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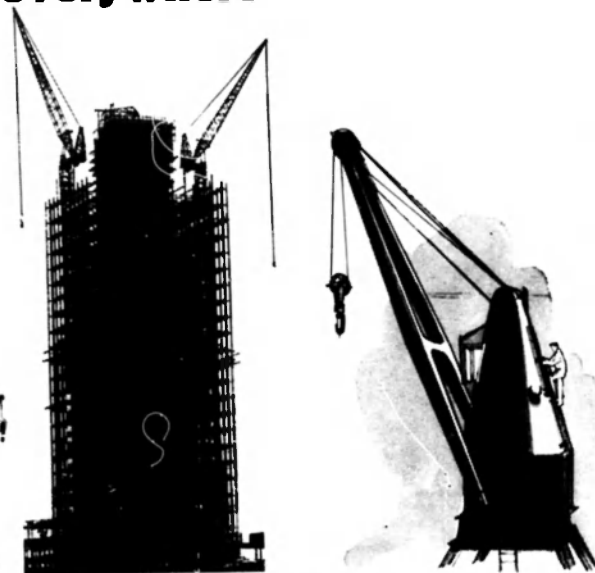
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# THE NAVY

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

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FEBRUARY-MARCH-APRIL, 1969

No. 1

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## — BOOK REVIEW —

### CARIBBEAN VAGABOND

By TOM CRICHTON

Publisher: Robert Hale Limited, London (our copy supplied by Hicks Smith & Sons Pty, Ltd, Sydney. Price \$3.25. 207 pages. Published: January, 1969.

Review by "IKARA"

When the yacht-chartering season came to an end in the Mediterranean, Tom Crichton set off across the Atlantic in his 50-foot yacht "Jack London" to try his luck in the West Indies. This book tells of his adventures on the way, his experiences in the West Indies, and the return journey across the Atlantic.

As a straight-out narrative the book is superb. The author's crew on the way over were an American would-be bullfighter, an English Divinity student and two hard drinking seamen—a Finn and a Dane. (The dust-jacket, incidentally, calls them "two rumbustious Swedes"). The adventures of this little band are faithfully recorded by the author.

When he arrived at St. Thomas, in the Virgin Islands, Crichton, after an initial set-to with officialdom, settled down to the business of chartering his yacht to the tourists. His descriptions of the various islands in the West Indies which he visited are first class, evoking in me a strong desire to visit all these places. (A lot of the places mentioned appear in the January issue of the "National Geographic").

Crichton's descriptions of some of his paying guests are very telling. His first charter was fairly disastrous; the charterers were a ghastly burlesque referred to as "The People from Sandusky". Other charterers were more likeable, and I am sure readers will be enchanted by the tale of the bibulous Mr. Thornton and the search for his misplaced motor cruiser.

I feel that the publishers have let Mr. Crichton down in their presentation of the book. For a start, the proofreading must have been rather slipshod, as there are too many spelling mistakes and

misprints. Again, the dustjacket notes appear to have been written by someone who had not read the book very thoroughly (perhaps this is to make sure that book reviewers actually read the book and do not just rely on the dustjacket).

However, this book can be recommended for its fascinating des-

criptions of the West Indies and of yachting generally. The author's acute observations of human beings in general and his fellow Americans in particular make the book a better than average travel or yachting book. One final thought—a map or two would add a lot of interest to a book such as this.

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### OUR COVER

Naval nursing sisters at H.M.A.S. Tarangau, Manus Island, check the weight of a native baby girl named Nicola, after the former Chief of Naval Staff, Vice Admiral Sir Alan McNicoll, K.B.E., C.B., G.M.

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## Nautical Notes from all Compass Points

By SONAR

### CANADA

#### Supply Management Course

The navies of ten countries were represented on a United States Naval Supply Management course which visited Canada late last year.

Course members included representatives from Thailand, Korea, Chile, Germany, Philippines, Canada, Ecuador, Turkey and Brazil.

Whilst in the Montreal area the group of senior naval officers visited the Naval Supply Depot, Man and His World and the College Militaire, Royal in St. Jean.

For a two day visit to Ottawa they were welcomed by Major-General F. D. Armour, Deputy Chief of Logistics, Canadian Forces, and attended briefings given by other senior officers from the headquarters.

At the Capital visits were made to the Canadian Forces Base Rockcliffe and the Aeronautical Museum.

The final two days of the tour were spent at C.F.B. Shearwater when the guests viewed facilities at H.M.C. Dockyard and other military installations in the Halifax area.

### PEOPLE'S REPUBLIC OF CHINA

#### Hydrofoil torpedo boats for Communists

The Navy of the People's Republic of China is reported to have a new class of hydrofoil torpedo boats designed and built in the country. Some 26 craft are believed to have been constructed since 1966. Particulars gleaned so far include a length of 73 ft. and a draught of 3.1 ft., and an armament of two 21-in. torpedo tubes and two 12.7 mm. guns. In Communist China they are known as the *Huchwan* class. One of this class is reported to have been transferred to the North Vietnam naval forces, but it is not known whether on a permanent or loan basis.

This class brings the total number of Chinese torpedo, gun and missile craft of the fast patrol boat type up to over 300 units.

#### Ballistic-missile submarine force?

According to the Indian Institute of Defence Studies the Chinese Navy has 24 long-range submarines capable of launching nuclear missiles. The Institute also states that China's naval strength, in addition to the submarines, consists of four destroyers, five destroyer-escorts, 11 frigates, 18 minesweepers and 35 patrol boats.

### FRANCE

#### Naval exhibition

France mounted a large scale naval exhibition last October. Two new types of fast patrol boats were shown with launchers for a new surface-to-surface missile, called the MM 38, Exocete, made by Nord Aviation.

The boats are obviously the French version of the Russian *Komar* and *Osa* class. The MM 38 incorporates a number of AS 30 Kormoran components; weighs 1,540 lbs. has automatic guidance and a range of 20 nautical miles. The missile rises initially to about 50 ft. then descends to 10 ft. and has a speed of Mach 1.

It would appear to be a great advance on the Russian *Styx* which is slow and travels at a considerable height. At only 10 ft. above the water a Mach 1 missile would appear to be almost immune to detection by radar, making it very difficult to shoot it down either by guns or anti-missile missiles. The only defence would be some form of radio countermeasures, but the problem will be to detect it in time to take any effective action of any sort.

If the missile will do all that is claimed for it, the French would seem to have hit on a real winner.

### Order for Nord 262s

Reports from France suggest that up to 39 Nord 262 turboprop transports may be ordered by the French Navy and Air Force. Two have recently been ordered by the Navy for crew training and personnel transports, and the Air Force is said to be negotiating for six for short range liaison operations. Navy planning, however, involves a total purchase of 15 Nord 262s to replace SO-30 Bretagnes and C-47s by 1970, and the Navy may also require another 18 of the type to replace C-47s now used for liaison duties. The Turbomeca Bastan 6 engines powering initial military deliveries will later be replaced by Bastan 7s.

### INDIA

#### 'Creepers' acquired from Soviet Union

Considering that India is still in the Commonwealth she is pretty cagey about her recent acquisitions from the Soviet Union. There was a time when all her warships were either former ships of the Royal Navy or British-built, but now that she has gone shopping elsewhere for her naval hardware she is keeping her light under a bushel.

According to a recent report which reached this column two escort ships of the Soviet *Petya* class were transferred in the summer from the U.S.S.R. for incorporation in the Indian Navy. These little flush-deckers have such a squat funnel, such a comparative lack of superstructure, and such a low-lying silhouette in general that they are said to be able to creep up over the horizon or through any sort of white-horse seas without attracting too much attention. But, as they are reputed to be capable of doing 30 knots, perhaps 'creep' is not the right word. Even at this speed, however, their reported engine power seems a bit high. They are said to have two diesels of 8,000 h.p. and two gas turbines of 15,000 h.p. each, with two shafts. (Photo next page).

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These handy little escorts or mini-frigates are believed to displace 1,050 tons standard and 1,200 tons full load with an overall length of 262 ft. and a beam of 32 ft. For their size they are fairly well armed with four 3-in. (76 mm.) guns in two gunhouses, one forward and one aft, four 16-barrel anti-submarine rocket launchers, two abreast before the bridge and two abreast abaft the after turret, and five 21-in. torpedo tubes in a quintuple bank abaft the exhaust vent or funnel. They were designed with a view to fitting two mine-rails and have a minelaying stern configuration. They do not look very expensive, although they appear to have all it takes for in and out defensive and offensive warfare. One cannot help thinking that at least one NATO navy could do with ships like this; modified, of course, to national characteristics and conditions. (Photo below).

### ITALY

#### Maritime aircraft

Italy has been evaluating three new types of long-range maritime aircraft, the Breguet Atlantic, the Lockheed Orion and the Hawker Siddeley Nimrod. Late last year an order was placed for 18 Breguet Atlantic A.S.W. aircraft and deliveries are scheduled to start in 1970. Price per unit has been stated to be \$3,200,000.

Italy at present uses Grumman S2 Trackers, whose range is limited. The advent of the Atlantic will mean that Italy could cover very nearly the whole of the Mediterranean.

NATO is pressing hard for increased maritime surveillance of the Mediterranean and it will be re-

membered that Britain has agreed to station a squadron of Shackletons in Malta for this purpose.

### JAPAN

#### Plessey sonar

The Plessey Electronics Group is to supply two high-definition sonar equipments to the Japanese Navy. The equipment, designed by the Admiralty Underwater Weapons Establishment, and manufactured at Plessey's Marine Systems Division, forms the core of a successful British minehunting system. Picture (below) shows the operations room for the sonar system being supplied.



Also from Plessey comes news of the successful trials and widespread adoption of their Plessey-Sippican Expendable Bathythermograph system (X.B.T.). Primarily for use in anti-submarine operations, the X.B.T. enables a ship to obtain accurate and continuous temperature-versus-depth recordings without having to reduce speed or stop. A complete temperature record down to depths of 1,500 feet can now be made in less than 90 seconds at speeds of up to 30 knots.

### MALAYSIA

#### Exercise "Fortex 69"

Thirteen Royal Malaysian Navy ships participated with vessels of the British, Australian and New Zealand navies in exercises in the Straits of Malacca during January and February.

Organised by the British Commander of the Far East Fleet, the exercise was held in the Northern half of the Straits and involved a total of 40 ships.

The aim of the operation was to exercise the ships of the four navies in all aspects of maritime and amphibious warfare.

Prior to exercise Fortex 69, ships of the Royal Malaysian Navy, Royal Thai Navy and the Royal Navy carried out mine-sweeping exercises (sponsored by the Royal Thai Navy) off Phuket in Thailand.

### N.A.T.O.

#### New Naval Command — MARAIMED

Co-ordination of activities of British, American and Italian land-based maritime patrol aircraft in maintaining and extending surveillance of the Mediterranean sea is the main function of a new NATO naval command MARAIMED, which was set up at Naples late in 1968. Background of the NATO decision is the increasing deployment of Soviet warships in the area, the latest estimate of which lists one helicopter carrier, one cruiser, eight or ten destroyers, about an equal number of submarines, and various types equipped for intelligence missions. The U.S.N. already has a maritime reconnaissance command at Naples, known as COMUSFAIRWING, equipped with Orions



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and Neptunes, and the U.K. uses two photo-reconnaissance Canberra squadrons based at Malta. Britain has agreed to assign a squadron of Shackletons to MARAIRMED early this year, replacing them later with its new jet Nimrod type. Italy will later have Breguet Atlantics to assign to this role.

### Exercise 'Eden Apple'

With the focus so much on the Russian fleet in the Mediterranean these days, it seems unfortunate that the large NATO exercise 'Eden Apple' recently carried out in that area did not receive more publicity. There do not appear to have been any press representatives embarked. Indeed, a television team which went out specially to cover the exercise returned empty handed.

The exercise, which had been planned for some time and was not laid on because of the recent Russian moves in the Med., took place from 5th to 20th November. It was conducted by Admiral L. Sotgiu (COMNAVSOUTH), from his headquarters in Malta.

Forces taking part were drawn from the British, French, U.S., Italian and Greek navies together with a number of shore-based maritime patrol aircraft provided principally by the French. The R.N.'s contribution included two guided-

missile destroyers, two destroyers, eight frigates, four patrol submarines and five R.F.As. In addition, Buccaneers, Sea Vixens and Gannets from *Eagle*, who is refitting, were deployed to Malta and Sardinia and carried out strikes and air-defence missions.

Amongst the French ships taking part were the aircraft carrier *Foch* and the cruiser *Colbert*. In all there were more than 50 warships.

The exercise was divided into three phases:

- (a) 5th to 9th November. Working-up.
- (b) 10th to 16th November. Tactical.
- (c) 16th to 20th November. Assembly and wash-up at Naples.

During the working-up period the forces were divided into two. British, French and Italian surface ships, including the *Foch*, tested procedures for air defence, replenishment at sea and anti-submarine warfare operating south of Toulon. The 'enemy' submarines were provided by the U.S., British and French; French Atlantic maritime aircraft carried out ASW patrols. All forces were under the overall command of Vice-Admiral de Seitiavauk de Greische, the French C-in-C Med. in Toulon.

The second group operated east of Malta under the command of Vice-Admiral A. M. Lewis flying his flag in H.M.S. *Hampshire*. It consisted of ships from the British, French, Greek and Italian navies; it carried out surface and air gunnery exercises, including the bombardment of the rock of Filfola, the well known gunnery target off Malta.

During the second phase, the NATO fleet continued to work in groups and both groups were attacked by *Eagle*'s Buccaneers from Sardinia and Malta, and Canberras from Malta.

A mock amphibious task force was formed and crossed the central Mediterranean to south of Greece, near Kithera, where it was attacked by Greek F.P.Bs.

Another group of ships simulated a convoy passing through the Sicilian Straits and was heavily attacked from the air and by submarines.

For once the usual Russian snoopers seem to have been conspicuous only by their absence, a highly unusual occurrence.

Most of the ships taking part rendezvoused on completion at Naples and Gaeta on 16th November and a 'wash-up' was held at the NATO headquarters of C-in-C South at Bagnoli.

NATO occasion at Naples. Admiral Sir John Bush (Allied Commander-in-Chief, Channel, and Eastern Atlantic) last November visited the Commander-in-Chief, Allied Forces, Southern Europe. Admiral Horacio Rivero, who is seen here (right) introducing Italian Admiral Luciano Sotgiu, Commander, Naval Forces, under his overall command.





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## SWEDEN

### Swedes Build Underground Base

Stockholm's new naval base, on the island of Musko in the capital's southern archipelago, will be inaugurated in the autumn of 1969, it was announced last week.

