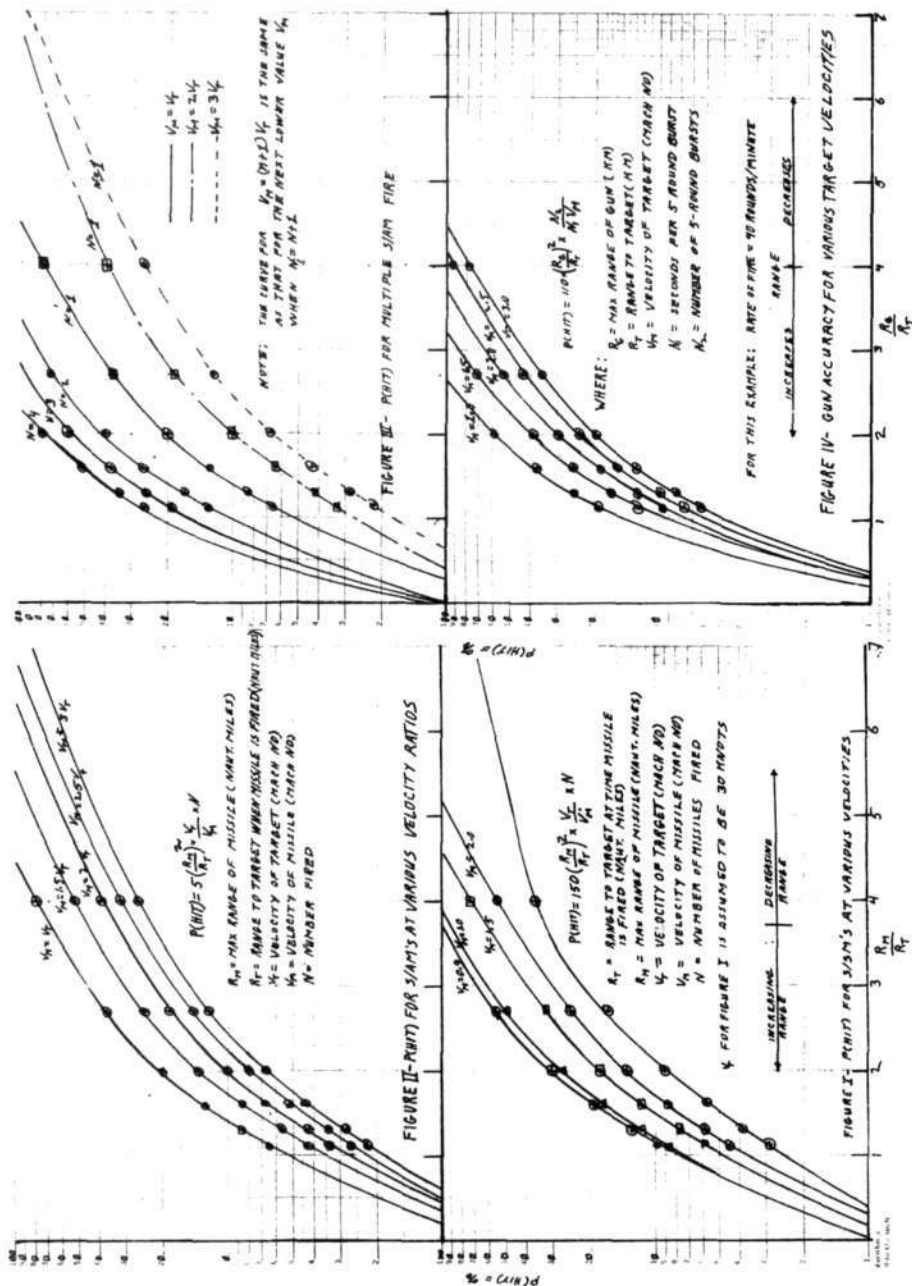
The data in Figure 1 clearly demonstrates the following axioms:

- The greater the velocity of the missile, the fewer the course corrections that can be made in any given range traverse.
- The greater the velocity of the missile, the closer the missile approximates the trajectory of a gun.
- The greater the velocity of the missile, the



Israeli gunboat armed with Gabriel missiles.

1. Any statistician can easily repeat this exercise from the listed data.



- lower the P(HIT) for any given sector of the missile's range.
- The mid-range (or most effective) probability of a hit expands to an ever increasing area as the velocity of the missile decreases. However, the beneficial value of this is limited because (Ref Figure II) the ability of a S/AM to hit an approaching target approaches an optimum value the slower the speed of the target missile.
 - As the range to target approaches maximum value, the P(HIT) approaches zero. Thus, the best or most profitable point of range at which to use a missile appears to lie between $\frac{1}{4}$ and $\frac{3}{4}$ the maximum range of the missile.
- The above information agrees well with data reports from the YOM KIPPUR War, the Lebanese Invasion, the Falklands War and JANES MISSILE SYSTEMS.

THE S/AM

Most of the statements about S/SMs also apply to S/AMs. The only differences are:

- S/AMs rarely exceed 30km and are mostly limited to 15 \pm 5km.
- The mach speed rarely varies above 3.0 or below 1.0. Most claims of velocities in excess of 3.0 are of doubtful validity.
- Most S/AMs are physically very much smaller than S/SMs.

S/AM Guidance systems are very little different from those of S/SMs. This is not considered to be a significant observation except where decoy systems are in use. Figure II shows the derived curves for various speed classes of S/AMs.

When OTO-Melara sales data, Egyptian and Syrian air defence data and PLO Propaganda claims (generally about 15% to 30% high) are compared to data appearing in JANES, ABC News, BBC News, and Israeli news releases (usually 15% low), a mid-range probability of 25% \pm 15% seems most correct. This yields Figure II.

The following very important claims were photographically demonstrated over Lebanon in the Israeli Invasion of 1982 and the UN actions of 1983:

- Infra-red and Thermionic Guidance systems, such as the PLO and Syrians used, had an 80%-90% chance of being decoyed by para-flares.
- Radar Guidance systems had a 60%-80% chance of being decoyed by "Window".
- Para-transponders were/are about 85% effective when interfering with ground controlled missiles.

No details are available on combinatorial systems but JANES accords them as being highly efficient.

EFFECTIVITY OF THE S/SM (Refer Figure I)

From the above data, there exists no difficulty in appraising the probability of a missile hit under any given (programmable) set of conditions. This can be easily done manually using a pocket calculator.

- The process is:
- Calculate the normal probability of a hit by the given missile, on the given target, for the given range.
 - Work out the probability of a hit by defending S/AMs on the attacking missile(s). Then work out the number of attack missiles that must be fired in order

- to ensure the arrival of (at least) two attack missiles at the target.
- From the gunnery data, work out the probability that at least one attack missile will get through.
- This set of calculations will quickly show the effect of the attacking/ or defending fire. Figures I-IV may be used instead of a calculator.

An example is sufficient to show the entire process.

- Assume an attack S/SM as follows:
 - Velocity: Mach 1.
 - Range to target: 125km (68 Naut Miles).
 - Max Range of Missile: 250km (136 Naut Miles).

- P(HIT): 30%.
 - No. Fired: To be calculated.
- Assume Defensive S/AMs as follows:
 - Velocity: Mach 1.
 - Range to target: 15km.
 - Max Range of S/AM: 30km.
 - P(HIT): 35% for 1; 90% for 3; 100% for 4 (Figures II and III).
 - No. Fired: 8, as 2 groups of 4.
 - Assume a defensive Robot-operated, Radar-ranged, computer-directed gun of the Vickers, UK 1955, 102mm (4in) single mounted type.
 - Range, max: 12/18km.
 - Rate of fire: 40 rounds/min.
 - P(HIT): for one 5-round bursts at 10km Range = 50%, for three 5 round bursts at

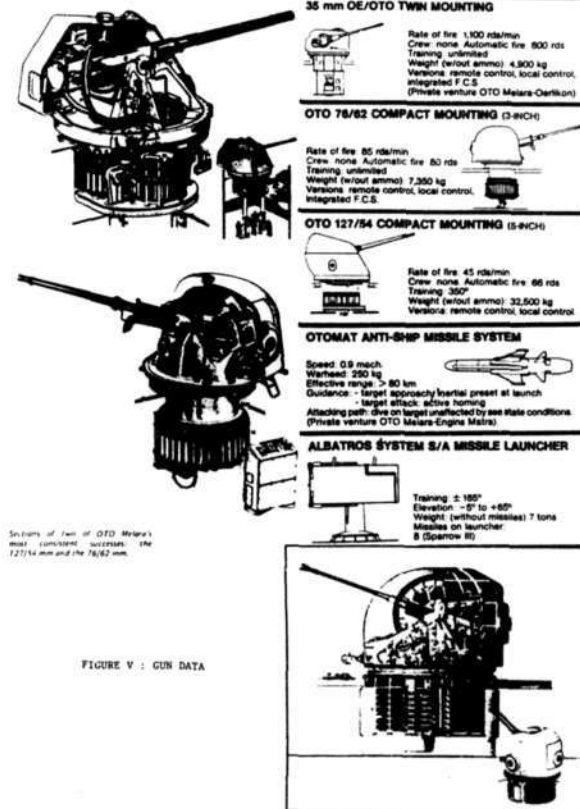


FIGURE V : GUN DATA

The twin Brodie turret housing Brodie/ Bofors 40/70mm guns is a really new concept in the field of anti-ship missile defence thanks to the addition of fragmentary ammunition with a proximity fuse.

10km Range a hit is certain (Table I or Figure IV).

(iv) Elevation: up to 75% is possible.

The assumed problem uses the mid-range of the missiles involved. Thus, $\frac{2}{3}$ is 2 in each instance. By reference to Figure I, for $V_m = 1.0$, the mid-range P(HIT) is 37%. Therefore, at least 3 missiles must reach the target to ensure a hit.

From Figure III, the P(HIT) for the S/AMs is 80% for each group of 4. Therefore, at least 2 attacking missiles will be destroyed before they reach the target area.

Figure IV shows that each gun burst has a 60% chance of a hit at mid-range. Because the gun will have time to fire 3-bursts, at least one attack missile will be destroyed.

Since 2-units of the assault salvo will probably either miss or be decoyed, at least 6 missiles must be launched in order to ensure a hit. This is a very expensive salvo.

The calculation just performed shows that missiles of the S/SM type are valuable only

Rounds		Seconds		P(HIT) at Mid-Range		Gun Cal Type
Per Min	Per Second	Per Round	Per 5-Rounds	One Burst of 5-Rounds	3-Bursts of 5-Rounds*	
10	0.167	6.0	29.94	14.7%	29.4%**	114mm
20	0.33	3.0	14.97	29.4%	59%**	100mm
30	0.498	2.0	10.00	44.0%	100% + ***	76mm
40	0.665	1.5	7.48	59.0%	100% + ***	102mm
50	0.832	1.2	5.995	73.4%	100% + ***	76mm
60	1.000	1.0	5.000	88.0%	100% + ***	76mm

* When multiple bursts are possible.

Let $R_a = 30 \text{ km}$ & $V = 1$ for Table 1.

** 2-bursts possible.

*** 3-bursts possible.

noted that the S/AM will not have time to lock on to its target at less than 25% of its range. At ranges less than $\frac{2}{3}$, the missile acts as an anti-aircraft gun.

S/AMs are most effective against missiles. The Israelis have shown that aircraft can decoy S/AMs using para-flares, aluminium "Window", and Para-transponders (ECM).

As shown in Table 1, the optimum rate-of-fire for a gun in the anti-aircraft or anti-missile mode is 30-60 rounds/minute in 5-round bursts. More rapid fire-rates are wasteful and expensive. Lesser fire-rates are not sufficiently certain of a hit. The probability formula is shown on Figure IV.

NOTE: The gun is still the best anti-aircraft defence.

IN SUMMATION

As shown here the Guided Missile loses its ability to strike awe and becomes a very predictable weapon. The supersecrecy that has, to date, prevented understanding of the principles of application of these weapons has yielded to the statistician's pencil and the news broadcaster's camera.

There is no question that a missile hit is deadly. But there is also no question that an efficient defensive unit can make a missile attack very costly. These are "facts of life" of modern warfare.

The principles of missile attack are simple. They are:

- Smother the enemy defence before that defence can smother the attack.
- The defence must maintain a radar detection alert at all times in order to detect an attacking missile at long range. Standard radar can easily do this. Computers of the "home" type can readily (and cheaply) store the data needed to implement a defence mode.
- S/AM defensive attack at mid-range usually can defeat ECM, Window, or Thermal sensing counter measures. However a S/AM defence is wasteful and requires at least four missiles to ensure destruction of a single attacking missile.
- Rapid fire, radar-directed, computer-operated, robot gun turrets can readily serve as secondary defence. However multiple attack can smother this technique.

The US Navy has fallen back on New Jersey class gun ships to economise on fire attack. Modern photographs* of this ship also indicate that the robot turret is regarded as of equal importance with the S/AM. Can it be that naval weaponry is turning FULL CIRCLE?

* Ref: THE NAVY, January, 1982, pps 19, 20, 21.



USS NEW JERSEY, economic fire power!

under conditions that allow them to smother the anti-missile technology of the enemy. More simply, they are only a slight improvement over artillery. The advantage they present lies in the reduced number of personnel required for their operation. Generally, missiles risk about 35% fewer personnel in battle.¹

When used in combination, these techniques are about 90% effective in protecting aircraft (Ref Lebanese invasion films ABC — 1983). However, the S/SM can not claim such protection.

THE COMPUTERISED GUN

Although JANES presents excellent data on the computer-controlled, radar-ranged, robot-operated gun (and turret); OTO-Melara Co advertisements in PACIFIC DEFENSE REPORTER and similar publications give much better data. The plates shown are from 1978 OTO-Melara advertisements (Figure V).

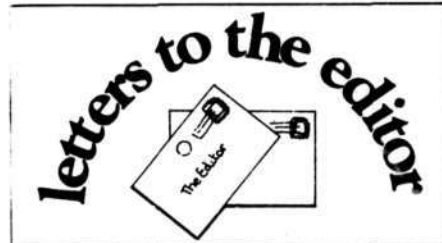
Table I was constructed from this material. Figure IV is based on an assumed value of 60% for the P(HIT) of a 5-round burst from a single barrel 102mm turret that fires 40 rounds/minute (the Vickers UK 1955 model, 102mm is typical). Estimates are from Falklands War Information and TV News.

