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Major Defence Order received for Ferranti FM1600D Airborne Computers

EMI Electronics Limited has placed an order worth £1M with the Ferranti Digital Systems Division for a large number of the airborne version of the FM1600D computer. The FM1600D is to be used in the Searchwater radar system, developed by EMI Electronics for the UK Ministry of Defence, to be installed in the new generation of HSA Nimrod maritime reconnaissance aircraft.

The airborne FM1600D, comprising a central processor, data input/output controller, power supply unit and core store of up to 32K words capacity, is housed in a 1 1/2 ATR case LRU (Line Replacement Unit). The FM1600D is constructed from MSI (Medium Scale Integration) circuit elements mounted on multi-layer printed-circuit boards. This construction meets the operational requirement for airborne electronic equipment to be compact, rugged and easily maintained.

The FM1600D is designed to control system peripheral units independently via high-integrity fast serial standard interface channels. Ultra fast peripherals may be linked directly to a FM1600D store through ported connections. The FM1600 series system-architecture is based on an operational philosophy that allows system peripherals to function autonomously, at their own speed, bidding for service as necessary, with the computer responding on a pre-established priority basis.

The FM1600D incorporates its own built-in test equipment (BITE) for checking the correct operation of the computer's interfaces, peripheral control units, core store, data input/output controllers, and power supplies. Complementary FM1600D BITE interrupt signal-handling logic enables intelligent and, on occasions, system-dependent action to be taken automatically in the event of a fault developing or action damage. This capability greatly simplifies fault-finding, as well as system recovery and maintenance.

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THE NAVY

Feb/March/April, 1977

MUTINY!

In An Australian Ship of War

by JOHN HENRY FORSYTHE

There has never been any doubt in Australia that the executive (the Cabinet and the Minister) has complete authority over the Navy. What has been less clear has been the extent to which the Minister should make detailed decisions on what were normally regarded within the service as internal naval matters and also the degree to which such intervention would be agreed to or cheerfully accepted.

The Navy not only liked to do it alone, it was encouraged to do so by the remoteness of its ministerial masters. Apart from the years 1915 to 1921, there was no minister before 1939 who devoted his whole attention to naval affairs; naval administration was within the portfolio of the Minister for Defence and in detailed administration the Navy experienced considerable ministerial neglect. In naval administrative history therefore there are many cases for the study of the relations between ministers and their advisers. One source of such cases is in the field of command and discipline and especially that relating to courts martial for the offence of mutiny. Mutiny had always been regarded with great seriousness by naval officers but it had not always been similarly regarded by politicians.

In 1919 there was a mutiny in HMAS Australia, the flagship of the Australian Fleet, which led to a situation in which the professional administration of the Australian Navy and the Fleet Commander both resigned their appointments as a protest against action taken by the Government to remit part of the prison sentences imposed on the mutineers.

On Sunday, 1 June, 1919, the Australia was in Fremantle Harbour in Western Australia, on her return voyage to Sydney from Britain where she had been serving with the Royal Navy under Admiralty orders since 1915. Although the Peace Treaty had not been signed at Versailles, the war was over and the Admiralty’s control of the ships of the Australian Navy was about to end. When the Australia arrived in Fremantle on the previous Wednesday, most of the ship’s company saw their own country again for the first time for some years. All the senior officers on board were members of the Royal Navy; the captain, Captain C. L. Cumberlege RN had been serving in Australian ships since 1913 and the Commodore Commanding the Fleet, Commodore J. S. Dumaresq RN, had been serving in Australian ships since 1917.

The mutiny can be described simply. About a hundred of the ship’s company went up on the quarter-deck and asked the Captain that the departure of the ship from Fremantle should be delayed by one day until Monday so that they would have an opportunity of entertaining friends on board to repay the hospitality that had been lavished on them. The Captain replied that he could not entertain such a request and he ordered the men from the quarter-deck. Subsequently the stokers ceased duty and the ship’s departure was in consequence delayed.

Captain Cumberlege summarily dismissed the men’s position at 90 days imprisonment, sentences which required and received the approval of the Commodore Dumaresq. Five others were court martialled and this was put in motion by a “circuitous letter” from Cumberlege to Dumaresq setting out what had occurred; Dumaresq convened a Court Martial in HMAS Encounter in Sydney on 19 June, 1919. The charge against the five men was of having “joined in a mutiny not accompanied by violence.”

The accused pleaded guilty. After some attempt by friends of the accused to turn the court’s mind towards leniency, the court sentenced one to hard labour for 2 years and dismissal, one to 1 year and dismissal, another to imprisonment for 18 months and dismissal and the others two to imprisonment for 1 year. Dumaresq reported the findings and sentences of the court martial to the Naval Board on 25 June, 1919.

R. B. Orchard, MP, had appeared as a friend of the accused on 26 June, he asked in Parliament whether there was any appeal. The Acting Prime Minister, W. A. Watt, said there was no appeal but that sentences of this nature were subject to review. On the same day Cornelius Wallace, MP considered that the sailors had been “brutally and savagely sentenced” and J. E. Fenton, MP called for the tabling of the papers. The Acting Minister for the Naval Portfolio, was not in the Parliament on that day. In the Senate the circumstances were referred to as a “so called mutiny” by Senator H. E. Prattten; and Senator A. Gardner referred to the “savages’ sentences.”

From this time until October the case was brought up frequently in Parliament — on ten occasions during July, five in August, six in September and four in October. The Government was continually harried. It was asked to “show wisdom and humanity” to approach the Admiralty to seek remission, and to show clemency. Members of the Opposition were in strong criticism and in calling for the release of the prisoners. In addition some members on the Government side pressed the Government to act. The celebrations for peace on 19 July were cited in support of a plea for clemency; after the Government re­sumed control of the Fleet from the Admiralty on 1 August it was pressed to act independently but replied that as a matter of principle it would not act without advice from the Admiralty from whom some remission had been sought. The case was debated with considerable emotion; it was claimed that a mother had seen
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November a telegram was sent by them requesting that these five prisoners should be released before Christmas.

The letter also asked him to sign the release warrants and proceed with the discharge of all five men. Durmaresq's target then became the Government. He wrote a letter to the Naval Board. In a memorandum of 7 December, 1919, to the Board he asked to be informed of the grounds on which the Commonwealth Government arranged for the release of the five mutineers of HMAS Australia.

According to the inference conveyed in the letter (of 1 December), action was taken as a measure of National clemency concerning all Military and Civil as well as Naval offenders.

According to the statement in the Press, attributed to the Minister for the Navy and referred to in my telegram of 26 November, the inferences conveyed are that the action was taken on account of the severity of the sentences for the offences committed, and that the Naval Authority as constituted can always be upset by the use of political influence.

He begged to:

Instruct that the release of all five mutineers on the 20 December, 1919, even if amnesty reasons be at this late hour postulated and publicly announced, is fraught with grave danger to the future discipline of the Navy and particularly to that of a Commonwealth which is already in an acute state of discipline. The situation was accentuated by social tendencies, and political temptations highly adverse to discipline.

He had complied with the instruction to sign the release warrants and published an official announcement to submit that he feels it will hardly be possible to submit that in my telegram of 26 November, the Press report whose substance is to Inference conveyed are that the action was taken on account of the severity of the sentences for the offences committed, and that the Naval Authority as constituted can always be upset by the use of political influence.

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ter was read at a meeting of the Board on 22 December, 1919. Negotiations then began and 24 December saw the Naval Board in the Palmerston. Dumaresq, however, was also that in view of these actions and assurances given, I am glad to announce my decision to reconsider the matter and beg that my resignation may be accepted.

Also on the same day Grant wrote to Cook withdrawing his resignation. The former told a meeting of the Naval Board on 16 February that he was withdrawing his resignation. On 22 February Cook issued Dumaresq’s letter. On 25 February a Navy Order (No 27 of 1920) was issued —

NAVAL DISCIPLINE

COMMONWEALTH GOVERNMENT — NOTICE ORDER

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2. This Navy Order is to be displayed on all Notice Boards of HMA Ships before it is to be read publicly.

No publication in the newspapers can be found of this statement.

Grant and Dumaresq were still unwilling to withdraw their resignations. In Britain he had been one of the leading opponents of the Government. Dumaresq’s statement that “those who had opposed the Government to react to these views, the Admiralty, they were not unreasonable. It was but a small step towards error, with members of Parlia-

The Sydney Bulletin referred to the case only once. On 26 June, 1919, the paper was firmly on the government’s side, seeing the court martial as a good case.

What conclusions can be gleaned from this story? First, the attitude in the late 19th century towards naval discipline as a moral service, and strong denunciation of the action taken in gaoling the five sailors clearly shows a concern for genuine humanitarian feeling but there was also the continuing need for disciplining the navy and especially so with the outbreak of the First World War. The colonial tendencies they made the understandable error of over-stating a good case.

Both Grant and Dumaresq had been second choices for their appointments. They had arrived in Australia at the time of the mutiny. They were able and gallant officers but they were not fully equipped for their appointments in that neither had had experience of a mutiny and therefore had not had the opportunity of experiencing the conflicts between ministers and their naval advisers. This was their blind spot. They were unaware of the line of action to be taken in drafting a system of naval discipline. The lack of experience of these two men, by each side of this division and perhaps it was more the fault of the Commonwealth Government than of the Naval Board, was to permit of all grievances being ventilated through the proper channels, and R was hoped that full and professional naval officer did not claim the right to decide how much military and naval discipline in times of peace as the German Government without the British Government without the German Government cabled to take the risk of their challenging. But he was not the Prime Minister; he was being feigned and he was preparing for an elec-

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QUEENSLAND: Staff Office Cadets, HMAS Morton, Box 1418T, GPO Brisbane, 4001.
WESTERN AUSTRALIA: Staff Office Cadets, HMAS Leeuwin, PO Box 56, Fremantle, 6160.
SOUTH AUSTRALIA: Staff Office Cadets, HMAS Encounter, PO Box 117, Port Adelaide, 5015.
TASMANIA: Staff Office Cadets, HMAS Huon, Hobart, 7000.
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Mine Counter Measures Vessels (MCM)

by A. W. GRAZEBROOK

The Defence White Paper announced the RAN's plans to build locally, two prototypes of an Australian designed, glass-reinforced, plastic-hulled Mine Counter Measures Vessel. The phraseology of the relevant paragraphs of the White Paper leaves little doubt that these two prototypes will be the forerunners of a largish class of MCM vessels for the RAN.