The \$60,000,000 project includes a complex system of docks, depots, workshops and offices blasted out of the solid granite to form a self-contained, nuclear bomb proof base for a staff of 1,250 military and civil personnel.

While few facts have so far been released about the size and design of this base, which is claimed to be one of the best-equipped and safest of its kind in the world, it is understood that it has accommodation for underground basing and overhaul of a wide range of ships, including destroyers, submarines and torpedo boats. About a million cubic metres of rock have been blasted away to make adequately-sized funnels and other service facilities.

For communications with the mainland, the military authorities have built a three-kilometer underwater tunnel, which was opened for traffic a few years ago.



NEW BRITISH FAST PATROL BOAT IS FAST AND HARD-HITTING

A new fast patrol boat — more powerfully armed than any other vessel of its size — has been designed by a British Company. It will be more effective at a greatly increased range, with better sea keeping abilities and longer endurance, and will be on trials early in the summer of 1969. With an overall length of 142 feet and top speed of about 40 knots, the boat is available in both Rolls-Royce gas turbine and diesel engine versions. Armament includes modern, highly accurate light guns and 5 guided missiles both controlled by equipment which incorporates search and tracking radar for operating them separately or simultaneously by day or night. These weapons make the boat effective against both aircraft and major fleet units. The steel hull is basically a round bilge form, with a spray deflecting chine extending from forward to aft of amidships, and a flat run aft. The superstructure is of aluminium alloy and the displacement of the craft is about 200 tons. Accommodation can vary according to the power fitted, but each arrangement provides for a captain and two or three other officers, 4-6 petty officers and 20-24 junior ratings.

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## First Type 42 ordered

The first of the Type-42 guided-missile destroyers was ordered from Vickers, Barrow-in-Furness, on 14th November.

This class was foreshadowed in the 1967 Supplementary Statement on Defence Policy and is a smaller version of the original Type 82 design, of which only one ship, H.M.S. *Bristol*, has been ordered. The Type-42 will have Seadart surface-to-air missiles—as will the *Bristol*—but will substitute a helicopter for the Ikara anti-submarine system.

The ship will be a fast, all-gas-turbine ship with the principal task of providing air defence for the fleet. In addition she will have useful anti-submarine and surface gunnery armament and will be able to perform the wide range of normal peace-time duties required by warships.

The Seadart will be fired from an improved type launcher, forward of the bridge. Further forward will be a new type of 4.5-in. gun, with a high automatic rate of fire. Both Seadart and the gun will be linked to two tracker-illuminator radars and a controlling computer. Normal air surveillance radar will also be carried.

The helicopter will be the new Anglo-French WG13, a twin-engined machine which is being developed jointly by Sud Aviation and Westland. It will carry an air-to-surface weapon for use against lightly defended surface ship targets, such as fast patrol boats. The WG13 will be larger than the single-engined Wasp now carried by most frigates in the R.N.

The main propulsion will be provided by flexible gas turbines: Rolls-Royce Olympus engines providing full power for high speeds, and the smaller Tyne engines being used for cruising. The twin screws will have reversible pitch for manoeuvring. Accommodation is being provided for a crew of 300, though the planned complement—thanks to intense study of this aspect—will be very much fewer than this.

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An artist's rendering of the nuclear-powered guided missile frigate DLGN-36

### **LIDAR**

Britain has developed an early warning device for the detection of chemical or biological attack. Known as LIDAR, it operates in conjunction with early warning radar and utilises a ruby laser beam which projects its light on to any radar-detected aircraft to reflect from any chemical or biological cloud emitted by the evading aircraft. This development, still in the experimental stage, but showing

"distinct possibilities", was disclosed for the first time late in October at an "open day" held at the U.K. micro-biological station at Porton. It is explained that though the minute droplets of such a cloud are too small to reflect a radar beam, the much shorter wave length of a laser beam satisfactorily reflects its light from them, to be collected by a Newtonian telescope and focused on a photo-electric cell which works on oscillograph. Differentiation between the two types of cloud

—chemical or biological—is not yet possible, but the wearing of similar protective clothing and respirators is now the accepted guard against both types of attack.

### **U.S.A.**

#### **Submarines' future role**

The U.S. Navy is giving serious consideration to the future role of the submarine. General Dynamics has been given a study contract to investigate the future of the nuclear powered attack submarine. The study is to cover both the design and system engineering aspects and its operational use.

The U.S. Navy is at present limited to a maximum of 69 attack submarines and both the Navy and Congress have expressed concern as to whether this number is sufficient for the long term future. At present only 33 of the U.S. attack submarines are nuclear propelled.

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JUNGLE RESCUE

### Jungle Rescue

This new jungle penetrating rescue device has a five-foot umbrella that pops out to protect two men from the jungle foliage during hoisting. The 21-foot long shield is lowered from rescue helicopters to retrieve downed airmen. It is scheduled for delivery to the Fleet this year.

### F-14 Fighter

U.S. Navy was expected earlier this year to make a decision between Grumman Aircraft Engineering Corporation and McDonnell Douglas as the selected prime

contractor to develop the F-14 long range supersonic naval fighter (formerly the VFX-1), which is designed to replace the cancelled naval version of the F-111, and expected to enter production about 1973. It will incorporate the powerplant, advanced navigational and other systems of the abandoned F-111B, and carry the Phoenix missile system also designed for it.

### Navy Plans Mile-deep Laboratory

A conceptual contract has been awarded to the Electric Boat Division of General Dynamics Corpora-

tion for the development of a manned underwater station a mile beneath the ocean surface.

The Naval Civil Engineering Laboratory (NCEL) scientific station will provide a shirtsleeve environment for five scientists at depths of more than 1,700 meters in the open ocean. It will be an operating platform from which scientists can accomplish work on the bottom and in the water column.

The station will be composed of two vertical cylinders resulting in a vehicle 12 meters long, 14 meters high, and 8.6 meters wide. One of the cylinders will house a power plant using an umbilical cable to the shore or surface. The scientists will live and work in the other cylinder.

Laboratory space will be provided on two decks, and a third deck will be used for berthing and living quarters. A fourth deck is provided for station operation and control.

From the station, scientists will be able to observe undersea environments either directly through viewports or indirectly by closed circuit television. They will be able to collect samples with a manipulator and bring them into the station's pressure envelope through a lock-in/lock-out system.

In use, the station will be positively buoyant and tethered from an anchor. All equipment that could become entangled will be jettisonable. Additional droppable ballast also is incorporated in the design. A connecting sphere between the two hulls will provide an escape trunk feature similar to that used on modern submarines.

The manned underwater station project is tied in with other ocean engineering operations concerned with ocean exploitation. For example, the Deep Submergence Rescue Vehicle being developed and built for submarine rescue operations can be mated to the station.

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### CODOG gearboxes for U.S.N.



The Gear Products Department of API Turbine-Generators Ltd. has completed works-testing at Rugby of the first of 11 sets of propulsion gearing for U.S. Navy P.G.M. class patrol boats. Our picture (above) shows the single reduction primary gearbox. This divides the input from a single 13,500 h.p. gas turbine between two output shafts which provide the input drive to the port and starboard secondary gearboxes. The ratio is 5,500/2,400 r.p.m. The diesel drive is taken to its own pinion in each secondary gearbox. S.S.S. clutches at both turbine and diesel inputs to the secondary gearbox provide automatic transfer of drive from one power source to the other.

### Poseidon

Second test launch of a Lockheed Poseidon long range ballistic missile — the multi-warhead nuclear F.B.M. planned to replace Polaris missiles in 31 of the U.S.N.'s submarines from early in the 1970s — was carried out by the Navy from Cape Kennedy in late November, three months after the first test launching. The two-stage, solid-fuel missile, measuring 34 ft. long x 6 ft. diameter, was ramp-launched to splash down in an Atlantic Ocean target area, but results of the test were not announced. Sixteen of the missiles will be carried in each submarine, and the 3 ft. greater length and 1.5 ft. bigger diameter of the Poseidon will require modifications in the submarines to carry it. Each warhead can be individually targeted, with greater accuracy than the Polaris system permits.

### Deepest Diver



The USS DOLPHIN (AOSS-555), launched at Portsmouth, N.H., on June 8, 1968, is the world's deepest diving operational submarine. The ship is 150 feet long, has a beam of 18 feet, displaces 900 tons and can carry 12 tons of oceanographic equipment. Capable of operating without the support of a mother ship, the DOLPHIN will be used for development and test of naval equipment and basic oceanographic research.

### Navy Develops 'Dog Fight' Missile

Control and propulsion sub-systems for the Navy's short-range, air-to-air, "dog fight" missile are being developed in-house, while an all-aspect infrared seeker is under study at Hughes Aircraft. The

"dog fight" missile is comparable to the AIM-82 short-range missile (SRM). Air Force plans to begin studies on this summer. Both missiles are intended for use at ranges of between 1,000 feet and two miles. They would replace either the Sidewinder or Falcon heat-seeking missiles now in the inventory.

### A.S.W. Trainer



This ASW student bottle simulator, patterned after the attack centre on destroyers, brings together in a tactical situation information from sonar and radar to create a realistic situation. The \$2.4 million device sets up two target submarines and a U.S. destroyer equipped with ASROC missiles, supported by two other destroyers or cruisers and three fixed-wing or helicopter aircraft.

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### U.S.S.R.

#### Ship-to-ship missiles

Considerable publicity has recently been given to the Russian Shaddock and Strela ship-to-ship cruise missiles. The former is reported to have a range of 300 miles and the latter 100 miles.

Whilst it is known that the *Kresta* and *Kynda* class of large guided-missile destroyers are fitted with Shaddock, and the smaller *Krupny* and *Kildin* class with Strela, it is not absolutely certain that they are intended for use against ships: they might equally be intended for bombardment.

It is difficult to see how a 300-mile missile could be aimed against a ship target, unless the latter were known to be entirely on its own. The missile's homing device, whether radar or infra-red, would find it difficult to select the right target after a 300-mile journey.

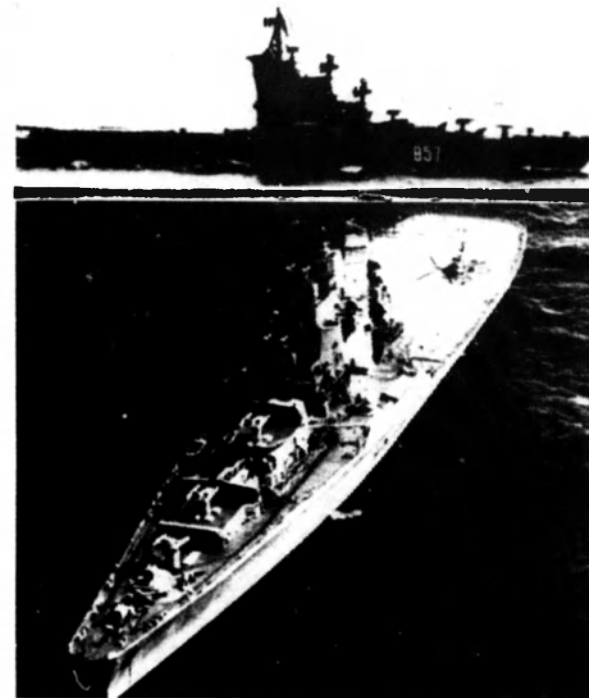
It would seem more probable that an aircraft would be used to guide the missile in the final stages of its flight: in which case it would have to sit somewhere in sight of its target and probably maintain a fairly steady course. This again seems unlikely as it would be so vulnerable to the target's anti-aircraft armament or to fighters.

The Soviet missiles do not appear to be very fast and, as they will have to fly high, will be easily detectable by radar and a sitting duck for ECM or ship-to-air missiles.

It is difficult, therefore, to see exactly how the Russians intend to use these expensive weapons.

#### Helicopter Carrier?

A number of photographs have now been published of the latest Russian ship to appear in the Mediterranean—the *Moskva* (Moscow). The ship gives the appearance of a cruiser with a large flight deck



The Cruiser Helicopter Carrier "MOSKVA".

abaft the funnel, probably quite large enough to take VTOL aircraft and, although one photograph showed a helicopter on deck, it seems likely that the ship was designed with VTOL aircraft in mind.

The ship has two, 12 barrel anti-submarine missile launchers forward, probably to launch Goa ship-to-air missiles, and a further

missile launcher of a slightly different type right forward. The latter could well be for some form of rocket-propelled depth-charge or torpedo, rather like the Australian *Ikara*, particularly as it has been reported that the ship was designed as an anti-submarine vessel.

Four guns, perhaps 3-inch, rest in twin mounts on the O1 level.

## CONTRIBUTIONS INVITED

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

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

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## EIRE

### Is It Goodbye to the Irish Navy?

Of the three small frigates or corvettes in the Irish Navy, *Maev* (ex-H.M.S. *Oxlip*) has been taken out of commission and placed in a state of preservation, and her two sister ships, *Cliona* (ex-H.M.S. *Bellwort*) and *Macha* (ex-H.M.S. *Borage*), have been largely disarmed, refitted and relegated to fishery protection duties. Each of the two latter has lost her two-pounder gun, two 20 mm. Oerlikon anti-aircraft guns, 'Hedgehog' multiple anti-submarine mortar and depth charges.

This is not very surprising, since these former corvettes of the Royal Navy (re-rated as frigates after the war) were of the well-known 'Flower' class hurriedly designed on the outbreak of the Second World War, having been laid down in 1940, launched in 1941 and completed in 1941-42, and could fairly be described as somewhat ancient. A span of 26 to 27 years is fair enough for ships of this type. *Maev* was built by A. & J. Inglis Ltd., Pointhouse, Glasgow, and *Cliona* and *Macha* by George Brown & Co. (Marine) Ltd., Greenock.

Of 1,020 tons standard and 1,280 tons full load displacement, all three ships were also armed with 4-in. guns in addition to the other

weapons mentioned above. Their propelling machinery comprises two boilers and triple-expansion steam reciprocating engines originally designed for a speed of 16 knots, but the best sea speed in latter years was about 14 knots and it is understood that none of them can now make more than a bare 10 knots. Their normal complement in full commission was 78 officers and ratings.

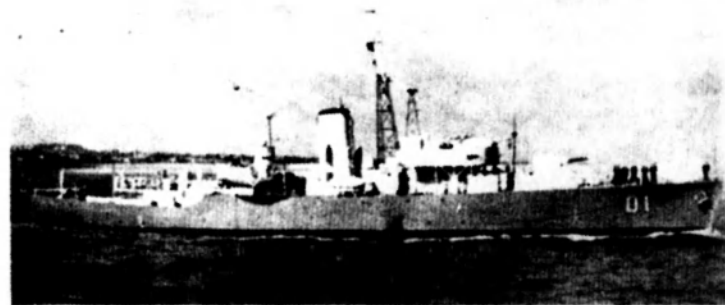
This laying up and demilitarization of the 'Flower' class virtually spells goodbye to the Irish Navy, for apart from these three old corvettes there are only three small tenders used as service craft, ferries and general utility, namely the *John Adams*, of 94 tons gross, launched in 1934, *General McHardy*, of 100 tons gross, launched in 1928; and *Wyndham*, of 93 tons gross, launched as long ago as 1903. The last is non-operational and quotations for the purchase of this vessel have been invited.