EFFECTIVITY OF THE S/SM (Figure II)

The data for the S/AM also applies to the air to surface missile. However, the air to surface and air to air missiles have a much shortened range unit. These types will not be covered in this discussion.

The S/AM (Figures II and III) is most effective when fired in salvos of 2 or 4 at the half range of the missile. But it must also be

2. Compare WWII ships' complements to modern (published) values of ships' complements.



R. ENEBERG
102 Arcadia Ave, Gympie Bay
NSW, 2227, Australia
May 6th, 1984

Dear Sir,

In 'Navy' magazine of April 1984, I noticed that Peter Farr in reviewing 'Battle-cruisers — A History' made a comment regarding the possibility of the 18-inch guns of the 'FURIOUS' ending up in Singapore.

This cannon still pops up, it seems it just won't lie down. Reference is made to this matter in the US periodical 'Warship International' of 1974/ #4 (PP.416/418) where it is stated that a Japanese survey of the fixed defences carried out in March 1942 (and which generally agreed with British records) counted some 52 artillery pieces of which the largest were 5-15 inch and 6-9.2 inch. There were no 18-inch pieces.

From my own records I list below a history of the 3 (only) 18-inch guns manufactured for the Royal Navy.

Gun No	Date	Depot	Ship/Service
1	9/18	Portsmouth	'FURIOUS'
	11/29		Proof & Exper
	2/42	Woolwich	Scrapped
	7/47		'FURIOUS'
3	1/18	Portsmouth	'GENERAL WOLF'
	7/18		
	12/20	Portsmouth	Sold for Scrapping
	7/33		
2	1/18	Portsmouth	
	9/18		
	10/20	Portsmouth	Issued to Sale Section
	7/33		

Yours faithfully,

B. ENEBERG.

49 Talford St, Doncaster East
Melbourne, 3109
17 April, 1984

Dear Sir,

In reply to Sir John Bates' letter about the BALLARAT and the KRAIT: The P&O branch line ceased operation in 1936 when the five B class ships had been sold. In fact BALLARAT was sold to Thos W.

Video Systems



PERTH:
15 Whyalla St, Willetton, WA, 6155
Phone: (09) 457 8711. Telex: AA92991 Ans Bk VIDNOR
MELBOURNE
9 Macquarie Place, Boronia, Victoria, 3155
Phone: (03) 729 8622. Telex: AA36680 Ans Bk VIDSYS

IS ELECTRONICS TECHNOLOGY UNDERWATER

• EQUIPMENT SUPPLIERS: Representatives of Hydro Products, Tetra Tech, Ocean Instruments, Photosea Systems, Brantner & Associates, Mesotech Systems, InterOcean Systems, Zipperubing Co, Giannini Instruments, Ocean Applied Research and De Regt. U/W TV, lights, cables, connectors, switches, sensors, instruments, RCVs, Acoustics, hire equipment available • SPARE PARTS: Spares — many in stock or on short delivery times • FIELD SUPPORT: Experienced people on callout 24 hours a day • ENGINEERING: In house design and manufacture of software and hardware of custom-built systems for underwater applications • FACILITIES: In house cable moulding of underwater connections. Unique hydrostatic test chamber to 1000ft pressure testing of articles up to 3ft diam and 8ft length

BRISBANE:
Cnr Commercial Rd & Small St, Fortitude Valley, Brisbane, Qld, 4066
Phone: (07) 52 7383

AUCKLAND:
30 Cron Ave, Auckland, New Zealand
Phone: (9) 59 2179. Telex: NZ21030 Ans Bk RELECT

Ward for breaking up in May 1935. I have a complete list of ships owned by the P&O group supplied from the London office, and as I stated before there were no ships called BALLARAT in the group between 1935 and 1954. The NELLORE certainly brought the KRAIT back to Australia in 1964. Referring to Mr D. Marshall's letter, after reading the piece by G. Hermon Gill in Royal Australian Navy 1942-1945 it would indicate that as the KOFUKU MARU she sailed under her own power to Australia from India.

Yours faithfully,
K. HODGES.

21 Bronhill Road, East Ringwood
Victoria, 3135, Aust
Dear Sir,

The article by Charles Mann, "Let's Consider Escort Carriers", in the April issue is of particular interest as it is fundamentally the precise recommendations that I made in my submissions to the Joint Committee on Foreign Affairs and Defence during 1981.

At the same time, and during the past three years, I have lobbied all the leading politicians endeavouring to promote the concept.

The Joint Committee was originally constituted by the Fraser Government to investigate and report on the desirability of purchasing an aircraft carrier. Only three civilians made submissions, which was disappointing and for all I know the other two may have been opposed to such a proposal.

The official report subsequently submitted to the new Hawke Government and published during 1982 ignored all reference to alternative suggestions. The report itself states that the committee "restricted its considerations to ships of the type which were short listed and perceived to meet the requirement announced in 1980".

Therefore no consideration was given to alternative suggestions though in fact my opinion that three carriers were the minimum requirement was acknowledged.

Like Mr Mann, I also made reference to the obvious advantages of building escort carriers in Australia.

No doubt the Government considers their current defence policy is the result of recent assessments of our defence needs. Coincidentally there appears to be little difference to their defence policy of fifty years ago.

During 1934, Mr Charlton, Leader of the Labour Opposition to the Bruce-Page Government, stated in Parliament that all that was necessary to defend this country was "aircraft and submarines". It was even suggested by some that a Navy was not necessary.

One would have expected the experience of World War 2 to have led to a revision in attitude, which indeed it did with the re-introduction of a Fleet Air Arm and the purchase of two aircraft carriers by the Curtin-Chiefly administration.

The Government's policy today conveniently coincides as it did in 1934, with the wishes of many for a cheap and easy solution to the problems of defence.

There will never be a cheap and easy solution to defence but there are many practical and less expensive alternatives that warrant consideration.

Recent opinion polls show that 56% of Australians favour the purchase of an aircraft carrier and that 74% consider that our defence expenditure should be increased.

Politicians are only influenced by "numbers" and I therefore urge all Australians to make their opinions known to their Federal members.

Yours faithfully,
R. S. WALLACE.

Helicopter Industry Plan for Australia

Westland, one of Europe's leading high technology groups, has offered the Australian aerospace industry an \$860 million work package with a difference.

The offer involves a 20% partnership in the design, development and production of the new Westland 30 passenger and troop transport helicopter and carries with it the exclusive rights to make and sell Australian made Westland 30s in the South East Asian region.

Westland intends to form a joint operation with an Australian company to manage this business. This company will also have access to Westland's whole product range, which includes hovercraft and aerospace, marine and industrial equipment.

For Australian employment this means not only the creation of 650 new long term skilled jobs but also 750 man years of creative design and development engineering.

Westland has also offered the AAC (Australian Aircraft Consortium) its UK resources to promote and provide manufacturing support for the sale of the Wamira (A10) aircraft in Europe. This is currently short listed for the RAF basic trainer replacement requirement.

The Group's Deputy Chairman and Chief Executive Sir Basil Blackwell, made these announcements in Canberra following a round of meetings with Government Ministers, including the Prime Minister.



Sir Basil said Westland's initiative was probably one of the most significant in the history of the Australian aerospace industry.

"It comes at a time when there is a coincidence of requirements by both the British and Australian armed forces for new helicopters and trainer aircraft", he said.

The RAAF has initiated development of a modern trainer aircraft which has also been shortlisted by the RAF. Also the RAAF and the RAF need significant numbers of troop transport helicopters of similar specification. The RAN is in the final stages of selecting a Naval helicopter involving significant offset opportunities.

The Westland 30 is a new member of the Westland Lynx team of helicopters, presently flying at a weight of 6000kg but with planned

growth to 7300kg.

The W30-100 series powered by Rolls-Royce engines is in full production at Westland's Yeovil facility and additional variants are in the advanced stages of development.

The first of these is the W30-200, powered by General-Electric CT7-2B engines, designed to meet operator requirements for hot weather and high altitude performance.

Further variants of the W30 include the 30-300 which incorporates blade, transmission and avionics developments, and is under consideration by the RAF and RAAF to replace their existing troop carrying helicopters.

The military version of the W30-300 will also incorporate hard points to carry several different gun and missile installations.

HMAS KUTTABUL Past and Present



HMAS KUTTABUL is a commissioned Naval Establishment located in Potts Point, Sydney, overlooking Garden Island Dockyard. The base provides domestic, personnel, administrative and health services support for all Naval personnel in the Sydney area, when such support is not otherwise provided by a parent ship or establishment.

Presently KUTTABUL supports some 1500 uniformed personnel who are employed in a number of areas including the Naval Support Command Headquarters, Fleet Headquarters, RAN Trials and Assessing Unit, North

Sydney, the Fleet Intermediate Maintenance Activity, Garden Island and the Navy Supply Centre, Zetland.

To many of the personnel HMAS KUTTABUL is merely a place from whence they are paid and in some instances, provided with accommodation. Many only enter the Establishment on infrequent occasions during the course of a posting and some, never at all. It is not surprising therefore that as a consequence of the composition of HMAS KUTTABUL and a marked lack of published historical material on the subject, most personnel, particularly the younger members of the Ship's Company, are unaware of how and why the 'Stone Frigate' in which they serve, was commissioned.

In an attempt to overcome the foregoing perceived deficiency and to capture the history

of HMAS KUTTABUL before it is lost with the passage of time, this sketchbook has been compiled. Hopefully the effort might also help to foster a more active interest in HMAS KUTTABUL.

ACKNOWLEDGEMENTS

This project would not have been possible without the assistance and encouragement of many people who are concerned with the preservation of our Naval heritage. In particular I would like to acknowledge the generous assistance of:

Mr J. R. W. (Bill) Allen, Mr Graeme Andrews, Mr Jack Gibbs, Mr Ross Gillett, Mr Jim Hughes, Mr Anders Lindstedt, Mr Clive Porteous, and finally the Command Photographic Team and in particular Leading Seaman (Phot) Peter Simpson.

P. J. HUGONNET, Commander RAN.

WAVAL Butterfly Valves



Type KWRF resilient seat with electric activator



Type KWD flanged body with gear box



Type PJ metal to metal seat with pneumatic activator and positioner



Type KWAL resilient seat, hand lever operated

WAVAL VALVES

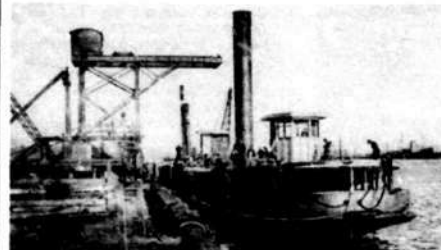
A DIVISION OF



5 WHIPPLE STREET BALCATTA
WESTERN AUSTRALIAN, 6021

Telephone: (09) 349 7111

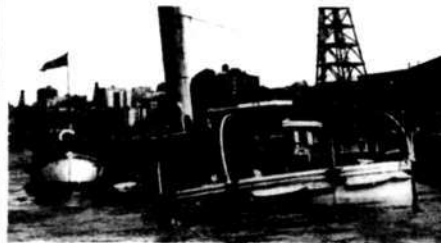
Telex 92943



The Sydney Harbour ferry KUTTABUL being completed at Walsh Island, Newcastle, in 1922.



KUTTABUL crowded with passengers during the 1920s.



KUTTABUL lies half submerged after the Japanese midget submarine attack on the night of 31st May/1st June, 1942.



Midget submarine I-22 is raised from the harbour bed.

KUTTABUL

SHIPS PARTICULARS

OVERALL LENGTH: 191 feet 9 inches.
BEAM (MAX): 38 feet 3 inches.
DRAUGHT (MAX): 13 feet 9 inches.
TONNAGE: Gross: 447. Nett: 201.
BOILERS: 2; working pressure: 180 psi.
ENGINES: Triple expansion, 3 cylinders (17½ in. 28 in. 48 in.), 24 inch stroke, 113 nominal horse power, 1050 indicated horse power.
SCREWS: 2, one each end.
SPEED: 14 knots.
PASSENGER CAPACITY: 2095 persons.
SISTER FERRY TO: 'KOOMPARTOO'.

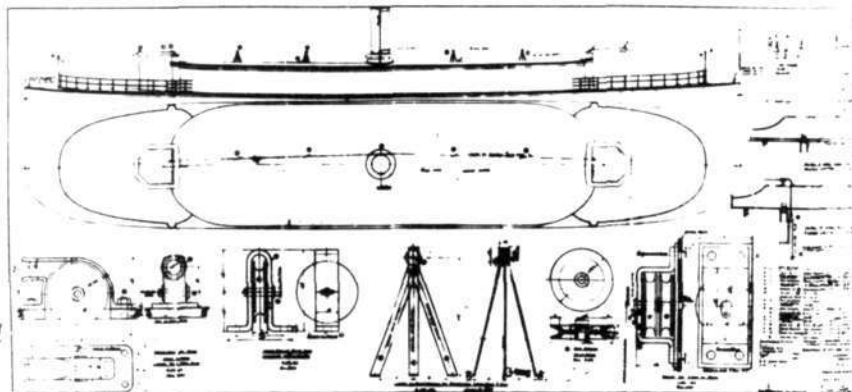


Commander Peter Hugonnet, RAN.

Commander HUGONNET entered the RAN in 1954 and undertook engineering training at the Royal Naval Engineering College, UK. His postings have included Marine Engineer Officer of HMS WALRUS, HMAS OXLEY, HMAS YARRA, Deputy Principal Naval Overseer Vickers Cockatoo Dockyard, Base Engineer Officer HMAS MORETON, Squadron Principal Technical Officer Australian Submarine Squadron, Principal Technical Officer HMAS STIRLING and Naval Support Command as the Rotatable Pool Manager. He is presently the Commanding Officer of HMAS KUTTABUL.