The allocation of $13 million to the purchase of long lead items this Financial Year (1976-77) demonstrates that at last the Australian Government has recognised the need to provide the RAN with modern MCM vessels—a need to which the Navy League has drawn attention frequently in this magazine.

The news that the new class are to be constructed in Australia is especially welcome. By this means, Australian industry will develop and up grade, for purposes of warship construction, the glass-reinforced plastics (GRP) expertise already built up by commercial boatbuilders, in the construction of yachts and pleasure craft. Further, local construction will ensure the availability of moulds for further use in the event of an emergency.

However, some commentators have been taken a little by surprise by the RAN's intention to design locally, instead of purchase overseas, the designs for the new craft.

NEW DESIGNS AVAILABLE

During the 1950s, most western navies implemented extensive construction programmes for MCM vessels. The majority of these were wooden-hulled and are now coming to the end of their hull lives. As a result of the need for replacements, a considerable number of MCM vessel designs, varying widely in size and capability, are now being developed or implemented (see Table). Most of these new designs take advantage of the glass-reinforced plastic hull materials now available.

Therefore, a wide variety of designs are available overseas. There is active competition for orders. This is the cause of the surprise at the RAN's decision to devote scarce technological resources to designing our own mine counter-measures vessels instead of some other category of warship.

The reason may well lie in the strategic purpose of, and environment in which, the new RAN vessels will operate.

As Table A shows, both the British and the French design are large — markedly larger than the ubiquitous TON Class now in service with many western navies and which have provided both the British and the French with the main bulk of their MCM forces for the past 15 years or so.

The new 615 ton British ships (HUNT Class) will be large enough and strongly built, enough to clear mines ahead of an invasion force approaching a contested over the beach landing. The HUNTS will have both mine-hunting (ie the use of sonar to locate individual mines) and mine-sweeping capability. They will be built to withstand a high degree of shock from explosions—a factor very significant in costs.

The French developed CIRCE design, now in service, and still with wooden hulls have only a mine-hunting capability. They work out at 460 tons displacement. Other than that they will have GRP hulls, few details have been released of the new NATO STANDARD design, of which France, the Netherlands, West Germany and Belgium are to build 15 each. However, as France has played a leading part in putting together this package, their CIRCE experience may be expected to have considerable influence on the NATO design.

With tactical thought similar throughout NATO, and with Britain participating with other NATO countries in the NATO Channel MCM force, it may be expected that the NATO Standard MCM vessel will

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have capabilities similar to those of the British HUNTS.

Within British naval circles, there is widespread concern that the HUNTS are too ambitious — "gold-plated ships" is the term used. It is claimed that their undoubtedly extensive capabilities have resulted in the ships becoming too expensive. Therefore, in the view of many naval officers serving outside the Admiralty, too few ships will be built. Certainly, so far only two have been ordered. There is a strong feeling that the Royal Navy should have taken the cost advantages of standardisation with NATO.

Vosper Thornycroft — who developed the GRP hull technique to build the British prototype WILTON — were concerned that the HUNT'S would be too expensive for the British export market. As a result, they have designed the smaller M47 GRP hull, offering alternative fits of mine-hunting or mine-sweeping capability. Armed with BLOWPIPE surface-to-air missiles, the M47 offers a ship capable of mine-clearance in waters in which at least some air opposition may be expected.

In MCM, as with other aspects of their naval expansion, the Russians are having plenty of everything. Their new large NATYA's are ocean-going MCM vessels, whilst the smaller SONYA's will ensure their home waters are cleared. As Captain John E. Moore put it (in his recent book THE SOVIET NAVY TODAY), the Russian Navy have a force capable of "port approach clearance, sweeping in amphibious forces, and swept channels in straits and other mineable waters."

The smallest of the new European designs is the GRP hulled M70, now in an advanced stage of development by Sweden. Following the construction of a small trial GRP hulled craft (HSwMS VIKSTEN), ten new M70 type will be ordered from KARLSKRONAARVET AB. The inclusion of a significant gun armament in the design for the M70 shows that opposed mine clearance operations are envisaged. The Swedish ship design is of interest as it is the smallest to which any nation has gone in the current rash of designs.

The US is not as far advanced as Europe in selecting MCM systems or the vehicles to carry them for the future. Several years ago, the US switched peacetime operational provision of MCM to helicopters (AMCM). This method was used in clearing the approaches to Haiphong in 1973. However, some displacement hulled capability was retained and manned, largely by reservists.

Haiphong showed that practical AMCM advantages were counter-balanced by the much more extensive support required. Depot ships of HARRIER CARRIER size and capability are required to operate AMCM away from home ports. Furthermore, AMCM is suitable for shallow waters only — displacement hulls remain necessary for clearing deep waters.

The USN now plans (for Financial Years 1977-81) a force of ten new MCM ships. These will be designed to clear advanced Soviet deep water mines. However, these have yet to run the gauntlet of Congressional approval and must be expected to face severe competition for scarce funds. After reading the MCM debates in USN professional journals, the discerning historian might note a similarity between the present position of MCM in the United States Navy and that of anti-
submarine warfare in the British Navy during 1920-38 — in times of acute financial hardship, "poor relations unrepresented in top circles get forgotten.

All the major overseas MCM vessels now being built or designed have one thing in common. They are all armed with guns or missiles. All are designed to face opposition in clearing mines.

**CHOICE OF MCM SYSTEM**

Whilst the White Paper announced that the RAN's new MCM craft would be locally developed, it did not state whether the MCM system itself — that is the method of locating and destroying the mines — would be locally developed.

Although the European differences over size and shock resistance of MCM craft are considerable, both the British and their European allies are fitting the French PAP 104 (Poisson Auto-Propulse) system for mine identification and destruction.

This system represents a marked advance on the original mine-hunting methods developed by the British. An object, suspected of being a mine, is located initially by sonar carried on the MCM vessel. Operated from the MCM vessel, PAP104's wire guided vehicle carries a TV camera (for close location and confirmation that the suspect object is a mine) and a destruction charge. It can operate up to 500 yards from the vessel and in depths of up to 50 fathoms. PAP104's batteries can operate for up to 20 minutes without re-charging. The system will operate in currents up to 4 knots and wind up to force 4.

Working in conjunction with VT, Sperry Gyroscope have developed the CAT mine disposal system for the "economy size" M47 mine-hunter. Utilising a Plessey sonar system, and a Decca Navigation and Action Information System, the CAT consists of a small low profile unmanned catamaran type surface craft, powered by a low magnetic diesel engine, and a towed submersible weapon carrier. Controlled by a radio link from the MCM vessel, the catamaran is directed to the mine for placing the demolition charge. With the US Navy devoting relatively little attention to developing new MCM systems, the PAP104 and CAT systems are the options available for the RAN to purchase.

The RAN has made no public statement indicating its preferred type of mine-hunting system. However, it is noteworthy that the French PAP104 system is being adopted for the RN HUNT's and the new NATO Standard MCM system.

**CONSTRUCTION**

Developed initially by the British, the prime attractions of GRP hulled MCM craft (sweepers or hunters) are:

- A basic hull of non-magnetic materials. Provided other equipment in the vessel is of suitable material, the GRP hulled craft will not activate magnetic mines.
- Much reduced maintenance costs compared with wood — the material used predominately in the past.
- Much longer hull life than wood.
On the other hand, the construction of GRP hulled craft involves completely new methods, and the substantial capital investment involved new equipment, covered in building berths, etc. Furthermore, the British experience showed demarcation and similar difficulties with labour — of which we can expect at least our fair share.

Specialised moulds must be built. These include not only hull moulds, but also moulds for bulkheads, deck, superstructure etc. Whilst a few of these may be appropriate for other types of ship, the majority are suitable for not only one category of ship (e.g. MCM vessel) but also for one class of ship.

New construction materials, with shorter shelf lives, require new handling methods and frequently new materials to be used in association with the ship. As one example, the British found that their standard paint remover has an adverse effect on the GRP hull. An alternative had to be developed.

All this adds up to substantial initial capital expenditure. However, this does not recur. Therefore, as the number of GRP hulls built to a particular design grows, the unit cost falls sharply. To this economic attraction must be added the very substantial savings achieved by lower maintenance costs and much longer hull life.

**AUSTRIAN MCM STRATEGY**

In deciding to design the new MCM vessels locally, it is probable that the RAN considered the self-defence capability as of markedly less significance than in NATO navies.

If the RAN's World War II experience is a basis for judgment, we can expect mine threats mainly in home waters out of range of enemy air attack. Readers will recall that mines were laid in many Australian port approaches and local areas. To clear these, and meet threats of further mine-laying, the RAN built up two main types of MCM vessel:

- **BATHURST Class** corvettes which had mine-sweeping capability.
- A number of smaller craft — often converted civilian vessels.

However, the BATHURST Class had relatively little mine-clearance work — particularly in home waters.

The main burden of mine-clearance was borne by a number of much smaller craft, operating in groups to clear the local areas and approaches to Sydney, Melbourne, Fremantle, Hobart, Brisbane, Newcastle, Darwin and Adelaide.