A few years ago the Irish Naval Service comprised three frigates, five motor torpedo boats and three other naval vessels, but the MTBs, numbered M1, M2, M3, M4 and M5, all built by John I. Thornycroft & Co. Ltd., Southampton, with a dis-

placement of 32 tons, an armament of two 21-in. torpedoes, two anti-aircraft machine guns and depth charges, and a speed of 40 knots, were discarded one by one.

The name of the Commanding Officer of the Irish Naval Service, a Captain, appears right at the bottom of the Irish list of Principal Military Appointments including two generals and 15 colonels, which is not surprising as his command at present appears to be very thin.

The formerly important naval base at Hawkbowl Island off Queenstown in Cork Harbour, which has two large dry docks, now derelict, but built to take big British battleships, and which in more halcyon days used to cater for a large squadron of the Royal Navy, is now a collection of practically empty or thinly stored buildings. And with the preservation, reclassification or sale of the naval ships it looks very much like approaching finis for the Irish Navy. Ireland would, no doubt, be the last to admit that the naval defence of Ireland now devolves upon the Royal Navy, but that is what it boils down to, for the defence of the British Isles, necessarily, logically and integrally, includes them all.



The Irish Navy's MACHA which has been largely disarmed, refitted and relegated to fishery protection duties.

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## **"The Cruise of the Emden"**

(JULY — OCTOBER, 1914)

By the Governor General of Australia, His Excellency the Rt. Hon. Lord Casey, G.C.M.G., C.H., D.S.O., M.C. K.St.J.

His Excellency was an officer of the First Contingent, Australian Imperial Forces, on board the Australian troopship ORVIETO, bound for Port Said.

After the now historic battle between the EMDEN and H.M.A.S. SYDNEY, the captain of EMDEN and a number of his officers were transferred to the ORVIETO, for transport to Suez or Port Said as prisoners of war.

His Excellency, being one of the few officers on board the ORVIETO speaking a little German, was put in charge of the prisoners. During this time, he had considerable opportunity to discuss their recent and very successful raiding cruise in the Bay of Bengal and elsewhere.

This account of the cruise of the *Emden* is gathered from the translation of a private diary in short-hand belonging to a Petty Officer who, in the capacity of Signaller, was on the bridge of the *Emden* throughout her three months raiding. The bald facts set down in his diary have been supplemented by conversation with those officers and men of the *Emden* who were conveyed as prisoners of war from Colombo to Port Said on the Australian troopship A3.

Until 28 July the *Emden* lay in Tsingtau harbour, the naval base of the German Navy in the East and the Capital of the State of Kiaochau. She was a light armoured cruiser of about 3,500 tons displacement, carried ten 4.1 inch guns and two 18 inch torpedo tubes, and was painted a light grey colour. She had three funnels and two masts, and was described by those who saw her as "a very pretty little ship". Her speed was 23-25 knots.

On 28 July 1914, the Captain of the *Emden* received orders from the German Government in Kiaochau to clear for action. On this date it will be remembered, affairs in Europe were in a very unsettled condition but a state of war had not yet been declared between Germany and any other nation. On the following day news came to Tsingtau by cable saying that war had been declared between Austria and Serbia and that Russia had started mobilising her troops on the German border.

This news was read in Tsingtau as indicating the thin end of the wedge which would split Europe into two camps, and accordingly on

31 July at dusk the *Emden* put out to sea, having taken on board her full supply of food, ammunition and coal.

She steamed out of harbour with all lights out and her war guard posted, and for three days steamed between Nagasaki and Shanghai, keeping out of sight of vessels of all sorts in the endeavour to keep her position unknown. She was waiting for definite news by wireless from her base, of war declared between Germany and Russia. This arrived on the morning of 3rd August, and with it the news that France was mobilising and that England would probably be drawn into the conflict.

On 4 August, the *Emden* sailed through the Straits of Korea into the Sea of Japan passing Nagasaki and the island of Tsusuna just off the Japanese coast. Several steamers were seen on the horizon but as her objective at the moment was the Russian cruiser *Askold* she did not interfere with merchant shipping—but on the other hand tried to keep her identity hidden.

The *Askold* had been lying in Shanghai harbour previous to the outbreak of war, but the Captain of the *Emden* concluded that she would now make for the Russian port of Vladivostock.

After waiting for several hours in the track which the *Askold* would probably take—and seeing no signs of any warship, the *Emden* steamed south, passing between the Island of Tsusuna and the mainland of Japan. Here smoke was seen on the horizon and it was evident that some vessel was bound for Vladivostock. The *Emden* gave

chase whereupon the strange vessel made straight for land.

Gradually gaining on her, the *Emden* fired blank ammunition when at a range of about 3½ miles in hopes of stopping her. The steamer however, believed the *Emden* to be a small gunboat of inferior speed, and kept on her course. The *Emden* now closed in to 1½ miles and fired a dozen shots across her bows and, on seeing the shells fall in the water, the steamer stopped and was eventually boarded by an armed party consisting of an officer and ten men.

The boat turned out to be the *Rjasan*, a Russian auxiliary cruiser but she had not yet been fitted with her guns and carried no ammunition, and moreover carried mails consigned to Vladivostock. The boarding party remained on board as a prize crew and took the vessel to Tsingtau, all lights being extinguished on the voyage.

On 5 August, whilst on her way to port, accompanied by her prize, the *Emden* received wireless news that "England had declared war on Germany" (sic). She replied to Tsingtau that she was returning and instructed the forts that she would arrive at 4 a.m. next day accompanied by another ship and that she was to be allowed to pass into the harbour.

She arrived at the appointed time on 6 August and leaving the *Rjasan* lying at anchor in the harbour, the *Emden* went alongside the pier where she was again coaled and provisioned to her full capacity.

At 7 p.m. on the same day she again put to sea accompanied by

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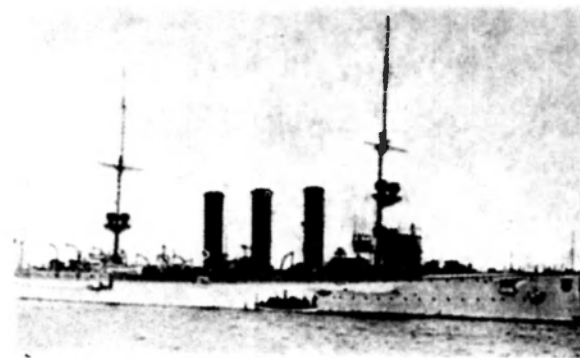
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the German collier *Marcomannia* carrying 6,000 tons of coal and a large store of provisions. The collier carried a crew of 48 officers and men and had a speed of ten knots.

From now onwards throughout her three months cruise the *Emden* showed no lights at night and seldom exceeded an average speed of ten knots.

From 7 to 12 August the *Emden* cruised round the China and Japan Seas. She held up the Japanese mail steamer bound from Hong Kong to Nagasaki but released her as war had not been declared with Japan.

She now commenced her journey southward to the Indian Ocean, a stop being made at the Marianne Islands where she coaled for the first time from her own collier. She then continued southwards arriving at the Island of Arigaur on the morning of the 13th, where she again coaled and set out for Timor.

Their object at this stage was to keep concealed and reach the Bay of Bengal without it being known that a German cruiser was in the vicinity.

This circuitous route via Timor was taken to avoid the British China Squadron in the China Sea and also to avoid the possibility of being seen going through the Malay Straits.

Timor was reached on 24 August. Here she again coaled and sailed westward the same evening through the Flores Sea where on the 1st

September she held up the Dutch steamer *Tromp*. Being a neutral vessel she was allowed to go, and the *Emden* carried on through the Lombok Straits between some islands off the coast of Java. She now passed well to the south of Java in order to avoid all shipping, as neutral vessels when set free would convey the news of her whereabouts to the nearest port.

On reaching the northern shores of Sumatra she closed in to land and coaled from the *Marcomannia* in smooth water.

From here on 6 September she sailed straight into the Bay of Bengal to start her crusade against merchant shipping, starting on the trade route between Colombo and Calcutta, some 250 miles to the South East of Madras.

It must be remembered that up till this moment there was no indication of any hostile vessel being in these seas. And moreover a notice had been issued by the Indian Government to the effect that the Bay of Bengal was clear of the enemy's ships.

For this reason no merchant vessel when ordered to halt by the *Emden* made any attempt to escape, thinking presumably that she was some British cruiser and that the quickest way of being allowed to continue on her course was to heave to and be examined. When within 600 or 700 yards the German flag was invariably hoisted, it being too

late then to make any attempt at escape.

The first boat captured was the Greek steamer *Pontoporos* from Calcutta, which had coal on board for British firms. Six men boarded her and she was made to accompany the *Emden*, but was subsequently lost, being believed to have been retaken by a British cruiser.

On the same day (10 September) the British steamer *Indus* was captured. She had been fitted up for the transportation of Indian troops.

Her crew were given opportunity of taking off all their personal gear and were transferred to the collier. Five shots were now put into the *Indus* making a large rent in her water line and she turned over on her side and sank.

Still keeping to the trade route in a northerly direction the British steamer *Lovat* was met with on the 11 September.

She had been also intended for the transport of troops and horses. She was treated in the same way as the *Indus* and her crew put aboard the collier.

On 12 September they met the British steamer *Kubinga* bound from Calcutta to New York with general merchandise consigned to American firms. On this account she was made to accompany the *Emden* in the same way as the *Pontoporos*.

It was the custom of the Captain of the *Emden* to place a prize crew of an officer and ten men on all vessels which were captured but which for some reason it was thought inadvisable to sink. This prize crew always contained at least one engineer.

On the same day (11 September) the British steamer *Killin* was captured bound for Calcutta with a full cargo of iron. She was sunk in the usual manner and her crew transferred to the collier.

On the 13th whilst still steaming northwards in company with the *Marcomannia*, the *Pontoporos* and the *Kubinga*, the British steamer *Diplomat* was sighted. She had on board a cargo of tea from Calcutta bound for England.



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Her crew were transferred to the *Kabinga* and the vessel was sunk.

It was now decided to transfer the crews of the *Indus* and *Killin* from the collier on to the *Kabinga*, presumably with the idea of despatching this vessel to the nearest port as the collier was becoming uncomfortably crowded and was a drag on the movements of the *Emden*.

The operation of transferring the crews was interrupted by the appearance of another vessel on the horizon. The *Emden* made off to intercept her and on finding her to be the Italian steamer *Loredano* brought her back to the scene of operations and asked her if she would undertake to take off all the crews which had now been collected on the *Kabinga* and transfer them to the nearest port.

The *Loredano* refused to do this and the Captain of the *Emden* was obliged to release her. As the *Loredano* was bound for Calcutta it was now realised that only a very short time would elapse before the news of the *Emden's* presence would be announced all over the Bay of Bengal. They afterwards read in Indian newspapers taken from captured steamers that on arriving at the mouth of the Ganges the pilot was informed of the presence of the hostile cruiser, and he, in turn, informed the Light Ship which sent on the news to Calcutta.

This was the first intimation at the ports of the cruiser's presence in the Bay.

As stated above the *Diplomat* was sunk on the night of 13 September in a position about 300 miles south of Calcutta. After despatching her another light was seen on the horizon.

The *Emden* asked her who she was by means of Morse signalling with a lamp at the masthead. Reply came that she was the Italian steamer *Dandolo*—and the *Emden* bade her goodnight.

On the 14th the Captain decided that his best method of evading pursuit was to adopt the unexpected course of steaming northwards towards Calcutta, and this was done still in company with the collier, the *Pontoporus* and the *Kabinga*, to a point about 150 miles south of Calcutta.

Here they got the British steamer *Traboch*, a small unloaded freight steamer. Her crew were put aboard the *Kabinga* and the vessel sunk in the ordinary way.

The *Kabinga* now having the crews of four vessels on board besides her own, was sent off to Calcutta, the assembled crews giving the *Emden* three cheers as she sailed off.

On the same evening the *Clan Matheson* was captured. She was from England bound for Calcutta and carried a valuable cargo amongst which were several motor cars, various articles of machinery and a racehorse. The horse was shot, the crew transferred to the collier and the vessel sunk.

On the 15th, *Emden*, still keeping her northward course, steamed to within 40 miles of Calcutta and then, altering her course sailed South East in the direction of Rangoon.

On the 18th, the Norwegian steamer *Dove* was held up, and the Captain given \$100 (Mexican dollars current in Tsingtau) to transfer the crew of the *Clan Matheson* to Rangoon.

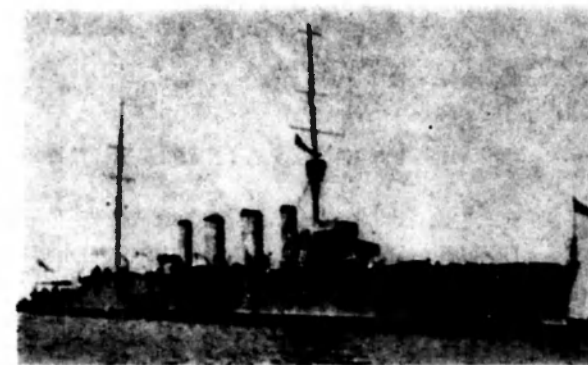
On the arrival of the *Dove* in Rangoon it was realised that the whole of the Bay of Bengal would be ringing with the news of the presence of the *Emden*. This was soon an accomplished fact as the

*Emden* picked up several wireless messages to this effect including one to the *Hampshire*.

It was now probable that the mouth of the Bay of Bengal would be patrolled by British cruisers to prevent the escape of the *Emden*, but notwithstanding this, the Captain decided on the daring feat of a raid on the oil tanks at Madras. This was made possible by one of his crew having been employed in Madras and thus having an intimate knowledge of the situation of the tanks and the fact that the fort guns were old and that there were no searchlights.

The ruse of employing a dummy fourth funnel to hide her identity was employed for the first time on this occasion, but as its usefulness on this particular escapade was doubtful, the method employed will be described later, when, during the Penang raid it secured the success of the undertaking.

At 9.30 on the evening of 22 September, the *Emden* had reached a position some three miles from the oil tanks at the entrance to the harbour without being challenged. She immediately used her searchlights to get the exact position of the tanks, fired a couple of ranging broadsides, extinguished her searchlights and poured salvo after salvo into the tanks, the shells bursting well—soon converting the tanks into a blazing mass.