KUTTABUL during construction



Original
plans of
the ferry
KUTTABUL



The ferry is launched on 7th April, 1922, by Lady Braddon, wife of Sir Henry Braddon, a director of Sydney Ferries Ltd



Fitting out after the launch



The main passenger deck is in place. By the time of her completion KUTTABUL would cost £70.032.

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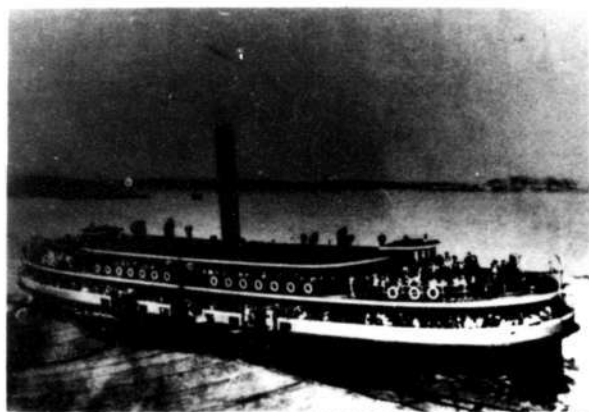
Trials and Commissioning

The Kuttabal left Newcastle at 8 am on the 10 August, 1922, and the voyage to Sydney was accomplished in a little over five hours. As a convoy, the tug Herioc accompanied Kuttabal down the coast, but her services were not needed. The Kuttabal showed a fine turn of speed and averaged 12 knots for the trip.' (SMH 11/8/22, P8)

SPEED TRIALS

Leaving the Sydney Ferry Company's yard at Milsons Point at 2.30 pm yesterday, the Kuttabal spent two hours undergoing acceptance trials. The vessel was in charge of officials of the Government Dockyard at Walsh Island, and at the wheel was Captain Bridge, Commodore of the Fleet of Sydney Ferries Limited.

Among those present on the vessel were Mr R. T. Ball (Minister for Public Works), Messrs T. P. Cooper (Undersecretary), W. A. Mackenzie (General Manager, Sydney Ferries Ltd), A. E. Cutler (General Manager, Walsh Island Dockyard) and Hector Kidd (Sydney Ferries Ltd). The vessel was run several times over the measured knot, and her average speed on runs against and with the tide was 12.96 knots, while on one run 13.338 knots was attained. This was above the required speed. Mr A. E. Cutler expressed the opinion that the vessel was the best ferry boat in the world taking into consideration her capacity, speed



KUTTABUL passes the Royal Navy battlecruiser HMS HOOD in early 1924. HMS REPULSE has just rounded Bradley's Head. All three ships were sunk during the Second World War.

and consumption. Mr Mackenzie (General Manager of the Sydney Ferries Ltd) stated that the vessel, with which he was well satisfied, would be placed with the Koompartoo on the service between Milsons Point and the Quay on Tuesday or Wednesday next.' (SMH 12/8/22 P13)

COMMISSIONED

The new passenger ferry Kuttabal, of the Sydney Ferries Ltd, which carried out her speed trials on Sydney Harbour on 11 August, was placed in commission yesterday (18 August, 1922), and commenced running in the Milsons Point service. Two new ferries, Kuttabal and Koompartoo, are now capable of carrying on a single trip across the harbour 2250 passengers each. On account of the vessels being regarded as practically unsink-

able, through being constructed with 18 watertight bulkheads, these ferries are not required to carry lifebelts.' (SMH 19/8/22 P13)

KUTTABUL was built to carry large numbers of commuters between Milsons Point and Circular Quay, when originally registered in Sydney in 1922 it was certified to carry 2094 passengers and crew.

CRUISE BOAT

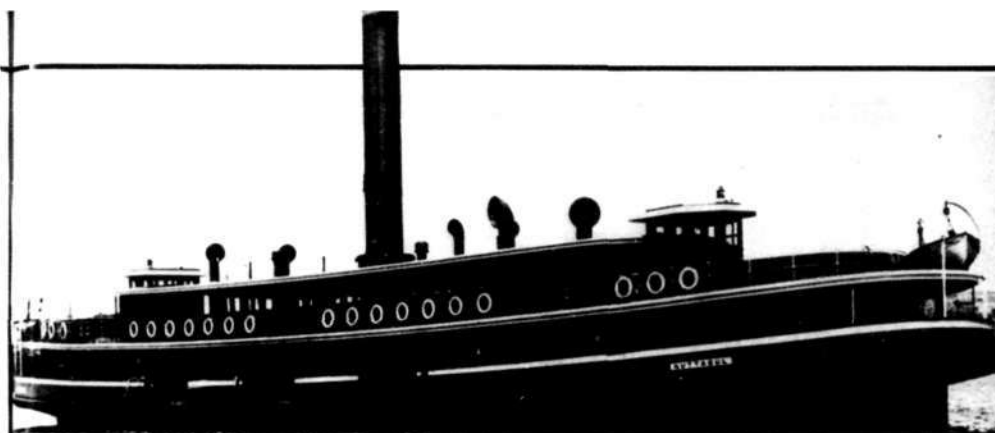
KUTTABUL ceased running at midnight on 19 March 1932 when the Sydney Harbour Bridge was opened. It was subsequently employed as a cruise boat and sometimes to follow the 18-footer sailing boat races.

MOONLIGHT HARBOUR TRIP

The ferry steamer KUTTABUL, largest of the Sydney Ferries Company's Fleet, has replaced the KIRRULE in the Sydney night harbour excursions. She has been fitted with 10 AWA loud speakers which were used last night to broadcast items throughout the vessel during the cruise around the harbour.' (SMH 25/3/35 P6)

STEAM HEATED CONCERT FERRY

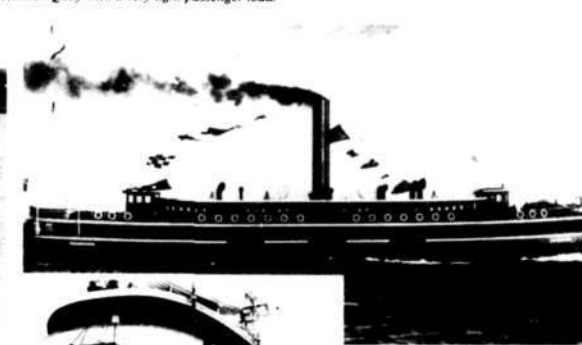
Sydney Ferries concert steamer KUTTABUL will leave Circular Quay on Sunday at 7.45 pm for the regular Sunday night harbour excursion, and will return at 10 pm. The KUTTABUL is steam heated throughout and ten speakers relay music to every part of the boat. Community singing will be held, the artists assisting being Miss Amy Ostenga (mezzo soprano), Maggie Foster (violinist), Messrs Vern Sellars and Bert Harrow (entertainers) and George Brown (pianist). (SMH 29/6/35 P10)



KUTTABUL passing Circular Quay with a very light passenger load.



KUTTABUL (rear), with her sister ship KOOMPARTOO.



All dressed up on arrival in Sydney 1922.



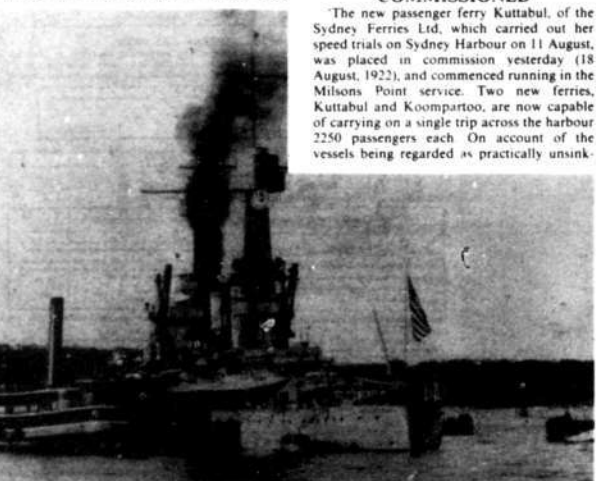
On the slipway for overhaul.



During the quiet periods KUTTABUL was berthed up harbour in Morts Bay.



KUTTABUL passes below the growing northern span of the Sydney Harbour Bridge, 1930.



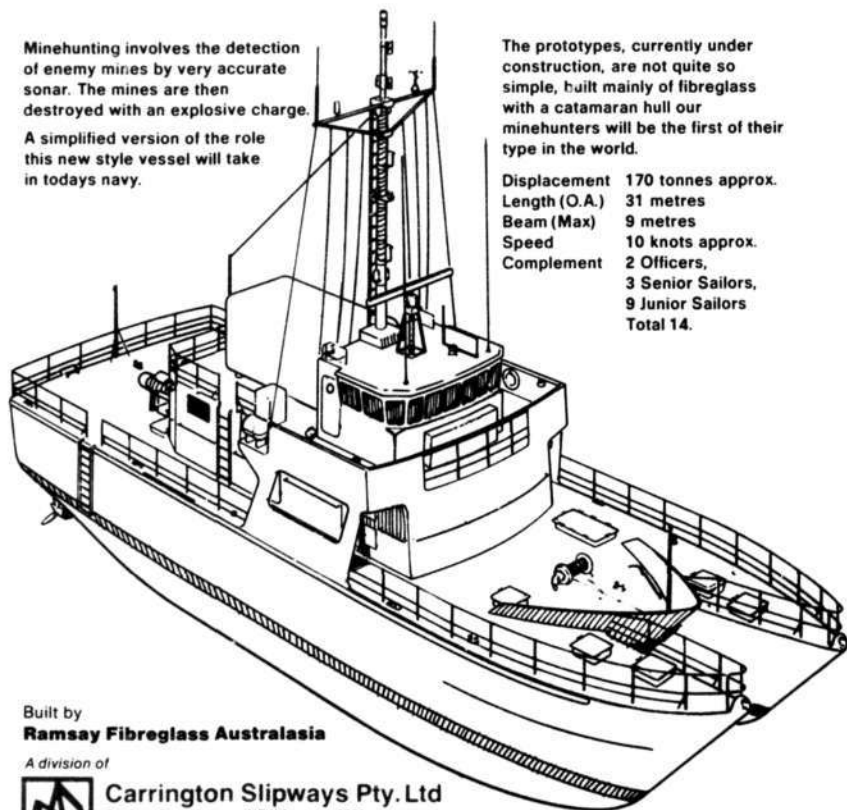
Even beside the mighty battleship USS CALIFORNIA, KUTTABUL still rides high and mighty, her hull only a few feet shorter than the American dreadnought's stacks.

MINEHUNTER

A concept for the future

Minehunting involves the detection of enemy mines by very accurate sonar. The mines are then destroyed with an explosive charge.

A simplified version of the role this new style vessel will take in today's navy.



The prototypes, currently under construction, are not quite so simple, built mainly of fibreglass with a catamaran hull our minehunters will be the first of their type in the world.

Displacement 170 tonnes approx.
Length (O.A.) 31 metres
Beam (Max) 9 metres
Speed 10 knots approx.
Complement 2 Officers,
3 Senior Sailors,
9 Junior Sailors
Total 14.

Built by
Ramsay Fibreglass Australasia

A division of



Carrington Slipways Pty. Ltd

Old Punt Road, Tomago NSW Australia 2322
Telephone: (049) 64 8071 Telex: AA 28185 Cable Carrslps

For enquiries please contact: Ian Smith, Manager, Ramsay Fibreglass Australasia,
Laverick Avenue, Tomago NSW 2322

THE BATTLE OF SYDNEY

A WELL PLANNED OPERATION

Plans for attack on shipping in Sydney Harbour were finalised by the Japanese High Command in early April 1942.

The Attack Group, five submarines I-21, I-22, I-24, I-27 and I-28, was commanded by Captain Hankyu Sasaki. I-21, the command submarine, equipped with a reconnaissance aircraft and I-22, I-24, I-27, I-28 carried midget submarines secured to their decks.

The group sailed from Japan for Truk on 11 May. I-28 was sighted on the surface by a US submarine on the morning of 17 May and was subsequently hit by two torpedoes and sank with all hands and her midget submarine. The crews of the midget submarines were embarked in I-22, I-24 and I-27 on 20 May and the group sailed for Sydney.

THROUGH THE LOOPS

Captain Sasaki brought the midget carrying submarines I-22, I-24 and I-27 into the launching position seven miles off Sydney Heads at sunset on 31 May. I-21 approached to within five miles off the harbour entrance.

Soon after 1700 the submarines surfaced and the midgets were launched.

Midget I-27, Lieutenant Chuma, was the first to enter the harbour. It crossed the submarine indicator loop at 2001.

Two and a half hours later it was sighted enmeshed in the anti-submarine net by a watchman. It was reported as a mine and no offensive action was taken.

Lieutenant Chuma struggled desperately to free the midget but at 2235 when the patrol boat LOLITA closed to investigate he fired the demolition charges and Midget I-27 sank to the harbour bed.

Midget I-24, Sub-Lieutenant Ban, crossed the submarine indicator loop at 2148. Ban succeeded in passing through the gate of the boom and was sighted close to USS CHICAGO at 2250.

The midget submarine was illuminated by searchlights and came under fire from both ships and shore.

It was next sighted off the eastern shore of Garden Island and later in the vicinity of Fort Denison where it was almost run down by the harbour launch NESTOR. Fifteen minutes later the conning tower of Midget I-24 was sighted by passengers on a ferry between Garden Island and Bradleys Head.



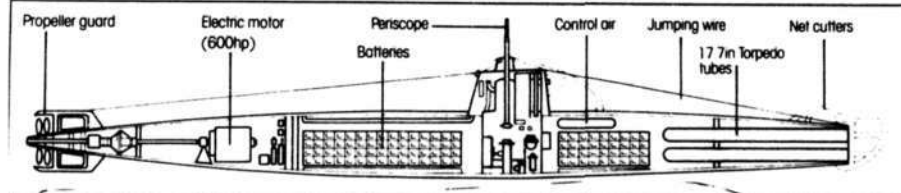
Very few photographs exist depicting KUTTABUL as a commissioned RAN unit. The above view shows her alongside the south-east corner of Garden Island, with two other vessels (including HMAS SAMUEL BENBOW), outboard of the ferry.