It may well be that in 1977 the RAN envisages the need for MCM Squadrons capable of maintaining the approaches to these ports (plus a number of newer ports handling minerals), the great majority of which could be cleared unopposed by an enemy. This could explain the RAN's preference for locally-designed MCM vessels, without defensive armament but capable of dealing with the four main types of mines:

- **Moored** (or contact) mines
- Acoustic mines — exploded by the noise of a ship's propeller or machinery
- Magnetic mines — exploded by changes in the magnetic field resulting from the passage overhead of a ship constructed from magnetic materials
- Pressure mines, exploded by changing water pressure resulting from the passage overhead of a ship

Without a need for defensive armament, and with relatively limited range necessary for sweep­ing those Australian waters where mine-laying is both possible and attractive in target possibilities, it may well be that the RAN's new MCM vessels will turn out small — even smaller perhaps than the Swedish M70 type.

**THE RAN MCM VESSEL**

It may well be that the RAN's new MCM Vessels will turn out to be the smallest which can:
- Carry the PAP14 mine-hunting and disposal system, together with the necessary sonar equipment.
- Cruise reliably at both the high initial search and low positive mine identification and location speeds necessary.
- Remain constantly in position over an identified mine for up to 20 minutes.
- Operate in the Australian port approaches and those relatively limited open areas which are suitable for mine-laying and through which shipping passes regularly.

Thus, we may well see an RAN mine-hunter which is smaller in size even than the Swedish 270-ton M70 type — a craft of similar length to the QACK Class patrol boat.

**TABLE**

<table>
<thead>
<tr>
<th>Type/County</th>
<th>M70</th>
<th>M70T</th>
<th>M47</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUNT (UK)</td>
<td>615</td>
<td>715</td>
<td>650</td>
</tr>
<tr>
<td>TON (UK)</td>
<td>215</td>
<td>197</td>
<td>140</td>
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<tr>
<td>CIRCE (France)</td>
<td>400</td>
<td>667</td>
<td>168</td>
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<tr>
<td>M70T (Sweden)</td>
<td>79</td>
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<tr>
<td>M47 (Vosper Thornycroft commercial design)</td>
<td>480</td>
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<td>39</td>
</tr>
<tr>
<td>NATYA (USSSR)</td>
<td>?</td>
<td>600</td>
<td>200</td>
</tr>
<tr>
<td>SONYA (USSSR)</td>
<td>?</td>
<td>151</td>
<td>?</td>
</tr>
</tbody>
</table>

*The figures for the United Kingdom designed TON Class are included for comparison purposes.*

All the craft listed except CIRCE and the TON Class are GRP hulled, although the material of construction of the two Soviet ships has not been confirmed.
HMAS SYDNEY VANISHED IN STRANGEST BATTLE

At 9 pm on 19 November, 1941, the crew of the German raider KORMORAN paused in their efforts to save their burning ship to watch a sheet of flame flicker on the far horizon.

The flame disappeared in the night and with it HMAS SYDNEY vanished without trace. Two hours later the doomed KORMORAN was scuttled and the strangest and loneliest sea battle of World War II ended.

SYDNEY went down with her entire crew and the story of her last battle was unfolded by the 330 survivors of the KORMORAN when they reached Australia. It is a story still shrouded in mystery.

Ships No. 41, the former Hamburg-America Line passenger ship Stiermark, was still being built at the outbreak of World War II. She was a diesel electric vessel of 9400 tons, capable of 17.5 knots and could cruise for a year with her full fuel capacity of 5000 tons. Her armament consisted of six 5.9-inch guns, two 3.7cm and five 2cm anti-aircraft guns, two double torpedo tubes and five heavy machine-guns. The ship carried 400 mines and for reconnaissance shipped two Arado 196 float planes and a fast Motor Torpedo Boat.

KORMORAN, commanded by Commander Theodore Detmers, sailed from Gotenhafen on December 3, 1940. Disguised as the Russian ship Vyacheslav Molotov she steamed north up the Norway coast and then west across Denmark Strait. By following the ice line she succeeded in eluding the Royal Navy patrols and by December 16 had broken out into the Atlantic.

The raider arrived in the South Atlantic on Christmas Day, 1940. She sank her first victim, the Greek ship Antonis, on 7 January. Eleven days later she sent the British tanker British Union to the bottom.

KORMORAN had her first lucky escape in this engagement. Her gun flashes were sighted by the auxiliary cruiser ARAWA. Luckily, Detmers had made off at top speed immediately after the sinking.

On 29 January, the third victim of the KORMORAN was the 11,900-ton AFRIC STAR. Later in the same day the Blue Funnel Line ship EURYLOCHUS suffered a similar fate.

Commander Detmers decided it was now time to find a safer hunting ground. Intercepted radio messages indicated that British cruisers were converging on KORMORAN's position. He now headed south in mid-Atlantic on the same latitude as Rio de Janeiro. The rendezvous was made with the German supply ship NORDMARK. The raider took on 138 tons of fuel and transferred 170 prisoners.

Cruising in the vicinity of St Helena, KORMORAN rendezvoused with another German raider, the Pinguin, on 25 February. German boarding party. She was the 11,900-ton AFRIC STAR. Later in the same day the Blue Funnel Line ship EURYLOCHUS suffered a similar fate.

Commander Detmers and Captain Knuders at this meeting divided the Indian Ocean into two raiding areas. However, Pinguin was caught by HMS CORNWALL in May and was subsequently sunk so the territorial divisions were to mean little.

Bearing troubles delayed KORMORAN's entry into the Indian Ocean until the end of March. On the 16th she rendezvoused with U-boat 124 and obtained a supply of white metal. The raider and the U-boat were joined next day by the pocket battleship ADORAL SHEER which in a month had sunk or captured 156,000 tons of Allied shipping.

Detmers added more victims to his tally before leaving the South Atlantic. The first was the tanker AGNITA of 3561 tons. Three days later he took the 11,395-ton Canadian tanker CANADOLITE. A prize crew was placed on this vessel which was dispatched to Germany.

KORMORAN rendezvoused with two more U-boats on the 26th. These were U105 and U106. The
NORDMARK joined them and refuelled the submarines.

April brought another two victims, CRAFTSMAN of 8022 tons, and NICHOLAS DEL, a new vessel of 5486 tons. The raider's record stood at eight ships of 56,719 tons.

Re-camouflaged, and now named NIPPON YUSEN KAISHA, KORMORAN entered the Indian Ocean in May. The raider's luck commenced to change. On 24 June, smoke was sighted for the first time in weeks and as the vessels closed it was realised the stranger was an enemy auxiliary cruiser, HMAS CANTON. KORMORAN increased speed and eventually outran her pursuer.

Commander Detmers changed his vessel's identity again at the end of July. She became the Dutchman STRAAT MALAKKA. Her first victim in the Indian Ocean, the Australian steamer MAREEBA 3472 tons, was obtained soon after.

Another long period of fruitless search followed this sinking and it was not until September 23 that Kormoran sank her last and last victim, the Greek vessel STAMATIOS.

The Indian Ocean was proving a difficult place. Commander Detmers decided to close the Australian coast and lay his mines. On the 19th the raider was approaching Shark Bay from the south-east. At 3.55 pm the alarm bells shrilled through the ship. A vessel was sighted dead ahead on the horizon. At first it was thought to be a sailing ship. The heat haze and the fine angle of the ship's approach made identification difficult. Commander Detmers turned his ship to port 260 degrees and increased speed. Five minutes later he identified the stranger as an Australian 6-inch cruiser.

The warship was HMAS SYDNEY which had already won distinction in the Mediterranean for her sinking of the Italian cruiser BABTOLCOMEO COLLEONI and the destroyer ESPERO. The 6800-ton cruiser returned to Australian In February, 1941 and underwent a refit. In May, Captain J. A. Collins transferred his command to Captain J. Burnett. The cruiser was engaged in escort duties from Australia to Malaysia for the remaining six months of her career. She sailed from Fremantle on November 11, with the transport ZEAALANDIA.

The outward voyage was without incident and the transport was handed over to the British cruiser DURBAN off Sunda Strait. She signalled her estimated time of arrival as pm on the 19th or am on the 20th and no more was heard from her.

The German captain knew flight was impossible. SYDNEY was capable of 28 knots. While these thoughts were passing through his mind, the engineer reported No. 4 motor out of action. KORMORAN's top speed was reduced to 14 knots. The encounter now meant action.

SYDNEY altered course and was closing the raider. A daylight lamp challenged "What ship?" Detmers ordered his chief signalman to reply with flags "slowly and awkwardly". He needed time to bring the cruiser within range of his guns.

The ships were now 15,000 yards apart and the cruiser had increased speed to 20 knots. SYDNEY requested the raider's tangled signal to be hoisted again. On the second try the flags spelt out STRAAT MALAKKA. Detmers knew the cruiser could radio for the Dutch vessel's position but he was fighting for time. SYDNEY next asked the ship's destination and after another delay caused by deliberately twisted flags, received the reply "Batavia". Nine thousand yards now separated the ships. The raider's guns were trained on SYDNEY waiting for their camouflaged flags to drop.

Commander Detmers looked with apprehension at the cruiser's amphibian aircraft warming up on its catapult. One quick observation from the air would reveal his ship's true identity. The cruiser was still closing. Only 1500 yards separated them when SYDNEY demanded the secret call sign of STRAAT MALAKKA. The deception was over. Detmers called "de-camouflage". The German war flag was run up and simultaneously KORMORAN's guns opened fire. The cruiser had turned broadside on and the range was 1000 yards. With a tearing, belching rasp the raider's anti-aircraft guns and heavy machine guns lashed the cruiser's bridge and deck. The 8.9-inch guns were banging away at point blank range.

SYDNEY opened fire with her 6-inch turrets but the shells whistled harmlessly over KORMORAN. Detmers altered course to bring his torpedo tubes to bear. The first two torpedoes crossed SYDNEY's bows but the third hit about a Turret. A sheet of water rose as high as the mast and she soon developed a list.