H.M.A.S. SYDNEY, taken in 1913

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Officers and men of the EMDEN

125 shells were fired in all, some of the ranging shots hitting some ships in the harbour and, it is said, some houses on land.

The *Emden* now left the harbour at full speed in a North Easterly direction, coming under the fire of the forts, all of whose shells fell short leaving the *Emden* untouched.

The men on the *Emden* say that the glare of the burning tanks could be distinctly seen 100 miles away.

On the 23rd the *Emden* was still steaming in a North Easterly direction to create the impression that she was making for Calcutta, but when out of sight of all shipping she turned south and passed round the east coast of Ceylon. It was here that the Greek steamer *Pontoporus*, which had been accompanying the *Emden* since she was captured, was lost sight of.

The inhabitants of Galle, in the South East of Ceylon, on learning of the approach of the *Emden* fled inland, fearing a raid similar to that on Madras.

On 25 September at a point about 130 miles south of Colombo, the small British freight steamer *King Lud* was captured and sunk, her crew being transferred to the collier. She had come from Suez and was without cargo.

On the night of the next day (26 September), the *Emden* took up a position 40 miles west of Colombo. The Captain told the writer that he considered that it would have been courting disaster for him to have attempted to raid

Colombo harbour, as the fort searchlights swept the horizon all night and the fort guns were far superior to his own.

His decision was to cruise about some distance outside and intercept all shipping bound for or leaving Colombo. Acting on this, in his position 40 miles out from Colombo, and whilst the fort searchlights were visible on the horizon, he captured the British steamer *Tymerik* with a cargo of sugar from Colombo bound for England.

She was sunk and the crew placed on the collier.

The collier was again becoming crowded and the Captain had some anxieties as to the disposal of the accumulated crews.

On sailing a little closer to Colombo on the 26th, the British steamer *Gryfvalde* was captured. She carried no cargo and was made to accompany the *Emden*, subsequently serving the purpose of riding the Captain of the *Emden* of the accumulated crews of 5 vessels.

On 27 September, after having reached a position some 300 miles west of Colombo, the British steamer *Buresk* was captured. She was laden with 6,000 tons of Cardiff coal for Singapore.

Leaving the Captain's steward, two engineers and some Chinese stokers on board, the remainder of the crew were transferred to the *Gryfvalde*. The men left on the *Buresk* were paid at their usual rate by the Captain of the *Emden*. A

prize crew were put on board and she was made to accompany the *Emden*, her coal being a welcome addition to their own supply.

On the night of the same day, whilst steaming in a westerly direction the British steamer, *Ribera* was captured. She was bound from Port Said to Colombo. Shortly afterwards, on the same night, the British steamer *Foyle* was also captured. Both these steamers were sunk and their crews transferred to the *Gryfvalde*.

A third steamer was sighted and stopped on the night of 27 September, but as she turned out to be the Dutch steamer *Diocha*, she was at once liberated.

On 28 September, the *Gryfvalde* was released and told to proceed to Colombo with the crews of five captured vessels on board.

Realising that the arrival of the *Gryfvalde* at Colombo would be the signal for a thorough search for the *Emden* on the part of whatever warships might be available, the Captain decided that the time had come for him to make for the open seas.

He accordingly steamed practically due south towards the Chagos Archipelago, accompanied by the British collier *Buresk* and his own collier *Marcommunia*. The latter was now sent off to some unknown destination, presumably having transferred all her coal and thus being no longer of any assistance to the *Emden*.

Having successfully avoided all shipping en route, the *Emden* and the *Buresk* arrived off the Island of Diego Garcia on 10 October. The island is inhabited by only a few European families and had not yet heard of the outbreak of war, owing to their communication with the world being limited to a steamer calling every three months with supplies.

Here the *Emden* coaled all day from the *Buresk*. She got into the good graces of the inhabitants by reason of her engineers having repaired a motor boat belonging to the island, in return for which baskets of coconuts and supplies of fish were sent aboard the *Emden*. Fresh provisions of this character were much appreciated, and with every expression of goodwill the

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*Emden* sailed the same evening, steaming to a position about 500 miles west of Colombo.

She arrived at this point at midnight on 14 October and at 12.50 a.m. on the 15th she intercepted the British freight steamer *Clan Grant* bound for Colombo with a cargo of general merchandise. She was temporarily manned with a prize crew but during the transference of her own crew to the *Buresk*, smoke was again seen on the horizon and the *Emden* went to investigate. The newcomer in the distance had the appearance of a war vessel, but turned out to be the *Pourrabel* (*Bon Revel?*), a dredge built to order of the Tasmanian Government. She was captured and her crew as well as that of the *Clan Grant* put aboard the collier *Buresk*, when both captured vessels were sunk, the dredge turning turtle completely before sinking—and, it was said by one of the *Emden*'s officers, presenting a very curious appearance.

Shortly afterwards the British steamer *Benmohr* was sighted, captured and sunk.

Her crew went on board the *Buresk*. The Spanish mail steamer *Fernando Po* was held up on 16 October and of course at once released.

Steaming in a northerly direction the *Emden* on 18 October encountered the Blue Funnel liner *Troilus* on her maiden voyage from Hong Kong to England. The *Troilus* was regarded by the Captain of the *Emden* as undoubtedly his best 'bag' as she was estimated to be worth with her cargo about £1,000,000. She carried a valuable cargo of copper, tin and general merchandise from the East. The *Troilus* carried about a dozen passengers amongst whom were some ladies, one of whom was ill. For this reason it was decided to have the *Troilus* accompany the *Emden* for the present as accommodation on the collier *Buresk* was limited. However, a few hours later the British freight steamer *Saint Egbert* appeared carrying cargo bound for America.

The passengers and crew of the *Troilus* numbering about 200 were now transferred to the *Saint Egbert* and the *Troilus* was sunk.

The Captain of the *Emden* frequently cited the *Troilus* as an example of the difficulty of quickly sinking a merchant vessel fitted with good watertight compartments. Putting aside the use of torpedoes against merchant vessels, the usual means taken to sink a ship was to open the vessel's valves and, standing off about 400 yards, pour half a dozen shots into her on the water line. The case of the *Troilus* was one in which shot after shot had to be put into her at various points along her line so as to puncture each compartment. Even with such treatment as this, she took a comparatively long time to sink.

On 19 October, steaming a little south, the *Emden* captured the British collier *Exford* bound from England to Singapore. She was made to accompany the *Emden* for a day and then as the *Emden* was not in need of her coal and as it was ascertained that her cargo of coal was for German Agents in Singapore, she was released.

Also on 19 October, the *Emden* captured the British freight steamer *Chilkana*.

She was fitted with wireless which she attempted to use, but on being threatened by the *Emden*, she had no option but to be captured in the usual way and sunk. Her crew were transferred to the *Saint Egbert* where those of the *Troilus* were now quartered—and the *Saint Egbert* despatched to Quilon, a small town on the South West coast of India. This town was closer than Colombo and was safer, as far as the *Emden*

was concerned, as it was not a Naval Station.

The *Emden* was now nearing the end of her raid on merchant shipping. She had up till this time intercepted 26 vessels in Indian seas, of which she had sunk 14 and released the remainder either on the ground of their neutrality or for the purpose of ridding her of the crews of sunken vessels.

She was now free of all encumbrances—and with the *Buresk*, she steamed for Penang, taking a good southerly course to avoid hostile war vessels. It was again her plan to avoid being sighted by any shipping, to steam with no lights visible at night and when smoke was sighted on the horizon to avoid recognition by flight even if her course was thereby lengthened.

It seems that the success of this great raiding cruise was due to the ability of the *Emden* to move quickly from one point, where she was known to an unexpected quarter without the knowledge of those at whose door the safety of merchant shipping lay.

The objective of the *Emden* was now a raid on Penang harbour where she expected to fall unawares on the British and Japanese cruisers which, she learnt from newspapers, had been intercepting German merchant shipping in the vicinity of Penang at the beginning of the war.

The *Buresk* was left to wait for the *Emden* in a position midway between Penang and Ceylon, since her limited speed of 10 knots might hamper the *Emden* in any action



The EMDEN ashore at North Keeling Island

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Wreckage on the decks of the EMDEN

in which she might be engaged.

The success of this raid may be said to be due to the ruse of rigging a fourth 'funnel' of canvas in addition to the three funnels which she carried. The purpose of the extra funnel was in order to disguise the distinctive 'three funnel' appearance of the *Emden* that she would in the distance or in uncertain light be mistaken for the British cruisers *Newcastle*, *Yar-mouth* or *Hampshire*, all of which were in these waters.

This dummy funnel was of canvas and of the same dimensions as the real funnels—30 feet high by 101 feet on the longest diameter of the oval. The oval shape was kept by wooden hoops at intervals, and the 'funnel' was 'hoisted' by a block and pulley attached to a rope stretched between the aft funnel and the mainmast, the base being attached to the deck.

Arriving at 4 a.m. on 28 October at a point 10 miles outside Penang, the extra funnel was rigged and the German flag hoisted. The Captain of the *Emden* strongly denies that anything but his own flag was hoisted on this occasion.

Steaming up to the northern entrance of the Penang Roadstead at 5 a.m., the Captain of the *Emden* could see that a good deal of shipping was lying there and in the forefront a cruiser whose nationality he could not yet distinguish. Approaching to a range of about 600 yards he found that she was the Russian cruiser *Jemichug*. She showed no signs of life and it appeared that all her crew must be asleep. Having manoeuvred into good position, the *Emden* fired a torpedo at a range of 400-500 yards hitting the Russian just beneath the aft funnel. This was quickly followed by another at even closer

range which struck a point just below the bridge. The first torpedo caused the Russian to sink several feet deeper in the water, and the second caused a terrific explosion and heeled the vessel over on one side. The *Emden* was during this time pouring broadsides into the Russian, sweeping her decks at point blank range. 100 shots in all were fired by the *Emden*. The few shots fired by the Russian had no effect on the *Emden*.

The account of the engagement which appeared in the Ceylon Observer is as follows:

"The *Emden* . . . had been lying outside Penang on Tuesday, 27 October, and about 5 a.m. the following morning when the light was still faint and deceptive, steamed into the man-o'-war anchorage and took up position. She was seen by the *Jemichug* but as the morning light was still faint and as she had rigged a dummy fourth funnel, she passed for the British ship *Yar-mouth* just long enough to enable her to manoeuvre into position for a sudden and effective attack on the Russian. Just as the latter became aware of the *Emden's* identity, a torpedo from that vessel struck her and the Germans swept her decks with a terrific broadside from about 300 yards range.

"The *Jemichug* had no chance of defending herself, but replied gamely. It was no use, for it could be seen through the flames and smoke, that she was listing so badly as to make her replies futile. Two other broadsides followed from the *Emden* and a terrific explosion ensued. A second torpedo having been successfully launched from the *Emden*, great rents were torn in the doomed Russian vessel, and she sank amidst a great cloud of black smoke.

"Just 15 minutes elapsed from the opening of the cannonade to the sinking. About 100 men went down out of 355. Several French torpedo boats were close in but like the *Jemichug* had no steam up.

"Having sunk the *Jemichug*, the *Emden* moved slowly round and opened fire on the oil tanks—none of which were hit.

"The *Emden* left the harbour by the North Channel."

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The Captain of the *Emden* denies having fired on the oil tanks as he was unaware of their existence. Otherwise—as he said—he would certainly have bombarded them.

The *Jemichug* was a superior ship to the *Emden* and, if an efficient look-out had been kept, the Penang raid might have had a different ending.

As mentioned above, the *Emden* left the harbour at full speed after destroying the *Jemichug*. She was fired at from an unknown quarter whilst leaving—possibly a shot from one of the several small French boats in harbour, but as the shots did no harm and as the *Emden* could not readily make out the position of the hostile craft, he continued on his way.

When some little distance outside Penang, the *Emden* met a strange vessel which as he approached hoisted the red flag, indicating that she was a powder steamer—and which turned out to be the British ship *Glen Turret*. She had signalled to land for a pilot and he had just reached the *Glen Turret* when the *Emden* appeared.

On the approach of the cruiser, he returned to his launch which made off at full speed for Penang. The *Emden* did not interfere with him in any way but proceeded to transfer the crew of the *Glen Turret* to the *Emden*.

While this operation was in progress, a war vessel of some description appeared on the horizon, making for Penang. The *Emden* at once recalled her boats which were in the act of transferring the crew of the *Glen Turret*, and made off to meet the approaching ship. At 6,000 yards she appeared much larger than she really was, owing to the deceptive early morning light, but as they closed in to 4,800 yards, they found her to be the French torpedo boat destroyer *Mousquet*.

The *Emden* opened fire at this range and struck the engine room with her opening shots.

She fired several broadsides at the *Mousquet*, practically all of which found their mark. She then ceased fire, expecting the *Mousquet* to be a total wreck and to surrender. She, however, gamely replied with about

ten shots, none of which reached the *Emden*.

The *Emden* again opened fire and very shortly the *Mousquet* was seen to be sinking by the bow. The Captain of the *Emden* then ceased fire and stood by to pick up the survivors who numbered 36—three of whom subsequently died of their wounds on the *Emden*.

The French prisoners said that the *Mousquet* had fired two torpedoes but these were not seen by the *Emden*. They also said that they had seen the *Emden* the previous night when they were patrolling the coast, but believed her to be a British cruiser.

The *Emden*, having lost a lot of valuable time on account of his engagement with the *Mousquet*, now saw another torpedo boat approaching from Penang. She at once set out for the Indian Ocean at full speed with the torpedo boat in chase but managed to elude her after a four hours run in heavy rain.

Proceeding on the way to her collier *Buresk*, the *Emden* met with the British freight steamer *Newburn* on 30 October. She was laden with general merchandise for Singapore. All the surviving French prisoners were placed on board and she was ordered to sail direct for Sabang in Sumatra.

The *Emden* reached her collier on 31 October and then sailed in company with her to the Cocos Islands, which were reached on the evening of Sunday, 8 November. She sailed round the islands to see that all was clear and, at 5.30 a.m. on Monday, 9 November, proceeded to Direction Island with her dummy funnel rigged for the third time.

Her object was to destroy the wireless station and cut the cables—and with this in view, the Captain landed a force of four officers and about 40 men, taking with them 4 machine guns.

It appears to the writer that the fatal mistake made by the Captain of the *Emden* was the unshipping of his dummy funnel before his landing party had actually landed. This gave the wireless operator on land the information that the vessel was in all probability a hostile one and gave him the requisite few

minutes grace necessary to send the S.O.S. signal which brought the *Sydney* to the spot.