TYPE "A" (KO-GATA) - JAPANESE MIDGET SUBMARINE

SUBMARINE DISPLACEMENT:	46 tons (46.74 tonnes)
LENGTH OVERALL:	78.5ft (23.9m)
BEAM:	6ft (1.8m)
DRAUGHT:	6ft (1.8m)
MACHINERY:	600hp Electric Motor
MAX SPEED - SURFACED:	23 KT
- SUBMERGED:	19 KT
RANGE - SURFACED:	80nm at 2 knots
- SUBMERGED:	20nm at 19 knots
ARMAMENT:	2 x 17.7in (450mm) Torpedo
CREW:	Two
NUMBER BUILT:	62.



I-400, an I class submarine similar to the parent boats used for the attack on Sydney Harbour.



Side profile of the Type A midget submarine.

HMAS KUTTABUL SUNK



First Sub-Lieutenant Ban, commander of I-24's midget which fired the torpedo that sank HMAS KUTTABUL.

At 2330 the midget submarine was fired on by HMAS GEELONG off Bradleys Head. Minutes later two torpedoes were fired at USS CHICAGO. The torpedoes are believed to have passed under the cruiser. One exploded harmlessly on the eastern shore of Garden Island and the other exploded on the harbour bed sinking the accommodation ship HMAS KUTTABUL and damaging the Dutch submarine K9. Twenty-one sailors were killed and ten wounded.

Side view of the sunken ferry. In later years the steps behind the ship were named Kuttabal Steps.



The morning after the torpedo attack, HMAS KUTTABUL lies on the bottom of Sydney Harbour.



Close-up of the damage.



Inside KUTTABUL during recovery operations.

HMAS KUTTABUL — HONOUR ROLL

STOKER II
ABLE SEAMAN
STOKER
A/LEADING STOKER
STOKER II
STOKER
STOKER
A/STOKER
STOKER II
ENGINE ROOM ARTIFICER IV
PETTY OFFICER
STOKER II
STOKER II
ABLE SEAMAN
STOKER
STOKER II
A/ABLE SEAMAN
STOKER II
ORD SEAMAN
ORD SEAMAN
STOKER II

JOHN SAMUEL ASHER
LESLIE WILLIAM BLAND
WILLIAM RICHARD BOUNDY
SYDNEY WILLIAM BUTCHER
LESLIE JOSEPH DENNISON
ARTHUR WILLIAM FRANCIS
JOHN EDWARD GANNON
JACK ALBERT GARDNER
FREDERICK ARTHUR GLANFORD
WALTER GEORGE GORDON
LEONARD WALTER HOWROYD
LESTER RICHARD JAMIESON
KENNETH FRANCIS KILLEEN
FRANK KIRBY
JACK EDMUND NUMAN
NORMAN LESLIE ROBSON
ARTHUR JAMES SMITH
HERBERT ARTHUR SMITH
DAVID TRIST
RAYMOND OWEN VENNING
THOMAS JOSEPH WATSON

Address of note
at date of death
of member

Official
No

(MEDINDIE, SA)	PA1913	RANR
(PADDINGTON, NSW)	54023	RANR
(WALLAROO, SA)	23893	RAN
(WESTON, NSW)	23734	RAN
(WILLIAMSTOWN, VIC)	W2277	RANR
(WIGHTON, NORFOLK, ENGLAND)	16076	RAN
(UNANDERRA, NSW)	S5161	RANR
(TEMPY, WILLIAMSTOWN, VIC)	W1418	RANR
(VIA GOOMERA, QLD)	B3414	RANR
(ALBERT PARK, VIC)	PM3354	RANR
(PENRITH, NSW)	19667	RAN
(GEELONG, VIC)	W2264	RANR
(SUNSHINE, VIC)	25753 (EX W2294)	RAN (EX RANR)
(ROYAL NAVY)	D/JX 238696	RN
(REDCLIFFE, QLD)	23807	RAN
(LEICHHARDT, NSW)	S5654	RANR
(MAYLANDS, WA)	F3222	RANR
(LOWER BUCCA, NSW)	S6131	RANR
(ROYAL NAVY)	C/JX 170204	RN
(PINNAROO, SA)	S6116	RANR
(HABERFIELD, NSW)	S5111	RANR

THE FINAL ACT

The later movements of Midget I-24 are not known. The submarine indicator loop recorded a vessel passing out of the harbour at 0158. The remains of this midget submarine have never been recovered and it is believed it sank in deep water off the coast.

Midget I-22, Lieutenant Matsuo, is believed to have entered the harbour at 2250. Her entry was not recorded by the submarine indicator loop but soon after 2250 HMAS YANDRA sighted a conning tower near the harbour entrance but lost contact. Fifteen minutes later YANDRA sighted Midget I-22 again in the vicinity of Hornby Light and dropped six depth charges.

Lieutenant Matsuo appears to have lain quiet on the harbour bed for some hours after this attack. At 0300 the midget was again sighted by USS CHICAGO as she was leaving harbour.

The harbour defence craft were alerted and at 0500 HMAS GOONAMBEЕ made a contact in Taylor Bay. The patrol boats YARROMA, SEA MIST and STEADY HOUR attacked the contact with depth charges. The wreck of Midget I-22 was found by divers later that day.

Both Midgets I-22 and I-27 were recovered. A post mortem examination revealed that Lieutenant Matsuo and Petty Officer Tsuzuku had committed suicide. The four Japanese sailors were given full military funeral. Their ashes were later returned to Japan.



Leut Matsuo and PO Tsuzuku of I-22, both were found dead from gunshot wounds in the head.

Their boat was subsequently salvaged after suffering a depth charge attack in Taylors Bay.

HMS Dreadnought nuclear-powered fleet submarine

We contribute much more to Maritime Defence than appears on the surface.

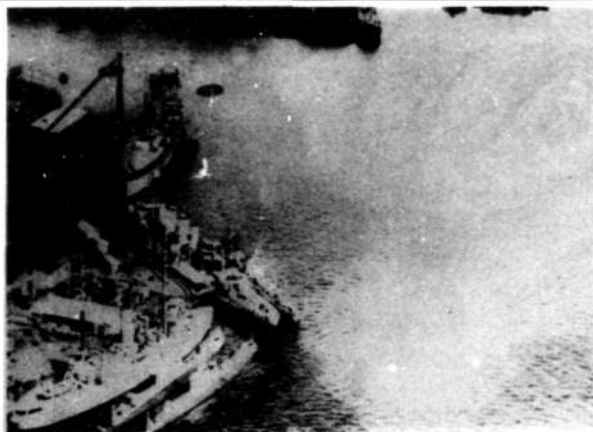
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Garden Island in the early 1930s. From top to bottom: a County class heavy cruiser, HMAS ADELAIDE with a River class torpedo boat destroyer outboard, and HMAS PLATYPUS with HMA Submarines OXLEY and OTWAY.



Looking towards Elizabeth Bay and Potts Point with Garden Island in the top left. HMAS PENGUIN ex PLATYPUS lies alongside the island's right hand shore.



HMAS MORESBY (left) lies in Elizabeth Bay in 1930. HMA PENGUIN ex ENCOUNTER is berthed at Garden Island.

Captain Cook Graving Dock

British naval policy in the Pacific relied on a main fleet based on Singapore.

This fleet was intended to protect sea communications in Southern and Eastern Asia and in the South West Pacific, including Australia. The growing naval strength and expansionist policy of Japan led to a request by the Admiralty in 1938, that a graving dock be built at Sydney capable of accommodating the largest capital ships of the Royal Navy.

The Australian Government agreed to pay the expense of constructing the dock to Admiralty specifications and plans. The site at Garden Island was recommended in January 1940 and construction of the dock began in July that year as a matter of wartime emergency. The work proceeded in shifts 'round-the-clock', employing an average between 2500 and 4000 workers.

The principal feature of the plan was the reclamation of 33 acres of the sea bed between Potts Point and the southern shore of Garden Island to include the basin in which the graving dock would be constructed. With this also went the levelling of the Southern end of the Island and excavations of the cliff at Potts Point to allow the building of an access road past the Woolloomooloo wharves.

After the coffer-dam of rock filling was built, the basin was pumped dry and the immense task of lining the walls and bed of the dock with concrete, and installing caissons and machinery was begun.

The dock was ready for use in March 1945 and from then until the end of the war was used for docking and servicing ships of the British Pacific Fleet and ships of the Royal Australian Navy.



Dredging operations associated with the construction of the Captain Cook Drydock, 1941.



Forming of the drydock, 1942.

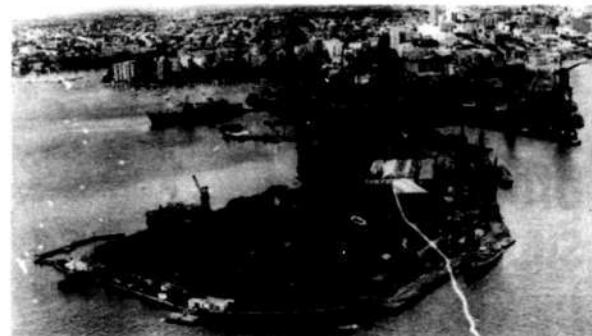


Construction work, 1942.

MODERNISATION

Between 1945 and 1977 only three substantial buildings were constructed on the Island.

By the mid 1970s it was apparent that the old and overcrowded facilities were inadequate to support the Fleet and consequently a modernisation plan was developed. It is anticipated that it will take 20 years to implement the plan at a cost of \$190m in 1979 prices. It will be necessary to undertake the work in stages to avoid disrupting the operation of the Dockyard.



Garden Island Naval Dockyard, 1983.

WOOLLOOMOOLOO BAY

During the first five years of settlement in Sydney, the deep, narrow and landlocked recess that is nowadays known as Woolloomooloo Bay was known to the pioneer colonists as the Garden Cove. That name came from a rural garden on the Island at the mouth of the Cove.

Sydney Cove, Farm Cove and Garden Cove were the first three anchorages of ships in Port Jackson. On their shores the first permanent settlement of white men in Australia took shape.

Under stage 1 of the Garden Island modernisation project, the face of Woolloomooloo is being transformed again. The Woolloomooloo sheds have been demolished and Cowper Wharf Roadway has been realigned. A multi-storey car park capable of accommodating 1150 vehicles is being built against the cliff.



Woolloomooloo Bay, 1890.



Woolloomooloo Bay, 1980.

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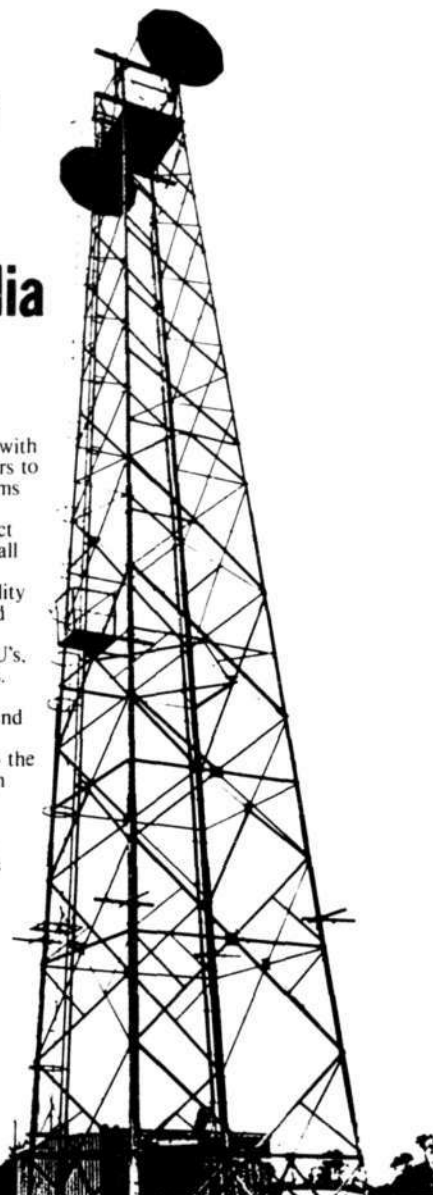
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EARLY DEPOT SHIPS

On 1 January, 1909, the survey ship HMS PENGUIN was paid-off and attached to Garden Island as a Depot Ship. From this time the Royal Navy Garden Island Establishment became known as PENGUIN.

On 1 July, 1913, on transfer of the Sydney Naval Establishments to the Naval Board of the Commonwealth of Australia, PENGUIN was purchased by the RAN and the Establishment commissioned as HMAS PENGUIN.

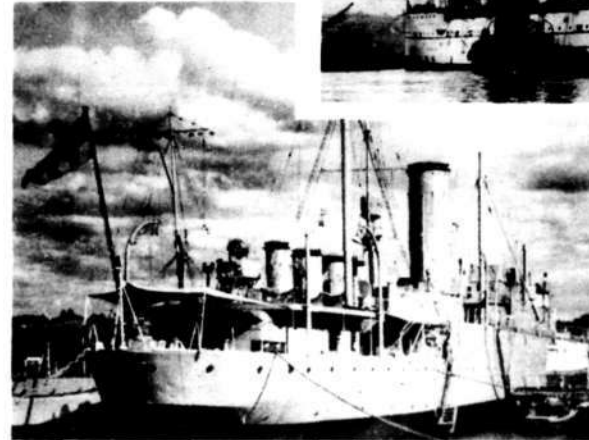
HMAS PENGUIN paid-off for disposal on 1 January, 1923 and her place was taken by the light cruiser ENCOUNTER, which was commissioned as HMAS PENGUIN on the same day. ENCOUNTER had previously decommissioned on 30 September, 1920 and had been in reserve since that date.

In 1929 ENCOUNTER was scrapped and on the 16 August, 1929, the Depot and Repair Ship PLATYPUS commissioned as HMAS PENGUIN.