Three turrets were now returning KORMORAN's fire with independent control. One salvo ripped through the raider's funnel and the next exploded in the engine room and started a fire.

SYDNEY was also on fire. The aircraft had been blown off its catapult. Two turrets were silent. The cruiser was not under fire. At 6.25 pm the raider came about and unleashed her four torpedoes. They passed clear of the raider's bows and SYDNEY limped slowly away still under fire. At 8.25 pm the raider ceased fire and the blazing cruiser was last seen heading into the deepening gloom.
THE NAVY

LEAGUE

OF AUSTRALIA

Federal President's Notes

INTERNATIONAL CONFERENCE OF NAVY LEAGUES

The Australian Navy League was represented at a “Congress of the Sea” arranged by the Spanish Navy League and held in Barcelona on 6 and 7 November, 1975.

The purpose of the conference was to discuss the formation of an international federation of Maritime and Navy Leagues to promote “sea-culture” and to educate people in the importance of the seas to all nations.

It was hoped that former Federal President, John Howse, who was in Europe at the time, would be able to represent Australia, but unfortunately he became ill and was unable to do so. In the event the Federal President arranged with the National President of the United States Navy League for the American representative at the conference, Ernest Carrere (who visited Australia in 1975 as National President) to act as observer for the Australian Navy League.

Mr Carrere has sent a preliminary report on the conference indicating that a small secretariat has been established to draw up a charter. A decision concerning future Australian participation in the Federation will not, however, be made until a full report is received and discussed by the State Divisions of the League and the Federal Council.

FEDERAL COUNCIL MEETS IN SYDNEY

The Federal Council of the Navy League met in Sydney on Saturday, 27 November, 1975, and was attended by representatives from all States (except Tasmania) and the ACT.

The meeting was held in HMAS PENGUIN at the invitation of the Commanding Officer (Captain Errol Birtwistle) who addressed the conference and afterwards lunched with the members. Admiral Synnot had only been in office for four days and his gesture in coming to Sydney was greatly appreciated.

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SYDNEY'S FIGHTING FERRIES

by ROSS GILLETT

During World War II seven Manly and Sydney Harbour ferries served with the RAN. Another five were requisitioned for the United States Navy and two by the Australian Army. The vessels were employed in a variety of roles and of the seven boats used by the RAN, three were converted to boom defence vessels, one employed as an accommodation vessel, one as a depot ship, another as a training and target vessel and the last was sunk as a naval target.

All Manly ferries plying the seven miles from Sydney were painted either naval grey or dark green (one of the original Manly ferry colours), but still retained their white funnels.

The Sydney Harbour ferry KAI KAI was the first boat to see naval service and was hired on numerous occasions during 1940-42 to act as an accommodation ship. KAI KAI was built in 1907 and was sold to the RAN on 4 March, 1943. She remained in naval service until 1947 and was sold on 2 June.

KUTTABUL, after the Japanese midget submarine attack. Kuttabul was sunk by the torpedo intended for the USS Chicago.

KARA KARA of Jervis Bay after being towed from Sydney by Bronzewing (left).

The most famous ferry to join the RAN was KUTTABUL one of the largest Sydney Harbour ferries built. She was requisitioned on 7 November, 1940, and commissioned on 26 February the following year. KUTTABUL was employed as both a depot and accommodation ship. She was never purchased outright by the RAN and when sunk was still owned by Sydney Ferries Ltd. To commemorate her loss, Garden Island commissioned as HMAS Kuttabul on 1 January, 1943.

KUTTABUL was originally built during 1922 at the Walsh Island shipyard in Newcastle and displaced 447 tons gross. It has been claimed that she was able to carry over 2000 passengers. Along with over 40 other ferries, KUTTABUL was laid up in 1932 following the Harbour Bridge opening.

KARA KARA was the third ferry to join the RAN, having been requisitioned by the United States Navy.
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floated on 27 February, 1941. She was commissioned on 14 September and later purchased on 7 November. KARA KARA was constructed in England by Saltney and was taken over by the Australian Navy in 1938, while the former was commissioned on 27 February, 1941. She was declared for disposal, but nevertheless was not sold until 1972, when Marrickville Metal Holdings Pty Ltd purchased the old ferry for scrap metal. Stripped of all valuable materials, KARA KARA was offered back to the Navy for target practice.

Holes were drilled in her deck and fitted with small plugs and several supports for the bridge were weakened to facilitate easy sinking. PERTH, YARRA and TEAL together with Skyhawk fighter-bombers from the Fleet Air Arm, sank KARA KARA off the southern NSW coast on 31 January, 1973.

KALANG and KOONDOOLOO were both built in England for service as vehicular ferries. As previously mentioned the opening of Circular Quay-Milsons Point passenger run from 1922 to 1932. In 1935 was the Manly ferry BURRA BRA, moored in Athol Light.

KOOMPARTOO, served on the Circular Quay-Milsons Point passenger run from 1922 to 1932. In 1935 she was returned to service and had her upper deck extended several years later. KOOMPARTOO was purchased in 1941 by the British Ministry of War Transport for deployment in the Middle East. Conversion work was carried out at Mort's Dock, but the entry of Japan into the war saw the abandonment of plans to base her overseas. KOOMPARTOO transferred to RAN control on 18 June, 1942, and was formally commissioned on 23 December. Armed with two 20mm Oerlikons and four Vickers .303 MGs, KOOMPARTOO proceeded to Darwin in January, 1943, and remained active until 1945, when she commenced a five year stint in reserve at Darwin. Taken to Sydney in 1950, she remained laid-up until being sold out of service in June, 1962.

The longest, although not the largest, ferry to see service in the RAN was the Manly ferry BURRA BRA. BURRA BRA was the last open deck passenger ferry built in Sydney in 1912. KURAMIA was requisitioned as a boom gate vessel on 20 February, 1942, commissioned on 30 June, and subsequently purchased in September, 1943. She remained based in Sydney during the war and post-1945 served as an amenities vessel. On 3 December, 1945, she paid off and was offered for sale. No buyer could be found and KURAMIA was sunk on 10 October, 1963, by aircraft from the carrier SYDNEY.
BINGARRA

Morts Dock. She completed her first official trial on 29 October, 1908 and commenced regular service in November. Manly at that time was the Mecca for weekend outings and the vessels of the Manly ferry fleet maintained a fast, regular service.

BURRA BRA was requisitioned on 13 November, 1942, for target towing and anti-submarine training duties, the conversion and fitting out being carried out by Poole & Steele Ltd, Sydney. BURRA BRA commissioned on 1 February, 1943, under the command of Lieutenant R. E. Morley RANR(S). Like several other Manly ferries, she was fitted with two naval type boilers and triple expansion engines which drove the ferry at over 13 knots.

On 25 August, 1943, she was purchased by the RAN and later paid off to reserve on 1 June, 1944. BURRA BRA was sold at auction in November, 1947. She is usually listed as being sunk as a target off Sydney but in fact was broken up at Stride's yard in Blackwattle Bay during the 1950s. Like many other auxiliary vessels taken over by the RAN during World War II, BURRA BRA led an unexciting life.

KURING GAII

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THE NAVY

Feb/March/April, 1977

In addition to the ex-Manly ferry BINGARRA, three other passenger ferries, all built late in the 19th century, were requisitioned for the United States Navy. KARABELLA (1897), KARAGA (1894) and KIAMALA (1897), were all laid-up in 1932 after the bridge opening, but had been returned to harbour service during 1936 and 1937. KARAGA was requisitioned on 30 April, 1943, KARABELLA and KIAMALA three days later on 3 May. KIAMALA and KARAGA were purchased from Sydney Ferries Ltd on 12 November for £1,300 and on 17 November for £1,450 respectively, while KARABELLA fetched £2,500 on 7 June next. All three boats were towed to northern bases for use by the United States Navy. The ultimate fate of these ferries is unknown, but it is probable that they were abandoned by the Americans at the war's end.

Another Sydney Harbour ferry to be used by the RAN during World War II was the LADY HAMPDEN. Employed as a naval target she was sunk in 1943.

The Manly ferry KURING GAII, built in 1900, also saw war service. KURING GAII was the first double-ended steel screw steamer on the Manly run. After 28 years service, she was sold on 3 August, 1928, and in October left Sydney to commence work with her new owners, Newcastle Ferries Ltd. Six years later, she was laid-up and subsequently hulked in the late-30s. After World War II she was towed to New Guinea and used as a store ship by US forces. Following the end of conflict, KURING GAII was purchased from Sydney Ferries Ltd on 12 November for £1,300 and on 17 November for £1,450 respectively, while KARABELLA fetched £2,500 on 7 June next. All three boats were towed to northern bases for use by the United States Navy. The ultimate fate of these ferries is unknown, but it is probable that they were abandoned by the Americans at the war's end.

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The Shipyard on the Western Coast

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The first battleship built for America was a 74-gun ship-of-the-line, appropriately named AMERICA. She was the first to be constructed in North America and was completed as independence from British rule was approaching. However, in 1782, she was given to the French Navy as a replacement for the MAGNIFIQUE, lost after grounding in Boston Harbour.

During the ensuing years, the young nation was afforded practically no effective naval defence and following the outbreak of war with Britain in 1812, protection was provided by a few frigates and sloops plus several converted merchant ships. This lack of naval power hampered attempts to stop Washington burning to the ground in 1814.

Early the previous year an Act was passed calling for the first ships-of-the-line for the United States Navy. The Act, dated 2 January, 1813, authorised four ships, Independence, Washington, Franklin and Columbus. Subsequent legislation raised the order by ten ships, but after the cessation of hostilities some were cancelled due to the perennial problem of funds, or more specifically the lack of them. Commonly known as the Independence class the three ships (Columbus completed as North Carolina class) became the first US warships to show the flag in foreign waters, the forerunners of the present US 6th and 7th fleets.