It is superfluous to give here a detailed account of the ensuing engagement as it has been described with great minuteness by people who were in a position to get all the details. An account has, I believe, been published giving the effect of practically every shot fired during the engagement.

It has seldom been possible to get such a complete record of a naval fight as in the case of the duel between *Sydney* and the *Emden*. The quaint situation of the Captains of the two vessels conferring afterwards on board the *Sydney* and piecing together their relative positions and movements as the action proceeded, made it possible for a most detailed report of the fight to be arrived at.

A few notes on aspects of the encounter which may not have been previously published may be of interest.

Firstly, the presence of the *Emden* so close to the Australian Convoy was altogether fortuitous. Captain Von Müller told me that he knew that troops were to be sent from Australia to Europe but he could not find out their route or date of sailing.

As has been mentioned elsewhere, on the appearance of the *Sydney* on the horizon, the *Emden* was under the impression that it was the *Newcastle* and it was not discovered that the oncoming ship was not the *Newcastle* until it was so late that, in the words of Captain Von Müller, 'I had no alternative but give battle'.

The *Emden*'s now famous first shot, fired at the *Sydney* at a range of 10,000 yards from one of her 4.1 inch guns, was naturally a shot at absolutely extreme range. This shot missed the *Sydney*, striking the water about 500 yards beyond her. The gun was elevated at the absurd angle of over 30° in order to throw her shells this distance—over 5½ miles. Normal long range for the *Emden*'s guns was 6,000 yards—under 3½ miles.

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At no time during the fight did the *Sydney* allow the *Emden* to come closer to her than 5,000 yards—comfortable range for the *Sydney*, fairly extreme range for the *Emden*.

In describing the fight, Captain Von Müller expressed a rather depressed surprise that the *Sydney* had, when she returned from her chase after the collier, "opened fire again on our wreck".

The answer would seem to be a combination of two reasons—that the *Emden's* flag was still flying, and that the *Sydney* had no reason to believe that the torpedo flat on the *Emden* was out of action.

As a matter of fact I understood from the Captain of the *Emden* that, although it was not in the portion of the ship that was utterly destroyed, it was nevertheless put out of action and Lieutenant Prince Von Hohenzollern, who was torpedo officer, took up his position with the Captain in the conning tower half way through the engagement.

It seems as if the *Emden* wished to capitulate, but wanted to avoid striking her flag and that her rather strange action was due to this and not to any sinister intention of torpedoing the *Sydney* when she approached to take off the survivors.

The Captain said that his International Code Book had been burnt and that he could not understand the *Sydney's* signals calling him to surrender.

Their flag was eventually hauled down by the Captain's servant, Werner, who at great personal risk managed to get over the intervening deck space under fire, climb the mast and unwind the flag.

The Captain denies that anything like 1,500 shots were fired by the *Emden*, as has been said in one account of the fight. His ammunition supplying arrangements were damaged early in the fight, and he thinks it improbable that more than 400 shots could have been fired.

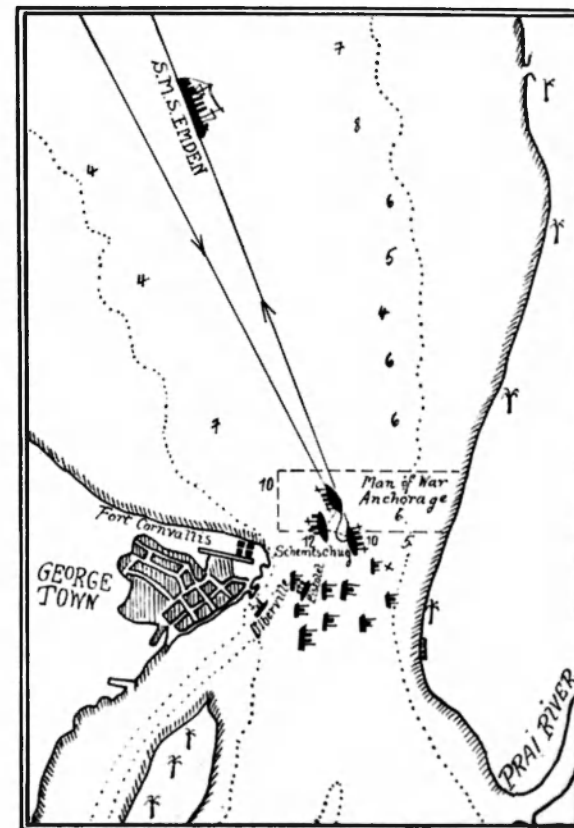
Captain Von Müller says that in the whole engagement he could only see the effect of one of his shots on the *Sydney*. This was a shot which set fire to a heap of cordite

which was on the deck and which burned up in a blaze, doing very little other damage.

Dr. Luther who was on the *Emden* told me that the condition of the men who swam ashore from the *Emden* to the Island was terrible. Their wounds were irritated by the salt water and those who were not drowned in the surf went through a night of agony on land, without shelter, water or food. The short intervening stretch of surf be-

tween the ship and the shore was rough and the bottom was sharp-edged coral. Several attempts to get a line ashore were made but it was found impossible, with the result that many were drowned in attempting to swim the breakers in their weakened condition.

The survivors were taken off the *Emden* and from the Island by the *Sydney* who transferred the unwounded to the *Empress of Russia* in mid-ocean. The latter boat had been called to the scene by the



THE EMDEN'S RAID ON PENANG

Copy of a sketch by an officer in the *Emden*.



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*Sydney*, as her own accommodation for the prisoners was altogether inadequate. Both vessels now made for Colombo where the badly wounded were left in hospital and the remainder taken on board the Australian troopships *Orvieta*, *Omrah* and the New Zealand ship *Maunganui*, on which they travelled to Port Said. At the latter port all the prisoners were transferred to the *Hampshire* in which they were taken to their place of internment.

When on the *Sydney*, the officers gave a limited parole on which they were allowed certain liberties on their word not to harm or attempt to injure the ship in any way. The four officers who were on the *Orvieta*, the Captain (Fregattenkapitan Karl Von Müller), Lieutenant Prince Franz Joseph Von Hohenzollern, Dr. (Stabsarzt) Martin Luther, and Lieutenant Zur See Fickenicher, refused to give their parole and were consequently interned in four cabins on the promenade deck under an armed guard. They were given their meals in the Children's Saloon and exercised on the deck, which was cleared for the purpose, for two hours daily.

The men, of course, gave no parole and were interned in a latticed off portion of the stern of the ship under a strong guard. They did physical drill twice daily on one of the lower decks under instruction from their Warrant Officers.

Both officers and men expressed satisfaction at their treatment on board the troopship.

Thus ended what has been described as 'a raiding episode such as Eastern waters have not witnessed since the days when these particular trade routes were subject to continual depredations.'

The *Emden* has, this same source continues, created a bigger stir in British commercial circles than the rest of the German Fleet put together.

#### FOOTNOTE:

"In finding this account of the cruise of the *Emden* that I wrote 55 years ago, I am reminded of what a fine person Captain Von Müller was. He was a gallant gentleman in the real sense. In all the seizures and sinkings that the *Emden* achieved I do not believe a life was lost.

We posted a guard on the quarters in the *Orvieta* occupied by Von Müller and his officers and men. The guards were all 6 ft. 3 ins. or more, which created the impression that all Australians were as tall and well built as this.

When occasionally at meals one of von Müller's officers made a remark to or about me that von Müller regarded as out of place in the circumstances, he would bark at him in rapid and corrosive German and the officer subsided in embarrassment.

When it came to von Müller and his officers leaving the *Orvieta* at Port Said, he asked me if he could have the privilege of leaving the ship in civilian clothes as he regarded it as contrary to his dignity as a German officer to be photographed as a prisoner of war in uniform. I agreed and had some ready made clothes got quickly from a store in Port Said, which turned out to be abominably ill-fitting, and with a fancy felt hat and yellow boots. However it was the best that could be done in the circumstances."

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# OFFICIAL OPENING OF T.S. PARRAMATTA

— A Photograph Record by the R.A.N. Photographer —

Headquarters in Rydalmere of TS PARRAMATTA, which was granted Naval Board recognition in 1965, was officially opened on December 21.

The Guard and ship's company were inspected by Rear-Admiral H. A. Showers, State President, Navy League of Australia. He was escorted by Commander L. Mackay-Cruise, R.A.N.R., Senior Officer, Naval Cadet Force, New South Wales, and the Commanding Officer, TS PARRAMATTA, Sea Cadet Lieutenant A. Stevenson.

The dedication service was carried out by the Senior Chaplain of the Mission to Seamen, the Rev. Colin Craven-Sands.

After the dedication the building was officially opened by Mrs. L. Mackay-Cruise.

Official guests included Mr. Nigel Bowen, QC, Federal Member for Parramatta, the Mayor of Parramatta, Alderman Wilde, Commander K. Graham, M.B.E., R.A.N., Staff Officer Reserves, the President and Committee members of Guildford R.S.L.

The band of the Royal Australian Naval Reserve, Sydney Port Division, was on parade.

During the afternoon the unit's first boat, a 14-foot dinghy, was delivered, much to the surprise and delight of the officers and cadets.

Light refreshments were served by the Ladies' Committee of TS PARRAMATTA.



The Official Opening Ceremony by Mrs. L. Mackay-Cruise, L. to R.: Lt.-Cmdr. Page, Parramatta's First Lieutenant; Lt.-Cmdr. L. Mackay-Cruise, Senior Officer, Nav Force, N.S.W.; Mrs. K. Graham; Lt. A. Stevenson, C.O., TS Parramatta; Mrs. L. Mackay-C. Colin Craven-Sands; Alderman Wilde, Mayor of Parramatta; Rear-Admiral H. A. Showers and Commander K. Graham, M.B.E., R.A.N.



Rear-Admiral H. A. Showers, C.B.E., President of the N.S.W. Division, Navy League, accompanied by Lt.-Cmdr. L. Mackay-Cruise and Lt. A. Stevenson, Cadets.



The Unit Headquarters. At left: Cadets of the Unit. At right: The R.A.N.R. Band.



At the conclusion of official proceedings, Officers and Cadets were surprised by the unexpected delivery of the Unit's first 14 ft. boat.

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# SEA CADET CORPS NEWS

## Efficiency Award

TS MELBOURNE has been awarded the Navy League of Australia Annual Efficiency Trophy.

The award is presented annually to the most efficient unit in the Commonwealth.

TS MELBOURNE (Sea Cadet Lieutenant D. McGillivray) is a Frigate class unit at Albert Park and was recognised by the Naval Board in 1951.

It is the first occasion that TS MELBOURNE has been selected as the most efficient unit in Victoria.

Units selected as the most efficient in other states were: TS PALUMA, Queensland; TS TOBRUK, N.S.W.; including the A.C.T.; TS LEVEN, Tasmania; TS FLINDERS, South Australia; TS BEDFORD, Western Australia.

The Director of Naval Reserves.

Captain R. C. Savage, R.A.N., who inspected the units, said:

"I was pleased indeed with the high standard of dress. I feel that each unit I inspected merited the honour of being custodian of the Sea Cadet Colour for that State.

"The Darwin unit, TS WARRAMUNGA, was considered on the Naval Officer-in-Charge North Australia Area's report, and merits special mention on this occasion.

"I enjoyed inspecting the units and commend all those responsible for their efficient organisation."

## SEA CADETS JOIN H.M.A.S. CRESWELL

Three former Sea Cadets from New South Wales units joined the Royal Australian Naval College as Cadet Midshipmen last January:—

Acting Cadet Petty Officer Anthony Drover, formerly of TS Sydney.

Cadet Leading Seaman Kenneth John Hornery and Cadet A.B. David Gordon Street, formerly of TS Sirius.

News of these successful applications must have been most gratifying to the Senior Officer and Officers of the N.S.W. Division.



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The principal objective of the Navy League of Australia is to stress the vital importance of Sea Power to the Commonwealth of Nations and the important role played by the Royal Australian Navy.

The League, in conjunction with the Commonwealth Naval Board, administers the Australian Sea Cadet Corps, by providing financial and technical sea training for boys who intend to serve in the Naval or Merchant Services, also to those sea-minded boys, who do not intend to follow a sea career, but who given this knowledge will form

We invite you to swell our ranks and so keep up to date with Maritime Affairs to help to build an ever-increasing weight of informed public opinion. The Navy League will then become widely known and exercise an important influence in the life of the Australian Nation.

The League consists of Fellows and Associates. All British subjects who support the objectives of the League are eligible for membership. Members receive copies of the League's magazine "The Navy".

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G.P.O., Sydney, 2001.  
Victoria — Room 8, 20th Floor, 528  
Collins Street, Melbourne, 3000.  
Queensland — Box 376E, G.P.O.,  
Brisbane, 4001.  
Tasmania —  
South Australia — Box 1529M,  
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Northern Territory — C/- H.M.A.S.  
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**AFTER COMPLETION, THIS FORM SHOULD BE DISPATCHED TO YOUR DIVISIONAL SECRETARY — NOTE LIST OF ADDRESSES ABOVE.**

Best wishes to the Navy from

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# JOIN THE AUSTRALIAN SEA CADET CORPS

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

The Australian Sea Cadet Corps is a voluntary organisation administered by the Commonwealth Naval Board and The Navy League of Australia.

The aim of the Australian Sea Cadet Corps is to provide for the spiritual, social and educational welfare of boys and to develop in them character, a sense of patriotism, self-reliance, citizenship and discipline.

Uniforms are supplied free of charge.

Cadets are not required to undergo any medical examination and are fully insured against accident while on duty.

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

The interesting syllabus of training covers a wide sphere and includes seamanship, handling of boats under sail and power, navigation, physical training, rifle shooting, signalling, splicing of wire and ropes,

general sporting activities and other varied subjects.

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

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

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

**Senior Officers, Australian Sea Cadet Corps**

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## MISSILE BOATS AND THE ROYAL AUSTRALIAN NAVY

By R. G. MILLAR

All through last year large numbers of the new 100 foot patrol boats have joined the fleet and from every corner of the country there are screams for more of them to be made available.

It is probably too late to ask this question, as it appears the full number of 20 will be completed, but, what naval advantage do we gain by having these vessels?

They are definitely good patrol boats, their limited armament, good seagoing ability and relatively fast speed, make them ideal for this type of work, especially in protecting our country's fishing grounds, but if any major threat to Australia's security developed, all these vessels would be hard put defending themselves against any passing MIG let alone inflicting any damage on the aggressor.

At a time when the Australian navy is hard put getting new vessels of any type, it is a crime to spend such large sums (over 400,000 dollars a boat) on vessels of such limited use.

Nevertheless, the boats are with us to stay, but it is still interesting to examine one of the better ways this money could have been employed or might in future be.