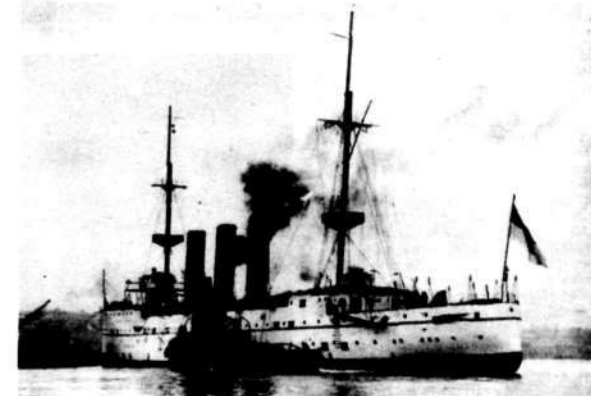
On 26 February, 1941 PLATYPUS commissioned for sea-going war service and her place as a Depot Ship was taken by KUTTABUL, which commissioned as a tender to HMAS PENGUIN that same day.

KUTTABUL was requisitioned by the RAN on 7 November, 1940, from Sydney Ferries Ltd, to provide spare and overflow accommodation for ships in refit at Garden Island. The staff of PENGUIN moved into the newly erected Hydrographical building on Garden Island.

The third HMAS PENGUIN ex PLATYPUS, commissioned as such in August, 1929.



HMAS PENGUIN as the Garden Island depot ship.



HMAS PENGUIN (II) was the former Challenger class cruiser HMAS ENCOUNTER.

On the 1 June, 1942, a torpedo fired by a Japanese midget submarine, at the heavy cruiser USS CHICAGO, passed under KUTTABUL's thin hull and exploding against the sea wall, caved in her bottom whence she sank in shallow water. KUTTABUL sustained 29 casualties of which 21 were fatal.

On 1 January, 1943, Garden Island commissioned as HMAS KUTTABUL perpetuating the name of the ferry. The name PENGUIN passed to the Balmoral Naval Depot on the same day.

Compensation subsequently paid to Sydney Ferries Ltd, at the end of the war for the loss of the KUTTABUL was 17,500 pounds.

LOCALITY:

POTTS POINT

The Aboriginal name for Potts Point was 'CARRAG-EN', however Governor Phillip in his survey of 1792 named it Point Campbell. In 1822 the land was granted to the Judge Advocate John Wyld who later sold off

approximately six and a half acres to Mr J. H. Potts. Neither of these gentlemen ever built properties on the Point, nevertheless their names have been perpetrated in 'Wyld Street, Potts Point' where HMAS KUTTABUL is

now located.

The actual site in Potts Point on which HMAS KUTTABUL now stands was previously occupied by three properties called 'Moncur Lodge' (later 'St Mungo'), 'Como'



Wyld Street, Potts Point, circa late 1800s.

and 'Clarens', which were all built between 1840 and 1845. The most historically important of these buildings was 'Clarens'.

CLARENS

'Clarens' named after the town on Lake Geneva in Switzerland, was built in 1845 and purchased by James Martin in 1853. Martin was to become Premier of New South Wales and later Chief Justice. Martin Place in Sydney is named after him.

Martin spent considerable funds embellishing his Potts Point home. Acting as his own architect and superintendent, he converted the garden of 'Clarens' to resemble the private garden of an Archon of Ancient Greece. A wide stairway of golden Pyrmont freestone, ornamented with beautifully sculptured Grecian urns and pallsades, led from the summit, terrace by terrace down to a private jetty. At the top of the stairway, commanding a view across the harbour to the Heads, was



Front of Clarens, facing Sydney Harbour.



The Clarens gardens in 1983.

another masterpiece in freestone, a summer house paved with intricate design of polished marble. On the middle terrace, high above the water, was the glory of the garden – a replica in freestone of the Choragic Monument of Lysicartus. This monument now resides in the Botanic Gardens, Sydney.

'Clarens' had a very early association with Garden Island and the Navy. Commodores of visiting Squadrons had a standing invitation to come across from Garden Island to 'Clarens'. Naval Commanders-in-Chief Australian Station, Commodore James Erskine RN (1882-1884) and Rear Admiral Sir George Tryon, RN (1884-1886) were regular visitors to 'Clarens'.

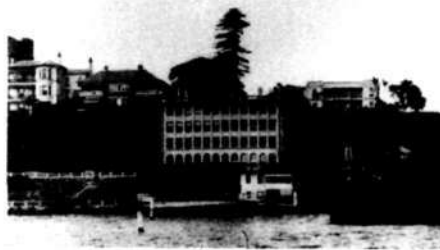
'Clarens' was demolished in 1966 in the wake of the construction of the Barracks. All that remains today to this significant residence are sections of the garden walls and the gazebo.

MONCUR LODGE and COMO were demolished by developers about 1939. A street was formed and named Collins Avenue and the two estates subdivided into nine allotments which were sold but never built on.

CLARENS, later named WILGA, was again divided into two flats and called WILGA and STRATHISLA. From about 1936 CLARENS became the private hospital CHARLEMONT. The Department of the Interior acquired CHARLEMONT and most of the other properties on the eastern side of Wyld Street around 1941. CHARLEMONT was occupied by WRANS who operated the Sydney Communication Centre, which was also situated on the site during the latter part of World War II.

After the war it became sailors' accommodation for personnel employed at Naval Headquarters, Garden Island Dockyard, Ships in Reserve, Gunnery Instructional Centre and Sydney Shore Patrol. It was nicknamed CHARLIE'S.

The present Barracks was commenced in February 1964. CHARLEMONT was gradually dwarfed by the new building and finally succumbed to the demolishers hammer when KUTTABUL was completed. The ground floor of the Administration block stands on the site of Collins Avenue and the North/South Wing cuts through the front of the old house.



Charlemont



Construction nearing completion, 1966.

THE BADGE

Each commissioned ship, establishment and Fleet Air Arm Squadron is eligible to wear a badge.

The ship's Names, Badges and Honour's Committee consider applications from any Naval organisation for the allocation of a badge, which if considered suitable, will be recommended to the Chief of Naval Staff for approval.

The history of the HMAS KUTTABUL badge design, blazon and motto is described below.

HISTORY

When the Naval Board, in 1945, requested all ships and establishment to provide details of any badges worn, the Commanding Officer of HMAS KUTTABUL replied forwarding a black and white sketch of a badge which he proposed should be adopted for his command.

The design showed the head and shoulders of an aboriginal warrior carrying a spear – an almost identical stance to that shown in the badge of HMAS WARRAMUNGA. In the background there were two ships: one a modern warship, the other a sailing vessel. The Commanding Officer advised that the design had been selected because 'kuttabul' was an aboriginal word. He did not suggest a motto.

No action was taken regarding the proposal, and 16 years passed before the second attempt to obtain a badge for the Establishment.

On October 3, 1961, the Commanding Officer submitted a rough sketch for a proposed badge. This design was based on the obsolete Sydney Ferries Ltd House Flag, as worn by the former Sydney ferry KUTTABUL. A St Andrew's Cross on a blue background with the letters S and F in the horizontal segments. In this instance the letters S and F had been deleted and at the intersection of the cross, a gold laurel wreath – to commemorate the personnel lost in the sinking of the ferry KUTTABUL. The suggested motto was "AT HAND – READY" from the Latin – "Ad Manum". This motto was considered appropriate in that it was considered that HMAS KUTTABUL was at hand to look after OCECA's (now FONSC) HQ.

The proposed design was considered to lack balance, so a second design was suggested replacing the laurel wreath with a Waratah flower, this being the floral emblem of New South Wales. After modification to delete the stem and leaves (so leaving only the 'head' of the flower) the design was approved, but with the motto I SHALL MAINTAIN. This motto, however, had already been allocated to HMAS LEEUWIN, so was changed to WISDOM AND FIDELITY.



Early construction of HMAS KUTTABUL, 15th February, 1965.



The Defence Minister, Mr Fairhall, cuts the ribbon to officially open the new KUTTABUL. Also in the picture left to right, are AB D. M. Jackson, Supply Officer Commander Fulton, Miss Navy, WRAN Rosemary Farne, Commanding Officer Commander Wilson and AB J. W. Griffin, 7th October, 1966.

This version of the badge, approved on July 9, 1963, showed the flower head outlined, or edged, in white — in the mistaken belief that to conform with the heraldic tincture rule the red flower had to be edged with white so that it could be placed on the blue field. The tincture rule does not allow a colour to be placed on another colour — only upon a metal — hence

the argent (silver or white edging).

Another rule, however, allows a 'proper' charge (one in its natural colours — as was the Waratah) to be placed on either a colour or a metal, so the edging was deleted from the badge. In this final form it was approved as the official badge for HMAS KUTTABUL on November 14, 1969.



(List of Officers)

BOOK REVIEW

DESTROYER!

GERMAN DESTROYERS IN WORLD WAR II

by M. J. WHITELEY

Published by ARMS & ARMOUR PRESS of London

Available in Australia from Thomas C. Lothian Pty Ltd of 4-12 Tattersalls Lane, Melbourne, Victoria

Reviewed by VIC JEFFERY

Although they were the most active German surface warships during World War Two, very little has been published on the wartime activities of the German destroyer.

Heavily-armed German destroyers laid minefields in British and Polish waters along with the Baltic. They supported invasions of Denmark and Norway, operated with such well-known capital ships such as the battle-cruisers SCHARNHORST and GNEISENAU, fought against Russian convoys in the icy Arctic wastes and clashed with British destroyers in the English Channel, North Sea and the Bay of Biscay.

Among the most famous of their wartime successes was the torpedoing of the 13,000 ton British cruiser, HMS EDINBURGH in 1942, whilst it was laden with Russian gold and a double success when five torpedo boat-destroyers clashed with a British force comprising a cruiser and six destroyers off the French coast. In the ensuing action the cruiser, HMS CHARYBDIS and the destroyer HMS LIMBOURNE were torpedoed and sunk.

The first two parts of this fascinating book, Design & Construction and Operations comprises 14 chapters covering topics such as North Sea Offensive, Challenge in the Channel, The Freezing North, Arctic Adventure and Norwegian Swansong.

Part One's four chapters cover war-built destroyers, torpedo boats and armament and consists of 24 individual entries covering all facets of pre-war destroyers, Heavier flak armament, More guns and Sophisticated fire control.

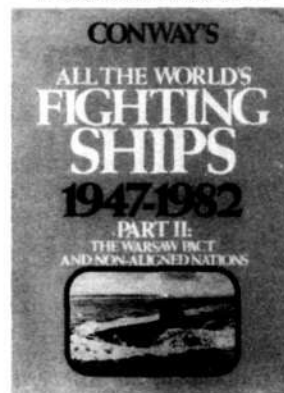
Included in the Part Two section of this book are 10 chapters packed with 69 individual incidents and action accounts bearing titles such as — A rogue torpedo, Trickery afoot, Caught in the crossfire, Search for a convoy and Point blank range.

Part Three covers seven appendices covering Technical data on destroyers and torpedo boat destroyers; Construction and career notes of destroyers and torpedo boat destroyers, offering extensive detailed notes on the ships construction details, Commanding Officers, career summaries and eventual fates, and even three pages of mine-laying successes in 1939-40.

Consisting of 310 pages and including 42 black and white photographs, 14 maps and 15 line drawings, "Destroyer" draws heavily on

previously unpublished official reports and also documents covering the design and construction of the warships themselves. Carefully and thoroughly researched, this book is priced at \$39.95.

THOROUGHLY RECOMMENDED



"CONWAY'S ALL THE WORLD'S FIGHTING SHIPS 1947-1982"

"PART II: THE WARSAW PACT AND NON-ALIGNED NATIONS"

Published by:

Conway MARITIME PRESS

Reviewed by: 'SHTANDART'

It is extremely difficult to make any adverse criticism about this book. It is unique in many aspects, not the least of them being the fact that, unlike the vast majority of compendiums of this type, the often convoluted political history of each of the 125 nations covered here are discussed in some detail prior to the actual listing of vessels.

For those who have never had access to the post-war editions of "Janes Fighting Ships", this book will more than adequately fill a heartfelt need. For all its dimensional slimmness, this very comprehensive volume includes the very smallest ocean-going armed vessels as well as the obvious major units of even the most obscure 'naval' nations like Kiribati, formerly the British Gilbert Islands, and the mythical Swiss Navy whose armed maritime activity precedes the fifteenth century.

The development of the post-war Yugoslavian Navy is particularly fascinating, especially when one reads of the awesome and seriously-considered naval aspirations which were felt to be achievable by the People's Assembly Presidium as early as December, 1946. These included plans for four cruisers and 20 destroyers, together with lesser craft.

Warsaw Pact nations are dealt with as a separate group and, not surprisingly, the Soviet Union receives a great deal of attention; this effort being extended to full discussions covering weapons and sensors for all purposes, including mines, fire control radars and a brief history of sonar systems in Soviet Naval service.

Recent additions such as the KIROV class battlecruiser, TYPHOON/SIERRA class SSBNs and UDALOY class large destroyers are discussed in full and, at the other end of the scale, even Argentine battle casualties from the Falklands/Malvinas War and museum ships extant in the various navies receive adequate coverage.

For all its historical content, this is a thoroughly up-to-date, high-quality book of a kind one expects from this reputable publishing house. Photographic and general illustrative content is nothing short of excellent in all respects. Even though it is the second part of an existing work, it is complete in itself, even up to the 1983 addenda, and would be a very necessary addition to anyone's naval library. I highly commend this work to the intending purchaser.

"THE GUINNESS BOOK OF SHIPS & SHIPPING FACTS AND FEATS"

by TOM HARTMAN

Published by GUINNESS SUPERLATIVES LIMITED of Middlesex, England. Available in Australia through William Collins of 55 Clarence St, Sydney. Price \$28.00

Reviewed by: VIC JEFFERY

This recently published title in the Guinness series is a must for the library of every ship-lover.

Divided into six sections — Experiment and Exploration, Warships and Warfare, Trade and Transport, Distress and Disaster, Odd Facts and Appendices, this book is truly a fascinating collection of entries relating to ships, ancient and modern.

Consisting of 264 pages and laid out in an open easy to read format, the text is supported by 196 black and white photos and line drawings, 26 colour photographs, two pages of house flags in full colour and nine maps.

This book goes a long way towards answering most of the questions anyone might reasonably ask about ships.

Warships, merchant ships, inventors, shipwrecks, explorers and battles are covered as are the general characteristics of over 150 types of vessels in one of the two appendices. The other appendix relates to a glossary of nautical terms and acronyms.

Sub-sections cover areas such as: Hospital Ships; troopships; medals and The Era of the Wooden Warship.