Independence entered service on 3 July, 1815, and four weeks after sailed for the Mediterranean Sea to join the squadron in those waters. Washington operated with the squadron until 1816 and was in turn replaced by Franklin.

The follow-on North Carolina class, described by a serving British naval officer as, the "perfection of a line-of-battleship", were excellent sea-going vessels, far superior to other ships of that time. The North Carolinas operated in the Mediterranean, Pacific Ocean and the Gulf of Mexico.

The two classes served up to the outbreak of Civil War in 1861, three of the latter class being burnt at Norfolk to avoid capture by the Confederate Navy. From nationhood, battleships of the US Navy were named after the States of the Union, the only exception being Kearsarge, named after a mountain in New Hampshire. In the 1960s it was decided to name all new construction nuclear powered frigates (now designated cruisers) for the states.

A new era of naval warfare was launched on 29 October, 1814, when a unique steam battery, named Demologos, was launched at New York. Designed by Robert Fulton, the vessel was built to defend New York from attack by the sea. The USN named the catamaran type vessel Fulton. She was powered by a large paddlewheel, the engine-room being set deep in the hull. Firepower was provided by 32 pdr guns, but unfortunately the vessel suffered from lack of range, being restricted to a small radius of action. Fulton's name was perpetuated again when the Navy commissioned its second steam frigate in 1837.

The ill-fated MAINE. Note the off-centreline placement of the main battery turrets.
The world's first screw-driven warships, designed by John Ericsson, joined the fleet in 1643, and by the mid-century experiments had also commenced on power driven turrets and armour protection, important components of the modern battleship.

The now famed duel between the Northern Monitor and Confederate Virginia (ex Merrimack), took place at Hampton Roads on 9 March, 1862, leading to an all-out revolution in sea warfare. The Monitor was one of three ironclads built to counter Southern naval forces and was protected by iron plates affixed to the wooden hull and decks. Monitor was built in 1862, and boasted two 11 inch guns in a steel revolving turret. History records the first battle of the ironclads well, so it is sufficient to note here that the battle issued forth a new era of naval tactics. The Monitor type warships proved successful and popular with American Admirals, so much so that a total of sixty-four were constructed. Five Civil War monitors were rebuilt with iron hulls and served until the early 1920s.

The US Navy's first "modern" battleships Maine and Texas took to the water in 1890 and 1892 respectively. Both were of foreign design, their main guns being located on each beam. This arrangement proved unsatisfactory when the guns were fired directly ahead or astern. As a result all subsequent USN battleships had their main gun mounts in the centralline position. The Texas could fire a broadside of two, 12 inch and four, 6 inch salvos. Improvements were made on her large guns allowing a salvo to be fired every two minutes. (The multi-barrelled Vulcan Phalanx gun to be fitted to the two RAN patrol frigates and also manufactured in the USA, fires 3000 rounds per minute.) Texas burnt a great deal of coal and by the early years of the 20th Century was regarded as a poor steamer.

By this time, the battleship was well protected. Maine carried a main belt of 11 inches, while her turrets were also protected by 11 inches of armour. Texas was fitted with 12 inch armour on the bulkheads, turrets and conning tower. Indiana, the Navy's first "true" battleship commissioned on 20 November, 1895, having been laid down on 7 May, 1891, as an armoured coast defence battleship. Indiana (BB-1) and her two sister ships Massachusetts and Oregon, were influenced in design by the previous Maine and Texas, completed earlier in 1895. They were armed with four, 13 inch, eight, 8 inch, four, 6 inch and twenty, 6 pdr guns, and four, 18 inch torpedo tubes. Vertical triple expansion reciprocal engines drove the ships at over 15 knots. In this class main belt armour was increased to 18 inches and to 15 inches on the turrets. The large turrets had an arc of fire of 285° and the secondary guns 135°. All three served in the 1898 Spanish-American war and later during World War I as gunnery training ships (Indiana and Massachusetts) and as a convoy escort ship (Oregon).

The OREGON, probably the best ship in the Navy during the Spanish-American War. Best known for her record-breaking run from San Francisco to Key West around Cape Horn, OREGON was also the only US ship at the Battle of Santiago to have full boiler power available.
American battleships were fitted with a large conspicuous cagemast. In 1898, with Spanish-American relations at rock bottom, Maine proceeded to Cuba to show the flag and protect US interests. On 15 February, she sank with the loss of 253 lives, apparently as a result of an underwater explosion. War was declared on 21 April, and Maine proceeded to Cuba to show the flag and protect US Interests.

HMS DREADNOUGHT, the British battleship that forced a new standard on the navies of the world. Below: The first US “dreadnought”; the DELAWARE, commissioned 1910. Note the unusual under-the-bow gun mounts, intended to provide protection against torpedo boats, but too often under water to be of much use. It was soon removed.

The changing look of battleships. Cage masts replaced military masts on older ships, such as KENTUCKY (above and right), and MASSACHUSETTS (below, right) a sister ship of the OREGON, and were installed on all new construction.

The battleship continued to grow in size and progressively the main battery was standardised with four 14 inch triple turrets being mounted on all US ships. Wyoming and Arkansas were enlarged versions of the first two and mounted an additional twin 12 inch mount. Wyoming was dismantled in 1931, but Arkansas survived to participate in World War II before being sunk as a target at the Bikini atomic bomb tests on 25 July, 1946.

In 1914, the 28,000 ton New York and Texas entered service and introduced with them the larger 14 inch guns of 45 caliber. Original designs had called for fifteen 12 inch guns in five triple mounts, but the larger armament was substituted. Texas, the only surviving World War I American battleship, has been preserved as a memorial by the state after which she was named.

New York was afforded a less dignified fate, being used initially as an atomic bomb test ship at Bikini in 1946 and later as a gunnery target.

Wyoming sailed to join the British Grand Fleet in the North Sea and arrived at Scapa Flow, the Fleet’s main base in the Orkney Islands, on 7 December, 1917, while Nevada, Oklahoma and Utah served on troop escort duties from Ireland. The Fleet participated in no active engagements and spent the majority of its time on training and exercises.
Pennsylvania and Arizona commissioned in October, 1916, but due to the lack of oil in England, were retained in home waters. Both were regarded as excellent sea boats, and were very economical in their day to day operations. They were similar in design to the previous Nevada class except for their shorter funnel.

By 1918, sixteen dreadnoughts had joined the fleet, establishing the USN as second only to the mighty Royal Navy.

The next group to enter service was the three ship New Mexico class, approved by Congress in October and November, 1914. A class, approved by Congress in 1914, while the Idaho was commissioned in May/June/July, 1917. Both were retained in home waters. Both were regarded as excellent sea boats, and were very economical in their day to day operations. They were similar in design to the previous Pennsylvania and Arizona class except for their shorter funnel.

The two Tennessee class ordered in 1914, while the Idaho was constructed from proceeds received from the sale of the pre-dreadnought battleships Missisipi and Idaho to the Royal Hellenic Navy on 30 July, 1914. Renamed Kllkls and Idaho to the Royal Hellenic Navy on 29 October and November, 1914. A class, approved by Congress in October and November, 1914. These ships were among the best in the world. Where earlier designs had been slightly in displacement, length overall, beam and draught. An enlarged bridge was fitted, while two funnels in lieu of one were also distinguishing features. The Tennessee commissioned on 3 January, 1920, and introduced with her a new gun arrangement whereby all main secondary turrets were mounted on the upper decks and not in embrasures in the ships sides. Unlike her predecessors, Tennessee was not rebuilt during the wars and from 1920 served in the Atlantic and Pacific Oceans. In mid 1925, she proceeded to Australia and New Zealand on a goodwill visit.

During 1920 and 1921, four larger dreadnoughts were launched, which gave another six battleships and six battlecruisers were laid down. The first four, Colorado, Maryland, Washington and West Virginia were similar to the previous Tennessee and California, but mounted eight, 16 inch guns in four mounts. At high speed they could fire a broadside of eight tons over twenty miles. The Colorado class displaced 32,800 tons and were powered by turbo-electric engines, generating 28,800 hp. They were also armed with twelve, 5 inch and eighteen, 3 inch guns. The clipper bow, introduced in the New Mexico class, was retained. These ships were the American answer to the British Queen Elizabeth class.

Delegates from France, Great Britain, Italy, Japan and the United States assembled for the Washington Conference on naval limitations on 12 November, 1921. The resultant meetings brought agreement from all participating nations that future capital ship ratios were to be Great Britain 5, United States 5, Japan 3, France 1.75 and Italy 1.75. As a result of the Treaty, many old battlecruisers were scrapped. In 1920 the battleships were either scrapped or demilitarised. Washington, the third ship of the Colorado class, was laid down, but construction was cancelled on 8 February, 1922, although 75.9% complete. Also cancelled on 8 February were the six 43,000 ton South Dakota class battleships and four of the battlecruisers. The remaining two, Lexington and Saratoga were completed in 1927 as aircraft carriers.

At the end of 1922, United States naval power was based upon the eighteen active battlecruisers. Another three (New Hampshire, South Carolina and Michigan) were in reserve and two (Colorado and West Virginia) under construction. Of the original twenty-four pre-dreadnoughts, only Kearrages, converted to a floating crane, remained in use. In reserve were a further fourteen, including ten from the Great White Fleet.
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May/June/July, 1977

THE NAVY

Page Twelve

“The Civilian Arm of the Navy”

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OUR COVER

AUSTRALIA'S FIRST FEMALE MIDSHIPMAN

Midshipman E. J. Yates, aged 20, a third year dental student at the University of Western Australia, recently realised a long standing ambition by joining the Royal Australian Navy.

In the process Midshipman Yates started a new chapter in the history of the Navy.