In October of last year the Israeli destroyer "ELATH" was sent to the bottom by "Styx" missiles (1000 lb warhead, 15-18 miles range) and if they are supplied to the North Vietnamese shore batteries, which it appears they will be, it is quite possible that all shore bombardments will come to an end, as these missiles far outrange the standard destroyer gun and the larger ships will be forced back to the limit of their range from the coast.

There are several other cases (North Vietnamese MTB's got within 3 miles of the U.S.S. Maddox and U.S.S. Turner Joy in August of 64. Had they been armed with missiles?) which all point to the effectiveness of this weapon, and it cannot be argued that the country possessing these missiles possesses a weapon of unlimited defence value.

mobility and speed of the launch vessel.

If they were obtained and operated in groups of four to five, they could be based in strength from Geraldton to Thursday Island, and then up through New Guinea. This would give us a shield right across our unprotected north and it should remove the chances of the naked-



HMAS BAYONET, the last of 20 patrol boats to be launched for the R.A.N., moves down the slipway at the Maryborough shipyards of Walkers Ltd. She was launched during November by Mrs. Lillian Purves, wife of the Third Naval Member and Chief of Naval Technical Services, Rear Admiral F. W. Purves.



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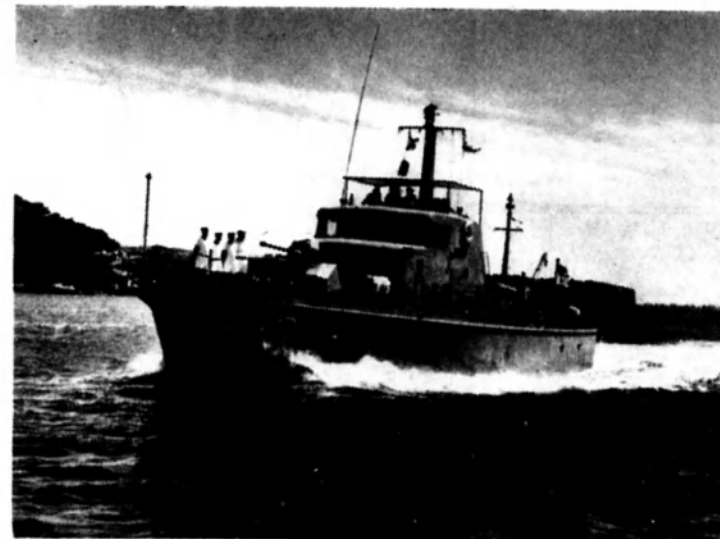
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HMAS ATTACK, 100  
ft. patrol boat, is  
stationed at Darwin.

ness feeling that was experienced  
in 1942 being repeated.

The Navy missile boats and the  
Air Force Mirages should be cap-  
able and in fact, *must* stop any  
aggression towards our shores before  
it has time to land. An invasion  
force would have to come by sea  
(air drops and aircraft are still un-  
able to move and land sufficient  
troops, large tanks etc. to defeat  
us) and they will certainly come  
in larger numbers\* than we can  
handle: and even if they did not  
the army organised only for tropi-  
cal warfare and with only one  
regiment of Centurion tanks for  
defence of the whole of Australia,  
would have to fall back and defend  
an area similar to the Brisbane  
line of the last war. (Brisbane Line  
—defence of the industrial com-  
plexes of Sydney, Newcastle etc.  
up to the tropic of Capricorn in  
Queensland, leaving the rest of  
Australia for the Japanese.)

Boats of this type could be  
manned by naval Reserve forces  
from the various towns or cities

\* It must be remembered that an  
army of 19 million men has a  
fighting potential of less than 1  
per cent. when aboard ship.

from which they were operating  
and this would result in the Reserve  
becoming a first rate naval force,  
knowing and able to take advan-  
tage of every natural advantage the  
stretch of coastline they were re-  
sponsible for offered.

A good point against these boats,  
would be the installing of the mis-  
siles ashore, thus removing the cost  
of the launch boat, but in the case  
of Australia this is not valid. The  
vast stretches of coast require mobi-  
lity to ensure the full coverage and  
also protection of our fishing  
grounds, if they are to survive the  
poaching.

Finally we come to the point—  
where would we obtain the vessels  
and missiles from?—Certainly the  
Soviet Union would not supply  
them to us, so we would have to  
look elsewhere, and this is not  
easy, as no Western power possesses  
vessels of this capability.

The missiles could probably be  
obtained from SAAB of Sweden,  
as they are believed to have de-  
veloped a similar missile. If not,  
we could build them ourselves. Why  
not! We helped develop a very  
crude type of weapon of this type  
—the "Malkara" anti-tank missile,  
and if we can construct such a  
complicated and deadly weapon

system as the Ikara anti-submarine  
missile, why not a ship to ship  
missile.

For launch vessels, big German  
Jaguar Class MTB could be ob-  
tained and converted to ship four  
of these missiles, but if we de-  
signed and built launch vessels in  
our shipyards it would probably  
prove of more benefit to the ship-  
building industry of Australia, and  
could also result in export orders.  
The shipyards have shown they are  
capable of completing vessels of  
this type very quickly once they are  
tooled up for their construction,  
and this would prove of immense  
value in strengthening the initial  
force, should war develop.

If these missile boats are ob-  
tained and if sufficient Airforce  
Mirage aircraft are available to  
operate with them, we probably  
can protect our country from  
invasion no matter what reverses  
our or our allies' troops suffer  
abroad. As it stands now our navy  
can carry a very limited war to an  
enemy's shores but it cannot defend  
our shores. Failure to take a realis-  
tic look at where Australia stands  
in Asia, to count on the might of  
our allies to defend us can only  
have one end. We will fight 1942  
again. What do you think?

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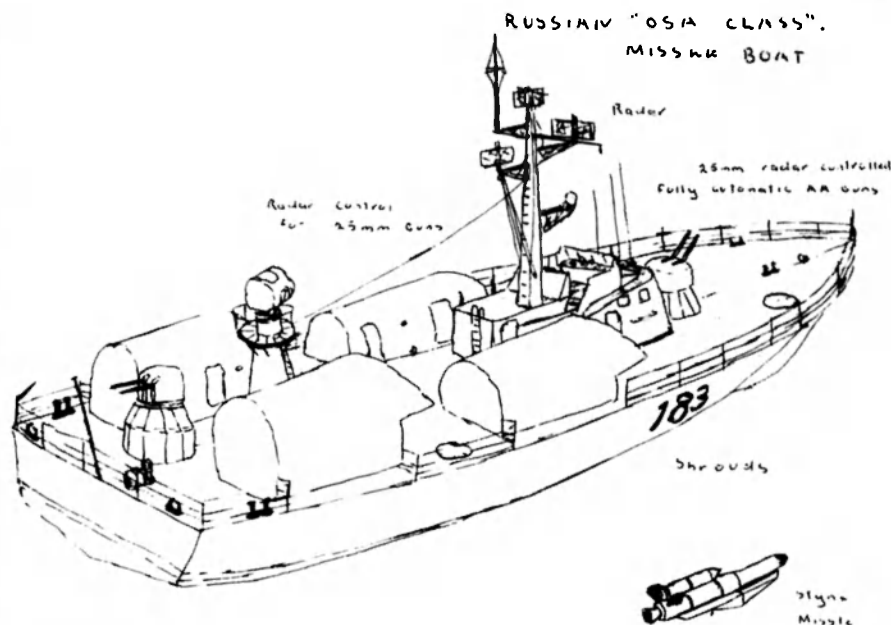
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give of his time on Saturday afternoons is asked to please contact the Cadet  
Liaison Officer, Lieutenant McPherson, H.M.A.S. WATSON, telephone 37-1311  
extension 256 between 0800 and 1530 for further particulars.

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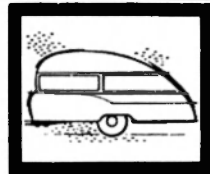
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## NEWS FROM BRITAIN

(The Editor is indebted to the officers of the Information Service of the British High Commission in Australia for their ready assistance in the compilation of this article).

### ADVANCED ANTI-COLLISION RADARS

Potential collision risks can now be evaluated with great speed and simplicity on a true motion display by the use of new anti-collision radars which include for the first time ever, Relative Motion Marker systems.

The unit offers the navigator a unique and practical means of simultaneously displaying relative information on a true motion presentation which shows the overall navigational picture.

By superimposing 'electronic' markers on a true motion presentation it is possible to see simultaneously the true and relative movement of other vessels in an encounter. Key-notes of the system are its opera-

tional and technical simplicity which have enabled high reliability and low cost to be achieved. These advantages, combined with the advanced operational capability of the equipment, make it suitable for all types of merchant and naval vessels.

Up to five Relative Motion Markers can be used simultaneously to monitor separate collision risks. The markers are painted continuously by a new 'inter-scan' technique and are independent of the rotating main scan point of the radar picture.

Each marker is a one-inch long straight line with a bright spot at one end that can be used to position the marker on an echo at any point on the display.

### Fixed

All markers extend inwards to-

wards 'own ship' from the bright spot, and once set, remain fixed at the same range and compass bearing to 'own ship', moving across the true motion display with it.

If a marker is positioned on an echo, a collision risk exists if the echo closes 'own ship' along the marker line of constant bearing. If the echo moves off the line, its relative motion is shown from the bright spot and its closest point of approach can be seen.

The five markers, which are entirely independent of each other, are operated from simple controls mounted on the true motion panel. The controls include range and bearing adjustment, brightness, an amber operating range indicator and five switches, one for each marker.



ANOTHER NUCLEAR-POWERED SUBMARINE JOINS BRITAIN'S ROYAL NAVY

HMS Repulse, another of the nuclear-powered Polaris submarines to join Britain's Royal Navy, leaves Barrow-in-Furness, north-west England, recently, having previously been commissioned into the 10th Submarine Squadron. After acceptance trials off Scotland and in the North Atlantic, the submarine—she carries 16 Polaris missiles and is also armed with six 21-inch torpedo tubes—will undergo a normal "work-up" period before crossing the Atlantic to test her missiles and bring system on the Atlantic range. With a displacement of some 7,000 tons, the Repulse, one of the largest submarines in the world, was completed three months ahead of schedule by her British builders and should be fully operational by mid-1969. Built by Vickers Ltd., Shipbuilding Group, Barrow-in-Furness, Lancashire, England.

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NOW THEY GO TO SEA ON BIKES

Two British ship's officers, Captain B. L. Baler (left) and First Officer David Boothroy, try out a new idea for making their duties easier, by using suitably equipped bicycles to cover the long deck of their vessel, the 170,000 ton ESSE MERCA — seen here in dock recently at Belfast, Northern Ireland. It was claimed that on her recent maiden voyage, the 1,010 ft. long oil tanker was the biggest and almost the longest ship (the Cunard QUEENS beat her by a few feet) ever to have entered British waters. The sheer length — nearly a fifth of a mile — of this enormous vessel, prompted the ship's owners to buy the bicycles for use on the tanker during her 12,000-mile voyage between Northern Ireland and the Persian Gulf. Now it seems that although bicycles may seldom have been used like this before the time-saving idea will probably spread.

These switches enable any marker to be brought up on the display, and to be moved to any range and bearing without affecting the position of the others.

Relative motion markers can be used on the three, six and 12 nautical mile range scales. The availability of the markers is shown by the operating range indicator which is illuminated when one of these scales is in use.

There are four radars in the new 12 inch range, offering a choice of 10kW or 25kW transceivers and 6 ft. or 9 ft. aeriels.

Decca Radar Ltd.—Decca House, 9 Albert Embankment, London, S.E.1. Australian Agents: Electronic Industries Ltd., Communications & Navigation Division, 161-173 Sturt Street, South Melbourne, Vic. 3205. Also branch in Sydney.

### VARIABLE FREQUENCY GLASS FIBRE MARINE AERIAL

A fibre glass variable frequency marine aerial developed by a British firm is claimed to have a unique construction which simulates an odd number of exact quarter waves on selected frequencies.

This results in the signal coming out of the TX at low impedance on any selected frequency providing the tank circuit is correctly tuned. The firm says that a very high 'Q' value — resonance — is achieved on any selected frequency including the marine 2 megacycles band, medium frequency and into the high frequency bands.

When carefully tuned on installation, the aerial gives a substantially complete transfer of radio frequency power on the fundamental frequency

only. There is virtually no wastage in the form of harmonics.

### Limitless

The aerial is particularly suited to lifeboats where a conventional whip aerial might hamper helicopter rescue work. It also suits pilot launches, fishing, and similar craft — but the range of uses is limitless. When deck mounted a special bracket is used on lifeboats and pilot launches. It is of especial use on cargo boats where the lack of superstructure makes the fitting of whip aeriels impossible.

Extremely compact and robust, the aerial is completely waterproof and connection is to a downlead in a waterproofed compartment in the aerial base. Up to 1kW of power can be used. If necessary, two V.F. aeriels can be used with less interaction.

Length of the aerial, the Partridge Marine Variable Frequency Aerial, is 8 ft. and diameter is 1½ inches.

### NEW LIFEJACKET VALVE IS SIMPLE, SAFE, ROBUST

Sealing arrangements in a new inflating valve for lifejackets and similar devices are of a design that greatly reduces the risk of blockages.

The valve, called the Crewsaver, is robust and simply constructed in chemically-inert and non-toxic materials and is intended for shrink-fitting into the P.V.C. tube of a lifejacket.

Its body houses a valve shuttle with a built-in sealing ring of synthetic rubber and an 18.8 stainless steel spring, all retained by a snap-lock base cap. Body, valve shuttle and base cap are moulded from polypropylene, which will not deteriorate or deform even under extreme tropical conditions—24 hours at 55 degrees C. and at a relative humidity of 95—and is unaffected by sea water.

Flutes on the valve shuttle give it a self-centring action, and consequently the sealing ring built into it always locates correctly on the valve seat. The position and shape of the ring tend to cause deflection of any solid particles that enter the mouth of the valve.

### Deflator Key

A dust cap incorporating a deflator key is made of low-density

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polyethylene and is attached to the body by an integral ring and band. Inside the cap there is a double labyrinth configuration that makes a completely dustproof and airtight seal without a rubber washer.

The valve is designed to retain pressures of  $\frac{1}{2}$  lb./in.<sup>2</sup> to 6 lb./in.<sup>2</sup>. Flow rate at 1 lb./in.<sup>2</sup> is not less than 3 ft.<sup>3</sup>/min. The initial opening pressure is between 0.07 lb./in.<sup>2</sup> and 0.36 lb./in.<sup>2</sup> when measured with the valve open to atmosphere. Input pressures of up to 20-30 lb./in.<sup>2</sup> will not dislodge the base cap.