If you are looking for the answers to questions such as The most famous sea fight in English history? The first man to equip his ships with hammocks? The first ship to be sunk by a submarine and the first ship to have her machinery below the waterline, you will find them in here.

Two famous Royal Australian Navy ships recorded in tragic events in the book are the second HMAS SYDNEY which was lost in action with the German raider KORMORAN off the WA coast in 1941. This is the known occasion on which both hunter and hunted were sunk.

The second RAN ship was the heavy cruiser, HMAS AUSTRALIA which was the first ship to be hit by a Japanese Kamikaze suicide aircraft, this taking place on 17 October, 1944.

Recommended reading and a valuable ready reference for any lover of ships.



— State on the move

by VIC JEFFERY, Navy Public Relations Officer (WA)

Sprawling over an area of more than 2.5 million square kilometres with a landscape ranging from the grandeur of the Kimberleys in the north to the large timber forests of the south, Western Australia is certainly a State on the move.

Described as the "Home of the America's Cup", "State of Excitement" and by a new WA Tourism Bureau slogan as "WA — One great day after another" with several climate zones and golden beaches. WA is a year-round holiday destination.

Western Australia's capital, Perth, is a relaxed yet sophisticated and cosmopolitan city situated on the banks of the Swan River with a population of nearly one million people.

Situated some 50-odd kilometres south of Perth on picturesque Garden Island in Cockburn Sound is Australia's fastest growing naval base, the fleet support facility HMAS Stirling.

Commissioned on 28 July, 1978, this fledgling naval base has since been visited by more than 100 RAN and Allied warships and submarines and is at present the home for one destroyer escort, one hydrographic survey ship, three patrol boats and two new naval tugs.



The six years since commissioning have also seen the construction on the island of an oil fuel installation, an armaments, weapons and equipment depot and a million dollar re-compression chamber — the first of its type in the Royal Australian Navy.

HMAS Stirling proudly lives up to its motto of "Go Forward".

The WA media were taken to sea for the day aboard the recently WA home-ported destroyer escort HMAS STUART on 8 March.

Accompanied by the three HMAS Stirling-based patrol boats HMA Ships GERALDTON, ASSAIL, the Reservist manned ADROIT and the Darwin-based GAWLER, the STUART proceeded to an area outside Rottnest where a series of gunnery and simulated anti-submarine exercises were carried out.

One of the highlights of the day was the successful firing of a Seacat anti-aircraft missile by HMAS STUART, the target being a Learjet towed drone.

Some of the action is captured in these photographs taken by Leading Seaman Photographer Steve Given, RAN.



Seen in formation off Rottnest are (left to right), HMAS ADROIT (82) Reservist manned Attack class patrol boat; HMAS GERALDTON, locally-based Fremantle class patrol boat with its Darwin-based sister HMAS GAWLER leading the destroyer escort HMAS STUART (48) and the other locally-based patrol boat which is obscured by HMAS STUART, the Attack class HMAS ASSAIL. (Photo — LSPH Steve Given)



An historic first off the west coast — four Royal Australian Navy Patrol boats exercising together. The four are the HMAS Stirling home-ported HMAS ASSAIL (nearest camera), HMAS GERALDTON and HMAS ADROIT, along with the Darwin-based HMAS GAWLER. (Photo — LSPH Steve Given)



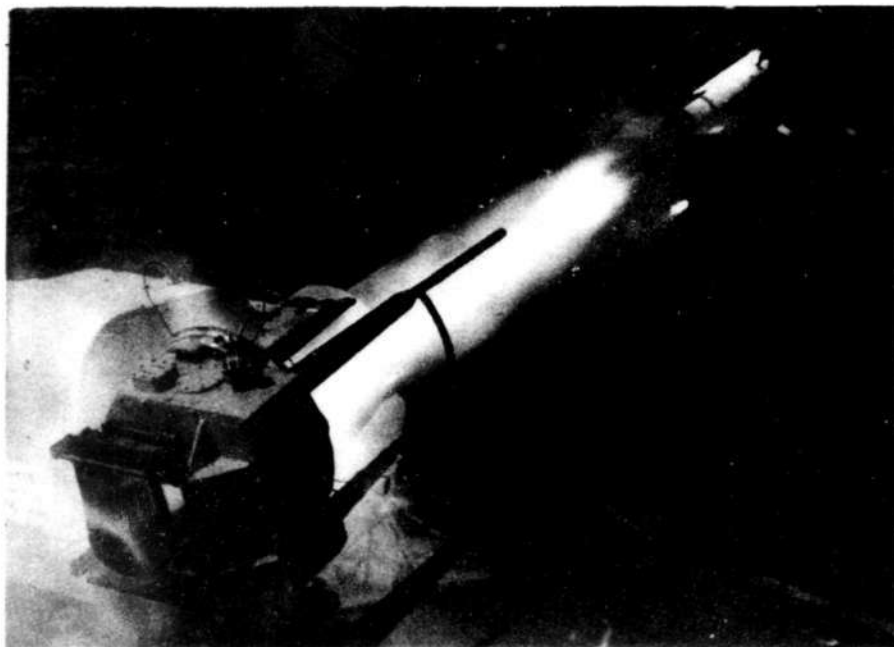
Saturday, 10th March, 1984, saw the 300 tonne medium naval tug TAMMAR launched in the yards of Australian Shipbuilding Industries Pty Ltd at South Coogee in Cockburn Sound, Western Australia. The launching and naming ceremony was carried out by Mrs Judith Orr, wife of Commodore David Orr, Naval Officer Commanding W.A. Area. The tug, the first naval vessel to be constructed in WA since World War Two, came into service on 15th March, 1984, and operates from HMAS Stirling. (Photo - LSPH Steve Given)



A group of members of the Royal Australian Navy Corvettes' association and their wives took the opportunity to inspect the first Fremantle class patrol boat to be based at

HMAS Stirling, the recently commissioned HMAS GERALDTON. Including 10 members of the first HMAS GERALDTON's complement, they visited the new GERALDTON on the 9th March, several days before the new arrival commenced her first patrol.

(Photo - LSPH Steve Given)



A Seacat anti-aircraft missile is fired from the destroyer escort HMAS STUART during the exercise. The missile was fired at a target drone towed by a commercial Learjet aircraft. (Photo - LSPH Steve Given)



The Fremantle class patrol boat HMAS GERALDTON arrived at the HMAS Stirling fleet support facility in Western Australia on 17th February, 1984. (Photo - ABPH Eric Pittman)



Manned by the Fremantle Port Division of the Naval Reserve, the HMAS Stirling based Attack class patrol boat HMAS ADROIT pounds through a light swell. (Photo - LSPH Steve Given)



A new aluminium workboat, based at HMAS Stirling. (Photo - ABPH Eric Pittman)



The Darwin-based Fremantle class patrol boat HMAS GAWLER made its first visit to HMAS Stirling in Western Australia on 2nd March, 1984. GAWLER is seen here entering the waters of HMAS Stirling. (Photo - LSPH Steve Given)

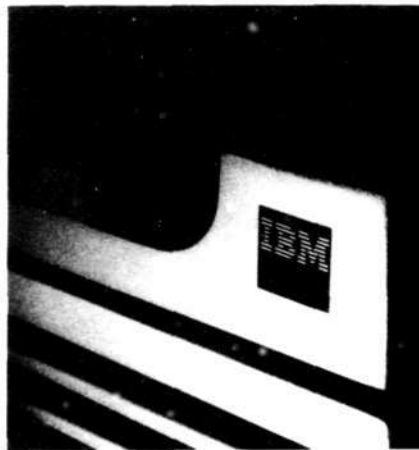


Seen working in Carreening Bay, the site of the fleet support facility HMAS Stirling on 11 April, 1984, is the largest tug in the RAN, the 300 tonne TAMMAR. This medium tug has the distinction of being the first naval vessel to be constructed in Western Australia since World War Two. (Photo - ABPH Eric Pittman)



The 110 tonne naval tug QUOKKA seen off Garden Island in Cockburn Sound, Western Australia on 11 April, 1984. (Photo - ABPH Eric Pittman)

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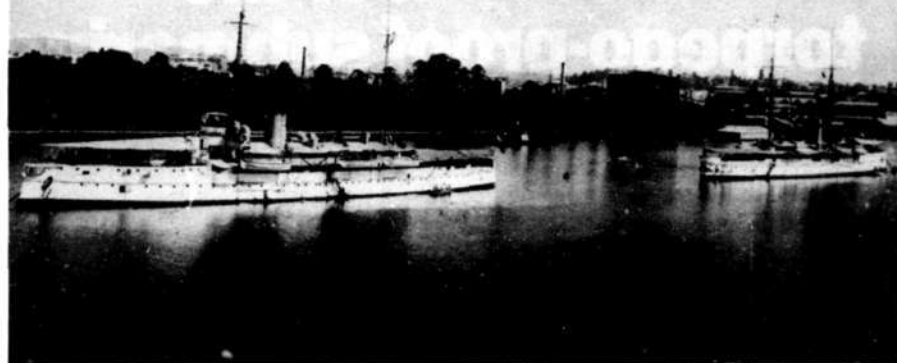
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THE NAVY

OUT OF THE PAST

BABY BATTLESHIPS



DE RUYTER (left) and HENDRIK HARTOG moored in the Brisbane River, September, 1910. (Photo — Royal Netherlands Navy)

After the turn of the century, while the great powers were building larger and larger battleships, many other nations settled for smaller, although heavily armed and armoured, vessels for coast defence. Referred to variously as *Coast Defence Ships*, *Coast Defence Battleships* or *Armoured Ships*, these ships were not designed for blue water action but to protect their country's coasts against attack.

Despite their defensive rather than offensive role, however, many did see blue water service, particularly those of the Royal Netherlands Navy. The *Koningin Regentes* class of four vessels: *Koningin Regentes*, *De Ruyter*, *Hertog*

by MICHAEL BURGESS

Hendrik and the slightly larger *Marten Harpertzoon Tromp*, served variously in the East Indies, off China and Japan, in South American waters and, in 1910, the first three visited Australia on a "flag showing" mission.

Launched between 1900 and 1904, these rather smart "baby" battleships displaced 4950 tons, measured 317ft overall, and had a beam of 49ft 10in, and a maximum draft of 19ft. Their main armament consisted of two 9.4in 40 calibre guns, and their secondary four 5.9in 40 calibre guns. Smaller weapons included eight 13 pdrs, four one pdrs, and three 18" torpedo tubes. Armour consisted of a 6-4" belt, a 2in deck and 10in for the conning tower and main turrets. With engines developing 7291 hp they had a speed of almost 17 knots. Their complement was 342.

Koningin Regentes was stricken in 1920,

Marten Harpertzoon Tromp in 1932 and *De Ruyter* in 1923, but *Hertog Hendrik*, the first Netherlands ship equipped with radio, had a colourful career until sold for breaking up in 1947.

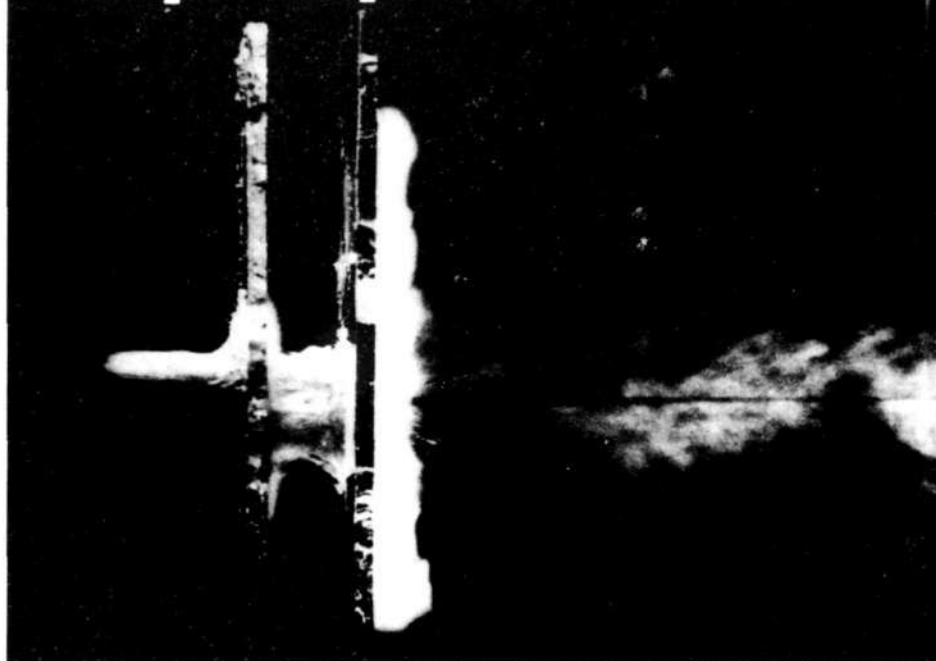
During the Spanish Civil War she convoyed Netherlands ships.

Decommissioned in 1938 she was recommissioned in 1939 as a floating battery near Terschelling, decommissioned again in November 1939, then sunk by her own personnel in 1940 at Den Helder after the German invasion. Raised by the Germans she was rebuilt at Antwerp and commissioned as the floating flak battery *Ariadne*. After the war she was found at Wilhelmshaven and returned to the Netherlands Navy. Rebuilt again at Rotterdam as an accommodation vessel she was recommissioned in October, 1947 and served first at Amsterdam then Den Helder. She was finally decommissioned and sold in 1972.



From left: DE RUYTER, HENDRIK HARTOG and KONINGIN REGENTES at Melbourne, 30th September, 1910. (Photo — Royal Netherlands Navy)

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RECORD RUN

by BRIAN NOONAN

A MAN who has led Brisbane's Naval Reser- vists into exclusive waters has stepped down from the helm.

Brisbane's RAN Reservists – under the direction of Commander Rob Poulton, 49, of Sunnybank – have become the only Naval Reservists in Australia capable of manning an amphibious craft.

And the Reservist-manned vessel, heavy landing craft HMAS LABUAN is proudly ensconced as part of the Regular Navy's Brisbane-based Australian Amphibious Squadron.