First E. J. Yates is a Francis Eaton, the first female to be accepted into the Australian Navy, who before her death in 1914, was a member of the Women's Royal Australian Naval Service in the Royal Australian Navy Nursing Service.

Enrica who has been granted the rank of Probationary Midshipman, Midshipman has been granted to HMAS LEEUWIN, Fremantle, but for the next three years will complete the University course for Dental Surgery.

Our photograph shows Midshipman Yates with the Navy recruiting officer, Mr. Western Australian Institute.

T J Brunsden RAN

May/June/July, 1977

THE NAVY

Page Thirteen
A record $40.3 billion for Navy programmes in fiscal year 1978 was requested by the Ford Administration. This Navy budget represents an increase of $3.9 billion over last year.

The total budget request for DOD of $123.1 billion is a 5.4 per cent increase in real terms (discounting inflation, carry-over items and other factors). It provides for continuation of appropriated fund support for commissioned stores and a 6.5 per cent pay raise for government employees and military personnel in October.

Among major personnel proposals, the budget calls for authorization to extend eligibility for the $30 monthly family separation allowance to all enlisted personnel with dependents, regardless of rate or time in service. Two major proposals from previous years, the Retirement Modernisation Act and the Defence Officer Personnel Management Act, also are in the FY78 budget.

The proposed budget projects a $48.4 billion five-year ship-building programme which calls for the construction of 15 T-ATF (LCC) ships by 1980, bringing the number of Navy ships up from the present 476 to 600.

### FIVE-YEAR SHIPBUILDING PROGRAMME

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- represent that goods or services have sponsorship, approval, performance characteristics, accessories, uses or benefits they do not have;
- represent that the individual or corporation has a sponsorship, approval or attestation fee, or if it does not have;
- make false or misleading statements concerning the existence of, or amounts of, price reductions;
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- make false or misleading statements concerning the existence or effect of any warranty or guarantee;
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To reduce reaction time to a minimum, gun slew occurs as soon as the target is acquired and offset adjustments are then made when a valid prediction solution is computed. Typically this process takes two seconds. The gun is fired by means of the console foot push when a valid prediction is achieved and the future range display indicates that the target is within effective gun range.

SEA ARCHER is designed to be extremely small, light, easy to install and operate and can be fitted in small FPB's for which sophisticated radar systems such as the Marconi-Sperry Sapphire System are not appropriate.

THE HOVERLIGHTER
—a solution to port congestion

British Hovercraft Corporation announced a new concept in off-shore cargo handling at the Europort Exhibition in Amsterdam, during November, 1976.

The rapid increase in trade in many of the emergent nations' ports has led to serious congestion and expensive delays. Expansion of port facilities is costly, time consuming and in many cases difficult because of urban growth.

Hoverlighters offer a unique solution to this problem by providing a rapid ship to shore link. A simple base can be sited conveniently for off-loading onto road or rail but clear of port congestion.

The Hoverlighter is a flat-decked hovercraft based on the SR.N4 cross-Channel passenger and car ferry craft. Fitted with four machinery modules, each located in a corner of the vessel, the craft would have a bow loading/unloading ramp and a control cabin adjacent to one of the forward modules. Powered by four Rolls Royce Proteus engines the craft will have an unloaded speed of 40-45 knots and loaded could reach speeds of 30 knots.

A typical operation using a fleet of five Hoverlighters each with a payload of approximately 200 tonnes, working a ten-hour day, could move up to 10,000 tonnes daily.

Unloading from the ships would be ship-operated cranes or large floating cranes, the containers and other loads would be lifted onto the Hoverlighter's deck and placed on wheeled trolleys, these would be positioned on the cargo deck using powerful motor tractors, these same tractors being used to unload the lighter onshore. A typical loading and unloading sequence would take approximately 30 minutes.

The Hoverlighter offers a versatile and low cost solution to port congestion. In the longer term the craft could form the backbone of river transport systems where the natural terrain of mudbanks, rapids and shifting sandbanks make the use of conventional freighters impossible.
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**SWEDEN AND SWITZERLAND THE MYTH**

by A. W. GRAZEBROOK

Once again, we are being told that there are advantages to the defensive strategy adopted by the Swedes and the Swiss. Do it the way the Swedes or the Swiss do it, and our defence problems will be solved. By implication our defence problems will be solved at markedly lower costs than incurred by Australia at present.

One senior Australian diplomat recently coupled this with an implication that we can avoid conflict altogether by minimizing defence expenditure and concentrating upon negotiation.

In the midst of all this, it is worthwhile taking a look at the Swedes and the Swiss and comparing their situation with our own. The two European countries are in a similar situation to one another:

- In terms of material resources (minerals, industries, living space etc) neither of them have very much which their past and potential enemies lack.
- Their geo-strategic situation is such that, although they would ultimately lose a war with a major aggressor, they can fight hard enough and long enough to make sure that the price an enemy would have to pay for the conquest would be unacceptably high.
- They sell potential aggressors those few material items they are likely to want.
- They have no strategic raw materials - uranium for example — that potential aggressors are likely to try and acquire or prevent their own armies from acquiring.
- In doing all this they put, and always have put, considerably more effort (both personal and monetary) into defence than does Australia.
- As can be seen at a glance, there are very considerable differences between the position of the Swedes and the Swiss and that of ourselves.
- Sweden and Switzerland have been described as "armed independent neutrals". Their military based armed forces are numerically the strongest in Europe other than those of the USSR. These are supported by a very substantial degree of defence industrial independence.

**DEFENCE INDUSTRIAL INDEPENDENCE**(1)

Both countries manufacture considerably more defence equipment than does Australia. Sweden produces to her own design.

- Supersonic fighters; Training aircraft; ATGW; Submarines: Escorts: Self propelled artillery; Medium and light tanks; Subsonic aircraft; Surface to surface missiles; Air to surface and air to air missiles; Fast attack craft; Towed artillery.

Switzerland produces to her own design:
- Surface to air missiles; Surface to surface missiles; Medium tanks; ATGW; Towed artillery.

In addition, Switzerland produces or assembles designs prepared in other countries:

- Supersonic fighters; Subsonic fighters; Transport aircraft.

In summary, all the major weapon systems and vehicles used by either country are built or manufactured in that country. Up to the present time, for example, the Swedish Navy incorporates no war ship, or auxiliary, built outside Sweden (although some fast attack craft are under construction in Norway).

No combat aircraft, first line war ship, SAM or SSGW is currently manufactured or built in Australia. The country is substantially dependent on overseas suppliers for defence equipment and much of the more sophisticated ammunition (IKARA being the exception), whereas Sweden and Switzerland are not only sourcing locally but giving appropriate attention to developing the next generation of weapon systems.

**SWITZERLAND**

In geography and economy, Switzerland differs very substantially from Australia. The very rugged mountainous Swiss terrain, densely populated and with short distances between major centres, favours shorter defence whereas the sparsely populated huge Australian landscape demands mobility. These factors, coupled with the fact that except for those with a repetitive sense of humour, Switzerland has no need for a Navy, mean the Swiss choice of equipment has little relevance for Australia.

However, the military principle upon which the Swiss provide manpower, and the general defence consciousness of the Swiss people, are of more than passing interest. Every male Swiss citizen is required to serve in the reserve for all his years between the ages of 20 and 50. The first 12 years are spent in first line reserve, ten years in the
second line, and eighth in the third line, with annual training commitments reducing in each line. Official and other reservists form less than the annual three weeks first line commitment for the first line other rank men. Flying personnel also serve longer.

With this system, the Swiss equipped 5000 air forces on a basis of 3500 permanent service personnel. About 200000 conscripts had a full time service at one time. A high standard of technical preparedness and expertise is maintained as shown by satisfactory operation of an air force that includes Mirage III fighters, and an army that includes some 650 tanks, 1000 armoured personnel carriers, some 100 guns, and surface to air missiles.

Confidence in the ability to maintain this standard of technical expertise is shown by Swiss plans to acquire F5E Tiger II fighters, and the 1975 setting of a contract for the design (by the Federal Thun) of a new battle tank. Maintenance of a high technical standard is carried out by civilian employees.

Any person who, as this writer has said, spends five years as a resident in Switzerland, cannot fail to be impressed by the extent of defence preparedness. Bridges, tunnels and defiles are wired for destruction. Arrows and ammunition are in the permanent possession (ie in the individual homes) of reservists. It is believed that, if needed, there are supplies secreted in remote areas sufficient to supply troops for up to two years. By law, every Swiss housewife can be required to maintain certain minimum stocks of certain provisions if and when the Federal Government demands. Key points are defended by substantial fixed emplacements whilst mobile units are in position in many parts of the country.

The independent neutral, with about half its population, maintains armed forces substantially in excess of those of Australia. As Switzerland has not been involved in armed conflicts for many years, it could be contended that her strategy has been successful. However, it is not cheap.

SWEDEN

With her dependence upon maritime trade — Denmark, the UK and West Germany are her biggest trading partners — the defence of Sweden has some similarities to that of Australia. However, the ability of at least one of her neighbours to mount a major armed invasion across a short distance of the Baltic has forced the Swedish Defence Staff to give primacy to this threat in implementing their official policy of keeping the必要ity out of war by a defence "so strong that the cost of defeating Sweden is out of proportion to the strategic advantages which an aggressor might attain."

For her 1973-1974 defence spending of 14669 million (2), Sweden's eight million people obtained an army of some 30 brigades, 50 independent battalions and a further 100 local defence battalions. Sweden's arms include over 500 DRAKEN fighters, some 132 Lansen attack aircraft (in course of being replaced by 150 VIGGEN attack aircraft) and some 350 other aircraft (3).