For use with CO<sub>2</sub> bottles the valve can be supplied with a threaded top.

E. S. Perry Ltd. of Hampshire, who undertook the development of the valve at the request of a manufacturer of lifejackets, is geared to cope with a wide range of special development projects in the same general field.

### STEERING INDICATOR CUTS HELSMAN'S FATIGUE

A new steering indicator develop-

ed by a British firm enables the helmsman of a yacht or power boat to steer an accurate course with the minimum of fatigue.

The equipment, known as the "Hestia", consists of three main components—a master compass, a control unit and an indicator.

The indicator has a long pointer and is mounted vertically close to the helmsman's line of sight. After the required course angle has been selected on the master compass, the helmsman has simply to keep the pointer vertical against a bold lubber line.

The pointer, representing the ship's heading in relation to the intended course, gives an easily read indication of any heading error. Should the craft wander off course to port, for example, the pointer will swing to the left and the helmsman will apply starboard helm to correct the error.

The makers say that trials have shown that steering errors made by a helmsman of average skill are considerably reduced with the aid

of the instrument. Typically a reduction of mean steering error from 12 degrees to 4 degrees saves two miles in distance run for every 100 miles sailed. It is said that in high speed power boats, the compass remains stable even when the craft is pounding heavily.

### Changing Conditions

To meet changing sea and wind conditions, the amount by which the pointer deflects can be adjusted from the control panel. With the "rough" setting, the pointer's full scale deflection is to 40 degrees on either side of the lubber line and at "calm" to 20 degrees.

The master compass, housed in a brass binnacle coated in nylon, is 4½ inches in diameter and 6 inches high. It weighs 4 lb. Two versions are available. One, for sailing yachts, is gimbal-mounted; the other, for power boats, is on a resilient mounting to minimise the effects of vibration.

The control unit, connected electrically to the binnacle, measures 4½



### FIFTY BRITISH WARSHIPS ATTEND WESTERN FLEET ASSEMBLY

The guided missile destroyer HMS HAMPSHIRE (foreground) and the anti-submarine frigate HMS UNDAUNTED (upper right) lead two columns of warships of Britain's Western Fleet during a recent exercise off the coast of Scotland. Some 50 ships — about half the Royal Navy's Western Fleet — gathered at Rosyth for their annual assembly. The ships ranged from guided-missile destroyers, submarines and a commando ship, coastal minesweeper and small survey vessels to frigates. The purpose of the assembly is to allow Flag and Commanding Officers to meet and discuss current matters and for ships to take part in a very full training programme.



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inches by 34 inches by 24 inches and weighs 14 lb. It is also connected to the ship's power supply and is available in 12V, 24V, 32V or 36V D.C. versions.

The indicator, available in 4 inch or 24-inch diameter versions weighing 3 lb. and 1 lb. respectively, is fitted with Beta lights for night-time illumination.

### MARINE WATER-COOLED DIESEL ENGINE

A new marine water-cooled diesel engine rated at 15 h.p. at 2,000 r.p.m. is a four stroke two cylinder unit suitable for a wide variety of commercial and pleasure craft, claim the British makers.

Cooling is normally by a thermostatically controlled direct raw water system, though the engine can also be cooled by the keel pipe

method if desired.

Standard equipment includes a manually-operated reverse gearbox, though a hydraulically-operated gearbox is available as an alternative.

Lister Blackstone Pty. Ltd., 1 Unwins Bridge Road, St. Peters, N.S.W. 2044.

### ROTATABLE ENGINE WILL DRIVE AND STEER CRAFT IN ALL DIRECTIONS

A motorboat with a rotatable engine that will drive and steer the craft in all directions, even backwards, has been developed by a British firm, Michaels Garade (Selby) Ltd. of Yorkshire.

Claimed to be unsinkable, it has a four-stroke, 2 h.p. engine which is encased in a cylindrical glass fibre container that slides into a housing in the stern, without any fastening.

It can be rotated through 360 degrees on its vertical axis, giving the boat great manoeuvrability.

The fan-cooled engine unit is 31 inches high, weighs 28 lb. and has a triple-bladed propeller, fitted with a shear pin. Watersealed, it has twin driving belts for reliability.

Constructed in coloured fibreglass, and supplied with wooden oars, the boat has built-in buoyancy tanks filled with rigid polyurethane foam that incorporate seats.

It is 8 feet long, 4 feet wide, 19 inches deep and seats two adults and two children in comfort.

Easily carried by two people, it is ideal for transport on a car roof rack. When the boat is inverted like this, the engine can be slipped, right way up, into the housing, thus avoiding fuel leaks.

The craft is called the Water Beetle Mk. II motorboat.

## AUSTRALIAN SEA CADET CORPS & R.A.N.R. SCHOOL CADETS NEWS

### NEW SOUTH WALES DIVISION

Report on training and activities undertaken by the Australian Sea Cadet Corps and the R.A.N.R. School Cadets for the quarter ending 31st December, 1968.

A continuous training period of 7 days duration was carried out by The Scots College, R.A.N.R. School Cadet Unit in H.M.A.S. *Creswell* from 24.11.1968 to 1.12.1968.

Weekend training for Sea Cadets and R.A.N.R. School Cadets took place in the following ships and establishments.

H.M.A.S. *Vendetta*, 11-13 October.  
H.M.A.S. *Anzac*, 18-20 October.  
H.M.A.S. *Creswell*, 18-20 October.  
H.M.A.S. *Stalwart*, 18-20 October.  
H.M.A.S. *Vendetta*, 25-27 October.  
H.M.A.S. *Creswell*, 8-10 November.  
H.M.A.S. *Watson*, 15-17 November.  
H.M.A.S. *Creswell*, 6-8 December.  
H.M.A.S. *Stalwart*, 13-15 December.  
H.M.A.S. *Vendetta*, 13-15 December.

Officers, Instructors and Cadets attended the services held at St Andrews Cathedral and St Marys Cathedral on Sunday, 6 October to mark the conclusion of Navy Week.

Cadets were used as ushers and to hand out the Order of Service.

On Sunday 27 October, 100 Cadets played an active part in the Annual Seafarer's Service held in St Andrews Cathedral in that they acted as flag bearers.

The Annual Sailing Regatta was held on Sunday 17 November and the courses were laid off Snapper Island. T.S. *Sydney* acted as the host Unit. Major trophies were won by T.S. *Sydney* and T.S. *Warrego*.

A party of three from the U.K. Sea Cadet Unit T.S. *Jervis Bay* comprising one Petty Officer Instructor and two Instructor Cadets arrived during November in the Shaw Savill M.V. *Tonic*. These personnel were billeted in H.M.A.S. *Watson* and the comprehensive programme arranged for them included amongst other items a visit to H.M.A.S. *Creswell*, H.M.A.S. *Nirimba* and to the Town Hall to meet the Chief Commissioner. Time

was also found for them to view some of the major tourist attractions in New South Wales.

After protracted negotiations, the Manly Municipal Council has agreed to grant T.S. *Condamine* (Manly Unit) the additional area of land requested by the Senior Officer and the matter has now been finalised. An Architect has offered his services free and is at present engaged in drawing up plans for a building commensurate to the attractive site. However, notwithstanding the many offers of physical assistance there still remains the problem of finding sufficient financial means to erect an adequate headquarters.

The official opening and dedication of T.S. *Parramatta* headquarters building took place on Saturday 21 December.

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## MALAYSIAN NAVY TEAM



Members of the Royal Malaysian Training Review Team called on the Chief of personnel, Royal Australian Navy, Rear Admiral R. I. Peak, O.B.E., D.S.C. (Centre) at Navy Office, Canberra, late in 1968. The team was led by Commodore G. R. Griffiths, R.A.N. (second from right), adviser to the Chief of the Malaysian Naval Staff. The visitors (L. to R.): Lt. Cmdr. Saan Tet Lay, Lt. Cmdr. Mohamed Jais Bin Abdullah and Lt. Tan Wah Thong. The team spent two weeks in Australia studying R.A.N. training facilities and equipment.

## U.S. PROJECT ON NORFOLK ISLAND

The Australian Government has agreed to the United States Government installing a passive receiving station on Norfolk Island.

When operating, the station will assist the United States Air Force in a research programme involving the study of ionospheric propagation in relation to long range radio paths.

The experiment is being conducted by the Barry Research Corporation, Palo Alto, California, under the sponsorship of the U.S. Air

Force in co-operation with the Australian Department of Supply.

## PAPUA-NEW GUINEA NAVY APPRENTICES

The first four Papua-New Guinea sailors to train as apprentices in Australia arrived at H.M.A.S. *Nirimba*, the Navy's apprentice training establishment at Quaker's Hill, N.S.W., last January, to start 18 months of advanced technical training to graduate as engine room artificers in the Territory's patrol boats.

Each joined the Papua-New Guinea Division of the R.A.N. in

December, 1966, and began training at H.M.A.S. *Tarangau*, Manus Island in January, 1967. There they each completed six months common apprentice training plus 18 months as engine room artificer apprentices (see photo next page).

Their specialised training will make them senior engineering sailors on the division's five Australian-built patrol boats.

## MINE HUNTER — H.M.A.S. CURLEW

The former mine-sweeper H.M.A.S. *Curlew* commissioned last December in her new role of mine-hunter, for which she was extensively modified at Garden Island Dockyard—the first mine-hunter in the R.A.N. The mine-hunter is the latest advance in mine counter-measures and is a significant addition to the Australian Fleet.

Using a high definition sonar set, the vessel locates mines ahead of the ship to clear a channel. Clearance divers aboard the mine-hunter are used to delouse or destroy mines which are located. Vessels of this type may also be used for locating crashed aircraft or missiles.

Other modifications made to *Curlew* are the fitting of twin active power rudders which give her increased manoeuvring capabilities at low speeds.

The mine-sweeper H.M.A.S. *Snipe* is currently being converted to a mine-hunter.

## NEW YEAR LOOK FOR R.A.N. SHIPS

From 1 January all R.A.N. ships carried new-style hull numbers on their bows and on each quarter.

The new form of numbering requires that they be square instead of rounded, thus improving visibility at sea: prefix letters have been omitted except for auxiliary vessels which retain letters, but of a smaller size. Numbers have been omitted

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Petty Officer G. Cunningham, issues football boots to artificer apprentices A. Linga, R. Heni (centre) and G. Aiade.



Our photograph shows HMAS YARRA receiving her final touches

from the stern and replaced by smaller numbers on each quarter. The new numbering system follows the practice of the U.S., Canadian and Pakistani navies (photo below).

### H.M.A.S. BAYONET

The last of the 20 fast patrol boats built for the R.A.N., H.M.A.S. *Bayonet*, was commissioned at Urangan, Queensland on 22 February.

### SURVEY TEAM IN NEW PATROL BOAT

The fifth patrol boat for service in the Papua-New Guinea Division of the R.A.N., H.M.A.S. *Madang*, left Sydney on 24 February to join the P.N.G. patrol boat squadron.

*Madang* carried a 7 man team of Navy and Army surveyors to survey the coastline of the Territory. Surveying of the north-coast of Papua-New Guinea is to commence about 20 March.

### INDONESIAN STAFF COLLEGE

A party of staff and students from the Indonesian Naval Staff and Command School arrived in Australia on Saturday, 22 February, to visit Australian Service Establishments.

The visit was part of the School's curriculum which enables a group of senior officers to familiarise themselves with conditions in Australia.

The 42 officers, led by Rear Admiral K. Djelani, Commandant of the School, were accompanied by the Australian Naval Attache, Djakarta, Captain W. J. Lovell, R.A.N. The party commenced their tour on 25 February at the Naval Air Station and Joint Anti-Submarine School, Nowra, N.S.W.

There followed visits to the training establishment H.M.A.S. *Cerberus*, the government Aircraft factory, the A.C.T., Garden Island Naval Dockyard and the apprentice training establishment, H.M.A.S. *Nirimba*.

### H.M.A.S. MELBOURNE RETURNS TO FLEET

At Garden Island Naval Dockyard on Friday, 14 February, the R.A.N. welcomed back to the operational fleet, the flagship, H.M.A.S. *Melbourne*.

The 20,000 ton aircraft carrier had completed a one-year modernisation programme and her operational squadrons of Skyhawks, Trackers and Wessex 31B helicop-

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ters flew above the ship during the  
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*Melbourne* is currently carrying  
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aircraft (see photo).

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The barrels of both 5 inch auto-

matic guns on *Perth* were changed  
at the U.S. Naval Base in the  
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barrels had each fired some 4,000  
rounds and were 92% worn (see  
photo).

By mid-January, *Perth* had des-  
troyed or damaged 86 enemy bun-  
kers, 184 structures, 28 sampans,

one small cargo vessel, four bridges,  
three trucks, killed six Viet Cong,  
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# THE ROYAL NAVY'S NEW TACTICAL TEACHER

by JOHN MARRIOTT in 'Navy'

When the R.N. Tactical School moves from Woolwich to H.M.S. Dryad in 1970 is to have a brand new Action Speed Tactical Trainer. This is now nearing completion of development at Ferranti Ltd. and was shown to the Press for the first time on 8th November.

With modern weapons, missiles and aircraft now coming into service the faithful old A.S.T.T. at Woolwich has got out of date and indeed in many cases is incapable of simulating modern conditions. This was realized some years ago and a staff requirement was raised for a much more sophisticated and versatile trainer. The Digital Systems Department of Ferranti were awarded a contract to develop one in conjunction with the Admiralty Surface Weapons Establishment and work started in August 1964.

The designers were determined to come up with something which not only met present day requirements, but which would be sufficiently versatile to meet all future requirements for at least the next 10 years, and they have produced a really first-class system which they claim is the most advanced tactical trainer in the world.

The core of the whole trainer is three Ferranti digital F1600 computers. These incredible machines can store up to 100,000 words, automatically perform all the various functions, produce the tracks of all the units taking part in a game and carry out a thousand other computations in a fraction of a second.

The trainer itself consists of 20 cubicles, with provision for a further four, each of which can be programmed to represent any type of unit, seaborne, airborne or sub-

her of P.P.I. type of displays, which, although not identical with similar displays found in ships, between them produce to the Command exactly the same information that would be available in a modern operations room of a ship.

There is a large, 24-in. cathode-ray tube on which are displayed all the detections made, together with alphabetical-numerical symbols indicating their track number, category, speed, etc. In addition there is a 'tote' display, very similar to that found in a ship, and one, or in some cases two, other filtered displays.

The cubicles are fitted with keyboards by means of which the students can give various instructions to the computer. For instance, if it is desired to alter course to 040 turning to port, *TURN PORT 040* is typed on the keyboard and an injection key pressed to feed the order to the computer. The ship then turns to the new course with all the correct delays for wheel-over, etc., imposed. It is even possible to differentiate between 'hard over' and only a few degrees of wheel; a rate of turn control being provided. Changes of speed are similarly realistically simulated and it is possible to order a zigzag or to sinuate.