Now Rob Poulton – who took delivery of LABUAN in May 1979 and was in charge of the amphibious training of the men who were to take her to sea – is moving to other work for the Navy after a record term of more than five years as Reservists' Commanding Officer.

But Australia's former Chief of Navy Personnel, Rear Admiral D. J. Martin, has made sure Rob's record efforts in Brisbane have not gone unnoticed.

The Rear Admiral presented Rob with a special commendation stating that the standards of efficiency and professionalism

Rob has set have been excellent examples for those serving with him.

The commendation stated Commander Poulton had shown deep concern for the welfare and training of his officers and men giving rise to a high state of morale and sense of purpose among the division.

Rear Admiral Martin also stated in the commendation that Commander Poulton's dedication and loyalty during his eighteen years service and his effective leadership reflected great credit on him and on the Royal Australian Naval Reserve.

Rob Poulton, born in Cheltenham, UK, settled in Australia in 1960 after serving in the British Merchant Navy.

He served in the Australian Merchant Navy until 1974, then managed John Burke's shipping and cargo terminal in Brisbane before taking over as plant and operations manager for Sunstate Cement last year.

He and his wife, who is from Melbourne, have two sons, both attending St Peter's Lutheran College in Brisbane.

In his new job for the Navy, Commander Poulton is conducting a seaward and port defence study in Brisbane and has recently taken over as Secretary of the Navy League of Australia, Queensland Branch.

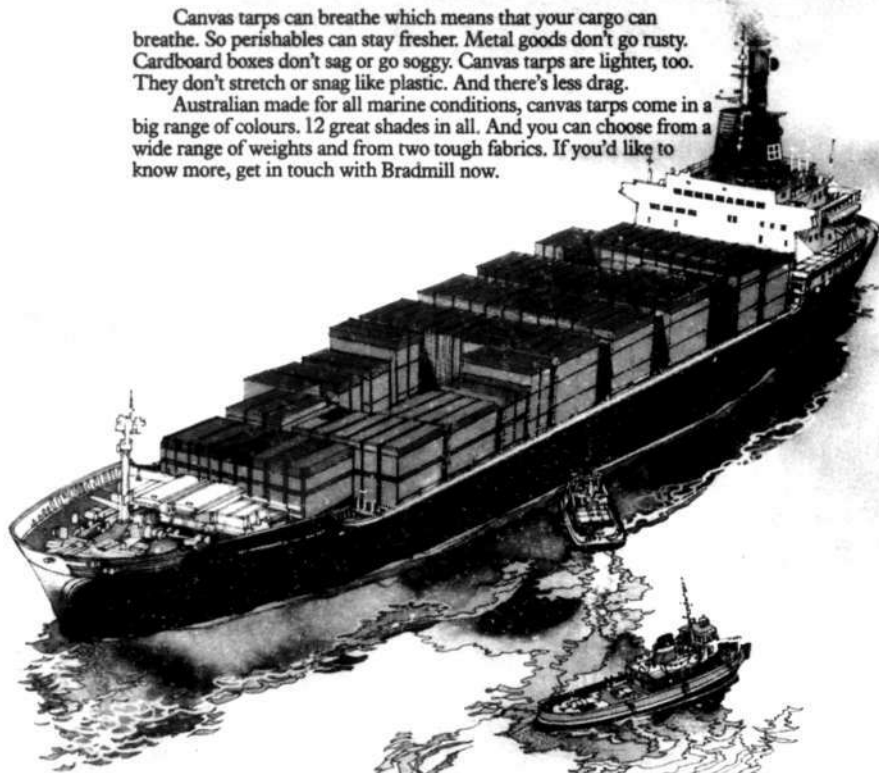


Commander Rob Poulton after receiving his commendation from Australia's Chief of Naval Personnel, Admiral Martin, watches as HMAS LABUAN (the Naval Reservist-manned vessel that was his for nearly five years), sails from Brisbane on a training run.

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HMAS TOBRUK DELIVERS VINTAGE TANK

The Royal Australian Navy's heavy landing ship HMAS TOBRUK returned from her New Zealand deployment on Monday, April 2.

TOBRUK unloaded a cargo of Army water transport craft including two 68 tonne landing craft (LCM 8s) and up to six LARCs (amphibious vehicles).

However the highlight of the morning was the transfer from TOBRUK through her stern ramp to a waiting LCM 8 of an historic M-41 Walker Bulldog tank destined for the Armoured Corp Museum at Puckapunyal. The tank was formerly operated by the New Zealand Army until replaced by the Scorpion.



The M-41 Walker Bulldog. (Photo - ABPH Simon Freeman)

HMAS SYDNEY JOINS THE FLEET

The Royal Australian Navy's latest guided missile frigate HMAS SYDNEY made a triumphal entry through Sydney Heads at 8.30 am on Tuesday, 27th March.

Sydney is the first ship in the RAN to be equipped with the formidable close range Phalanx anti-missile weapon system capable of firing 3000 rounds of tungsten-tipped bullets per minute from a six barrel 20mm gun.

She is also armed with a Mk 13 guided missile launcher for Harpoon anti-surface missiles and Standard anti-aircraft missiles. Sydney carries a 76mm Mk 75 gun and two triple Mk 32 anti-submarine



HMAS SYDNEY arriving 27th March, 1984. (Photo - LSPH Ron Berkhout)

warfare torpedo tubes. The vessel has a sophisticated array of sensors and computerised warfare systems. She is powered by two General Electric LM 2500 gas turbines driving one controllable pitch propeller to give speed of more than 28 knots. Sydney displaces 3600 tons and is equipped to carry two helicopters.

Sydney's Lord Mayor Alderman Douglas Sutherland and the Fleet Commander Rear Admiral Geoffrey Woolrych joined Sydney by helicopter out at sea for her progress to Circular Quay.

INDONESIAN FISHING BOAT APPREHENDED BY NAVY

The Fremantle Class patrol boat HMAS IPSWICH apprehended an Indonesian fishing boat off the north west coast on 21st March and escorted it to Koolan Island, north of Derby, for investigation by the West Australian fishery officials.

The fishing boat was first sighted at 3:30 pm the previous day by a coastal surveillance patrol aircraft. At the time it was hidden in mangroves at the entrance to King Sound.

The Coastal Surveillance Centre in Canberra requested Navy assistance, and IPSWICH which was on patrol duties in the vicinity of Ashmore Reef, was ordered to carry out a search. The patrol boat intercepted the Indonesian fishing boat at 9:45 am, and handed it over to the West Australian officials at Koolan Island.

VISITS BY ALLIED AND FRIENDLY NAVAL SHIPS

At the conclusion of consultations between the United States, the United Kingdom and Australia, the Minister for Defence, Mr Scholes has announced that:

- As a result of the visit of HMS INVINCIBLE to Sydney last December the Government had reviewed the arrangements for visits by allied and friendly naval ships to Australian ports and in particular the question of possible access to Australian dry dock facilities.
- The Australian Labor Party and this Government have gone on record as supporting the visits of naval ships of our ANZUS allies. This policy applied equally to our other friends and allies, particularly the British.
- Visits by allied warships are fully consistent with our responsibilities as a sovereign nation which must protect its fundamental security interests, as is the provision of necessary repair facilities.
- As a matter of record, we wish to state that this Government does not require that allied Governments reveal whether their ships carry nuclear weapons. Both the United States and British Governments have a policy of neither confirming nor denying the presence of nuclear weapons. We accept the reasons for that policy.
- The United States and British Governments are aware of Australian concerns with respect to the storage of nuclear weapons on Australian territory.
- Consultations between Australian, United States and British officials over recent weeks addressed the question of an allied or friendly warship possibly needing to drydock in an Australian port in the future. It was agreed that each request would have to be considered on its own merits taking into account technical and safety factors, and the strategic and operational circumstances obtaining at the time. As Ministers have stated, Australia would not in any way endanger the safety of any allied or friendly ship or crew in need of access to Australian facilities; and
- As befits the relations between friends and allies, we will continue to have close consultations on all matters that affect our joint efforts to provide for our mutual defence.

LIFT-OFF FOR SUPER JUMP-JET

The first production version of a new Anglo-US generation of jump-jets that offer twice the payload or range of the present Harrier vertical take-off and landing (VTOL) fighter has recently been handed over to the US Marine Corps.

The Super Harrier, to be known in the US as the AV-8B and in the UK as the GR MK.5, has been developed jointly by British Aerospace and McDonnell Douglas as a successor to the UK plane which has for years been the world's only operational VTOL aircraft. It is currently in front-line service with the UK air force, The US Marine Corps and the Spanish navy while a Sea Harrier variant is in service with the British and Indian navies.



HMAS ADVANCE in the Captain Cook dry dock during her recent refit. (Photo - RAN)

The Harrier II handed over at the US Marine Corps air station at Cherry Point in North Carolina, is the first of 12 pilot production AV-8Bs that will be delivered to the marines this year. These aircraft will be followed by 21 limited production planes that will swell the Cherry Point fleet to 33 by next year when the first squadron of the newcomers will become operational.

Four full-scale development AV-8Bs have already been built and are now being used for flight testing. The US marines expect to acquire 336 Harrier IIs over the next decade. The British Royal Air Force plans to have 60 and to introduce the first batch into service in 1987.

General Paul X. Kelley, Commandant of the Marine Corps, said at the hand-over: "We have the greatest force in the world, so it is appropriate that we also have the greatest aircraft of its kind in the world. We have that here today."

NAVAL RESERVISTS IN MAJOR SHIPPING EXERCISE

More than 170 men and women of the Royal Australian Naval Reserve (RANR), assisted by 60 permanent Naval and Air Force personnel, participated in a two-week major exercise to practice the control and protection of merchant shipping.

Named Expanded Sea 84, the exercise, which began on 2nd April, was world-wide involving friendly Western nations.

In addition to the involvement of RANR, RAN and RAAF personnel in the Indian and Pacific Ocean regions, Reserve personnel from the New Zealand, Canadian, United States and United Kingdom navies took part.

In Australia, a Maritime Headquarters was established, and control units set up in all major Australian ports, manned largely by Naval Reservists.

During the course of the exercise many Reserve officers boarded Australian and friendly Western merchant ships to brief Masters. Some of the boardings involved transfer of Reservists to merchant ships at sea by Navy and RAAF helicopters for briefings on plans and procedures to control the movement of merchant ships in situations of simulated tension.

In Australia, exercise Expanded Sea 84 was under the direction of the Fleet Commander, Rear Admiral G. J. H. Woolrych, RAN.

FIRST ADFA COMMANDANT

The Minister for Defence, Mr Gordon Scholes, recently announced the appointment of Commodore Peter R. Sinclair, RAN, as the first Commandant of the Australian Defence Force Academy.



HMAS IBIS paying off, 4th May, 1982. (Photo - ABPH Hardy Ahlue)

Commodore Sinclair will be promoted Rear Admiral and take up the appointment on July 9, 1984.

The Academy, in the Canberra suburb of Campbell, has been under construction since 1980 and is expected to open in January, 1986.

Mr Scholes' announcement coincided with a ceremony at ADFA recently during which the Chief of Defence Force Staff, Air Chief Marshal Sir Neville McNamara, unveiled a plaque to mark the acceptance of ADFA as a separate unit of the Australian Defence Force.

Mr Scholes said it was the first true ADF unit with the staff and support to be provided by all three Services.

"As an educational institution, ADFA is affiliated with UNSW though it is answerable militarily direct to CDFS," Mr Scholes said.

"The Academy will bring together in a single institution for all three Services a diversity of courses taught by academic and military staff of the highest calibre," he said.

RAAF FLYING IN SUPPORT OF THE FLEET

The Department of Defence and the Defence Force have no knowledge of any document mentioning a figure of \$80 million for the cost of RAAF flying in support of the Australian Fleet, the Minister for Defence, Mr Gordon Scholes reported in April.

He was commenting on media reports that the RAAF's assumption



The former Daring class destroyer HMAS VENDETTA is towed across Sydney Harbour on Friday, 25th May to be stripped of any valuable items still aboard and which can be used by her sister HMAS VAMPIRE. Later in June the ship was placed into the Captain Cook Dry Dock and made seaworthy for her last voyage. (Photo - ABPH Keith Cole, RAN)

of support flying for the RAN was costing more than the support formerly given by the Fleet Air Arm.

Mr Scholes said that when all flying support tasks were transferred to the Air Force from the Fleet Air Arm, a process expected to be completed by July 1984, the additional cost for the flying hours for items such as fuel, spares and contractor servicing, would be about \$5 million. This will be more than offset by net savings of about \$10 million a year as a result of reductions in other Navy costs flowing from the transfer of the air support tasks to the RAAF. This will give a net annual saving of about \$5 million a year without taking into account the very substantial capital investment required to sustain the Fleet Air Arm.

The Minister said that the Fleet Air Arm fixed wing aircraft flew a total of just under 4000 hours in 1982-83 on Fleet support tasks and training. In 1983-84 Fleet support tasks are being carried out by both Fleet Air Arm and RAAF aircraft, with the Air Force providing some 1500 hours and the RAN some 1700 hours.

"The RAAF is broadly meeting the Navy requirements now," the Minister said, "and by the end of this financial year on June 30 it will fly the hours on Fleet support tasks agreed by both services."