Whereas island continental Australia's defences lay emphasis on defence of maritime trade, Sweden is concerned primarily with defence of a substantially substantial naval, air, and land force. This is reflected in the composition of the Royal Swedish Navy, which includes: 12 escorts, 20 submarines, 46 fast attack craft, 49 mineayers, 38 MCM craft, 200 fast sealboats. This force is designed to:

- Utilise SSOW armed and torped armed fast attack craft to deter surface warships and hostile amphibious forces.
- Utilise selected sea-lanes clear of mines and submarines for naval and indispensable emergency transport traffic.
- Provide an offensive deterrent submarine force.
- Utilise extensively offensive minelaying.

Recognising that the majority of the Soviet submarines in the Baltic are diesel-electric driven, the diesel submarines are effective in the SKS (anti-submarine) role as well as the not inconsiderable deterrent effect twenty submarines would have in the small Baltic Sea. The short distances and narrow confines of the Baltic waters have allowed Sweden to keep the size of their submarines down. The latest submarines have not exceeded 1000 tons (as compared with 1600 tons for Australia's OBERONS). The Swedish submarine design has been developed, with new types and new systems, and with a policy of stern standards. Forty-five smaller minelayers are available for coastal defensive minelaying.

The suitability of Swedish waters for defensive minelaying makes Sweden equally open to a high minelaying by an enemy. To provide protection against this threat in implementing Sweden maintains a substantial MCM force of some 38 craft. A new generation of small grp hulled MCM vessels is under development (refer "The Navy", Feb-Mar-April, 1977).

There are confirmed but persistent rumours that the new A17 Class submarines will be driven by the hydrogen peroxide propulsion system. Developed by the Germans in World War II, it is said to have local an impact on war, since it will take a smaller or less manpower to work in the 1940s and 1950s going to the extent of building two trial submarines. However, expenditure was discontinued in favour of the superior nuclear propulsion system. Where are there those experts who regard hydrogen peroxide propulsion as a success, but overtake by nuclear power as more appropriate or practicable in Australia's circumstances. Since the days of Napoleon I, the Royal Swedish Navy fought in various navies and maritime circumstances. New submarines are due for completion in the second half of the seventies, with a substantial strategic advantages which an aggressor might attain.

Some ninety ships of the Royal Navy will take part in the Silver Jubilee Fleet review at Spithead on Tuesday, 28 June, 1977. The Royal Navy will take part including ships of the Royal Fleet Auxiliary which support the Fleet at sea, and the Royal Maritime Auxiliary Service. Some ninety ships of the Royal Navy will take part, including ships of the Royal Fleet Auxiliary which support the Fleet at sea, and the Royal Maritime Auxiliary Service.

Natives of the Commonwealth, NATO, CENTO and the EEC have been invited to participate in the Fleet Review. Personal invitations have also been sent to the two honorary Admirals in the Royal Navy — HM King Olav V of Norway and H.M.S. and XVI Gustaf of Sweden. The Marchant and Fishing Fleets will be represented, together with other organisations having a close association with the Royal Navy, including the Royal National Lifeboat Institution, Trinity House and HM Coastguard.

In all, it is expected that some 150 ships will take part in the Fleet Review.

Her Majesty will review the Fleet from HMY Britannia which, by tradition, will be preceded through the lines of ships by the Trinity House Vessel Patricia. The Royal Yacht will be followed by the destroyer HMS Erebus. She will be the last ship of the Royal Fleet Auxiliary to pass through the lines, and will be followed by the Royal Yacht.

The Review Fleet is expected to begin at 2:30 pm and will conclude approximately 2:30 pm with a flypast of the Royal Fleet Auxiliary. The Review Fleet is planned to begin at 2:30 pm and will conclude approximate 2:30 pm with a flypast of the Royal Fleet Auxiliary. The Review Fleet is planned to begin at 2:30 pm and will conclude approximately 2:30 pm with a flypast of the Royal Fleet Auxiliary. The Review Fleet is planned to begin at 2:30 pm and will conclude approximately 2:30 pm with a flypast of the Royal Fleet Auxiliary. The Review Fleet is planned to begin at 2:30 pm and will conclude approximately 2:30 pm with a flypast of the Royal Fleet Auxiliary.
Modernisation of Garden Island Naval Complex

A design team comprising members of the Departments of Construction and Defence and private consultants has been established to prepare a development plan for the modernisation of the Naval complex at Garden Island, New South Wales.

When announcing the formation of the team, the Minister for Defence, the Honourable D. J. Killen, said that this was fore-shadowed in the 1976 White Paper on Australian Defence which stated: "The Government intends that the major Naval Base at Garden Island, NSW, should remain, but be modernised and developed in a way which pays careful attention to environmental considerations and improved aesthetics."

Mr Killen said the modernisation was long overdue. Existing wharf space was inadequate and extracted from the operational capacity of the Fleet and additionally the unsatisfactory condition of many other facilities created inefficiencies and resulted in poor working conditions.

A start would be made this year on urgently needed improvement to several berths at Garden Island. To this end tenders would be called during April-May for the extension of the East Dock Wharf to provide berthing space for ships of destroyer escort size.

In addition the NSW Premier, Mr Wran, had agreed to negotiate a lease of No 2 berth, Woolloomooloo, to Defence. This would alleviate congestion at Garden Island during the development programme.

Mr Killen said the design team, during the planning stages, would consult with acknowledged experts in the areas of aesthetic and environmental planning and in the retention of historical sites and buildings. Such consultations would include the NSW State Planning and Environmental Authority, the Maritime Services Board, the Australian Heritage Commission and the National Trust of NSW. The team would also consult with the workforce, both in regard to functional and environmental aspects of the development.

One important objective of the modernisation plan would be to reduce noise and air pollution resulting from dockyard industrial activities. Some industrial activities had already been moved from Garden Island. The design team would investigate the possibility of transferring other activities away from the dockyard to recognised industrial areas in Sydney.

This study revealed that relocation costs, including the costs of establishing an adequate support infrastructure required for the Naval dockyard and Fleet Base, would be many times the cost of rebuilding or rehabilitating existing facilities.

That Government, he said, had concluded it was not desirable to divert money and resources from other areas of national development and consequently Garden Island should be modernised. The present Government had endorsed this policy.

Mr Killen said it was expected the design team would submit initial proposals for Government consideration about December of this year, and the final report by June 1978.
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THE NAVY

Federal President’s Notes

INTERNATIONAL CONFERENCE OF NAVY LEAGUES

DEFENCE CUTS?

Media reports indicate that the Defence Department will not escape attention as the Federal Government pursues its objective of reducing government spending.

Few people would doubt that ways to economise could be found within the Department but it will require a resolute Minister with all the support he can muster to ensure that the equipment programme and forward planning are not interrupted.

So far as the Navy is concerned, there is a minimum number of ships and facilities it must have if Australia is to retain a credible defence capacity. Sooner or later every item of equipment has to be paid for, and if we procrastinate now the taxpayer is likely to pay dearly for it in the future.

Hopefully, with a government committed to a realistic security force — and now faced with a real test of its capabilities — a proper sense of priorities will obtain.

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THE NAVY LEAGUE OF AUSTRALIA

MEET THE NAVY AND MEET THE NAVY LEAGUE

Two State Divisions recently organised functions to extend the League’s relations with the Navy, and to make the League better known in the community.

In Melbourne, executive members met with a number of officers from the Victorian Naval Command at an informal gathering in the home of League member Martin Clemens. The naval and League “teams” were led by NOC Victoria, Commodore Dacre Smyth, and Victorian President John Bird, respectively.

In Adelaide, Division President Bruce Grey and a small committee arranged what turned out to be a very lively “reception” in the home of NOC South Australia, Commander Phillip Mulcare, to which they invited a number of leading citizens. A very successful party had an equally successful outcome, as the Division acquired thirty or so new members!

It was a pleasure for me to attend both these functions, and most encouraging to observe the result of these exercises in communication.

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THE NAVY LEAGUE

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TS MERSEY'S 25ft Motor Cutter being launched on the unit slipway. A week later the cradle was removed and the boat placed on its moorings.

TASMANIA AROUND THE TASMANIAN DIVISION
Compiled by A. J. LEE

During late 1976 Tamar received a rebuilt whaler and Leven their repaired RNSA from HMAS Huon. Leven were also donated a surf-boat and are constructing a Mirror class dinghy. Marsay launched the 25ft motor cutter (see photograph) after overhaul and placed this welcome addition to it's fleet in service. Tamar has also received the damaged lifeboat from the Stralisman. This boat will require extensive repairs before it is in service. Leven have taken their whaler into the HQ for repairs and painting.

Burnie Unit (TS Ema) has commenced pouring the floor for the new headquarters and boathoused. The work is being done by unit officers and helpers. They are also manufacturing moudlds to make their own concrete bricks.

Ulverstone Unit, TS Leven, has been forced to abandon plans to build a headquarters on a new site and instead is raising money to renovate (and in some cases completely rebuild) their existing complex. The original building is believed to have been built early this century.

A view of the old Amenities Building being rebuilt into a two storey HQ by TS Ema at Burnie.

On 25 March a twenty-fifth Anniversary Dinner was held at TS Tamar's headquarters. A large gathering of present and past supporters gathered along with representatives of the Navy, Army, Air Force and the City Council. Tamar, which has just rounded off a good year by winning the State Colours and the Andrews Trophy, celebrated the occasion by presenting the Commanding Officer with a sword as a token of thanks for his twenty-four years' service. To follow this it was announced that Lieutenant Cleaver had been promoted to Lieutenant Commander (Cadets) and was presented with a pair of shoulder traps.

Cadets from Derwent visited a submarine and also stayed on board the HMAS Duchess whilst she was flagship for the Royal Hobart Regatta. Derwent cadets also visited the HMZS Taranaki and provided six cadets under the charge of First Lieutenant HMAS Huon as a slipping party when this vessel left port.

Cadets from Derwent and Tamar participated in Anzac Day ceremonies at New Norfolk (Derwent's band playing for the third year running), Hobart, Glenorchy and Beaconsfield.