A complete H.F. and U.H.F. communications system is provided to enable cubicles on the same side to talk to each other, and there is also a phone system in each cubicle to enable the cubicle, which repre-

sents the operations room, to talk to the bridge (represented by the directing staff)

Data transmission of plot details can be simulated and made to appear automatically on the 'tote' and the displays exactly as is done when data transmission between ships is in use. Where this is not the case, voice plot information can also be passed between cubicles as if it was being sent by voice radio. On receipt it is inserted manually via the keyboard so that it shows up on the displays.

The directing staff have a number of displays on which they can either watch the whole tactical picture, a blown-up portion of it, or any display in any cubicle. They also have arrangements for driving up to 100 units themselves, but since 100 would be too many for them to manoeuvre all the time, they can programme these units to do what they require, press a switch and leave it to the computer to drive them. Thus the directing staff can manoeuvre a convoy, insert a submarine, or an aircraft, or shore-based missiles, in fact anything that their ingenuity can devise.

The whole playing area covers 2,048 square miles and is all displayed on vertical panels where all the tactical movements are recorded so that spectators can watch the progress of the battle.

A very useful innovation is a separate Wash-up Room where the

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game can be replayed so that it can be seen by all the participants, thus allowing the main area to be used simultaneously for another game with a fresh lot of students.

Considerable trouble has been taken to ensure that each ship's sensors detect realistically: horizon effect, jamming, size of target are all taken into account. In addition it is possible to simulate any form of enemy electronic countermeasure. The directing staff can insert various reductions in radar or sonar ranges obtainable, to represent adverse conditions, simply by making a switch.

Game preparation of the directing staff is simple and needs no special skill. All that they have to do is to complete a form to define the units wanted in the game, their starting positions and the entry time and manoeuvres required by the units which they themselves are controlling. The forms are converted onto tape, and fed to the computers which assemble them and print out a 'scenario' for use by the directing staff. Changing from one

game to another takes only a few minutes.

There is no doubt that the new A.S.T.T. is a great advance on the existing one at Woolwich. Ferranti claim that, in spite of its complexity, maintenance will be no problem, only six maintenance engineers being required.

As regards the remainder of the staff, apart from the directing staff itself, one Wren will be required in each cubicle whose principal function will be to type into the computer the various orders given her as to own ship movements by her 'captain'.

Ferranti are naturally looking for export sales and have already been in touch with two Commonwealth and two NATO navies. Since the R.N. trainer started development the state of the computer art has steadily improved and Ferranti have now developed a much smaller and cheaper computer using microminiature techniques. It is known as the FM 1600B and it is their intention to embody this in all future A.S.T.Ts for export. The computer has a

bigger capacity, so fewer will be required, thus there will be a considerable saving in space as well as cost.

Whilst the R.N.'s 20-cubicle system is ideal for playing large games, it is not essential to have such an elaborate set-up and one can easily reduce the number of cubicles and allow the directing staff to drive more units. Hence the system is extremely versatile and can be designed to suit any navy's requirements.

The export versions are expected to cost anything between £100,000 and £1m., depending upon the complexity required, but an average medium-sized trainer should cost about £400,000.

Tactical trainers fulfil a much-needed role in teaching naval officers how to handle their ships and squadrons in war; something which would cost a fortune to learn at sea in peacetime. When one considers the large number of officers which can be put through a trainer in the course of a year, the initial outlay would appear well worth it.

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## HELICOPTER-DESTROYERS FOR THE ROYAL AUSTRALIAN NAVY

By Cadet Midshipman G. J. DICKKENBERG, R.A.N.

This article is a further reply to the feature by Mr. R. J. Hallett which appeared in the May-June-July, 1968 edition of "The Navy", page 25. Mr. John Mortimer also replied to the feature, see page 63, August-September-October, 1968 edition.

Drawings reproduced were prepared by the author.

In reply to Mr. R. J. Hallett's article on helicopter-destroyers for the R.A.N. I would like to make the following points and suggestions.

Mr. Hallett assumes that the age of these ships is not too great to make such a conversion worthwhile, and it is here that my first doubts in this project exist. He is going to build virtually new ships from them, but is going to keep in them the machinery that has already gone through twenty years' service.

In addition he is going to alter their appearance dramatically, to make these vessels appear new and modern, but this expensive change achieves little in the way of their self defensive and detection capabilities. After all, the purpose of these conversions is to supply a relatively inexpensive source of new ships. He is devoting a very large amount of money to equipping his ships with the latest in submarine detection equipment and yet his armament lacks our best anti-submarine weapon, the IKARA.

Admittedly, he intends carrying helicopters, however these are not the effective weapon IKARA is, especially in heavy seas. In addition, he hopes to carry two of these aircraft, large SeaKing helicopters, no mean task considering their size and the limited room available on these ships. On re-reading his article I seriously doubt the feasibility and worth of such a conversion.

If we are to refit these ships to such an extent, why not build new vessels altogether, a move that appears to me would cost little more and leave us with a far greater lifespan to expect of these

ships. If indeed we wish to make these vessels worthwhile submarine hunters we must make provision for the refit to include the fitting of the IKARA system. We cannot possibly hope to carry two SeaKing helicopters and must either reduce this to one or adopt much smaller, less effective aircraft.

As to the problem of increasing the size of the R.A.N., I can see several solutions. We could for instance order or build a number of the new escort ships such as the Leander Class frigates, ships which are ideal for anti-submarine work and more importantly, ships which meet our limited manning ability. On the other hand, we could still modify to a limited degree our Battle class destroyers and type 15 frigates.

Within these limited conversions I would have these vessels equipped with the IKARA missile system and a helicopter. The modified ships could be expected to emerge from refit as follows:

### BATTLE CLASS DESTROYERS

Dimensions:  
Length 379'  
Beam 40'  
Draught 13'6"

#### Aircraft:

1 SeaKing Helicopter

#### Weapons:

2 MK X Mortars  
2 4.5" Dual purpose guns  
1 Ikara launcher  
2 Seacat launchers  
2 40mm A.A. guns

The Ikara launcher would be situated in B gun position with its magazine below it. The seacat launchers would be on either side of the hangar with their director on top of the hangar and their maga-

zines below it. The MK X mortars would be under a retractable section of flight deck and the two 40 mm Bofors would be abaft the flight deck.

### TYPE 15 FRIGATES

#### Dimensions:

Length 358'  
Beam 36'  
Draught 13' 6"

#### Aircraft:

1 SeaKing Helicopter

#### Weapons:

2 MK X Mortars  
1 Ikara launcher  
2 Seacat launchers  
3 40mm A. A. guns

The layout of the type 15 frigates would be very similar to that of the Battle class destroyers, except for the absence of the 4.5" gun. The third Bofor in this case would be located forward of the superstructure. The unfortunate fact about the type 15's is their lack of defensive armament in the way of guns and surface to surface capabilities. The three Bofors are hardly sufficient as defensive weapons, however, sacrifices must be made and calculated risks taken to ensure the maximum efficiency of these ships as anti-submarine vessels.

Whether or not the Australian Navy needs expanding and whether or not these old ships are worth converting is a matter for the Naval Board and Government to decide but I do believe it is important for ships of today's navies to carry some system of long range detection, some of this in the form of helicopters, and the best the Allies can supply in the way of anti-submarine weapons.

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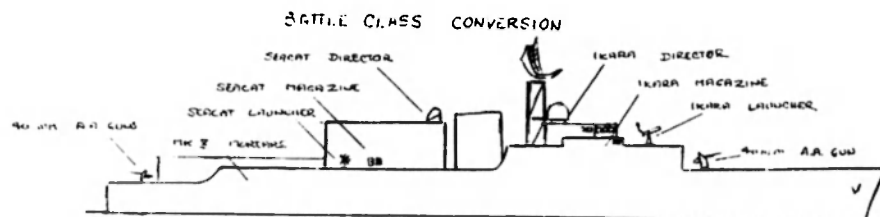
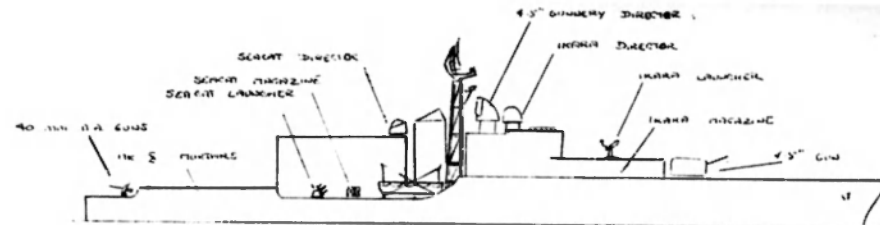
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# Italian Navy comes up with another First

Italy is showing quite a lot of interest in the Harrier, the world's first operational VTOL close-support fighter aircraft, designed and built by Hawker Siddeley, and, just as the Italian Navy was the first navy in Europe to have a cruiser armed with missile launchers, so it looks like being the first navy in Europe to have a ship capable of operating VTOL aircraft.

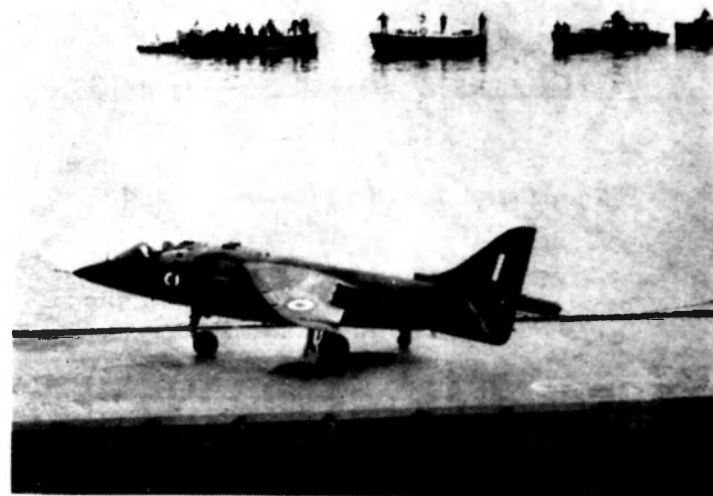
The Italian Navy has already proved to its satisfaction that a VTOL aircraft can be operated from quite a small cruiser. This was when a Harrier completed a two-day demonstration, watched by Italian Service chiefs, with a vertical landing on the small helicopter platform of the Italian guided-missile-armed escort cruiser *Andrea Doria*, which has a displacement of only 5,273 tons standard and 6,426 tons full load and the flight deck of which is only 98½ by 52½ feet.

She and her sister ship, *Caio Duilio*, were designed to carry four A/B 204B ASW helicopters, and in addition to the substantial hangar abaft the after funnel quite a lot was contrived on ships of the size. With an overall length of 489½ feet and a beam of 56½ feet they are armed with a twin launcher forward for Terrier surface-to-air guided missiles, eight 3-inch anti-aircraft guns and six 12-inch anti-submarine torpedoes in two triple banks. Their propelling machinery comprises four Foster Wheeler boilers supplying high-pressure superheated steam to two sets of double-reduction geared turbines aggregating 60,000 shaft horse power and turning two shafts, equal to a speed of 31 knots. They have a capacity of 1,100 tons of oil fuel, giving them a range of 6,000 miles at a speed of 20 knots, and withal they have accommodation for 53 officers and 425 men. These

handsome ships might be called portmanteaux of all the military propensities. If ships of this size and conventional appearance can also operate a VTOL aircraft it wants little imagination to envisage only a slightly larger ship with the capacity for carrying VTOL aircraft designed and built in from the start.

## A bigger G.M. cruiser

Actually a bigger Italian guided-missile-armed cruiser, *Vittorio Veneto*, is being completed, although at the time she was designed and laid down VTOL aircraft in ships of her size and type were hardly envisaged. With a standard displacement of 7,500 tons increased to 8,850 tons at full load, she was designed to carry nine A/B 240 B ASW helicopters, with a consequently larger flight deck aft, sponsoned out from her beam. She is obviously even more suitable to



The HARRIER VTOL lands an ANDREA DORIA

operate VIOL aircraft than her smaller half-sisters. She has an overall length of 557½ feet with a beam of 63½ feet, and has an extra deck from the break of the fore-castle to the transom thus giving a higher flight deck which is also the deck-head of the hangar below and also of the quarter deck open to the counter and the stern on both sides. She has thus taken her helicopter stowage and servicing below decks like an aircraft carrier, instead of as an addition to the superstructure which is the usual practice in cruisers, destroyers and frigates. But from the after funnel to the fore-castle she is still very much a cruiser, and she has the same punch as—in fact a little better than—*Andrea Doria* and *Caio Duilio*.

*Vittorio Veneto* is also very much a missile ship. In addition to her twin Terrier guided-missile launcher forward which is also capable of launching anti-submarine rockets (Asroc) (the combined mounting also being known as Aster), she is, according to official information, equipped with experimental arrange-

ments, similar to those in the larger cruiser *Giuseppe Garibaldi*, for launching medium-range ballistic missiles comparable with Polaris tubes of which provision has been made for four. She also mounts eight 3-inch single dual purpose guns and two triple tubes for anti-submarine torpedoes. Her propulsion plant is basically similar to that in the *Andrea Doria* class but with more powerful turbines of 73,000 shaft horse power designed for a speed of 32 knots. And the complement has been increased to 550 officers and men.

#### First surface-launched I.C.B.M.

*Giuseppe Garibaldi* was converted from an orthodox cruiser into a surface-to-air guided-missile ship, with a twin Terrier launcher in 'X' position, and she also has four large vertical tubes aft in 'Y' position for launching inter-continental ballistic missiles, the first ever mounted in a surface ship. But she is a bigger ship than *Vittorio Veneto* with a displacement of 9,800 tons standard and 11,335 tons full load with a

heavier battery comprising four 5.3-inch guns and eight 3-inch anti-aircraft pieces.

A sister ship of *Vittorio Veneto* was projected, to have been named *Trieste*, but the plans were modified to provide for a better ship and later the specifications were changed to give a hybrid amphibious cruiser. The building of this ship has been halted for the time being, and taken out of the new-construction cruiser programme, while the design is being re-cast. It is said that if she materializes she will be even more of a carrier than *Vittorio Veneto*. She is expected to be a helicopter carrier and commando ship in the full sense, but with a missile armament. She will turn out at least 10,000 tons and could possibly operate a flight of VTOL aircraft.

The potentialities of this type of helicopter-cruiser for operating VTOL aircraft have doubtless already been realized by the planners and constructors responsible for the conversion of the British *Blake*-class cruisers.

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