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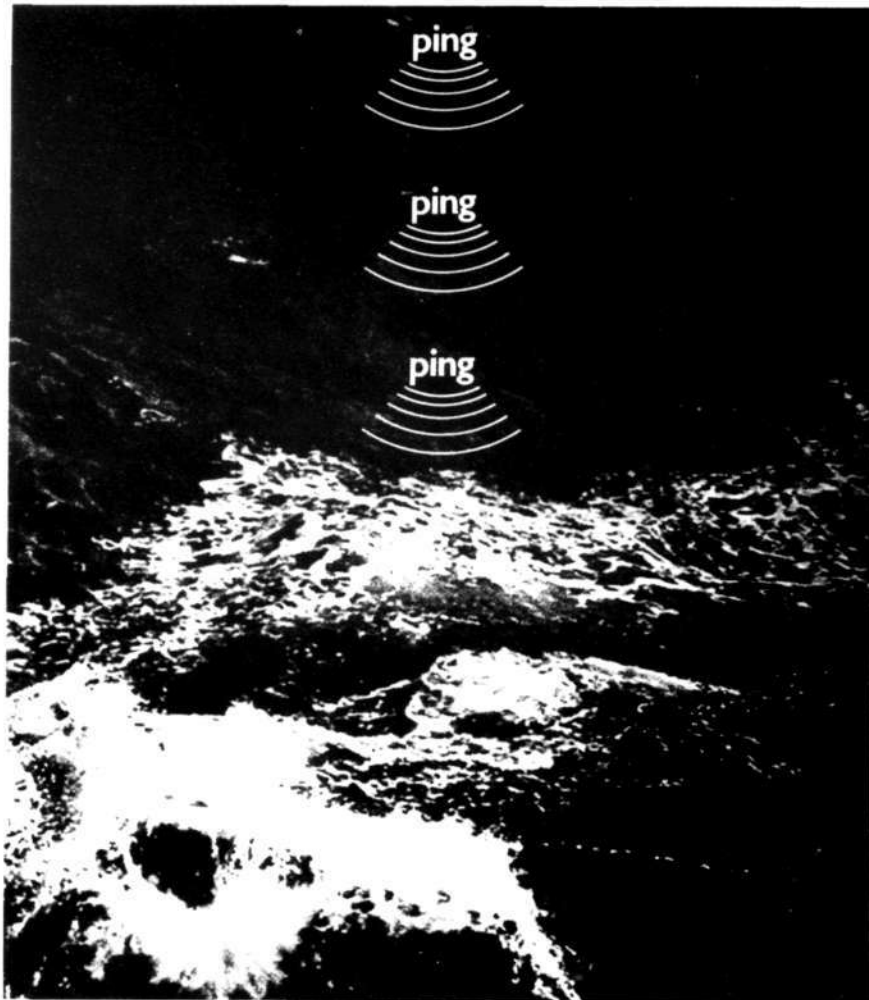
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July, 1984

USS NEW JERSEY



A high oblique port bow view of the battleship USS NEW JERSEY. In the background is the replenishment oiler USS KANSAS CITY. (Photo - USN)



An aerial view of USS NEW JERSEY taken in the Pacific Ocean in September, 1968, during the ship's Vietnam commission. (Photo - USN)

July, 1984

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HMAS TOBRUK

New Zealand Deployment

HMAS TOBRUK, the RAN's Amphibious Heavy Landing Ship has returned to Australia after participating in multi-national exercises off the New Zealand Coast.

TOBRUK sailed from Sydney on 21 February with elements of the 1st Field Squadron Royal Australian Engineers embarked. The first port of call was Great Barrier Island, off Auckland, where the army contingent was landed to take part in exercise Tasman Exchange.

Auckland was the next stopping point and during the ships ten days alongside HMNZS Philomel, final preparations were completed for the major exercise of the deployment. This exercise was codenamed Northern Safari.

by
Leut A. F. ROSENTHAL
PRO, HMAS TOBRUK

The aim of the exercise was to mobilise the New Zealand Army's Ready Reaction Force and to familiarise selected elements of this force in air/sea deployment to an area lacking in developed port and off loading facilities.

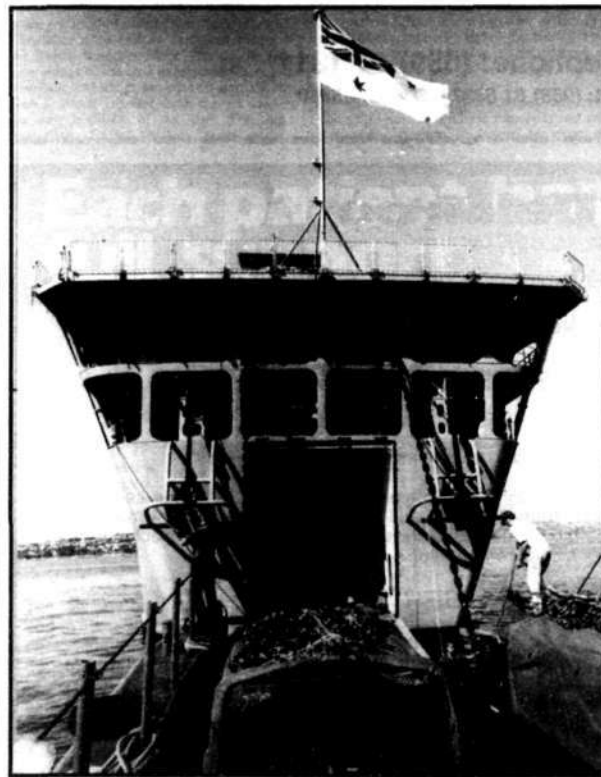
TOBRUK's role in the exercise was to ferry the estimated 700 soldiers, 50 vehicles and associated stores to Great Barrier Island, the venue chosen for the exercise. Included amongst the soldiers transported to the island were 136 Gurkhas, normally based in Hong Kong, who were to act as the enemy force.



HMAS TOBRUK loaded with army equipment for 'Northern Safari'

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July, 1984

THE NAVY



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Troops landed during the exercise by LCM 8, AB 1055.

of cargo the ship sailed from Lyttelton, near Christchurch, to embark further elements of the Ready Reaction Force. During the four days alongside the crew experienced the warm hospitality which is an integral part of any New Zealand visit. But social success was not the only highlight of the visit. The ship's Australian Rules football team proved

themselves a formidable force by defeating a team of local stars by eighty-five points. This feat was repeated again in Auckland later in the deployment but not however, by such a rude margin.

With yet another "green horse" embarked the ship returned to Great Barrier Island and once again successfully lodged her cargo on

the island's rugged shores. Having completed the lodgement, TOBRUK sailed to join Exercise AUCKEX, an ASW exercise in which units from the RAN, RNZN, USN and RNZAF participated. During the exercise the ship was involved in the salvage of a sinking fishing trawler off Great Barrier Island and detached from the exercise early to tow the stricken trawler to Auckland.

The task of extracting the New Zealand Forces from Great Barrier Island was conducted during the period 26-27 March and the exercise, from TOBRUK's point of view concluded in Auckland with the final discharge of stores and personnel.

The ship sailed for Sydney on 29 March with the army participants of Tasman Exchange embarked. Throughout the voyage both sailors and soldiers alike worked feverishly to prepare the ship for her annual inspection which was scheduled for Thursday, 12 April.

The crew's efforts culminated with a successful inspection report from the Fleet Commander and the ship sailed the following morning to anchor off Grotto Point, Sydney, an anchorage not recommended for those contemplating relaxation.

During the four days the ship was at anchor the Maritime Wing of the Army School of Transport carried out freight handling exercises using LARC V amphibious vehicles in preparation for deployment with the Australian National Antarctic Research Expedition.

TOBRUK departed Sydney on Monday, 17 April and headed north to her Brisbane base and a well deserved rest over the Easter holidays. (All photos — courtesy HMAS TOBRUK.)

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NAVY LEAGUE DIVISIONAL & CADET NEWS

QUEENSLAND

Recently the RAN played an important role in the practical development of a group of Naval Reserve Cadets from Queensland when it hosted ten of them together with their Commanding Officer and two PO instructors on the Flagship HMAS STALWART for a voyage from Sydney to Brisbane. In doing so RAN and the officers of STALWART earned the gratitude of those involved and indeed of the NRC movement generally for their co-operation and understanding. The Cadets experience took place during STALWART's involvement in exercise Sea Eagle off the Australian Coast from Tuesday, 13 March until coming alongside at Brisbane on Wednesday, 21 March.

The cadets were properly fitted in with the routine running of the ship but as well witnessed or took part in, shipboard activities such as firefighting exercises, engine room watches, refuelling at sea, anchoring in harbour, a church service at sea, jack-stay transfers and helicopter operation from the flight deck. Practical instruction the lads received included steering experience on the bridge (all achieved at least 10 hours watchkeeping on the wheel) and the maintenance and firing of various firearms.

The Commanding Officer of the cadet group, Lieut J. A. Tranter (CO, T/S Tylgum) reported however that it was not only the cadets who obtained benefits from the voyage. "PO Belton and PO Dickson and myself," he said, "primarily acted as observers but within a couple of days were taking a very active role on board because of the total acceptance by STALWART's crew. We managed to glean much useful information and of course obtain first hand experience of today's Navy."

The experience was, then, of benefit to all who took part. It was however aimed primarily at developing the awareness of the cadets to sea-going duties and there are ten cadets from T/Ss Tylgum, Redcliffe, Paluma, Magnus and Norfolk who will never forget those nine days in March. In fact as Lieut Tranter recalled, it was "in summary a very worthwhile experience for all the NRC contingent, and one which, we hope, can be repeated in the future!"

WESTERN AUSTRALIA TS VANCOUVER

Sailing regatta held in Albany on the Princess Royal Harbour on March 3rd, 4th and 5th.

Units from Perth and Bunbury joined Albany Naval Reserve cadets in a sailing regatta at the Princess Royal Sailing Club on the weekend.

The sailing started in earnest on Saturday afternoon and continued until 12 noon on Monday.

The boats used were standard Navy issue Corsair class which are used by the Royal

Australian Navy.

The outright winner of the regatta was the crew of Able Seaman Zacchin, Leading Seaman Reeves and Leading Seaman Jones from the TS Anzac at Rockingham.



Aboard HMAS STALWART, March 1984.

The most consistent trophy was awarded to Leading Seaman P. Hinge, Seaman Coutts and Seaman Longbone of the TS Vancouver at Albany.

Other cadets of the TS Vancouver who participated in the regatta were Petty Officer S. Prior, Seaman Madden, Able Seaman T. Shirley, Leading Seaman Hearnsey, Able Seaman Woolsey, Recruit Cufley. Rescue crew: Seaman Hinge, Recruit Coutts, Recruit Milne and Galley staff Seaman M. James.

Commanding Officer (G. Curran) SO NAVAL RESERVE CADETS WA was also in attendance at the regatta.

The regatta was hailed as an outstanding success by all officers and cadets and they expressed their thanks to the Princess Royal Sailing Club for the use of the club's facilities.

It is hoped that Albany will be able to make the regatta an annual event.

VISIT TO HMAS STUART BY NAVAL RESERVE CADETS

At 0800 on Friday, 30 March, ten naval reserve cadets from the Training Ship Vancouver embarked on HMAS STUART for a trip to Esperance a port 500 kilometres east of Albany.

Those cadets to embark on the Stuart were: Lsmn Paul Hinge, Lsmn John Waghorn, Lsmn Paul Heaney, PO Scott Prior, Smn Dallas Boston, Smn Devon Barto, Smn Martin Coutts, Rct Andrew Hinge, Rct Kevin Heaney, Rct Kenworthy.

For many of the cadets involved it was the realisation of a lifetime dream to go to sea with the Navy.

Following is an account of their voyage as written by Lsmn Paul Hinge and Lsmn John Waghorn.

0800 the cadets mustered on the Albany wharf alongside HMAS STUART, from there we marched up on the ship, saluted the colours and the officer of the day, from there we were assigned to our sleeping quarters. After settling in we were paraded to the fo'c'sle and fell in forward of the gun. We remained there until the ship had cleared the harbour and was well into King George's Sound. For the next two hours we were involved in a man-overboard drill, where a ship's diver jumped overboard with a line to rescue a so called 'man-overboard'. Then we watched an anchor-drop before heading out of the Sound. It was now time for our first meal on board. Standing in line was an event on its own, because we had great difficulty in staying in the one place and coming to terms with the ships movement. After collecting our food we went to the mess hall and tried to eat lunch. Some cadets were already feeling nauseated! After SCRAN we were called to One deck aft, where we were taught pistol and sub-machine gun drill. Two cadets from the same family had to retire due to a lesser ability to withhold their SCRAN. From here we moved to the starboard bridge wing to try our skills at using a 40 calibre machine gun. Some seagulls had near misses. From here a sinking drill was performed, where all cadets moved to their life boat area for roll call. After this all cadets moved to the



Ready to board HMAS STUART, March 1984.

quarterdeck to try out their skills with pistols and sub-machine guns. The two cadets who retired earlier rejoined us, while Lsmn Waghorn left the group and went with an ETS sailor to gain some experience on what this field entails. Once again it was time for SCRAN after which we watched a video and some lucky cadets headed for bed. Other cadets mustered for night duty. On duty we spent an hour on the quarter deck as life boat sentry.

The next hour on the helm, the third hour on the starboard bridge wing and the final hour on the port bridge wing. By early morning on Saturday, 31st March, we were in sight of Esperance. We had SCRAN and cleaned up into 10s for berthing. During the berthing an Officer played the bagpipes. We then collected our belongings and moved into hired cars for the return trip to Albany. And so ended 24 of the best hours we have spent.

TS VANCOUVER was well represented at this year's ANZAC day service that commenced at 10.45 am, Wednesday, 25th April.

Close to a full complement of Naval reserve cadets ably led by Sblt Peter Hare (NRC), took part in the parade that commenced in Lockyer Avenue and proceeded along York Street to finish in Stirling Terrace.

Albany turned on a wonderful day of sunshine with the bugler high on the parapet of Saint John's Anglican Church making a splendid sight as he played the Last Post.

The day was slightly marred due to several cadets fainting.

VICTORIA'S FIRST NAVY LEAGUE BRANCH FORMED

On the 7th March, 1984, a Warrant of Commission was issued to the Geelong (Vic) Branch.

This is the first Victorian Branch and its formation is the realisation of an ambition for LCDR R. H. Appleton (Ret'd).

Following on his retirement from the Command of the Naval Reserve Training Ship "BARWON", Bob Appleton found the necessary twelve members, gained their support and approached the Victorian Executive.

Since then, many have asked to join the branch and it is envisaged that Geelong will soon have a sizable group of people backing the Navy League and its aims and ambitions.

The first executive, elected at a meeting at the Royal Geelong Yacht Club, are as follows: President R. H. APPLETON, Vice-President Mr R. I. SCOTT, Secretary/Treasurer Mr P. JAMES, Committee Mrs P. EVANS and Mr N. EVANS. All members of the Navy League wish the Geelong Branch every success in its endeavours.



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