Tamar has provided the guard and colour parties at Beaconsfield continuously since 1983.

TS York have been given the use of a house to convert into a temporary headquarters, by Comaico, for a year's trial at a nominal rental. This house will be used until enough funds are raised to build a permanent headquarters (approx $150,000 is needed).

York also provided a Guard of Honour for the State Conference of the RSL during May, 1977.

TS Marsay has had several weekend camps as have Emu and Leven. TS Leven's camp was a reward camp for those cadets who sold programmes at the Christmas carnivals.

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A view of the old Amenities Building being rebuilt into a two storey HQ by TS Ema at Burnie.
as a unit fund-raising drive. The cadets particularly enjoyed pulling the unit’s surf boat, finding it easier on the muscles in the tidal rip, than a whaler.

TS Mersey’s power boats are now on call for duty with the State Emergency Service.

Emu’s instructors are becoming quite proficient bricklayers as they continue working with bee’s on their new headquarters site.

News from TS Canberra
Compiled by
Lieutenant
F. J. Whetten

The ACT Unit of Naval Reserve Cadets (TS Canberra) was very much to the fore when the re-enactment of the landing of Captain Phillip and his party took place as part of the Canberra Australia Day Celebrations held on 31 December, 1976, on the shores of Lake Burley Griffin.

When I was first approached by the Australia Day Committee to take part I immediately accepted the invitation.

The unit is the proud owner of a 27 Montague Whaler and all people concerned thought that this boat would be ideal for the work which had to be done.

On the day, Captain Phillip and his party arrived by “ship” which anchored approximately 40 yards from the beach, our whaler, manned by cadets from TS Canberra then began the arduous task of ferrying the party ashore.

Six trips in all were made, each time the boat was loaded with passengers, Phillipp and his soldiers of course were landed first, thereafter the people then brought ashore included convicts, troopers, nurses, settlers, squatters, and even as far as three Merino sheep, sheep dog, and handler and MacArthur Onslow.

Needless to say the cadets worked very hard under the efficient control of Chief Instructor Lawley (coxswain) and Honorary Instructor Ian Nicholson (bowman).

When ferrying of passengers was completed the whaler’s crew was invited on board Captain Phillip’s “ship” for some well earned refreshments.

The job they had to do was difficult, but with cheerfulness it was carried out in a smart seaman-like manner and as Commanding Officer of the unit I am very proud of them all.

VICTORIA
Presentation of Navy League Colour

On Sunday, 14 November, 1976, the Navy League Colour was transferred to the Unit judged the best in Victoria for 1976 — TS Barwon — at a short and impressive ceremony at their headquarters on Eastern Beach, Geelong.

The Reviewing Officer was Commandant K. H. MacGowan, RAN, the Commanding Officer of HMAS Macquarie. He was accompanied by the Senior Officer Victorian Division NRC Commander (Cadets) Alan Smith.

A small contingent from TS Latrobe, the holders of the Colour in 1975, in the charge of their Commanding Officer, Lieutenant (Cadets) E. Clegg, travelled a long distance from their homes in the Latrobe Valley to Gippsland, Victoria, to take part in this significant and important annual event in this Division.

The ceremony was watched by a large number of people including leading citizens of Geelong, among whom was that city’s Mayor, parents, families and friends of the Cadets.

After the conclusion of the transfer of the Colour all visitors were made very welcome by the Commanding Officer of TS Barwon, Lieutenant (Cadets) R. J. Whittington, and the President (Mr D. J. McGrath) and members of the Barwon Unit Committee to their fine headquarters building on the foreshore of Eastern Beach for a most enjoyable and extremely well catered barbecue.

The Colour being paraded in ceremonial procedures.

First Trident Missile Launch Successful

The first flight model of the Trident missile successfully completed its planned flight of more than 4000 miles after being launched from Cape Canaveral January 18. This was the first in a series of test firings of the new long range missile.

The new missile will be capable of submerged firing from both the Poseidon and the new Trident Fleet Ballistic Missile (FBM) nuclear-powered submarines. Improved solid propellant, electronics and materials give the Trident missile much greater range than the currently deployed Poseidon missile. The Trident missile will carry a multiple, independently targeted re-entry vehicle (MIRV) warhead to a range of 4000 miles.

The missile is guided by a self-contained inertial guidance system, independent of external command and controls once it is launched. It is approximately 34 feet long and six feet in diameter and weighs in excess of 65,000 pounds.

The first submerged launch from a Trident submarine is planned for the summer of 1979.

Backfit of the Trident missile into Poseidon submarines will begin by financial year 1979. Modifications of Poseidon submarines to accommodate the change to Trident missiles can be accomplished alongside a tender.

Our representative snapped this meaningful photograph during the presentation of the Best Guard Trophy to TS MELBOURNE.

Back to top
Join the NAVAL RESERVE CADETS

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

The Naval Reserve Cadets are administered by the Australian Naval Board. The Naval Reserve Cadets provide for the spiritual, social and educational welfare of boys and to develop in them character, a sense of patriotism, self-reliance, citizenship and discipline. Uniforms are supplied free of charge.

Cadets are required to produce a certificate from their doctor to confirm they are capable of carrying out the normal duties and activities of the Cadet Corps. If injured while on duty, Cadets are considered for payment of compensation.

Parades are held on Saturday afternoon and certain Units hold an additional parade one night a week.

The interesting syllabus of training covers a wide sphere and includes seamanship, handling of boats under sail and power, navigation, physical training, rifle shooting, signalling, splicing of wire and ropes, general sporting activities and other varied subjects.

Instructional camps are arranged for Cadets and they are also given opportunities, wherever possible, to undertake training at sea in ships of the Royal Australian Navy. Cadets, if considering a sea career, are given every assistance to join the Royal Australian Navy, the Merchant Marine or the Royal Australian Naval Reserve, but there is no compulsion to join these Services.

Uniforms are supplied free of charge.

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

SENIOR OFFICERS, NAVAL RESERVE CADETS:

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

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

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

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

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

TASMANIA: Staff Office Cadets, HMAS Huon, Hobart, 7000.

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

ANNUAL GENERAL MEETING 1977

Notice is hereby given that the Annual Meeting of the Navy League of Australia, New South Wales Division, will be held on Monday, 29 August, 1977, at 5.30 pm, in the Conference Room, Second Floor, P & O Building, 55 Hunter Street, Sydney (access by way of Castlereagh Street entrance).

A warm invitation is extended to you to be present, and to bring a guest if you so desire.

BUSINESS

1. Apologies.


3. To receive the Committee's Annual Report — presented by the President, Lieutenant Commander E. Bryden-Brown, VDR, RANR.

4. To receive the Balance Sheet and Accounts — presented by Mr R. I. Rae, FCA, Honorary Treasurer.

5. A. Election of Executive Committee. The following gentlemen offer themselves for re-election: Lt Comdr E. Bryden-Brown, Mr D. P. Trickett, Rear Admiral G. J. B. Crabb, Mr. McCullagh, Commander R. A. Donovan, Commander R. O. Albert, Commander K. M. Adams, Mr A. R. Webster, Mr Malcolm Longstaff (further nominations will be received).


7. General Business. At the conclusion of Formal Business, refreshments will be served.

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Page Thirty THE NAVY May/June/July, 1977

Page Thirty-One THE NAVY May/June/July, 1977
With the placing of contracts worth a total of some £6 million, more of the Royal Navy's ships are to be equipped with the world's most advanced Integrated Communication System — the Marconi ICS3.

Under the terms of recent contracts placed by the Ministry of Defence Procurement Executive and with GEB-Marconi Electronics companies, ten systems are to be supplied to the Royal Navy. Marconi Communication Systems will be supplying the transmitting and receiving sub-systems and MSDS the distribution and supervisory sub-system. This follows Marconi's announcement in 1973 of the initial £7 million development and manufacturing order for ICS3. This latter marked the first occasion upon which industry had been given overall responsibility for both the design and production elements of a complete naval communication system.

ICS3 is an extremely versatile system for equipping newly built ships, and its manufacturing programme has been carefully synchronized with the naval ship-building programme. At the same time, it has been designed to be compatible with those earlier generations of ship's communication systems (ICS1 and ICS2) of which Marconi is a major supplier, and to provide a basis for the modernisation of existing systems.

Its superiority over previous generations of ship's communication systems lies in its versatility and its improved operational capabilities. Complete systems suitable for any class of major warship can be constructed from four sub-systems, each being designed to meet individual operational requirements. Each sub-system is, in the main, made up of identical units thus providing standardisation of operation, maintenance and training for all.

The four basic sub-systems of ICS3 are: hf/mt transmission, hf/mt reception, distribution and supervision, and automatic message processing. Each sub-system is designed to minimise the numbers and skills of the staff required for operation and support. Operator controls have been reduced to a minimum and simple operational test and checking facilities are provided. Onboard repair is by means of plug-in interchangeable sub-assemblies and periodic maintenance routines are virtually abolished. Thus ICS3 provides a high level of "circuit availability" and a low "mean-time to repair".

The telegraph sub-system, which is supplied by the MEL Equipment Company Limited is an automated message processing and handling sub-system which caters for all types of naval telegraph traffic and can be tailored, by virtue of its modular construction, to suit shipborne communication systems of varying size and complexity. It enables a significant reduction in the manning levels of the ship's communications office to be achieved even when operating under peak combat conditions.

Many sophisticated techniques and facilities are incorporated, including visual displays, integrated circuit and magnetic tape storage, automatic priority message routing and handling etc. significantly reducing message throughput and distribution times.

What kind of boat is fast enough, tough enough, economical enough and suitable for sustained, open-ocean enforcement? An evaluation of USCG Cutter Flagstaff (WPBH-1) proved the merits of hydrofoils in such missions as enforcement of laws and treaties, search and rescue, marine environmental protection and aids to navigation.

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